

Wetlands International South Asia

Annual Report

2022-2023

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Wetlands International South Asia

Wetlands International South Asia

ABOUT US

Wetlands International South Asia is a non-government organisation working for conservation and restoration of wetlands in the South Asia region. Its office was established in 1996 in New Delhi (India) as a part of the Wetlands International network. Wetlands International is a global, independent, non-profit organisation dedicated to the conservation and restoration of wetlands, and presently works in over 100 countries through a network of 19 regional and national offices and expert networks with a Global Office in The Netherlands. Wetlands International is an International Organisation Partner of the Ramsar Convention. In 2005, Wetlands International South Asia was registered under the Societies Registration Act of the Government of India (retaining the remit of the South Asia region).

The organisation uses a mix of approaches, including technical knowledge, policy dialogue and field demonstrations for addressing various issues related to wetland conservation and restoration. Its work spans the following major areas, individually and collectively contributing to its mission of “**maintaining and restoring wetlands — for their environmental values as well as for the services they provide to people**”:

- Integrated management planning for securing wetland features and addressing risks of adverse change
- Mainstreaming wetlands in development plans, programmes and investments to reduce conservation-development trade-offs and enhance co-benefits
- Strengthening policy and institutions for effective

implementation of wetland management actions

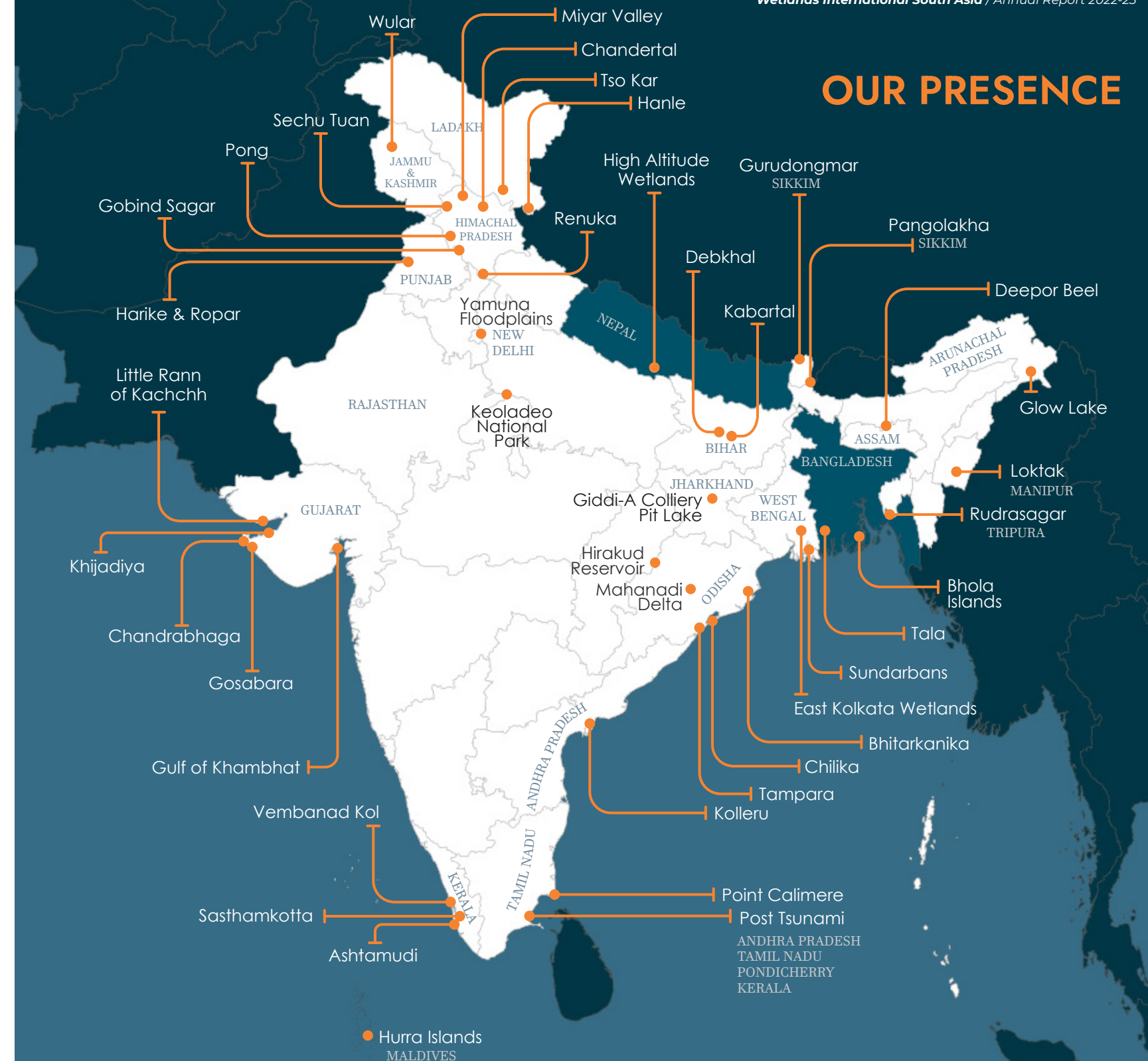
→ Communication and outreach to promote affirmative societal behaviour for wetlands ecosystem

→ Capacity and knowledge development to bridge the science-policy-action divide

Presently, **Dr Sidharth Kaul** (former Advisor, Wetlands, Ministry of Environment, Forest and Climate Change) is the President of the Society, **Prof. J.K. Garg** (Director, Tribhuvan College of Environment and Development Sciences - Nalanda University Centre, Neemrana) is the Vice President and **Mr Pijush Sinha** (Board Member, Avendus Finance Private Limited) is the Treasurer. **Dr Ritesh Kumar** (Director, Wetlands International South Asia) is the ex-officio Secretary.

The Governing Body comprises the Office Bearers, seven members elected by the General Body and the Chief Executive Officer, Wetlands International as the ex-officio member. **Prof C.K. Varshney** (Professor Emeritus, Environmental Sciences, Jawaharlal Nehru University), **Dr Sara Ahmed** (Founder, Living Waters Museum), **Prof. B.B. Dhar** (Former Director, Central Institute for Mining Research, Council of Scientific and Industrial Research), **Dr Lalitha Vijayan** (Honorary Director, Salim Ali Foundation, Thrissur, Kerala), **Prof. M.N. Murty** (Former Director, Institute of Economic Growth, New Delhi), **Prof. K.V. Jayakumar** (Emeritus Professor at the National Institute of Technology (NIT) Warangal, Andhra Pradesh) and **Dr. Manoj P. Samuel** (Executive Director, KSCSTE - Centre for Water Resources Development and Management (CWRDM)). **Mr Han De Groot**, (Chief Executive Officer, Wetlands International) represents Wetlands International on the Governing Body.

OUR PRESENCE



FROM THE PRESIDENT



ALL OF YOU have inspired and motivated us to exhibit our potential for better performance each year. On this

positive note, it gives me great pleasure to present the Wetlands International South Asia Annual Report for 2022-2023 which I am sure will satisfy your expectations. I am thankful to all our General Body members for reposing faith in me as a President once again, and I assure you of my best efforts to enhance the visibility of this organisation to reach greater heights.

AS YOU ARE AWARE wetlands in the South Asian region suffer from loss and degradation due to anthropogenic and developmental pressures which poses a great challenge for the managers. Due to this alarming situation, attention is being focused on key trends, management challenges and the role of the organisations towards increasing water and food insecurity, increasing climate risks, increasing risk of disasters, refocusing on urban wetlands, changing trends in wetland conservation financing, responding to the external environment, monitoring and evaluation which have increasingly become the key areas to look at. It is encouraging to note that wetlands are receiving greater policy and programming attention—as is reflected in the budget announcement on *Amrit Dharohar*, the launch of the *Save Wetlands Campaign*, *Mission Sahbhagita* and others. The network of Ramsar Sites presently stands at 8% of the known wetland regime. Despite these policy emphases, the condition of wetlands remains precarious. Efforts on conservation and integrated management do not match up with the pace of degradation, and the necessary investment in developing skill and knowledge base is not forthcoming at the desired level.

Our work therefore becomes all the more critical and crucial.

THE SILVER JUBILEE year was celebrated to mark the 25-year work of this organisation. A number of competitions were organised, online due to Covid pandemic, for various categories of students and prizes were given to the best contributions to encourage children. Various webinars were also conducted on different thematic areas where eminent experts from different parts of the world participated. We concluded the celebrations of the Silver Jubilee year through a public event in Delhi on 29 September 2022. The Chief Guest, Hon'ble Union Minister Dr R.K. Ranjan Singh aptly called for a 'whole of society approach' for wetlands conservation, which is also our programming emphasis in these years.

AS WETLANDS INTERNATIONAL South Asia expanded its reach, the need for a spacious office was felt, and hence In January 2023, Wetlands International South Asia office shifted to a professional office space at NSIC Business Park, Okhla Industrial Estate in New Delhi, India.

IN ORDER TO gather information on peatlands, as this area has not been explored to that extent in India, Wetlands International South Asia initiated a programme on the conservation of Himalayan peatlands and has launched a two-year project to map the extent and condition of these ecosystems. A project has also been initiated to develop integrated management plans for wetlands conservation and wise use of the pilot sites in three Himalayan States to Secure Habitats of Birds Migrating within the Central Asian Flyway. An assessment of ecosystem services of the Chandertal landscape was also initiated. Wetlands International South Asia, with support from the United Nations Environment Programme (UNEP) and Partners for Resilience Consortium, has developed

and implemented scalable Ecosystem-based Disaster Risk Reduction models in two wetland basins of Odisha and Bihar. The initiative focuses on wetland solutions for building community resilience against water-related hazards such as floods, droughts, and storm surges.

IN OUR ENGAGEMENT with conventions, a Roundtable of Ramsar National Focal Points of South Asia region will be held during mid-December 2023 at the International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal. The meeting will be organised by Wetlands International South Asia (WISA) in collaboration with the ICIMOD.

I WOULD ALSO like to bring to your notice that the delicate ecosystems, which are vital to our survival, have deteriorated as a result of human interference with natural processes. Urban floods are highly destructive and have adverse socioeconomic effects in areas where flooding is typical. Recent floods in Himachal Pradesh and the National Capital Territory of Delhi showed the long-term impact of losing wetlands and the drainage systems that connected them. It is time for wetlands to be promoted as Nature-Based Solutions and included in sector strategies for disaster risk reduction and urban planning.

I WOULD LIKE to take this opportunity to convey my sincere gratitude to all the members of Wetland International South Asia Society and technical and administrative staff for their dedicated and sincere efforts. I am sure with the constant support of you all we will be in a position to fulfil our dreams for sustainable conservation and effective management of these fragile ecosystems. I request all to give us feedback in order to improve our annual report each year.

Dr Sidharth Kaul
President

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FROM THE DIRECTOR’S DESK



DURING 2022-23, several policy announcements have been made that underline increasing priority being placed on wetlands conservation. The launch of *Amrit Dharohar* focused on promoting the unique values of Ramsar Sites, *Mission Sahbhagita* as an inclusive framework for wetlands governance, and the Save Wetland Campaign to promote awareness of wetlands values at local levels are laudable efforts, which have considerable scope for enhancing the scale and impact of wetlands conservation in India. However, their success lies in developing the underpinning capacities in local institutions in taking collective and cross-sectoral action for addressing threats to wetlands ecosystems, ensuring that different agencies do not work for cross purposes to the detriment of wetland ecosystems, and speeding up wetlands management planning process without compromising planning quality and consistency. Our work therefore becomes highly relevant in building capacities for wetland management at various levels, simplifying wetland management guidance and practices, and increasing emphasis on monitoring and learning to ensure that management is effective.

IN DECEMBER 2022, the Contracting Parties to the Convention on Biological Diversity adopted the Kunming-Montreal Global Biodiversity Framework. Wetlands find specific mention in the targets for ecological restoration and effective management. It

is pertinent that the global targets find a place in national targets and ambitions so that action on restoration and effective management of wetlands can be rapidly scaled up.

INDIA HAS COMMITTED to ambitious climate change mitigation targets, pathways of which are linked with reducing the emission intensity of economic activities as well as creating additional carbon stocks. Peatlands are known as the largest terrestrial carbon stores, even storing more carbon than most vegetation types combined. Unfortunately, our understanding of peatland distribution is limited to only coastal areas and patch-level assessments in other parts. This year, we have embarked on a project to map peatland distribution in the Indian Himalayas, wherein the conditions are very conducive for the development of these ecosystems, and select studies have also confirmed the presence of these ecosystems. The results of this project will help us pitch for peatland conservation and restoration as a means of climate change mitigation actions.

THE STATE OF INDIAN WETLANDS assessment initiated this year is an attempt to present a coherent national-scale picture of the status and trends of wetlands, their drivers of change, and response actions needed. This assessment is also an effort to galvanize actions towards geographies and sectors which have hitherto remained under-addressed in wetland policies, programmes and investment. We will be presenting the outcomes of the assessment in the coming year, and also working on policy and programming front to stimulate action.

FINALLY, SCALING UP wetlands conservation action will also require a broadening of the financing base and partnerships. The India Wetlands Coalition provides a platform for meaningful engagement with environmentally-conscious corporates on their greater role in affirmative actions for wetlands conservation.

I THANK THE Governing Body members for their astute guidance to our work, and my wonderful colleagues for their hard work and positive energy towards the fulfilment of our organisation’s vision and mission.

Dr Ritesh Kumar
Director

List of Abbreviations

AWC	Asian Waterbird Census	NSIC	National Small Industries Corporation
BNHS	Bombay Natural History Society	PfR	Partners for Resilience
CAF	Central Asian Flyway	PRI	Panchayati Raj Institutions
CCL	Central Coalfields Limited	RIS	Ramsar Information Sheet
CEPA	Communication, Capacity-building, Education, Participation and Awareness	RRCEA	Ramsar Regional Centre East Asia
CMS	Convention on Migratory Species	SIRD	State Institute of Rural Development
CoP	Conference of Parties	SOP	Standard Operating Procedure
CRZ	Coastal Regulation Zone	SOC	Soil Organic Carbon
DRR	Disaster Risk Reduction	SWAK	State Wetlands Authority Kerala
Eco-DRR	Ecosystem based Disaster Risk Reduction	UNDP	United Nations Development Programme
ESSVA	Ecosystem Services Shared Value Assessment	UNEP	United Nations Environment Programme
GEF	Global Environment Facility	UPSWA	Uttar Pradesh State Wetlands Authority
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit		
GLOF	Glacial Lake Outburst Flood		
GoI	Government of India		
IMWBES	Integrated Management of Wetland Biodiversity and Ecosystem Services		
IKI	International Climate Initiative		
IWC	International Waterbird Census/ India Wetland Coalition		
KILA	Kerala Institute of Local Administration		
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme		
MoEFCC	Ministry of Environment, Forest and Climate Change		
NGO	Non-Government Organisation		
NIDM	National Institute of Disaster Management		
NIRD	National Institute of Rural Development and Panchayati Raj		

2022-2023

YEAR AT A GLANCE



Silver Jubilee Year
celebrations

- **The Silver Jubilee Year celebrations came to a close in September 2022**, with a public event in New Delhi. Hon'ble Minister of State for External Affairs and Education, Dr Rajkumar Ranjan Singh, chaired the event and delivered the keynote address. Three publications centred on the role of communities in wetlands conservation were released. Winners of online competitions were presented with awards.
- **The office shifted to professional premises in the NSIC Complex in January 2023**. The spacious office has a seating capacity of 35 people, along with conference and meeting rooms, and ample parking space.

Programme Implementation

- A two-year project on mapping the extent and condition of peatlands in the Indian Himalayas was launched. Modelling for

mapping potential peat areas was conducted for Miyar Basin as a test case, and results were validated with field assessments.

- **A project on integrated management planning for flyway bottleneck sites in Himachal Pradesh and Sikkim was initiated.** Ecological character baselines for three wetlands of high ornithological significance were completed during the year.
- **A guidebook on assessing climate risks to wetlands was published in collaboration with GIZ-India.** The guidebook provides a practical approach to integrating climate risks in wetlands management. A meta-analysis of carbon stock and methane release from Indian wetlands was completed.
- **Economic value of select ecosystem services—water supply and storage, ecosystem carbon stock, flood buffering, tourism and fodder provision from Chandertal landscape were assessed.** The economic value of these ecosystem services is estimated to be 7.23-7.44 thousand crores.
- **In 15 villages of Odisha and Bihar, wetlands rejuvenation actions were integrated into Gram Panchayat Plans.** 32 community-based organisations received training on wetlands management, disaster

risk reduction and sustainable livelihood options.

