

Communication, Capacity Building, Education, Participation, and Awareness (CEPA) Strategy for Citizen Engagement in Wetlands Conservation & Wise Use for Madhya Pradesh



ABOUT MADHYA PRADESH STATE WETLAND AUTHORITY (MPSWA)

The Government of Madhya Pradesh has constituted the Madhya Pradesh State Wetland Authority (MPSWA) under Wetlands Rules 2017 for the conservation and effective management of wetlands. The Environment Department serves as the nodal agency, with Environment Planning & Coordination Organization (EPCO) providing technical and secretarial support. MPSWA oversees policy development, regulatory frameworks, Integrated Management Plans, NPCA implementation, capacity building, research, communication, and resource mobilization. A Technical Committee and a Grievance Committee, facilitates Ramsar designation, prepares and implements conservation plans, monitors ecological health through Wetland Health Cards, and promotes public awareness.

ABOUT CENTRE FOR ENVIRONMENT EDUCATION (CEE)

The Centre for Environment Education (CEE), established in 1984 as a Centre of Excellence under the Ministry of Environment, Forest and Climate Change (MoEFCC), promotes environmental awareness across India. CEE develops educational programmes and materials, strengthens Education for Sustainable Development (ESD), to ensure Environmental Education leads to on-ground action. Working with State Governments, Foundations, and Corporates, CEE is known for its work in biodiversity conservation, school education, waste management, marine conservation, and sustainable rural-urban development, and contributions to the national & global ESD processes.

ABOUT THE PROJECT

Recognizing the importance of community participation in wetland conservation, MoEFCC and MPSWA have initiated a citizen engagement programme under the IKI-BMUV 'Wetlands Management for Biodiversity and Climate Protection' project implemented by GIZ. Guided by Ramsar's CEPA framework, CEE, supported by GIZ has developed a CEPA Strategy for citizen engagement in Madhya Pradesh. The strategy is an outcome of extensive consultations and pilot testing of key approaches and stakeholder groups at Ramsar sites in the state.

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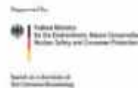
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Communication, Capacity Building, Education, Participation, and Awareness (CEPA) Strategy for Citizen Engagement in Wetlands Conservation & Wise Use for Madhya Pradesh



Executive Summary

Wetlands are among the most productive and valuable ecosystems in Madhya Pradesh, supporting drinking water supply, irrigation, fisheries, flood regulation, biodiversity conservation, climate resilience, and livelihood security. They also hold deep cultural and spiritual significance for local communities. Despite their critical importance, wetlands across the state are increasingly threatened by pollution, encroachment, unregulated resource extraction, and climate change impacts. Recognising these challenges, this report presents a Communication, Capacity Building, Education, Participation, and Awareness (CEPA) Strategy as a central approach to strengthen citizen engagement and ensure the long-term conservation and wise use of wetlands.

Aligned with the Wetlands (Conservation and Management) Rules, 2017, the National Plan for Conservation of Aquatic Ecosystems (NPCA), and India's commitments under the Ramsar Convention, Madhya Pradesh has established a strong institutional framework through the State Wetland Authority (SWA). Initiatives such as Wetland Mitra, World Wetlands Day celebrations, Ramsar site processes, and district-level consultations demonstrate growing momentum for participatory wetlands governance. However, the need for a structured, state-wide CEPA strategy remains critical to ensure consistency, scalability, and sustained behaviour change.

Community consultations, Focus Group Discussions, and field engagements across multiple wetland landscapes reveal that local communities—especially fishers and farmers—possess strong traditional ecological knowledge and are deeply dependent on wetlands for their livelihoods. At the same time, there are significant gaps in awareness of legal provisions, ecological thresholds, and sustainable management practices. Key threats identified include sewage and solid waste discharge, agricultural runoff, encroachment, and unsustainable fishing and water abstraction. The report highlights that effective wetland governance requires multi-stakeholder participation, involving communities, government departments, urban local bodies, educational institutions, civil society organisations, tourism stakeholders, and industries.

The CEPA Strategy presented in this report provides a structured roadmap with short-, medium-, and long-term objectives to institutionalise wetlands awareness and stewardship across governance systems and society. The strategy offers tailored interventions for eleven prioritized stakeholder groups, including fishers, farmers, schools, youth, NGOs, urban and rural communities, planners, industries, and District Wetland Conservation Committees (DWCCs). These interventions span awareness generation, capacity building, participatory planning, behaviour change communication, curriculum integration, regulatory compliance, and livelihood enhancement.

Field-based pilot initiatives further demonstrate how CEPA translates into tangible conservation outcomes. Experiences from Yashwant Sagar, Bhoj Wetland, Sakhya Sagar, and school-based programs highlight how fisher groups, farmers, students, teachers, and district authorities can collectively contribute to wetland protection through sustainable livelihoods, pollution reduction, experiential learning, and inter-departmental coordination.

Overall, the report establishes CEPA as not merely an awareness tool, but a central governance mechanism that links community participation, institutional strengthening, sustainable livelihoods, climate resilience, and biodiversity conservation. By embedding wetlands into education systems, urban planning, district-level governance, and citizen behaviour, the strategy lays a strong foundation for people-led, sustainable wetland management in Madhya Pradesh.

List of Abbreviations

ASHA	Accredited Social Health Activist	MP	Madhya Pradesh
BAIF	Bharatiye Agro Industries Foundation	MPPCB	Madhya Pradesh Pollution Control Board
BMUKN	German Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety	MPSBB	Madhya Pradesh State Biodiversity Board
BNHS	Bombay Natural History Society	MPSEDC	M.P. State Electronics Development Corporation Ltd.
BORDA	Breman Overseas Research and Development Association	NAPCC	National Action Plan on Climate Change
BS&G	Bharat Scouts & Guides	NCHSE	National Centre for Human Settlements and Environment
BSI	Botanical Survey of India	NEP	National Education Policy
CEE	Centre for Environment Education	NGC	National Green Corps
CEO	Chief Executive Officer	NGO	Non-government Organization
CEPA	Communication, Capacity Building, Education, Participation, and Awareness	NPCA	National Plan for Conservation of Aquatic Ecosystems
CGWB	Central Ground Water Board	NSS	National Service Scheme
CGWB	Central Ground Water Board	PHE	Public Health Engineering
CMS	Centre for Media Studies	PMG	Paramparagat Matsya Gyan
CSOs	Civil Society Organisations	PRI	Panchayat Raj Institutions
CSR	Corporate Social Responsibility	PRO	Public Relations Officer
DEWATS	Decentralized Wastewater Treatment Systems	PWD	Public Works Department
DIET	District Institutes of Education and Training	RFPs	Request for Proposals
DPR	Detailed Project Report	RPL	Regenerative Production Landscape
DWCC	District Wetland Conservation Committee	RS	Remote Sensing
EEP	Environment Education Programme	SBM	Swachh Bharat Mission
EIA	Environment Impact Assessment	SPA	School of Planning and Architecture
EPCO	Environment Planning & Coordination Organisation	SPCB	State Pollution Control Board
EQM	Environment Quality Management	STP	Sewage Treatment Plant
ESD	Education for Sustainable Development	SWA	State Wetland Authority
FGDs	Focus Group Discussions	SWM	Solid Waste Management
FPOs	Farmer Producer Organizations	TEK	Traditional