- **A pilot project on the rejuvenation and management of a pit lake** of Central Coalfields was initiated.
- **Management plans for three Ramsar Sites were initiated during the year.** Three stakeholder workshops and baseline assessments were completed for integrated management planning of Vembanad-Kol wetlands of Kerala. Zone-wise draft management action plans were prepared after seeking inputs from departments through one-to-one meetings with government functionaries and local self-government electives in Thiruvananthapuram, Alappuzha, and Kottayam. The integrated management plan for Gokul Jalashay, a floodplain wetland of River Ganga in Buxar was completed and approved for implementation by the Bihar State Wetland Authority. An ecosystem services shared values assessment was conducted in Sasthamkotta to support the management planning process.
- **Management effectiveness evaluation frameworks applied** in seven Ramsar Sites.
- **Wetlands International South Asia became the founding partner of India Wetland Coalition** established to enable corporate sector partnership in wetlands conservation.
- **Dialogue on the establishment of a Regional Platform for Wetlands**

in South Asia was further progressed through discussions at a side event at Ramsar COP 14 in Geneva. The national focal points expressed their concurrence for establishing the South Asia Regional Platform within the framework of the Ramsar Regional Initiative.

- **Draft Targets for wetlands for the Global Biodiversity Framework were prepared**, working together with a team of international NGOs. Wetlands finally found a specific mention in the Kunming-Montreal Global Biodiversity Framework adopted by the CBD in December 2022.
- **A public event was organised on World Wetlands Day at India International Center**. Mr Amitabh Kant, G20 Sherpa and former Chief Executive Officer, NITI Aayog, delivered the keynote address. A music video, “*Hum Agar Nahin To Tum Kahan*”, was released globally.
- **Events for youth engagement were held** at Hirakud Reservoir in Odisha, Thane Creek in Mumbai and Kabartal in Bihar.
- **Mid-winter waterbird census for 2023 was launched in January 2023**. Reports were received from 444 sites. A collaborative census with State and UT Biodiversity Boards was also held in 60 sites in February, wherein 2.3 million waterbirds were sighted. The census also revealed the presence of numerous IUCN red-listed vulnerable species, including

Baer's Pochard, Sociable Lapwing,
Common Pochard, and Lesser
Adjutant.

Society membership

- **8 members were added to the Society as General Body Members.** The total membership base of the Society as of September 15, 2023, included 12 Founder Members, 15 Nominated Members, 1 Institutional Member, 13 General Members and 1 Student Member.

Finance and Accounts

- **During April 2022-March 2023, the organisation's funds receipts were Rs. 49.99 million.** Of this, Rs. 45.52 million was on account of project funds received from 8 donor agencies, and the balance of Rs. 4.47 million was as interest earned on the reserves. The total expenditure during the year was Rs. 47.32 million. Direct overheads stood at Rs. 3.55 million, forming 7.5% of total expenditure.
- **The total reserves at the end of the financial year stood at Rs. 117.27 million,** which is an increase of Rs. 14.45 million over the last year.

CELEBRATING SILVER JUBILEE EVENT

Highlights

- > The Silver Jubilee Year celebrations came to a close in September 2022, with a public event in New Delhi. Hon'ble Minister of State for External Affairs and Education, Dr Rajkumar Ranjan Singh, chaired the event and delivered the keynote address.
- > Three publications centred on the role of communities in wetlands conservation were released. Winners of online competitions were presented with awards.
- > The office shifted to professional premises in the NSIC Complex in January 2023. The spacious office has a seating capacity of 35 people, along with conference and meeting rooms, and ample parking space

Participants of the Silver Jubilee event at India Habitat Centre, New Delhi

Wetlands International South Asia celebrates its Silver Jubilee

Wetlands International South Asia celebrated its Silver Jubilee year of inception on 29 September 2022 at India Habitat Centre, New Delhi. Hon'ble Minister of State for External Affairs and Education, Dr Rajkumar Ranjan Singh, graced the occasion as the chief guest.

Congratulating the organisation on achieving this epic milestone, Dr Singh praised the conservation efforts of Wetlands International South Asia. He emphasised that water security is central to the lives and livelihoods of people and thus calls for the participatory role of the individuals beyond their societal realm.

Dr Sidharth Kaul, President Wetlands International South Asia, highlighted the 25 years journey of the organisation since its inception in 1996.

Three publications were released on the occasion. The book 'Wetland Champions', published in collaboration with Mongabay India, reflects the efforts of individuals, society and communities

in wetland conservation by showcasing 25 positive stories of affirmative actions. The second book 'Wetlands Conservation and wise use: The Role of Citizens' focuses on the critical role of individuals in conserving the wetlands, emphasising an all-of-society approach towards wise use. The third book, 'Inspiring Echoes', is a collection of messages received from partners and supporters on the silver jubilee occasion.

Wetlands International South Asia also held several pan-India online competitions on various themes related to wetlands, with the youth as the focus. The winners of these competitions were also awarded by the chief guest.

A panel discussion on 'Wetlands conservation—challenges and prospects' was also organised. The panellists included Mr Ravi Singh, Secretary General and CEO, WWF India; Prof. R R Mishra, Special Technical Advisor, NIUA and Former DG of National Mission on Clean Ganga; Dr Sara Ahmed, Founder Living Waters Museum; Mr Pijush Sinha, Board Member, Avendus Finance Private Limited. Dr Ritesh Kumar, Director,

Wetlands International South Asia, moderated the discussion. The panellists emphasised using simple language while communicating wetlands to the wider audience. The panellists also stressed strengthening conservation efforts at the grassroots level and not just being confined to expert discussions and management plans. Laying emphasis on wetlands as societal assets, Dr Ritesh Kumar, Director, Wetlands International South Asia, stressed upon decentralising wetland management, augmenting interventions from regulatory to one enabling a participatory approach through dialogues and collaborative actions.



Release of publications by (L-R) Dr Ajit K. Pattnaik, Dr Rajkumar Ranjan Singh, Dr Sidharth Kaul and Prof. J.K. Garg



Hon'ble Minister of State for External Affairs and Education Dr. Rajkumar Ranjan Singh graced the occasion as the Chief Guest



Panel discussion on Wetlands conservation—challenges and prospects

Commemorating Silver Jubilee

To promote the wise use of wetlands among the general public and to commemorate its silver jubilee year, Wetlands International South Asia organised several activities to highlight the efforts for conserving wetlands in the South Asian region. The activities ranged from conducting webinars on different environmental themes, organising national-level competitions on photography of natural resources, slogan and essay writing and painting for school and college students. The first silver jubilee webinar was held on September 16, 2021, on the topic 'Managing Wetlands: Addressing the Challenges of Water Security and Climate Change'. On October 20, 2021, the second webinar in the series was held on the subject of 'The Future of Wetlands in Urban Spaces'. 'Wetlands Governance: Challenges and Imperatives' was the subject of the third Silver Jubilee webinar, which took place on November 25, 2021. Recognising the important role played by children and youth in wetlands conservation, online competitions (amateur photography, essay writing, slogan writing and poster making) for children and youth were organised from September 1, 2021 till November 15, 2021.

The themes of the Digital Photography Contest were:

- ▶ *Wetlands are beautiful landscapes*
- ▶ *Wetlands and birds*
- ▶ *Wetlands and people*

The themes of the Digital Poster Contest were:

- ▶ *Wetlands are important life support systems*
- ▶ *Arrest wetlands becoming wastelands*

The themes for the Online Essay Writing Contest were

- ▶ *Without wetlands, no water security.*
- ▶ *Why conserve wetlands?*

The themes for the online slogan contest were

- ▶ *Wetlands are biological supermarkets*
- ▶ *Why conserve wetlands*

More than 150 entries were received and evaluated by an expert panel. The awards included free student membership and cash prizes.



Webinar invitations



Students beside their prize winning entries at the Silver Jubilee event

WETLANDS INTERNATIONAL SOUTH ASIA SHIFTS ITS OFFICE

In January 2023, Wetlands International South Asia shifted to a professional office space at NSIC Business Park, Okhla Industrial Estate in New Delhi, India. This office has a seating space for 35 people along with a sizable conference room and meeting room to boost productivity and networking opportunities. The office is located in close proximity to the NSIC Metro Station.

Dr Sidharth Kaul, President of Wetlands International South Asia, inaugurated the new office on January 23, 2023, in the presence of Dr Ritesh Kumar, Director of Wetlands International South Asia and the entire team.



Team Wetlands International South Asia in the new office

WETLANDS AND CLIMATE RESILIENCE

Highlights

- > A two-year project on mapping the extent and condition of peatlands in the Indian Himalayas was launched. Modelling for mapping potential peat areas was conducted for Miyar Basin as a pilot, and results were validated with field assessments.
- > A guidebook on assessing climate risks to wetlands was published in collaboration with GIZ-India. The guidebook provides a practical approach to integrating climate risks in wetlands management.
- > A meta-analysis of carbon stock and methane release from Indian wetlands was completed.

PROJECTS:

- > Himalayan Peatlands Programme
- > Wetlands management for biodiversity and climate protection (funded by GIZ under the International Climate Initiative of the German Federal Government)
- > Internal funding

TEAM

Harsh Ganapathi, Dhruv Verma, Arghya Chakraborty, Dayadra Mandal, Apoorva Thapa, Kamal Dalakoti, Dr Pradeep Vashisth and Saadan Hussain

Mapping Himalayan Peatlands

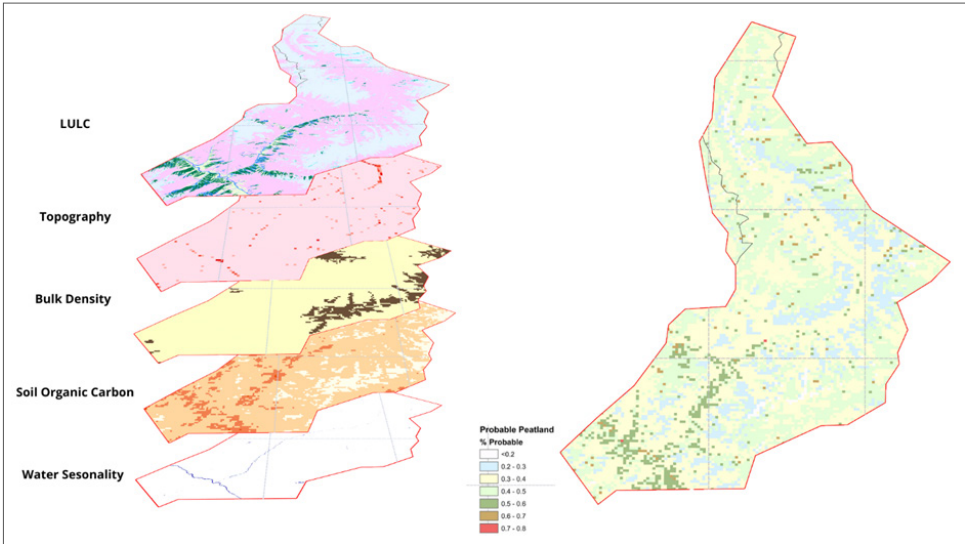
Peatlands are the world's most carbon-dense wetland ecosystems and hold twice the amount of carbon stored in all the world's forests on just 3 percent of the Earth's land surface. These systems play a critical role in the global carbon cycle and climate regulation. Unfortunately, the extent of peatlands in India is yet to be systematically assessed. The available datasets are of coarse resolution and do not represent the ground reality.

Wetlands International South Asia places a high priority on the conservation of Himalayan peatlands and has launched a two-year initiative to map the extent and condition of these ecosystems. The ultimate aim is to trigger systematic restoration and conservation action so that these wetlands continue to lock carbon, moderate water regimes, and support unique species assemblage and socio-cultural values.

As a part of this initiative, a geospatial mapping exercise was conducted to identify potential peatlands in Miyar Basin. The basin spans ~ 964 km² and is located in Lahaul District of Himachal Pradesh at an elevation ranging from 2–6,000 m amsl. A probabilistic map of peatlands in the basin was developed on the basis of multicriteria analysis of thematic raster layers on land use and land cover, topography, water seasonality, bulk soil density, and soil organic carbon content. The analysis indicated that nearly 0.02% of the landscape had peatlands, with probability ranging between 60–75%. The modelled soil organic carbon stock ranged between 39 to 78 tonnes per hectare, amounting to a total soil organic stock ranging between 526 to 1,390 tonnes in the top 30 cm soil layer.



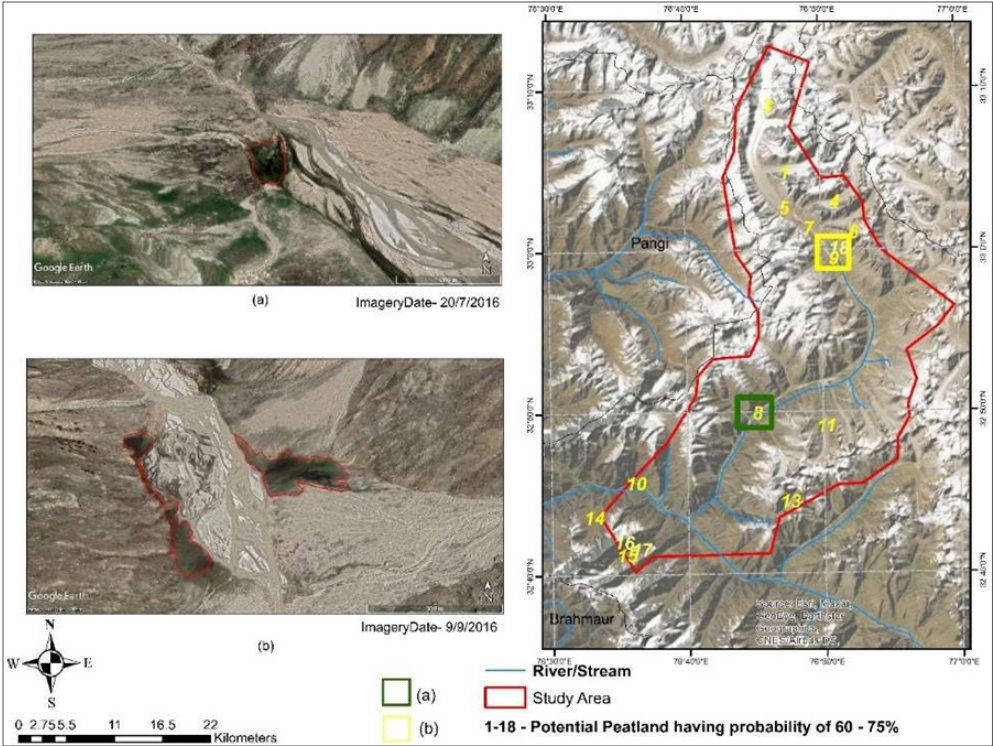
Harsh Ganapathi, Senior Technical Officer-Ecohydrology collecting soil samples in the peat bogs of Miyar Basin



Probable peatland of Miyar Basin using multi-criteria analysis by weighted raster overlay method

Pockets of carbon rich peat bogs in Miyar Valley

Ground truthing of four of the 18 locations was conducted in July 2022. Soil samples from these locations were analysed for depth, drainage, vegetation, colour, porosity, Bulk Density, Soil Organic Carbon, pH, Electrical conductivity, and Soil Organic Matter. The SOC content at these sites ranged between 9 to 18%. The estimates from the field investigation correlate with the modelled projections. In the coming period, more samples will be tested, and the model improved based on field observations.



Extent of potential peatlands identified in 18 locations across Miyar Basin

Guidebook on assessing climate risks to wetlands

The Ministry of Environment, Forest and Climate Change (MoEFCC), in partnership with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, India and Wetlands International South Asia has been implementing an International Climate Initiative (IKI) supported project, 'Wetlands management for biodiversity and climate protection'. Project implementation includes the development and field testing of techniques for evaluating climate risks for wetlands, and

identifying corresponding mitigation and adaptation measures. The method has been published as a guidebook titled 'Managing Climate Risks in Wetlands - A Practitioner's Guide'. This guidebook is a compilation of methods to integrate climate risk into wetland management planning at the site level towards capturing climate co-benefits while maintaining the wise use approach of the Ramsar Convention on wetlands. The publication was released by the Hon'ble Union Minister of Environment, Forest and Climate Change on World Wetlands Day 2023.



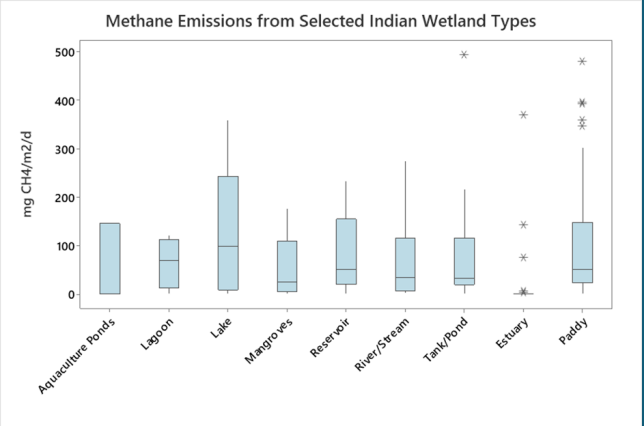
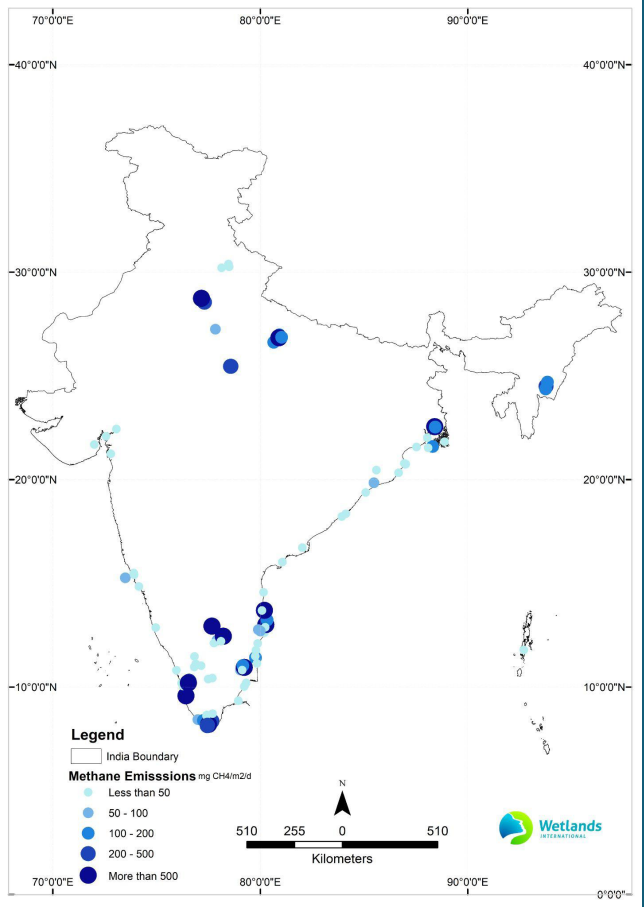
Indian wetlands and methane

Methane (CH_4) is a significant greenhouse gas (GHG) that contributes to climate change and, as per IPCC, has warmed the planet by around 0.5°C between 1850 and 1900. Wetlands are a major source of methane, released primarily from the action of archaea (collectively referred to as methanogens), decomposition of organic matter and metabolism of organic acids, hydrogen and other compounds. Methane emissions within individual wetlands are highly variable, both spatially and temporally, due to the heterogeneity of environmental variables like the oxygen content of the soils or sediments, the availability of methanogenic substrates, chemical properties of organic matter, temperature, and nutrient supply. Globally, it is estimated that nearly 40% of total global methane emissions are from wetlands.

The annual methane emissions from India have been reported to be 22 Tg. As a part of the MoEFCC-supported National Communications project, Wetlands International South Asia conducted a meta-analysis of methane emissions from Indian wetlands. Overall, 104 estimates on wetlands methane from 17 studies for the period 2000-2022 were included in the analysis.

The total CH_4 flux reported in these studies ranges from less than $0.1 \text{ mgCH}_4/\text{m}^2/\text{d}$ to $494.09 \text{ mgCH}_4/\text{m}^2/\text{d}$ with a median of $20.34 \text{ mgCH}_4/\text{m}^2/\text{d}$. Inland natural wetlands ($49.2 \text{ mgCH}_4/\text{m}^2/\text{d}$), particularly lakes ($98.3 \text{ mgCH}_4/\text{m}^2/\text{d}$) have the highest methane emissions. Methane emissions from highly polluted urban wetlands were more than ten times higher than the median value.

Extrapolating the wetland type-wise emissions to the national level renders a national annual emission of 2.07 Tg. Among the types of wetlands, urban wetlands contribute to 14 times higher methane emissions, probably due to large-scale human interference, higher abundance of macrophytes and high levels of pollution. The study points out the need for a systematic country-level assessment of methane emissions from wetlands and the incorporation of emission-lowering mechanisms such as restoring hydrological regimes which can enable carbon storage, maintain the stability of wetland soils, preserve natural hydroperiods and prevent eutrophication within the management plans.



ABOVE: Range of Methane emissions from Indian wetlands
BELOW: Methane emissions from selected Indian wetlands

CONSERVING HIMALAYAN WETLANDS

Highlights

- > A project on integrated management planning for flyway bottleneck sites in Himachal Pradesh and Sikkim was initiated. Ecological character baselines for three wetlands of high ornithological significance were completed during the year.
- > Economic value of select ecosystem services - water supply and storage, ecosystem carbon stock, flood buffering, tourism and fodder provision from Chandertal landscape conducted. The economic value of these ecosystem services is estimated to be 7.23–7.44 thousand crores.

View of Chandertal with Samudra Tapu in the background

ARGHYA CHAKRABARTY

PROJECTS:

- > Conservation and Wise-use of Five Wetlands in Three Himalayan States to Secure the Population and Habitats of Birds Migrating within the Central Asian Flyway (funded by the National Mission on Himalayan Studies, MoEFCC)
- > Economic Valuation of Biodiversity and Ecosystem Services in SECURE Himalaya Project Landscapes in Himachal Pradesh (funded by the UNDP, India)

TEAM

Arghya Chakrabarty, Harsh Ganapathi, Dayadra Mandal, Apoorva Thapa, Dr Pradeep Vashisht and Preethi Vasudevan

Conserving Central Asian Flyway bottleneck sites in the Indian Himalayan region

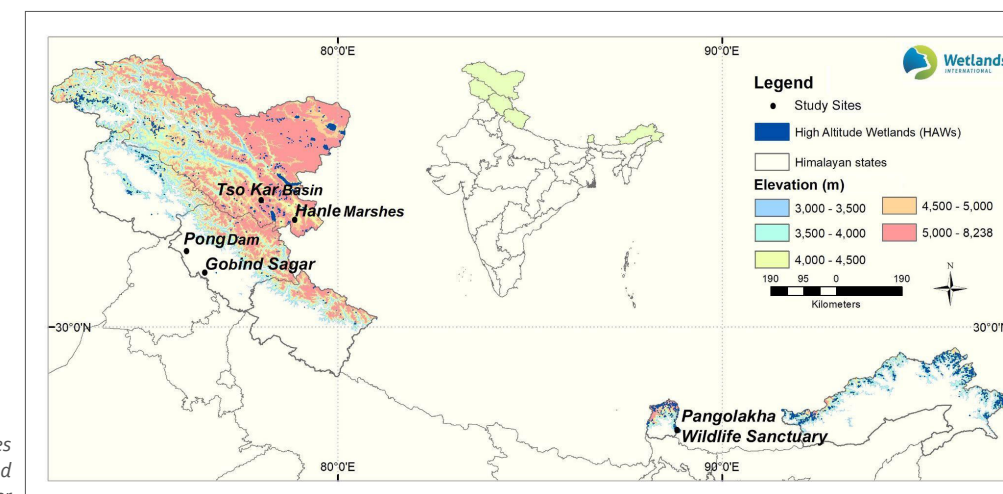
The Central Asian Flyway (CAF), one of the nine in the world, is used by 182 migratory waterbird species and 244 landbird species for completing their lifecycles and escape the harsh winters of the northern hemisphere. India provides critical stopover sites to over 90% of the bird species known to use the CAF in search of refuge, food and rejuvenation.

Wetlands in the Indian Himalayan Region play a pivotal role in the completion of their annual migration as these wetlands are nestled in the flyway bottlenecks or act as stopover sites for the birds. Several of the High Altitude Wetlands, such as alpine marshes, lakes and peatlands, are hotspots for migrating and breeding birds. However, many of these wetlands are threatened due to physical regime alteration, habitat destruction and landscape-scale changes that adversely affect species diversity, migration patterns, health and overall population.

The Ministry of Environment Forest & Climate Change (MoEFCC) developed the National Action Plan for Conservation of Migratory Birds and their Habitats along Central Asian Flyway (2018-2023) to conserve the critical habitats of these migratory birds through an effective management regime. As a part of the CAF National Action Plan implementation, the National Mission on Himalayan Studies (NMHS) entrusted Bombay Natural History Society and Wetlands International South Asia with a project 'Conserve and Wise-use of Five Wetlands in three Himalayan States to Secure Habitats of Birds Migrating within the Central Asian Flyway'. The project aims to develop integrated management plans for wetlands conservation and wise use of the pilot sites, with a focus on conserving migratory birds and their habitats.

During 2022-23, stakeholder mapping, biodiversity and ecosystem services assessment, and bird tagging were initiated in Pong Dam and Gobind Sagar in Himachal Pradesh and Pangolakha Wildlife Sanctuary (Elephant Lake) in

Five wetlands along three Indian states within the Central Asian Flyway identified as a significant waterbird stopover



Sikkim. The project team supported BNHS experts in tagging nearly 1,400 migratory birds from these wetlands. Ecological character baselines were established, and findings were discussed with stakeholders and experts to identify relevant management interventions during consultation meetings. During 2023-24, the baseline data will be used to formulate integrated management plans and develop Standard Operating Procedures for Migratory Bird Conservation with a focus on systematic monitoring and disease surveillance and response.

Assessing and valuing ecosystem services of Chandertal landscape

Following up on the development of an Integrated Management Plan for Chandertal Ramsar Site (completed by Wetlands International South Asia in 2021), an assessment of ecosystem services of the Chandertal landscape was initiated in February 2022. The scope of the UNDP and MoEFCC-supported project includes an assessment of the status and trends of biodiversity and ecosystem services, identification of priority economic sectors dependent or

having an impact on biodiversity and ecosystem services, assessing the cost and benefits of conservation investments and making a business case for integrating ecosystem services values in relevant public and private sector plans, programmes and investments. The landscape social-ecological system characterisation rendered five critical ecosystem services: water supply and storage, ecosystem carbon stock, fodder provision for livestock, flood buffering, and tourism. The ecosystem services supply matrix was established using hydrological models, land use and land cover mapping, field surveys and key-informant interviews. The value of water storage and supply is estimated based on the capital required to establish a hypothetical structure envisaged to store an equivalent quantity of surface water stored in the landscape as wetlands and discharged from the landscape through rivers and streams. Fodder cost utilised by livestock is estimated using a shadow approach involving prices of substitutes used by pastoralists as proxies, arriving at the market value of fodder. The value of flood buffering is evaluated by simulating a potential GLOF scenario using a 2D unsteady flow model, and the damage cost avoided due to the presence of

landscape features to buffer floods. The value of ecosystem carbon stock is assessed from the carbon stored in the form of above-ground and below-ground biomass and in the soil using field sampling and remote sensing techniques. The value of tourism and recreation has been assessed using the individual travel cost method. Valuation of these services, using a mix of market and non-market methods, as briefly described above, rendered an annual flow ranging from INR 7.23 thousand crores to INR 7.44 thousand crores. Determination of sectoral synergies and trade-offs indicates the need for shifts in institutional decision-making ranging from environmental flow regulation, investment into early warning systems, tourism zonation plans, grazing regulations, regulated infrastructure development and safeguarding carbon stock in the landscape. Integrating these economic values into sectoral development plans will enable effective conservation and management of the landscape to ensure a continued supply of ecosystem services.



Water testing at Chandertal, a high altitude wetland in Lahaul Spiti district of Himachal Pradesh

The District Administration Lahaul Spiti with Wetlands International South Asia team



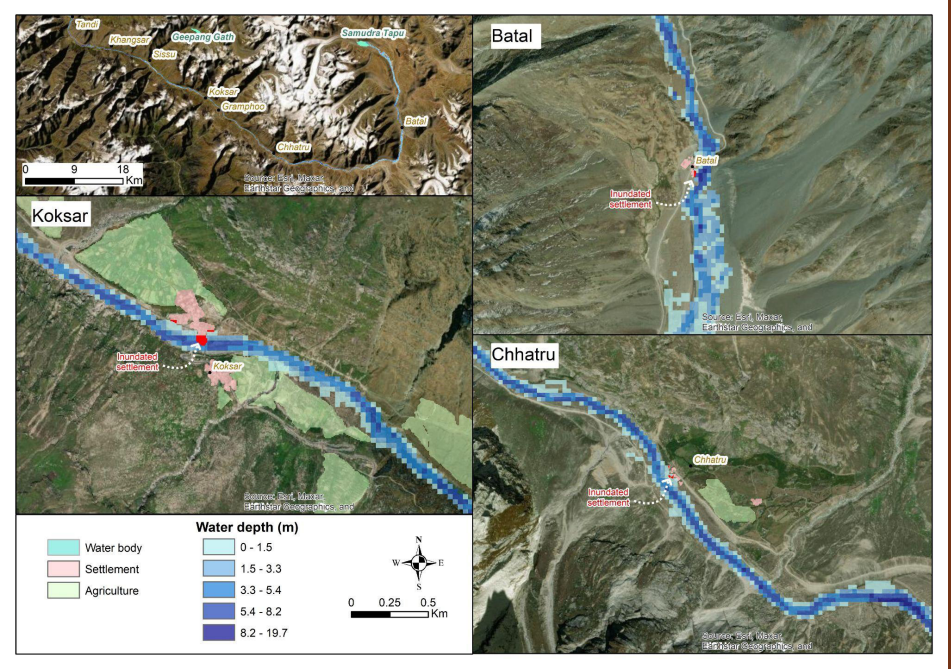
Evaluating flood buffering capability of Chandra Basin

The upper reaches of Chandra Basin have two major glacial lakes, Samudra Tapu and Geepang Gath. During 1971-2022, these lakes have expanded nearly 7.6 and 10 times in terms of area and 16.3 and 17.6 times in terms of volume, thus creating a high risk of Glacial Lake Outburst Floods. Within this basin, the landscape features such as peatlands, marshes, river bed, boulders and lakes such as Sissu lake abutting Chandra River provide a flood buffering effect by retaining and gradually releasing a significant proportion of these floodwaters. The concentration of economic assets and livelihoods within

these areas enhances flood risk and the risk of economic damage to society. GLOF was simulated for the glacial lakes, Samudra Tapu and Geepang Gath using a two-dimensional unsteady flow model, run on HEC-RAS v 6.1 software. Inflow hydrographs of the lake, moraine dam parameters and terrain data were used as inputs to the model. The modelling indicates that the flood waters, in the instance of a breach, will attain a maximum height of 26 m for both Geepang Gath and Samudra Tapu and a maximum velocity of 38 m/s for Geepang Gath and 46 m/s for Samudra Tapu. This will inundate nearly 27 km stretch of the Kaza-Gramphoo and Manali-Leh highway, damaging five bridges connecting the villages of Batal, Chhatru, Khoksar and two others,

and 1.6 km of the Leh-Manali highway, damaging Sissu bridge. During 2005 and 2021, the area under settlement and agriculture within the basin increased from 40 ha to 69 ha (70% increase) and 952 ha to 1,315 ha (38% increase). Land use and land cover modelling indicate that by 2040, the settlement and agricultural area will increase from 73 ha to 257 ha and 1,343 ha to 3,315 ha, respectively. Correspondingly, the flood accommodating spaces are likely to reduce from 2,271 ha to 2,124 ha across the landscape during 2021 to 2040. The simulation shows that an additional 7 ha of settlement and 178 ha of agricultural land will be inundated by 2040. The assets at flood risk with the projected landuse change are valued at INR 343 crores.

The assessment points out the need for flood risk-informed development in the basin and, in particular, prevent land use change in flood-accommodating areas, particularly wetlands. This can be done through embedding such information in district development and disaster management plans.



Extent of flooding in the landscape due to breaching of glacial wetlands in 2021

LOCAL ACTIONS FOR INTEGRATING WETLANDS IN DEVELOPMENT

Highlights

- > In 15 villages of Odisha and Bihar, wetlands rejuvenation actions were integrated into Gram Panchayat Plans. 32 community-based organisations received training on wetlands management, disaster risk reduction and sustainable livelihood options.
- > A pilot project on the restoration and management of a pit lake of Central Coalfields was initiated.

Aerial view of the Giddi-A Colliery Pit Lake

ARGHYA CHAKRABARTY

PROJECTS:

- > Up-scaling community resilience through ecosystem-based disaster risk reduction (funded by Wetlands International Global Office as a part of an EU-funded project on Ecosystem-based Disaster Risk Reduction)
- > Assessing biodiversity and ecosystem services values of the proposed Ramsar Site at Giddi-A Colliery Pit Lake at Argadda Area (funded by Central Coalfields Limited, Jharkhand)

TEAM

Dr Asghar Nawab, Dhruv Verma, Kalpana Ambastha, Kamal Dalakoti, Arghya Chakrabarty and Ravi Prakash

Wetlands rejuvenation for enhancing community resilience

Wetlands International South Asia, with support from the United Nations Environment Programme (UNEP) and Partners for Resilience Consortium (PfR) has developed and implemented scalable Ecosystem-based Disaster Risk Reduction (Eco-DRR) models in two wetland basins of Odisha and Bihar. The initiative focuses on wetland solutions for building community resilience against water-related hazards such as floods, droughts, and storm surges.

During the year, the project enabled the integration of wetland rejuvenation in the development plans of 15 Gram Panchayats in Odisha and Bihar. These plans were considered at the Gram Sabha meetings and were endorsed as per the laid down procedure. The project worked with the Primary Fishermen Cooperative Society in Kabartal and Tampara to reduce the use of zero-sized fishing nets and observe closure periods during monsoon. 32 community-based organisations such as Self Help Groups, fish cooperatives societies, farmers associations and local NGOs were trained on wetlands conservation and wise-use, disaster risk reduction and sustainable livelihoods as climate change adaptation. Conservation of 3,312 hectares (ha) of wetlands and community common pool resources (marshes, fallow

land, village ponds, drainages) were brought within the aegis of Panchayat Development Plans. Protection and rejuvenation actions are planned to be implemented by mobilising funds from ongoing development schemes such as MGNREGS, Livelihood Mission, Jal Jeevan Hariyali and other developmental schemes.

A Cost-Benefit Analysis performed by the University of Massachusetts Amherst demonstrated that the benefits of Eco-DRR and resilience enhancement interventions in India outweigh the value of their initial costs by several orders.

Integrating Eco-DRR in sector development plans and programmes

The Ministry of Panchayati Raj is rolling out training on Sustainable Development Goals (SDG) to all local self-governments across India to enable SDG embedding in sectoral plans and programmes. The first state-level workshop was convened by the United Nations Environment Programme (UNEP), the Kerala Institute of Local Administration (KILA), the State Institute for Rural Development, Odisha and the United Nations Development Programme (UNDP) at Bhubaneswar on November 21, 2022, to scope mainstreaming of Climate Change and Eco-DRR in the SDG training material of State Institute of Rural Development (SIRD), Odisha.



Dhruv Verma, Senior Technical Officer - Wetlands Conservation sharing his viewpoints in a workshop in Bhubaneswar conducted to promote Eco-DRR in the developmental agenda of local self-government such as Panchayats

The lessons from implementing wetlands-based Eco-DRR projects for reducing water-related risks were presented at the workshop by Mr Dhruv Verma, Senior Technical Officer, who also leads the organisation's engagement on this topic. Building sectoral convergence, developing capacities of development professionals and line department officials, promoting research for evidence-building, and evaluating the cost-benefit ratio of Eco-DRR for further uptake in social protection schemes were identified as major strategies for upscaling wetland-based solutions in the development sector plans and programmes.

During 2023-24, the workshop will be followed by the development of a hands-on manual for PRI members and

MGNREGS officials and engineers for implementing Eco-DRR measures as a part of local development plans. This document is being produced by Wetlands International South Asia in collaboration with NIDM, New Delhi; NIRDPR, Hyderabad; and KILA, Thrissur.

Restoring and managing a pit lake in Jharkhand

Coal mining operations lead to the creation of mine voids, which over time go through biogeochemical processes and collection of ground, surface and rainwater, leading to the formation of wetland ecosystems. These lakes pose a variety of risks, such as toxicity to aquatic and terrestrial animals, groundwater and surface water contamination, salinisation, accidents and others. The steep, highly mobile banks and absence of fringing vegetation starve the ecosystem of nutrients and habitat complexity. However, when well treated and remediated, these lakes can also evolve into rich aquatic habitats (in otherwise terrestrial-dominated ones), sources of benefits to society such as drinking water, fisheries, tourism and others. Rejuvenating and sustainably managing such lakes can significantly add to the overall wetlands conservation efforts.

The Central Coalfields Limited has requested the services of Wetlands International South Asia to conduct a baseline assessment of Giddi-A Colliery Pit Lake in Hazaribagh towards its rejuvenation and management. The lake spans 30 ha and is 83 m–94 m deep. Quarrying in this lake ceased in 1990s. The Over Burden dumpsites have since been afforested and evolved into open, dry deciduous forests with low canopy density.

The project implementation was initiated in March 2023. Baseline assessments indicated that the catchment is spread over 127 ha, with River Damodar constituting the main drainage system. The lake margins have gentle slopes and support colonies of aquatic vegetation such as *Polygonum hydropiper*, *Marsilea quadrifolia* and thickets of *Typha sp.* There is considerable groundwater inflow into the wetland (0.1 MCM per year), which enables the maintenance of lake levels. 121 plant species and

eight faunal species of high global conservation significance have been recorded from the lake catchment. Around 2,400 kilolitres of water is supplied daily from the lake to the coalfield township of 900 households. The forest adjoining the lake also forms a part of the 'Sarhul' festival rituals of the Santhal tribes.

The assessments will be completed during 2023-24, based on which Wetlands International South Asia will work with the CCL to implement the rejuvenation measures. These measures are likely to involve expansion of the littoral zone, establishment of an emergent vegetation belt, measures for enhancing carbon sink by promoting aquatic biomass growth, landscape contouring beyond a shoreline, and developing spots for nature tourism. Management and monitoring measures will also be developed in consultation with stakeholders.



Dr ASGHAR NAWAB

Dr Asghar Nawab, Programme Head - Aquatic Ecology leading the interaction with the Central Coalfields Limited personnel at the field-site in Hazaribagh

STRENGTHENING WETLANDS MANAGEMENT

Highlights

- > Three stakeholder workshops and baseline assessments completed for integrated management planning of Kol wetlands of Kerala. Zone-wise draft management action plans were prepared after seeking inputs from departments through one-to-one meetings with government functionaries and local self-government electives in Thiruvananthapuram, Alappuzha, and Kottayam.
- > The integrated management plan for Gokul Jalashay, a floodplain wetland of River Ganga in Bihar was completed and approved for implementation by the Bihar State Wetland Authority.

PROJECTS:

- > Integrated Management of Wetland Biodiversity and Ecosystem Services (IMWBES) (funded by MoEFCC under GEF UNEP-5th cycle project)
- > Vembanad-Kol: Integrated Management Plan for Conservation and Wise Use (funded by State Wetlands Authority, Kerala)
- > Wetlands management for biodiversity and climate protection (funded by GIZ under the International Climate Initiative of the German Federal Government)

TEAM

Dr Asghar Nawab, Kalpana Ambastha, Harsh Ganapathi, Suchita Awasthi, Kamal Dalakoti, Diana Datta, Sakshi Saini, Dayadra Mandal, Preethi Vasudevan and Ravi Prakash

Integrated management planning for Vembanad-Kol Wetlands

Vembanad-Kol constitutes one of the largest wetland regimes on the Malabar coastline. Comprising the Vembanad Estuary flanked by river floodplains of Kuttanad and Kol, in the south and north, respectively, interspersed by river estuaries and mangrove marshes interconnected by an intricate network of natural and human-made channels, the Ramsar Site spans over 1,304 km². The rich diversity supported by these wetlands is indicated by the recorded presence of 147 plankton, 338 plants, 177 fish, 10 amphibia, 23 reptiles, 225 birds and 21 mammalian species. Each year during winter, Vembanad-Kol harbours one of the highest populations of migrating waterbirds in the Central Asian Flyway within India. The wetland sustains the livelihoods of nearly 0.2 million households through backwater tourism, inland navigation, and a range of resources such as clams, shellfish and finfish. Located at the apex of the basin, Vembanad-Kol also regulates hydrological regimes, providing flood protection to large settlements such as Cochin and Ernakulam as well as water for agriculture in the Kuttanad and Kol regions—the Rice Bowl of Kerala. Vembanad-Kol was designated as a Wetland of International Importance (Ramsar Site) under the Ramsar Convention by the Ministry of Environment and Forests, Government of India, in 2002.

Lack of consideration of wetland ecosystem processes and its full range of ecosystem services and biodiversity values in regional

developmental planning has led to the rapid transformation of Vembanad-Kol, creating several adverse ecological and socioeconomic impacts. Large-scale reclamation of naturally fertile floodplain marshes was encouraged since the late 19th century and continued till the 1950s. Shallower wetland regions and marshes in the Kuttanad and Kol region were converted into polders, locally called *padashekharams*, to enable agriculture. A number of spillways, regulators and locks were constructed for regulating inflows and preventing salinity intrusion from the sea. In 1976, Thaneermukom Barrage was constructed across Vembanad to prevent saline water intrusion into Kuttanad and control tidal action within its polders. Incentives during the 80s and 90s led to the establishment of Udyogmandal, an industrial belt on the shorelines of River Periyar and within the vicinity of wetland complex.

During the 90s, backwater tourism emerged as one of the prominent features of Kerala tourism industry. There was an explosive surge in the number of tourist houseboats. The natural banks of the Vembanad Estuary, once covered with thick mangrove forests, were cleared off to construct tourism facilities. Baker Estate such at Kumarakom, which had the longest mangrove stretch in Kerala till the 90s, was extensively felled for construction of Kerala Tourism Development Center Complex.

The impacts of these developments on Vembanad backwaters are apparent. The area of the Vembanad Estuary has shrunk (from 365 km² in 1834 to 179.25 km² in 2010 and waterholding capacity drastically reduced (by over 77% during 1834-1984). Alteration of natural

Highlights continued...

- > Management effectiveness evaluation frameworks applied in seven Ramsar Sites.
- > Wetlands International South Asia became the founding partner of India Wetland Coalition established to enable corporate sector partnership in wetlands conservation.
- > Management plan for conserving floodplain wetlands Upstream of Gomti confluence to Muzaffarnagar sub-basin and Ghaghara Confluence to Gomti confluence sub-basin prepared and under consideration of Uttar Pradesh State Wetland Authority.

hydrological regimes has led to clogging of channels in Kuttanad area. Continued discharge of industrial effluents and sewage into the river and the backwaters has led to water quality deterioration and spread of freshwater invasives such as water hyacinth. Diversion of upstream freshwater inflow to the sea for flood control in Kuttanad has led to reduction in water availability within Vembanad, impacting flushing patterns. Changes induced in the natural salinity gradients of the Vembanad Estuary due to the operation of Thaneermukom Barrage have led to a decline in the catch of brackish water and marine fisheries and live clams. Despite all hydrological interventions, rice production in Kuttanad has declined over the years, converting it from the coveted ‘rice bowl of Kerala’ to ‘den of distress’.

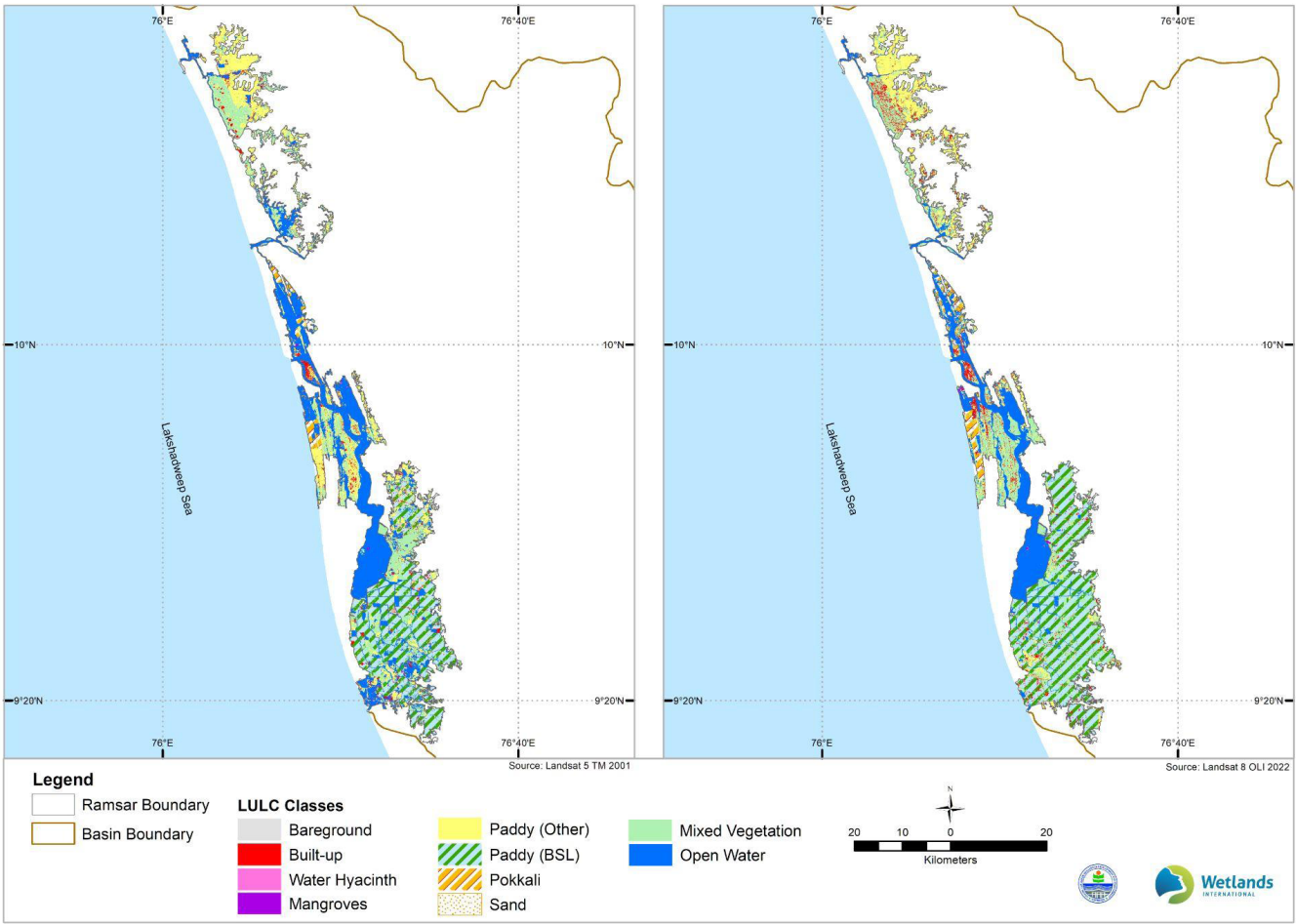
In 2016, the Honourable High Court of Kerala, in the matter pertaining to implementation of coastal regulation

zone in Vembanad, directed the amicus curiae to submit a report based on responses on CRZ implementation from the Ministry of Environment, Forest and Climate Change, State Pollution Control Board, Government of Kerala and local bodies. The *amicus curiae*, on the basis of analysis of responses received from various agencies, concluded that a comprehensive plan for the prevention of environmental degradation, pollution and encroachment of the Vembanad Lake has to be formulated and implemented with the active involvement of all stakeholders. Accordingly, the State Wetlands Authority Kerala commissioned a joint project to Wetlands International South Asia and the Center for Water Resources Development and Management. This project commenced in March 2022.

In May 2022, an inception workshop was held in Kumarakom, Kottayam district to sensitise the different stakeholders and

Changes induced in the natural salinity gradients of the Vembanad Estuary due to the operation of Thaneermukom Barrage have led to a decline in the catch of brackish water and marine fisheries and live clams.

to understand their perspectives with regards to Vembanad-Kol Integrated Management Planning. The workshop saw active participation, and participants from academia and government departments presented the findings from the various scientific studies conducted on



Change in Land use land cover of Vembanad-Kol between 2001-2022



Stakeholders consultation workshop for Vembanad-Kol IMP preparation at Alappuzha, Kerala on 2nd November 2022 / Photo credits: Kalpana Ambastha

Vembanad-Kol wetlands also highlighted multiple issues.

Three stakeholder consultation workshops were held in Alappuzha, Kochi, and Thrissur in the first week of November, 2022 to discuss the current institutional arrangements and future planning for wetland management in the respective ecological zones. The workshops were inaugurated by the sitting MPs and MLAs of the respective legislative and parliamentary constituencies. The group work around wetland management

themes—Institutions and Governance, Water Management, Catchment Conservation, Species and Habitat Conservation, Community-based Fisheries Management, Sustainable Fisheries, Sustainable Wetlands Agriculture Interactions, and Sustainable Wetlands Tourism—helped outline (1) Wetland conditions and drivers of adverse change and the impacts of wetland deterioration on stakeholders (2) Current Institutional set up including information on organisational hierarchy,

roles and responsibilities of different line departments towards conservation and sustainable management of Vembanad-Kol with information on challenges and constraints faced in executing the programs, interdepartmental coordination mechanisms, and the schemes, policies, and programs therein and (3) Broad management actions for the Integrated Management of the Vembanad-Kol.

Subsequently, draft zone wise draft management action plans were prepared, which were further refined

and consolidated after seeking inputs from departments through one-to-one meetings with government functionaries and local self-government electives in Thiruvananthapuram, Alappuzha, and Kottayam in the first week of March 2023. A final stakeholder workshop was held on 20th July 2023 to finalise and consolidate the action plans and budgets.

Integrated management plan of Gokul Jalashay approved by Bihar State Wetland Authority

Gokul Jalashay wetland complex, spanning across the Buxar and Bhojpur, districts of Bihar, is an ox-bow wetland system linked with River Ganga. The wetland complex comprises Gokul Jalashay (448 ha) and Sunki Suhiya (1,320 ha), connected by the flows of seasonal River Dharmawati and flood pulses of River Ganga. The complex is an important source of freshwater and

flood buffer for the 56 surrounding villages. The mosaic of habitats within the wetland complex sustains at least 186 plant and 134 animal species. Communities around the wetland ascribe high cultural and recreational significance to these wetlands. Recognising the need for securing the ecosystem services and biodiversity values of Gokul Jalashay, Gokul Jalashay has been included in the implementation of the GEF-MoEFCC-UNEP funded Integrated Management of Wetland Biodiversity and Ecosystem Services (IMWBES) project.

The management plan was prepared during 2022-23 based on field missions, secondary literature review, collection of primary data on species and habitats, interpretation of satellite data, and stakeholder interviews. The analysis indicated that the wetland is threatened by habitat fragmentation, pollution, siltation, and proliferation of invasive species. Construction of Nainijor Road between Gokul Jalashay and Sunki Suhiya has led to the fragmentation of the natural

inundation regime. In the last 20 years, the loss of hydrological connectivity has led to increased silt retention, thereby making the wetland shallower. The water quality of the wetland complex has deteriorated over time due to increasing anthropogenic stresses such as the discharge of untreated sewage, and solid waste dumping.

The management plan proposes delineation and demarcation of the wetland complex, and notification under Wetlands (Conservation and Management) Rules, 2017. The connectivity between the wetlands has to be restored through selective dredging of natural channels and the construction of a culvert and sluice gate at Nainijor. To restore the natural hydrological regime, selective dredging of the inlet of Dharmawati River is recommended. Regular monitoring of water bird population through Asian Water bird Census at all the major congregation sites within and around Gokul Jalashay wetland complex is recommended. To

manage the proliferation of invasive macrophytes, regular harvesting and alternative use is recommended. For livelihood enhancement, the development and promotion of nature-based tourism is proposed.

The plan entails a budget of Rs. 61.53 crores and was approved for implementation by the Bihar State Wetland Authority in their meeting held on July 19, 2023.

Management planning for Gangetic floodplain wetlands of Uttar Pradesh

River Ganga flows through 27 Districts of Uttar Pradesh, covering a distance of 1140 km with its entry point at Kotwali in Bijnor District and exit at Dokti in Ghazipur District. Its middle sub-basin in the state, the Upstream of Gomti confluence to Muzaffarnagar sub-basin spans around 30,782 km², encompassing about 3.6% of the Ganga basin area and the Ghaghara Confluence to Gomti confluence sub-basin occupies 27,552 km², covering 3.25% of the Ganga basin area.

An analysis of wetlands dynamics in the 10-km buffer around the River Ganga using Landsat images (30 m resolution) of 2000 and 2020 shows a sombre picture. The Upstream of Gomti Confluence to Muzaffarnagar Sub-basin has seen a 72% reduction in wetland area from 57,310 ha to 15,844 ha in the last twenty years. Similarly, the wetland regimes in the Ghaghara Confluence to Gomti Confluence have shrunk by 71%, from 28,988 ha to 8,529 ha, primarily lost to agricultural conversions.

To support the conservation and sustainable management of the Gangetic wetlands of Uttar Pradesh, the NMCG sanctioned a technical assistance project to the Uttar Pradesh State Wetlands Authority in January 2022. As a part of project implementation, an assessment of the ecosystem services of the 285 wetlands was undertaken using the Rapid Assessment of Wetland Ecosystem Services Tool (RAWES), which includes 106 and 32 wetlands in the two sub-basins. A functional score was derived for crucial functions of the wetland like groundwater recharge potential, flood buffering, and water purification using the hydro-geomorphic (HGM) approach wherein the wetlands were ranked as per the significance of functional attributes

The Upstream of Gomti Confluence to Muzaffarnagar Sub-basin has seen a 72% reduction in wetland area from 57,310 ha to 15,844 ha in the last twenty years.

like geomorphology, water source, water permanence, hydrodynamics, soil type, and vegetation. This was then aggregated with the Ecosystem Service Index derived using the RAWES tool and threat scores to prioritise wetlands for their management imperativeness and significance in the river basin. The inventory data was uploaded into an electronic database of the Uttar Pradesh Forest Department (upforest.org/wetland.aspx).

Management action planning for these wetlands was carried out at two levels: **a)** the interventions at the sub-basin level, which are aimed at ensuring that wetlands are embedded in the institutional and governance framework for water, land, and biodiversity management, and **b)** interventions at wetland sites which address the direct drivers of adverse change.

For site management planning, the 138 wetlands in the two sub-basins were categorised into four categories **a)** Wetlands within Protected Areas; **b)** Ponds within the jurisdiction of Village Panchayat; **c)** Urban and peri Urban Wetlands; and **d)** Agriculture floodplain wetlands. Specific management strategies were framed for these categories. Management of Protected Area Category wetlands is essentially targeted toward the protection and conservation of endangered wildlife species and their unique habitats whereas the strategy for management of Urban and peri-urban wetlands needs to be aligned with master plans forming an integral part of the city and urban planning. Subsequently, specific management actions were identified for each wetland after evaluation of threats to individual wetland ecological character elements and stakeholder consultations. These management plans have been placed for financial support of the National Mission on Clean Ganga.



A fisher at Gokul Jalashay Wetland Complex

© RAVI PRAKASH

Management Effectiveness Tracking of Ramsar Sites

Monitoring of wetlands in India, in general, including the Ramsar Sites, has been ad hoc. For most of the sites, measured performance indicators reflect that the outcomes of management are not in place. In this regard, the GEF-MoEFCC-UNEP funded Integrated Management of Wetland Biodiversity and Ecosystem Services Project (IMWBES) in collaboration with BMUV-IKI project ‘Wetlands Management for Biodiversity and Climate Protection’ implemented by MoEFCC and GIZ have developed a Management Effectiveness Tracking Tool (METT) for Indian wetlands by adapting

the existing management effectiveness evaluation frameworks for the Indian context.

The METT evaluates how well wetland management is being carried out to achieve set goals and objectives for sustaining the values of a wetland. The tool comprises five datasheets: **Data Sheet 1a** (*Reporting progress at the wetland*), **Data Sheet 1b** (*Identifying and describing wetland values and benefits*), **Data Sheet 2** (*National and International Designations*), **Data Sheet 3** (*Wetland Threats*), **Data Sheet 4** (*Assessment Form consisting of 32 questions with a score covering six stages of the management cycle-context, planning, inputs, processes,*

output, and outcomes) and **Data Sheet 5** (*Trends in wetland values and benefits*).

A guidebook on METT titled ‘*Management Effectiveness Tracking Tool (METT) for Indian Wetlands—Practitioner’s Guide*’ has been developed as an aid for practitioners to implement METT at Indian wetlands of International and National Importance. It provides guidance on the interpretation of data sheets and helps in setting up the evaluation process.

As of now, METT assessments have been carried out for seven Ramsar Sites, and the key inferences derived from the assessment have been described below.

METT evaluation for seven Ramsar Sites

Ramsar Site	METT Score (%)	Key Inferences				
		Overall Management Effectiveness	Planning	Adequacy of Inputs	Appropriateness of Process	Outcome and Output
Chilika Lake	79	Good	Excellent (92%)	Good (71%)	Good (65%)	Excellent (92%)
Satkosia Gorge	67	Good	Moderate (60%)	Good (76%)	Good (73%)	Low (50%)
Tampara Lake	33	Extremely Low	Low (48%)	Extremely Low (29%)	Extremely Low (19%)	Low (42%)
Hirakud Reservoir	39	Low	Low (48%)	Extremely Low (33%)	Extremely Low (31%)	Low (50%)
Harike Lake	71	Good	Good (68%)	Moderate (62%)	Good (85%)	Good (67%)
Kabartal Wetland	56	Moderate	Good (80%)	Extremely Low (29%)	Low (46%)	Good (75%)
Sasthamkotta Wetland	50	Low	Good (68%)	Extremely Low (29%)	Low (31%)	Good (67%)

Assessing catchment connectivity in Najafgarh Jheel

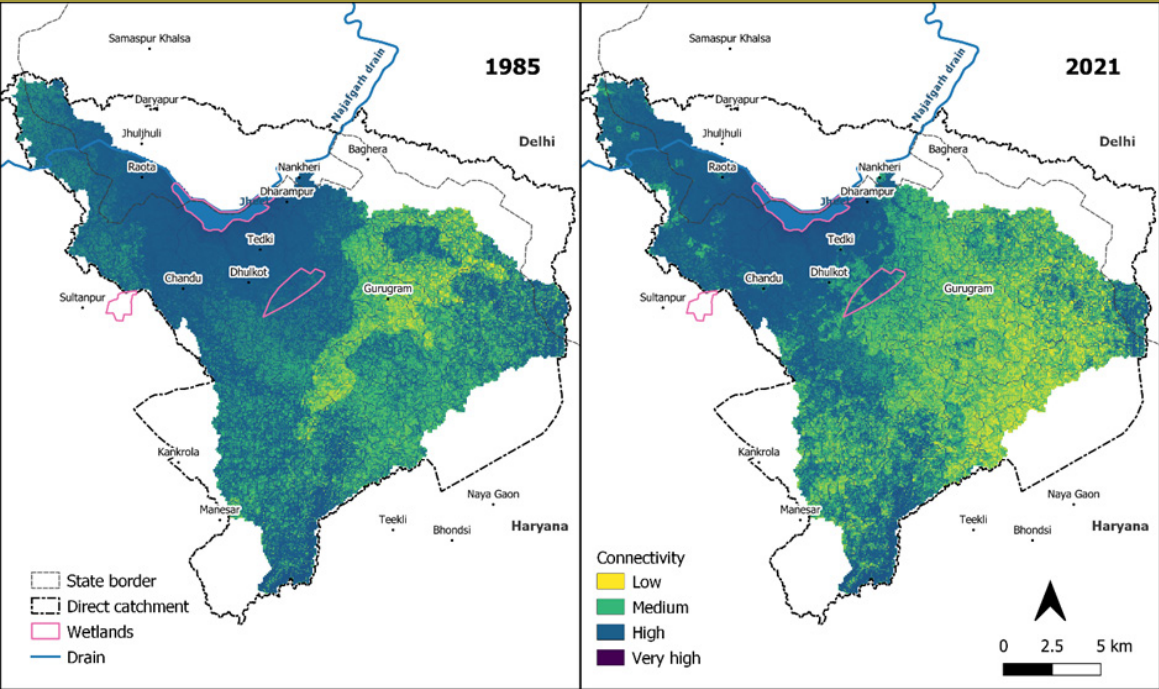
The hydrology of the wetland are majorly influenced and dependent on the connectivity with its catchment. This, in turn, determines the efficiency of the transfer of material such as water, sediments and nutrients from the catchment into the wetland. The connectivity has a major influence on wetlands soil type, water chemistry, vegetation structure and overall ecology.

Najafgarh Jheel is a transboundary wetland of Delhi and Haryana located north-west of Gurgaon city in Haryana and south of Najafgarh town in Delhi.

The wetland is seasonal in nature and is formed in a local depression alongside the course of the Sahibi River, now known as the Najafgarh Drain. The wetland spanning 2,530 Ha at 210 m amsl is a major flood buffer, yet highly exposed to encroachment from the sprawling townships. The inundation water regime covers the farmlands on either side of the wetland, though due to the building of an embankment on the Haryana side, the natural spread of the wetland on the Delhi side of the wetland has considerably reduced. The wetland provides a major relief to the city of Gurgaon as it is located at a natural slope to the city. Though the direct catchment of Najafgarh Jheel spans 287 km², and includes the city of

Gurgaon, extensive land use change has led to dis-connectivity between the lake and its catchment.

In 2020, as a part of the committee constituted by the Wetlands Authority of NCT of Delhi, Wetlands International South Asia developed a framework Environmental Management Plan for the conservation of Najafgarh Jheel. The plan, however, used very limited data owing to time and resource constraints. Najafgarh Jheel was identified as a priority wetland within Wetlands International South Asia’s annual plan to pursue integration in urban planning. In the current year work on hydrological regimes assessment were further developed.



Connectivity analysis of Najafgarh Jheel for 1985 to 2021

The connectivity analysis was done using the Connectivity Response Unit (CRU) and the Connectivity Index (IC) approach for the period of 1985 to 2021. The Digital Elevation Model of the terrain was used as the topographic component and the land use land cover of the catchment across different years was used as the land cover factor. The surface roughness derived from the land cover determines the impedance of water flow towards the local sink, the Najafgarh Jheel.

The assessment indicated that low connectivity areas increased from about 11% in 1985 to 25% in 2021. The high connectivity areas were reduced during this period from 36% to 25%. Previously

well-connected areas such as Basai are no longer contributing to the surface hydrological flows to the wetland. Since the topographic factor is kept constant in the IC calculations, the change in connectivity is attributed to land-use/land-cover changes, more specifically, buildup-induced impedance to the surface flows.

The connectivity analysis provides important insights into the decreasing inundation regime of the wetland. The assessment pinpoints areas where hydrological connectivity interventions such as re-alignment of local drainages must be targeted to benefit the hydrology of Najafgarh Jheel.

Najafgarh Jheel, a transboundary wetland between Delhi and Haryana

RAVI PRAKASH



(L-R) Saadan Hussain, Junior Technical Officer, Iqra Bashir, C4Y Fellow and Preethi Vasudevan, Junior Technical Officer - Water Management conducting insitu water quality test of Najafgarh Jheel

Launch of India Wetland Coalition

A Memorandum of Cooperation between Indian Business and Biodiversity Initiative (established by the MoEFCC and the Confederation of Indian Industries to enable Indian Businesses to make commitments for biodiversity conservation and sustainable use) and the MoEFCC was signed during the National Workshop held under the aegis of GEF-MoEFCC-UNEP funded IMWBES project to establish a joint work programme on wetlands in May 2022. In continuation of the same, CII-ITC in partnership with Wetlands International South Asia, Godrej and WWF-India has launched the India Wetland Coalition (IWC). The IWC is an initiative led by the CII-ITC to enable business partnerships for wetlands conservation, addressing the nature loss risk and building resilience to climate change.

The work areas of the IWC include:

- creating awareness among the private sector partners towards the role of wetlands and participatory conservation of these unique ecosystems
- developing guidelines for wetland management including the models and policy support for partnerships
- developing tools, guidance, and case studies for business engagement in wetlands conservation
- building business partnerships for ecosystem-based solutions for restoration, valuation of ecosystem services, and water and climate risk mitigation

Support to State Governments

- A field mission to Arunachal Pradesh was held in March 2022 by President, Wetlands International South Asia and Director to discuss collaborative work on furthering the conservation of wetlands in the state and building capacity of concerned line government departments and stakeholders. During the mission, field visits were made to several valley wetlands and discussions were held with the Arunachal State Wetlands Authority to forge a collaboration between the two organisations for the said purpose.
- A field mission was conducted during January 5-6 to Ottu Lake, a riverine wetland of Ghaggar River in Sirsa, Punjab to suggest management measures and assess the feasibility of designation as a Wetland of International Importance. The field team, led by Dr Asghar Nawab (Programme Head, Aquatic Ecology) conducted discussions with district administration, line departments and agencies and assessed the physical condition of the wetland. Available documentation on species richness, threats and management were evaluated and the need for systematic wetlands inventory and management was highlighted in the recommendations.
- Director, Wetlands International South Asia participated in the technical committee meetings of State Wetlands Authorities of NCT of Delhi, Madhya Pradesh and Bihar. In Delhi, field visits to five wetlands

were priority management were conducted and issues pointed out. In Bihar, a list of priority wetlands for integrated management planning and notification under Wetlands (Conservation and Management) Rules, 2017 were approved. In Madhya Pradesh, the Authority took a decision to constitute district level committees to undertake preparation of brief documents and management plans.

ENGAGEMENT WITH CONVENTIONS

Highlights

- > Dialogue on the establishment of a Regional Platform for Wetlands in South Asia was further progressed through discussions at a side event at Ramsar COP 14 in Geneva. The national focal points expressed their concurrence for establishing the South Asia Regional Platform within the framework of the Ramsar Regional Initiative.
- > Draft Targets for wetlands for Global Biodiversity Framework were prepared, working together with a team of international NGOs. Wetlands finally found a specific mention in the Kunming-Montreal Global Biodiversity Framework adopted by the CBD in December 2022.

Participants at the COP14 event in Geneva, Switzerland

SUCHITA AWASTHI

PROJECTS:

- > Integrated Management of Wetland Biodiversity and Ecosystem Services (IMWBES) (funded by MoEFCC under GEF UNEP-5th cycle project)
- > Internal funding

TEAM

Suchita Awasthi and Dr Asghar Nawab

Progressing dialogue on the establishment of South Asia Regional Platform

Wetlands International South Asia convened a meeting of the Ramsar National Focal Points at Ramsar COP 13 in Dubai in 2018, wherein the representatives of the national governments and international organisations concurred with the idea of the development of a regional platform for wetlands managers of South Asia. This was followed by a regional meeting of the national focal points at IWMI headquarters in Colombo in 2019, wherein the possible roles of the platform were identified. In 2022, a virtual training programme on wetlands and water management was organised by Wetlands International South Asia in collaboration with RRCEA.

The dialogue on establishing the South Asia Regional Platform was further progressed at the 14th Meeting of the Conference of the Contracting Parties

to the Ramsar Convention on Wetlands (COP14) which took place at the International Conference Centre Geneva (CICG) from November 5 to 13, 2022.

On November 8, a side event on 'Regional Collaboration for Wetlands Wise Use in South Asia' was organised in Geneva by Wetlands International South Asia in collaboration with Ramsar Regional Center East Asia (RRCEA), International Water Management Institute (IWMI) and GIZ-India. The event was attended by Ramsar Focal Points from India, Nepal, Bhutan, Pakistan, and Sri Lanka, along with a number of international and national organisations. The national focal points expressed their concurrence for establishing the South Asia Regional Platform within the framework of the Ramsar Regional Initiative. The platform could assist the wetlands managers and stakeholders in developing capabilities for integrated management, provide the required knowledge base for wetlands conservation, and also bring on-board region-specific models for intersectoral collaboration. IWMI, RRCEA, WWF India and GIZ-India offered support to the development of such an initiative and welcomed the contracting parties willingness towards regional collaboration.

The dialogue will be followed by a roundtable meeting of Ramsar National Focal Points proposed to be held during mid-December 2023 at the International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal. The meeting will focus on firming up the modalities for the operation of the



Dr Sidharth Kaul, President, Wetlands International South Asia, delivering keynote address at the side event at COP14 in Geneva, Switzerland



Dr Ritesh Kumar, Director, Wetlands International South Asia, addressing the participants in COP 14 side event in Geneva, Switzerland / Photo Credits: Suchita Awasthi

regional platform, and the submission of a proposal to the Ramsar Convention for the establishment of a Ramsar Regional Initiative.

Support to the designation of Ramsar Sites

Wetlands International South Asia has been designated as a CEPA NGO partner by the MoEFCC to support the implementation of the Ramsar Convention. Under the aegis of the GEF-MoEFCC-UNEP funded IMWBES project, support has been provided to the compilation and submission of the Ramsar Information sheets of the 26 additional wetlands of international importance, expanding the network to 75. An updated Ramsar Sites Factbook, a one-stop resource of information on

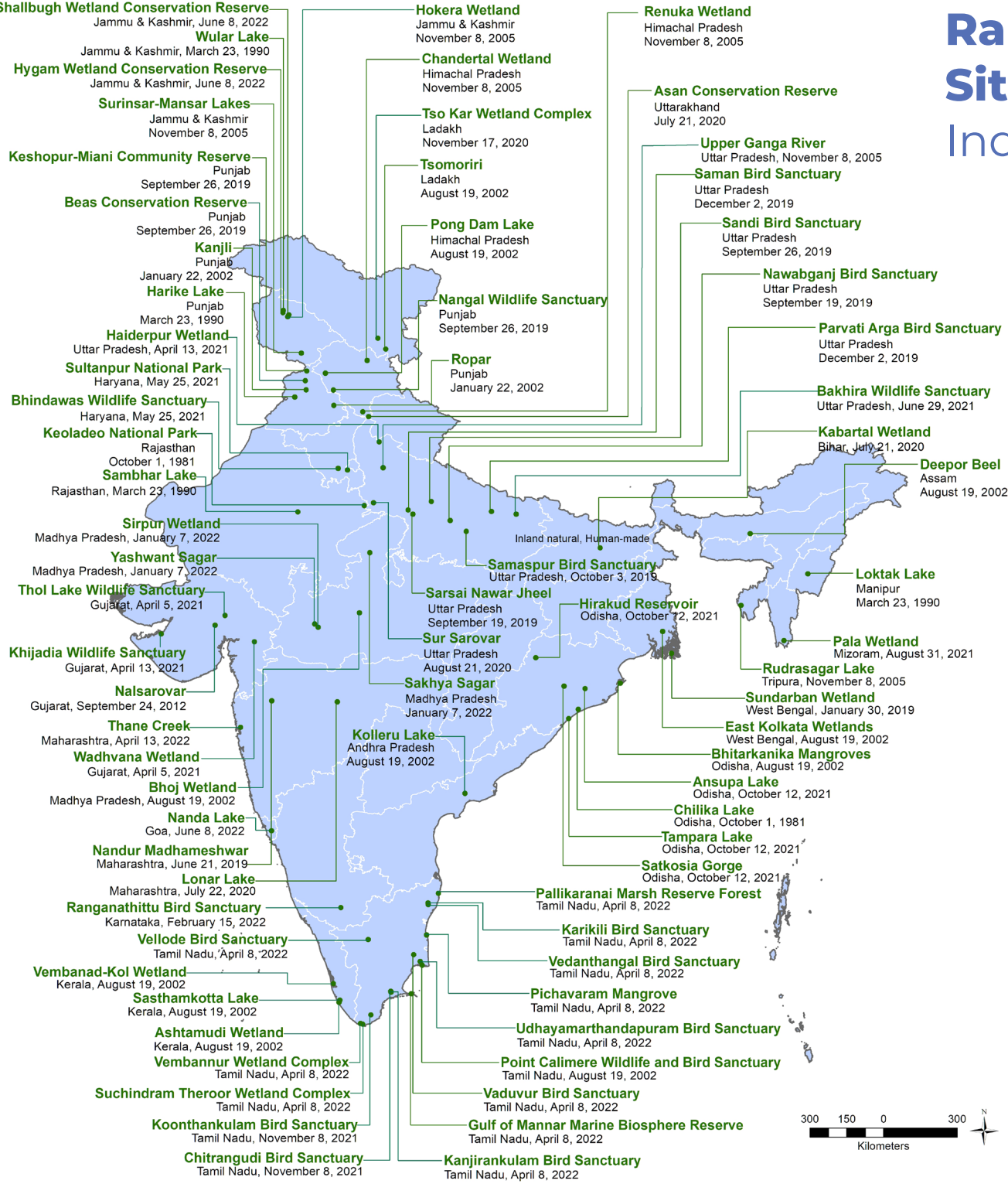
our 75 Ramsar Sites, including their values, threats they face and management arrangements, has been prepared and was launched by the Hon'ble Minister of Environment, Forest and Climate Change, Mr Bhupender Yadav, on World Wetlands Day 2023. The publication brings together disparate information on the Indian Ramsar Sites in a concise and engaging format for the varied stakeholders working towards conserving these valuable ecosystems. The project also supported organising the side event titled '75 at 75' at the 14th session of the COP of the Ramsar Convention held in Geneva, Switzerland, from November 5-13, 2022. The side event aimed at showcasing India's efforts for wetlands conservation and implementation of the Ramsar Convention, focusing on India's designation of 75 wetlands to the List of Wetlands of International Importance in the 75th year of the country's independence.

Support for inclusion of wetlands in Kunming-Montreal Global Biodiversity Framework

Wetlands International South Asia worked with the global team to draft a proposal and specific targets for wetlands restoration and effective management under the Global Biodiversity Targets of the Convention on Biological Diversity. The draft targets and proposals were presented at the regional meetings of the Ramsar Conference of Parties held in November 2022, culminating into the adoption of Ramsar Resolution calling on Parties to the Convention on Biological Diversity (CBD) to: "enable the adequate

recognition of wetlands in the goals, targets, and indicators of the post-2020 Global Biodiversity Framework."

Wetlands International, IUCN, WWT, WWF, and Birdlife International have produced a briefing note on how the protection and restoration of inland waters should feature in the post-2020 GBF, including global wetland restoration targets of at least 300,000 km of rivers and 350 million hectares of inland water ecosystems by 2030. As an outcome of the advocacy efforts, the Kunming Montreal Global Biodiversity Framework adopted in December 2022 include inland wetlands within the Targets 2 and 3.



Ramsar Sites of India

CITIZEN SCIENCE FOR WATERBIRDS

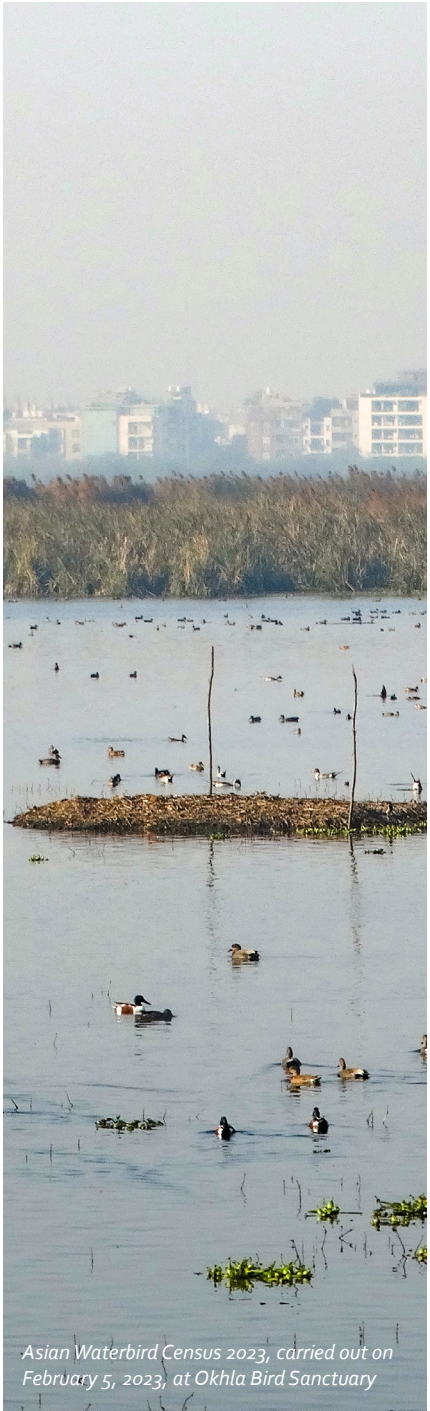
Highlights

> Mid-winter waterbird census for 2023 was launched in January 2023. Reports were received from 444 sites. A collaborative census with State and UT Biodiversity Boards was also held in 60 sites in February wherein 2.3 million waterbirds were sighted. The census also revealed the presence of numerous IUCN red-listed vulnerable species, including Baer's Pochard, Sociable Lapwing, Common Pochard, and Lesser Adjutant.

Bar-Headed Goose, Northern Pintail, and Little Cormorant were found to be the most abundant species in AWC at Gobind Sagar

POORVA THAPA

TEAM
Dhruv Verma, Arghya Chaktabarty and
Apoorva Thapa



Asian Waterbird Census 2023, carried out on February 5, 2023, at Okhla Bird Sanctuary

ZAFAR ABBAS

Asian Waterbird Census 2023

The Asian Waterbird Census (AWC), a citizen science initiative, is jointly coordinated by the Bombay Natural History Society (BNHS) and Wetlands International South Asia in India. The AWC is an integral part of the global waterbird monitoring programme, the International Waterbird Census (IWC), which runs concurrently with other regional IWC programmes in Africa, Europe, West Asia, the Neotropics, and the Caribbean. The AWC currently encompasses 25 nations and regions of Asia and Australasia. This nationwide census fosters the participation of local conservation enthusiasts in monitoring waterbird diversity and wetland conditions. The 2023 census was conducted during January-February 2023. Twenty states and three union territories collectively covered approximately 444 wetlands, reporting about 28 lakh waterbirds in this census. The AWC database aids in the formulation of a variety of local, national, and flyway-scale conservation frameworks and initiatives across the region, including research programmes and the development of national wetland and waterbird conservation strategies.

To institutionalise waterbird monitoring in wetlands across the country and beyond protected areas, the AWC network collaborated with the National Biodiversity Authority (NBA), a nodal statutory organisation on biodiversity conservation,

List of state-wise number of wetlands covered during AWC 2023

STATES/UTs	NUMBER OF SITES
Andaman and Nicobar Islands	6
Arunachal Pradesh	7
Assam	7
Bihar	3
Chhattisgarh	17
Goa	3
Gujarat	55
Haryana	3
Himachal Pradesh	2
Jammu and Kashmir	17
Jharkhand	1
Karnataka	26
Kerala	114
Ladakh	4
Maharashtra	71
Mizoram	3
Odisha	5
Tamil Nadu	56
Telangana	15
Tripura	9
Uttar Pradesh	1
Uttarakhand	2
West Bengal	17
TOTAL	444



Purple Heron at Udhwa Lake Bird Sanctuary in Jharkhand / Photo Credits: Ravi Prakash

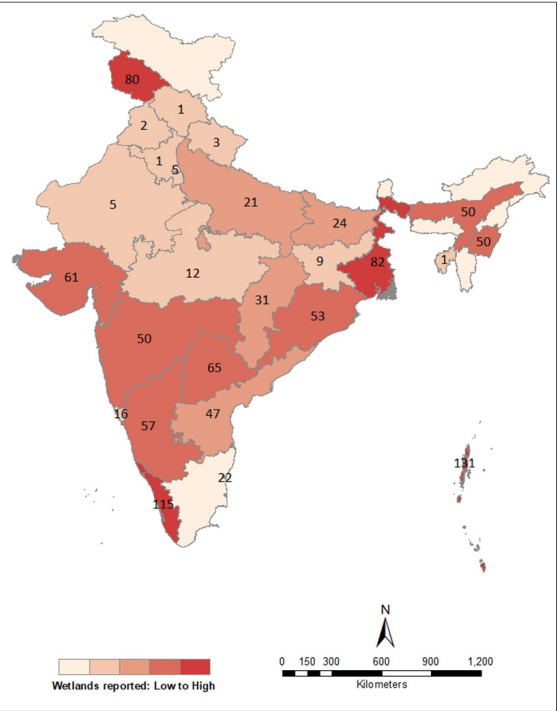
sustainable use of its components, and equitable benefit sharing. The AWC network worked with the State Biodiversity Boards (SBB), Union Territory Biodiversity Councils (UTBC), and panchayat level Biodiversity Management Committees (BMC) to encourage their members to participate in wetland conservation and waterbird monitoring and to use the census to strengthen the People Biodiversity Register (PBR), as mandated by section 41(1) of the National Biodiversity Act (2002). Under the supervision of SBB-UTBC officials, a collaborative AWC was conducted in 60 wetlands across 10 states and union

territories. During the census, 2,388,484 waterbirds from hundreds of different species were sighted. The census also revealed the presence of numerous IUCN red-listed vulnerable species, including Baer’s Pochard, Sociable Lapwing, Common Pochard, and Lesser Adjutant, highlighting its importance as a biodiversity and habitat monitoring tool.

Asian Waterbird Census 2019-22

During 2019-22, 23 states and four union territories actively participated in the AWC, with active and constant support from the National Biodiversity Authority (NBA) and bird enthusiasts. During 2019-22, about 1,200 sites and over 66 lakh waterbirds were recorded. The waterbird species with the largest number of count was Eurasian Coot *Fulica atra* (698,519) followed by Eurasian Teal *Anas crecca* (510,060) and Eurasian Wigeon *Mareca penelope* (373,342). The states with the highest number of sites

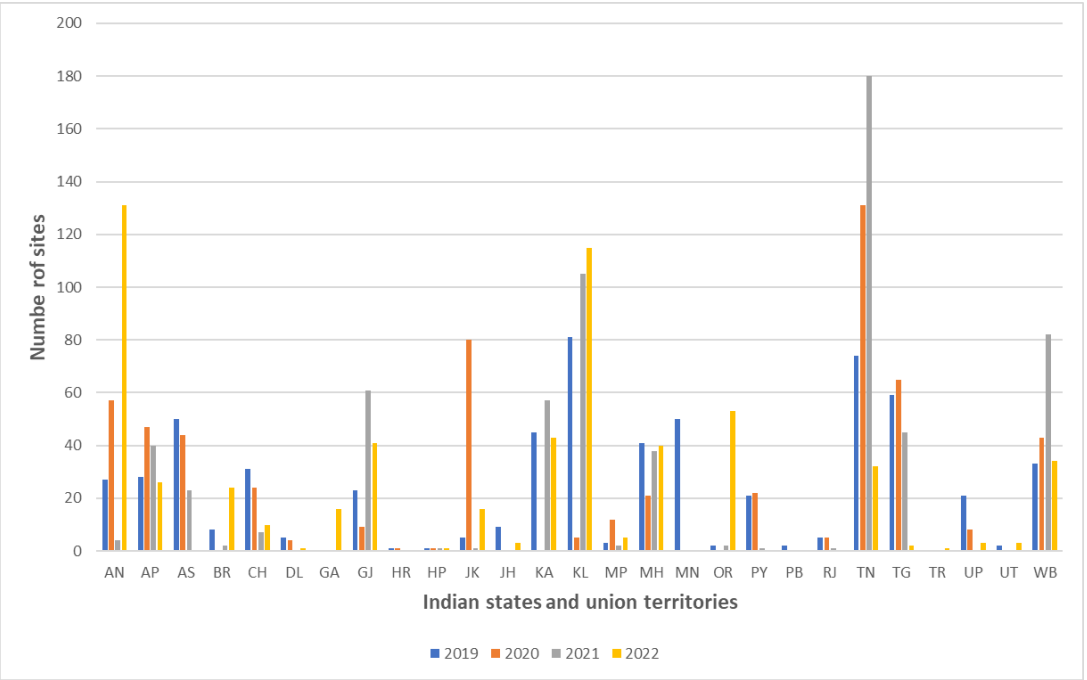
covered were Tamil Nadu (180) followed by Andamans and Nicobar Islands (131) and Kerala (115). However, the highest congregation of waterbirds were reported from Jammu and Kashmir (1,506,962), Gujarat (1,311,829), and Andhra Pradesh (1,143,680).



State-wise number of wetlands reported during AWC 2019-2022



Wetlands International South Asia and BNHS conducted a two-day event on February 4 and 5, 2023 as part of the first Asian Waterbird Census at Gobind Sagar Lake in Himachal Pradesh



Number of wetlands reported during AWC 2019-2022

CAPACITY DEVELOPMENT

Highlights

- > Under the aegis of the ongoing GEF project, 'Sahbhagita' workshop was organised in Chennai wherein the Mission Sahbhagita was launched to promote participatory conservation and wise use of wetlands. The project also supported drafting the Standard Operating Procedures for the implementation of the mission.
- > Ecosystem Services Shared Value Assessment to support management planning at Sasthamkotta highlighted varying stakeholder perceptions around ecosystem services of the Ramsar Sites, their benefits and beneficiaries across the basin.

PROJECTS:

- > Integrated Management of Wetlands Biodiversity and Ecosystem Services (supported by the MoEFCC as a GEF-UNEP cycle 5 project)

TEAM

Suchita Awasthi, Ravi Prakash and Sakshi Saini

Support to the Launch of Mission Sahbhagita

Under the aegis of the GEF-MoEFCC-UNEP funded IMWBES project, a national workshop for developing a roadmap for participatory conservation and wise-use of wetlands titled 'Sahbhagita' was organised in May 2022. The workshop was held at the National Center for Sustainable Coastal Management in Chennai, Tamil Nadu, and was attended by 157 participants which included wetlands managers, State and UT Wetland Authorities, corporates, wetland champions, NGOs and knowledge partners. The workshop was held in two sessions, the first session included discussions on key elements of the participatory national wetlands conservation and wise use policy. The second session, chaired by Hon'ble Union Minister of Environment, Forest and Climate Change, Mr Bhupender Yadav, included felicitation of the wetland champions, presentation of the round table results, and dialogue with the wetlands managers and decision-makers.

As an outcome of the national workshop, Wetlands International South Asia, under the IMWBES project, supported the launch of Mission Sahbhagita to promote participatory conservation and wise use of wetlands to enable a society ownership approach. The project also supported drafting the Standard Operating Procedures adopting a 'whole of society' approach for conserving and sustainably managing wetlands, with primary stakeholders and local communities at the forefront, enabling a shift from a government-driven to society ownership approach. The MoEFCC has guided the State/UT Wetland Authorities to implement the mission using the guidelines that encourage convergence with line departments with an aim to mainstream wetlands in sectoral plans, programmes and investments.

Sakshi Saini, Project Associate (IMWBES), along with State Wetland Authority Kerala carried out an ESSVA survey around Sasthamkotta Lake

© RAVI PRAKASH

Ecosystem Services Shared Value Assessment in Sasthamkotta Lake

The draft management plan for Sasthamkotta, is being prepared under the GEF-MoEFCC-UNEP funded Integrated Management of Biodiversity and Ecosystem Services Project. The Ecosystem Services Shared Value Assessment (ESSVA) tool is a questionnaire-based survey tool that provides stakeholders with an opportunity to identify ecosystem services and overcome perception gaps related to benefits and beneficiaries. As a part of management planning for Sasthamkotta, Ramsar Site, the Wetlands International South Asia team along with State Wetland

Authority Kerala (SWAK) carried out an ESSVA survey around Sasthamkotta Lake to understand the perception, preferences, and attitudes of the local community towards the ecosystem services provided by the wetland. The survey was carried out in two villages covering over 140 households located on opposite sides of Sasthamkotta Lake: Sasthamkotta and West Kallada.

The majority of the community members were aware of the decline in the water levels of the wetland. The State Wetland Authority Kerala report further validates these findings, stating that while overall, the wetland water levels have declined, 2021 is an exceptional year in which the wetland water levels increased due to an increase in the rainfall received. The community members also raised the

issue of plastic pollution and soil erosion. Economy-wise, the income of fishers has declined due to a reduction in fish catch. They stated that earlier, they used to earn Rs. 5,000—Rs. 10,000 per day, but now it is reduced to Rs. 2,000—Rs. 5,000. *Pandanus* species have declined around the wetland, forcing the people who were dependent on these plants for their livelihood to seek alternative sources of income.

The wetland is mainly utilised for drinking and domestic purposes by the community. In the survey, they accorded the highest score to water use (2.81) in terms of the magnitude of activity. The community members mentioned that there is an over-extraction of the water by the Kerala Water Authority to meet water demand, which is one of the major

reasons for the decline in wetland water levels. They also suggested low levels of mining activities (1.18). These mining activities were mainly reported from the West Kallada village.

The community members were of the view that there is not much decline in the cultural services related to the wetland. Sastha Temple, located on the wetland shorelines, organises an annual fest during February-March, leading to an upsurge in tourism. The communities have expressed their reluctance to promote mass tourism in the wetland as this would affect water quality and overall aesthetics. A conscious decision not to use motorboats in the wetland has been taken by the Village Panchayats, which is adhered to strictly.

The community members believed that there is a little to moderate need to improve the basin governance pillars. They accorded the highest score to participation (2.13) and policies (2.13), followed by institutions (1.90), wherein score 1 means none, score 2 means a little, and score 3 means moderate

improvement. Approximately half the respondents during the interview were not aware of knowledge and information, technology, and financing as pillars of governance.

More than 40% of the community members suggested that there is a need for bio-fencing around the wetland. Other suggestions include improving wetland water quality, removing *Acacia* species, desilting, preventing soil erosion, promoting eco-tourism, and removing aquatic weeds. Suggestions also include planting native plant species such as *Pandanus* species, which would not only promote native biodiversity but also provide livelihood to the people. The members of the community also suggested that native bamboo varieties need to be planted, which can help in binding soil and prevent soil erosion. Some members stated that the stakeholders need to work together and integrate sectoral policies for better management. One of them suggested that a local management body needs to be established whose only objective is to manage the wetland effectively. About

3.57% of the community members also proposed building canals alongside the wetland so that the treated wastewater coming from the wastewater management plan needs to pass through the canal instead of entering the wetland directly. This water can undergo further treatment here in the canal and then be discharged into the wetland. The outcomes of ESSVA are used as a monitoring baseline for the management plan under preparation.



Sakshi Saini, Project Associate (IMWBES) along with State Wetland Authority Kerala in Sasthamkotta village for ESSVA survey

SAKSHI SAINI



RAVI PRAKASH

View of Sasthamkotta Lake, Kerala

COMMUNICATIONS AND OUTREACH

Highlights

- > Public event was organised on World Wetlands Day at India International Center. Mr Amitabh Kant, G20 Sherpa and former Chief Executive Officer, NITI Aayog delivered the keynote address.
- > A music video, 'Hum Agar Nahin To Tum Kahan' was released globally.
- > Events for youth engagement were held at Hiraakud Reservoir in Odisha, Thane Creek in Mumbai and Kabartal in Bihar.

PROJECTS:

- > Integrated Management of Wetland Biodiversity and Ecosystem Services (IMWBES) (funded by MoEFCC under GEF UNEP-5th cycle project)
- > Wetlands management for biodiversity and climate protection (funded by GIZ under the International Climate Initiative of the German Federal Government)
- > Internal funding

TEAM

Suchita Awasthi, Dr Asghar Nawab, Dhruv Verma, Zafar Abbas Zaidi, Ravi Prakash and Harsh Ganapathi

World Wetlands Day 2023: Making wetland restoration a social movement

Wetlands International South Asia organised a public event on February 2, 2023, at India International Centre, New Delhi, to celebrate World Wetlands Day and to sensitise society on the multiple values of wetlands and the role society can play in ensuring the effective restoration of wetland ecosystems. The chief guest of the event was Mr Amitabh Kant, G20 Sherpa and formerly Chief Executive Officer, NITI Aayog. The event was attended by 72 dignitaries from central government agencies, international organisations, academia, civil society, media and experts.

Mr. Amitabh Kant delivered the keynote address and called for a whole-of-society approach and affirmative actions to restore wetlands for sustainable development. While according wetlands as the life-support systems, he highlighted the implications of worsening wetlands health on our development trajectory.

Knowledge and outreach materials were also released on the occasion. The poster "*It's time for Wetland Restoration*" highlights the urgent need to prioritise

wetland restoration. The comic book "*Vanya: The Lifeline of Kuhu*" is a story of three kids who travel to Vanya wetland to fulfil their grandfather's dream of saving the pristine wetlands from developmental pressure. A special souvenir that showcases different types of wetlands on one side and the role that wetlands play within the landscape on the other, was also released.

A panel discussion on 'Ecological Restoration of Wetlands' was organised in the second half. The session was chaired by Prof. Sudhir K. Sopory (Emeritus Senior Scientist, International Centre for Genetic Engineering and Biotechnology). Mr Kunal Satyarthi (Joint Secretary, National Disaster Management Authority, Ministry of Home Affairs, Government of India), Dr Usha Lachungpa (Formerly Principal Research Officer, Forest Environment & Wildlife Management Department, Government of Sikkim), and Mr Ramveer Tanvar (Founder, Say Earth and popularly known as the Pond Man of India) participated in the panel discussion.

The key takeaways of the discussion were to strike a balance between human needs and wetland restoration in the current scenario, together with underlining the



Release of Publications by the Chief Guest, Mr Amitabh Kant / Photo Credits: Sauryajit Chaudhuri



Panel discussion held on World Wetlands Day event in New Delhi / Photo Credits: Sauryajit Chaudhuri

relevance of wetlands restoration as a key nature-based solution for disaster risk reduction. It was also observed that behavioural change is essential for wetlands restoration. Emphasis was given to major research institutions to conduct management-oriented research in the landscape, engaging local communities. It was also decided to take tangible steps to improve the status of wetlands by providing a management-oriented knowledgebase and building the capacity of stakeholders.

A call to action on wetland conservation through a music video, 'Hum agar nahin to tum Kahan'

On World Wetlands Day, February 2, 2023, Wetlands International South Asia globally released the music video, 'Hum Agar Nahin To Tum Kahan', which is a call to action for wetlands conservation. Ms Susmita Das, a veteran singer, has rendered the track. The music video is available through the Wetlands International South Asia YouTube channel.

Engaging Youth in wetlands conservation and management at Hirakud Reservoir, Odisha

Wetlands International South Asia and Water Initiatives organised a youth exposure programme on February 12, 2023, at Hirakud Reservoir in Odisha. The programme was supported by Sambalpur Wildlife Division, Government of Odisha; JCI Sambalpur Foundation for Ecological Security (FES); Mahanadi River Waterkeeper, Sambalpur Kala Academy; and Yuva Udayan. The event was attended by over 70 participants, including students, biodiversity experts, local water champions, and representatives from corporates and Non-Governmental Organisations. The event was chaired by the Divisional Forest Officer, Wildlife, Ms Anshu Pragyan Das.

During engaging conversations and a tour of the Hirakud Reservoir, the youth participants of the programme were educated about the benefits of wetlands and ways they might contribute to their conservation. The conservation measures that would be implemented in the future were discussed by Ms Das, who also



A music video 'Hum Agar Nahin To Tum Kahan' to promote wetlands conservation

urged cooperation and active youth involvement in her call for action. During the event, a factsheet was also released to raise awareness of the significance, threats and conservation actions on Coastal Ecosystems. Mr Harsh Ganapathi, Ms Suchita Awasthi and Ms Dayadra Mandal interacted with the students on the importance of wetlands and the role youth can play in the conservation of these ecosystems.

World Wetlands Day at Kalinga Institute of Industrial Technology

Wetlands International South Asia under the ambit of GEF-MoEFCC-UNEP IMWBES project, organised a conference at the Kalinga Institute of Industrial Technology Deemed to be University, Bhubaneswar on the occasion of World Wetland Day 2023. The conference was organised to raise awareness regarding the importance of wetlands and recent developments in wetland restoration and conservation and was attended by students, academicians, researchers, subject experts and policymakers. Through the two technical sessions, the conference emphasised the



Harsh Ganapathi, Senior Technical Officer - Ecohydrology interacting with the college students on Thane Creek

linkage of wetlands with the conservation of wildlife and other species, climate change, water management and local livelihoods of India as well as Odisha. The guest speakers from academia, social activists, scientists & researchers shared their expertise and experience with the scholars and students. The experts also informed the students about the uniqueness and importance of Chilika, the first Ramsar Site of Odisha.

Films and lectures bring wetlands science closer to students in Mumbai

With an aim to introduce Wetland science and sensitise college students on the types of wetlands, their functions, values, benefits and associated threats, a guest workshop for college students was organised by Wetlands International South Asia in collaboration with Muse foundation in Mumbai. The workshop on October 18, 2022, for first year B.Sc Home Science students at Dr BMN College of Home Science, SNDT Women's University in Matunga, Mumbai

saw active participation of students together with their mentors.

The session was conducted by Harsh Ganapathi (Senior Technical Officer, Wetlands International South Asia). The presentation included a case study on Thane Creek, a newly designated Ramsar Site that is lined up with mangroves on both sides and plays host to a number of key coastal species ranging from the iconic Flamingos to the Atlantic Fiddler Crabs.

World Wetland Day 2023 event at Kabartal, Begusarai

Forest Department Begusarai organised an event on World Wetland Day 2023, in collaboration with Wetlands International South Asia under the aegis of the GEF-MoEFCC-UNEP funded IMWBES project. The event was held at the Kabartal Wetland Complex and was attended by various stakeholders including local NGOs, school students, local residents, and government officials. Mr R.K. Ravi, Division Forest Officer (DFO), Begusarai

welcomed the participants with his speech on conserving Kabartal. Students from various schools participated in a painting competition organised by the forest department. Mr R.K. Ravi facilitated the award ceremony for the painting competition. Discussion around the conservation of Kabartal took place at the event, and community perception on the subject was noted by the organisers. Mr Ravi Prakash, Wetlands Specialist, at Wetlands International South Asia, discussed the various aspects of wetlands including their ecosystem services and conservation interventions. He also emphasised the involvement of youth in wetlands conservation. Mr. Mahesh Bharti, founder of Kabar Nature Club emphasised community involvement for the protection of Kabartal against various threats including poaching and encroachment.

GOVERNANCE

Highlights

- > Governing Body approved proposal for deployment of reserves and shifting of office premises to a new location of NSIC Okhla.
- > General Body approved Annual Report and Audited Accounts for the period April 2021–March 2022 in their meeting of September 2022.

WETLANDS INTERNATIONAL SOUTH ASIA is registered as a Non-Government Organisation under the *Societies Registration Act* of the Government of India. The Society is governed under a three-tier structure.

The strategic directions and policies of the organisation are set by a **General Body** 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 the 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 is responsible for implementing the strategy and activities of the organisation.

Annual General Body Meeting

The 15th Annual Meeting of the General Body was held on September 29, 2022, at India Habitat Center and attended by 22 members (and five requests for leave of absence). The annual report and audited financial statements for the period April 2021–March 2022 were adopted.

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 the implementation of technical programmes. The twenty-second meeting of the Governing Body was held on April 20, 2022. The Annual plan for 2022 was also discussed and approved along with the activity report for 2022.

The twenty-third meeting of the Governing Body was held on September 23, 2022, wherein the Governing Body approved the annual report and audited financial statements for presentation at the Annual General Body Meeting. The proposal for deployment of reserves was also discussed and approved including shifting of office premises to a new location of NSIC Okhla.

Meetings of Office Bearers

The Office Bearers met four times during April 2022–March 2023 to assess the implementation of decisions taken in various meetings of the Society, review technical programmes and prepare agendas for the meetings of Governing Body and the General Body.

New General Body Members

Following were inducted to the General Body during 2022-23:

1. **Ms Vidya Padmakumar**
Research Scholar, Mangalore University
2. **Mr Alok Palliwal**
Director, AVJ Infotech Pvt. Ltd.
3. **Dr Siprarani Pradhan**
Assistant Professor, Odisha University Technology and Research, Bhubaneswar
4. **Dr Murugan Shanthakumar**
Biologist/Mentor, Bengaluru
5. **Dr Hari Ponnammam Rani**
Professor, National Institute of Technology Warangal
6. **Dr Rupak De**
Retired Principal Chief Conservator of Forests and Head of the Forest Force, Uttar Pradesh
7. **Captain Partha Bhowmik**
Pilot, Tata SIA Airlines Limited (Vistara)
8. **Mr Ashok Amgoth**
Research Scholar, Department of Civil Engineering, National Institute of Technology Warangal (Student Member)

Annual General Body meeting in progress

Accounts and Audit Report



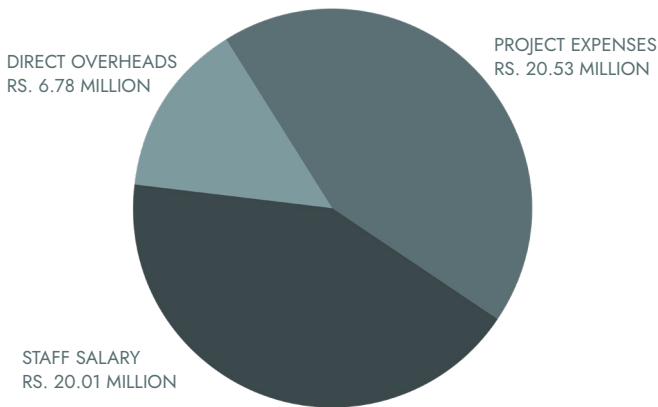
A scenic view of Chandertal, Himachal Pradesh, India

KAMAL DALAKOTI

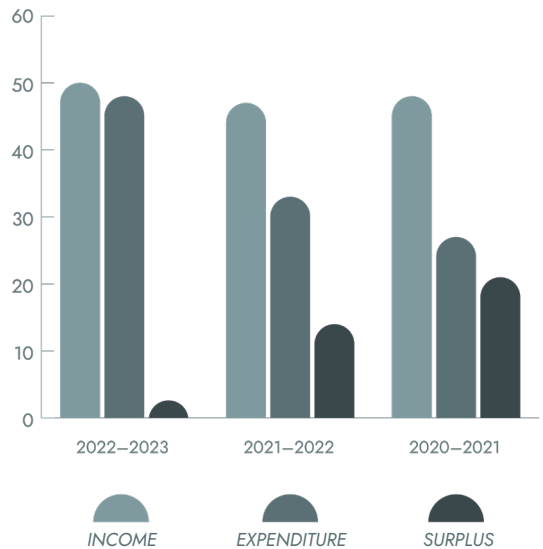
During the period April 2022–March 2023, a total income of Rs. 49.99 million was received. Of this, Rs. 45.52 million was on account of project funds received from 8 donor agencies, and the balance, Rs. 4.47 million as interest earned on the reserves.

The total expenditure incurred during the year towards various programmatic activities was Rs. 47.32 million. Direct overheads stood at Rs. 6.78 million, forming 14.32 % of total expenditure. Project expenses were Rs. 20.53 million, including Rs. 20.01 million towards staff salary.

On a net, a surplus of Rs. 2.67 million was accrued. The total reserves at the end of the financial year stood at Rs. 117.27 million, which is an increase of Rs. 14.45 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: Rs. 47.32 million
APRIL 2022 - MARCH 2023



INCOME, EXPENDITURE & SURPLUS
(Rs. millions)

Balance Sheet

All figures in Rupees			
PARTICULARS	2022-2023	2021-2022	2020-2021
SOURCE OF FUNDS			
CAPITAL ACCOUNT	1,410,796	1,410,796	1,410,796
GENERAL RESERVE			
Opening Balance	102,824,616	84,761,088	70,775,308
Add Transfer during the year	14,450,472	18,063,528	13,985,780
Closing Balance	117,275,088	102,824,616	84,761,088
INCOME & EXPENDITURE ACCOUNT			
Opening Balance	21,354,593	24,967,649	18,216,406
Add Surplus during the year	2,256,797	14,450,472	20,737,023
Less Transfer to General Reserve	(14,450,472)	(18,063,528)	(13,985,781)
Closing Balance	9,160,918	21,354,593	24,967,649
CURRENT LIABILITIES			
	5,478,084	8,171,963	6,942,247
TOTAL	133,324,886	133,761,968	118,081,780
APPLICATION OF FUNDS			
Fixed Assets			
Opening Balance	2,406,528	2,033,108	1,915,971
Additions during the year	7,195,204	1,071,871	632,780
Less : Sale	(222,351)	(49,580)	-
Less: Depreciation	(1,288,499)	(648,871)	(515,644)
Closing Balance	8,090,882	2,406,528	2,033,107
CURRENT ASSETS, LOANS, ADVANCES, DEPOSITS& CASH BALANCES			
	125,234,005	131,355,437	116,048,670
TOTAL	133,761,968	118,081,780	111,547,160

Income and Expenditure Statement

All figures in Rupees			
PARTICULARS	2022-2023	2021-2022	2020-2021
INCOME			
Project Income	45,520,196	41,881,202	41,819,495
Other Income	4,479,484	5,430,587	5,891,603
TOTAL	49,999,680	47,311,789	47,711,098
EXPENDITURE			
OVERHEAD COSTS			
Salary	21,732,637	17,015,011	12,520,972
Office running expenses	5,305,609	2,727,243	2,347,000
Governance expenses	769,870	162,000	180,000
Organisational tax	-	1,107,303	707,297
Depreciation	1,288,499	648,871	515,644
PROJECT COSTS			
Sub-contractor/Project Grant	10,345,531	8,513,375	9,268,356
Travel Costs	1,144,695	653,668	75,050
Project Material	178,226	69,179	59,270
Communication	178,019	131,097	128,044
Financial charges	(135,897)	163,145	10,256
Publications	2,769,225	969,724	907,286
Training/Workshops/Meetings	4,166,469	700,701	254,901
TOTAL	47,742,883	32,861,318	26,974,075
SURPLUS DURING THE PERIOD			
	2,256,797	14,450,472	20,737,023
TOTAL	49,999,680	47,311,789	47,711,098

Outlook

2023-2024

WE AIM TO WORK ON ENHANCING OUR RESOURCE DEVELOPMENT CAPABILITY, ESPECIALLY WORKING WITH ENVIRONMENTALLY-CONSCIOUS CORPORATES ON ENHANCING OUR GROUND PRESENCE.

During 2023-24, we will work for the following results in six thematic areas (Building wetlands knowledgebase, Conserving Himalayan Wetlands, Strengthening Ramsar Site Network, Wetland rejuvenation, Sector mainstreaming, and Capacity development for integrated management) :

I. Building wetlands knowledgebase: We aim to produce an evidence-based analysis of the status and trends in Indian wetlands as a guide to inform national policies, programmes and investments. We will also be publishing the 2016-22 synthesis report on population trends in waterbird species as a basis for triggering conservation action in high-ornithological value wetlands in the Central Asian Flyway. Within the Gangetic floodplain wetlands, we will be publishing a high-resolution map

of the Gangetic floodplains of Bihar and a trend analysis for the last two decades to enable prioritization and management planning.

II. Conserving Himalayan Wetlands: Work during the year will include publishing a draft peatlands map of the Indian Himalayan Region and establishing a Himalayan Peatlands Coalition. An ecosystem services assessment of Chandertal Basin will be concluded and sector linkages mapped to support the integration of high-altitude wetlands in the development plans of various sectors. Management plans with ecological baselines will also be established for two ornithologically important wetlands of Central Asian Flyway sites in Himachal Pradesh and Sikkim.

III. Strengthening Ramsar Site Network: We will work towards finalization and approval of management plans for seven Ramsar Sites (Point Calimere, Pong, Renuka, Harike, Sasthamkotta, Kabartal, Tampara and Vembanad-Kol). The first cycle of management effectiveness tracking will be completed during the year.

IV. Wetlands rejuvenation: In the Gangetic floodplain wetlands of Uttar Pradesh wherein we completed management planning for 3 sub-basins, our work will be focused on initiating rejuvenation actions in at least two districts. A rejuvenation strategy and action plan for one pit wetland in Eastern Coalfields will be developed and agreements for implementation established. A

pilot project on the conservation of Makhana-wetlands of North Bihar will be designed and implementation initiated

V. Sector mainstreaming: Inception-phase activities of GEF Project 'Mainstreaming natural capital values into planning and implementation for Sustainable Blue Economic Growth in basins of Aghanashini Estuary (Karnataka) and Vembanad-Kol' will be completed.

VI. We will also demonstrate the integration of wetlands in District Disaster Management Plans in Ganjam (Odisha).

VII. Capacity Development: Work for establishing a national training curriculum on wetlands through a regional network of training institutes will be further

deepened with the establishment of partnerships. Three modules (integrated wetlands management, managing water quality and wetlands wise use) will also be finalized and added to the existing training pack.

VIII.Regional Cooperation: We aim to establish a South Asia Platform for wetlands managers to enable sharing of lessons and experiences and strengthen capacity for wetlands management in the region through region-specific solutions. Our work will focus on enabling formal agreement within the Ramsar National Focal Points to establish a Ramsar Regional Initiative

IX. We will also continue to provide handholding support to wetland authorities with which WISA

has a long-standing association. Through wetlands authorities and other forums, we will continue to engage with the state government by raising relevant issues also enabling state governments to take actions for effective regulation and management.

Suraj Tal in Lahaul is one of India's highest High Altitude Lake at 4700m / Photo Credits: Harsh Ganapathi

WETLANDS INTERNATIONAL SOUTH ASIA

Governing Body



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



Prof. J.K. Garg, Vice-President
Director, Tribhuvan College
of Environment and Development
Sciences - Nalanda University
Centre



Mr Pijush Sinha, Treasurer
Board Member, Avendus
Finance Private Limited



Prof. C.K. Varshney
Professor Emeritus, Environmental
Sciences, Jawaharlal Nehru
University and Distinguished
Adjunct Professor, AIT, Bangkok



Dr Sara Ahmed
Founder, Living Waters Museum



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



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



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



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



Dr Manoj P. Samuel
Executive Director,
KSCSTE-Centre for Water
Resources Development and
Management (CWRDM)



Mr Han De Groot
Chief Executive Officer, Wetlands
International Global office,
The Netherlands (ex-officio)

Retiring Governing Body Members



Dr Ajit K. Pattnaik
Former Principal Chief
Conservator of Forests,
Government of Odisha



Dr Asad Rahmani
Former Director, Bombay
Natural History Society,
Mumbai



Prof. Erinjery J. James
Pro-Vice Chancellor, Karunya
Institute of Technology and
Science, Coimbatore,
Tamil Nadu



Dr Harini Nagendra
Professor, Azim Premji
University

General Body

List as of September 15, 2023

FOUNDER MEMBERS

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

Dr Ajit K. Pattnaik
Former Principal Chief Conservator of Forests,
Government of Odisha

Dr Asad Rahmani
Former Director, Bombay Natural History Society,
Mumbai

Prof. Erinjery J. James
Pro-Vice Chancellor, Karunya Institute of Technology
and Science, Coimbatore,
Tamil Nadu

Dr Ashok K. Kundra
Former Secretary to the Ministry of
Mines and Special 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. Kailash C. Malhotra
Professor Emeritus, Indian Statistical
Institute, Kolkata, West Bengal

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

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

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

Ms. Jane Madgwick
Executive Director, Global Commons
Alliance

NOMINATED MEMBERS

Prof. J.K. Garg
Director, Tribhuvan College
of Environment and Development Sciences, Nalanda
University Centre

Mr Pijush Sinha
Board Member, Avendus Finance Private Limited

Prof. C.K. Varshney
Professor Emeritus, Environmental
Sciences, Jawaharlal Nehru University and
Distinguished Adjunct Professor, AIT, Bangkok

Dr Sara Ahmed
Founder, Living Waters Museum

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

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

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

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

Mr Han De Groot
Chief Executive Officer, Wetlands
International Global office, The Netherlands
(ex-officio)

Dr Harini Nagendra
Professor, Azim Premji University

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

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

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

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

GENERAL MEMBERS

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 Suresh Chandra Gairola
Indian Forest Service (IFS) (Retired);
Maharashtra Cadre

**Mr Raghavendra Sesandra
Nanjundappa**
Staff Software Engineer, Informatica

Ms Vidya Padmakumar
Research Scholar, Mangalore University

Mr Alok Palliwal
Director, AVJ Infotech Pvt. Ltd.

Dr Siprarani Pradhan
Assistant Professor, Odisha University Technology
and Research, Bhubaneswar

Dr Murugan Shanthakumar
Biologist/Mentor, Bengaluru

Dr Hari Ponnammma Rani
Professor, National Institute of Technology,
Warangal

Dr Rupak De
Retired Principal Chief Conservator of Forests and
Head of the Forest Force, Uttar Pradesh

Captain Partha Bhowmik
Pilot, Tata SIA Airlines Limited(Vistara)

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

INSTITUTIONAL MEMBER

Dr Manoj P. Samuel
Executive Director, KSCSTE - Centre for Water
Resources Development and Management
(CWRDM)

STUDENT MEMBER

Mr Ashok Amgoth
Research Scholar, Department of Civil
Engineering, National Institute of Technology,
Warangal

Gobind Sagar Lake, Himachal Pradesh

WETLANDS INTERNATIONAL SOUTH ASIA

Our team

DIRECTOR



Dr Ritesh Kumar

List as of September 15, 2023 | Total members: 24

PROGRAMME HEADS & SENIOR TECHNICAL OFFICERS



Dr Asghar Nawab
Programme Head/
AQUATIC ECOLOGY



Suchita Awasthi
National Project
Coordinator/IMWBES



Harsh Ganapathi
Senior Technical
Officer/ECOHYDROLOGY



Dhruv Verma
Senior Technical Officer/
WETLANDS CONSERVATION

OPERATIONS AND FINANCE



Sauryajit Chaudhuri
Manager/OPERATIONS
AND PARTNERSHIPS

TECHNICAL OFFICERS



Kalpana Ambastha
Technical Officer/
SUSTAINABLE
LIVELIHOODS



Arghya Chakrabarty
Technical Officer/
BIODIVERSITY



Ravi Prakash
Technical Officer/
WETLANDS SPECIALIST



Kamal Dalakoti
Technical Officer/GIS
AND REMOTE SENSING



Dr Pradeep Vashisht
Technical Officer/GIS
AND REMOTE SENSING



Zafar Abbas Zaidi
Communications
Manager



M. L. Khan
Administration and
Finance Officer



Avinash Kumar Saroj
Accountant

JUNIOR TECHNICAL OFFICERS & PROGRAMME ASSOCIATES



Preethi Vasudevan
Junior Technical Officer/
WATER MANAGEMENT



Dayadra Mandal
Junior Technical Officer/
WATER MANAGEMENT



Apoorva Thapa
Junior Technical Officer/
BIODIVERSITY



Saadan Hussain
Junior Technical Officer/
CLIMATE CHANGE



Nikita Mishra
Junior Technical
Officer/ KNOWLEDGE
BASE DEVELOPMENT

OFFICE SUPPORT STAFF



Rakesh Verma
Office Support Staff



Mahender Kumar
Office Assistant



Diana Datta
Programme Associate/
IMWBES



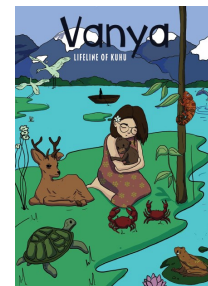
Sakshi Saini
Programme Associate/
IMWBES



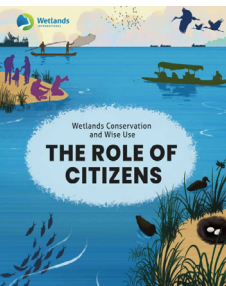
Bhuyashee Rajkumari
Programme Associate/
IMWBES

Publications

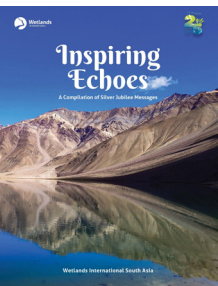
Popular



Vanya: Lifeline of Kuhu



Wetlands Conservation
and Wise Use: The Role
of Citizens



Inspiring Echoes: A
Compilation of Silver
Jubilee Messages



Wetland Champions

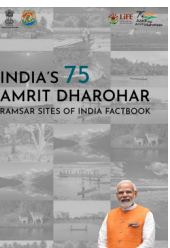
Technical Reports

- Conserving and Sustainably Managing Gangetic Floodplain Wetlands of Uttar Pradesh (jointly with Uttar Pradesh Environment, Forest and Climate Change Department)
- Gokul Jalashay Wetland Complex: Integrated Management Plan
- Kabartal: An Integrated Management Plan for Conservation and Wise Use
- Chandertal: An Integrated Management Plan for Conservation and Wise Use
- Pong Dam Lake: Integrated Management Plan (jointly with GIZ India and Himachal Pradesh State Wetlands Authority)

Posters

- World Wetlands Day theme poster: 'It's time for Wetland Restoration'

External Publications



India's 75 Amrit
Dharohar: Ramsar Sites
of India Factbook by
Wetlands Division,
Ministry of Environment,
Forest and Climate
Change, Government of
India

- Managing Climate Risks in Wetlands: A Practitioner's Guide by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
- Chakrabarty, A. and Kumar, R. (2023). Restoring and Sustainably Managing Indian Wetlands. In Giri, K., Mishra, G., Singh, S., Kumar, M., Sharma, R., Devi, K. and Rawat, A.S. (eds). Compendium of Sustainable Land Management Practices (pp. 145–156). Centre of Excellence on Sustainable Land Management, Indian Council of Forestry Research and Education Dehradun.
- Finlayson, C.M., Fennessey, S., Grillas, P., and Kumar, R. (2023). Commemorating the 50th Anniversary of the Ramsar Convention on Wetlands—Part 1. Marine and Freshwater Research.
- Rights of Wetlands Working Group (2022). Rights of Wetlands—Transforming our relationship with wetlands : Available from www.rightsofwetlands.org
- IPBES (2022): Summary for policymakers of the methodological assessment of the diverse values and valuation of nature of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. U. Pascual, P. Balvanera, M. Christie, B. Baptiste, D. González-Jiménez, C.B. Anderson, S. Athayde, R. Chaplin-Kramer, S. Jacobs, E. Kelemen, R. Kumar, E. Lazos, A. Martin, T.H. Mwampamba, B. Nakangu, P. O'Farrell, C.M. Raymond, S.M. Subramanian, M. Termansen, M. Van Noordwijk, A. Vatn (eds.). IPBES secretariat, Bonn, Germany. 37 pages. <https://doi.org/10.5281/zenodo.6522392>



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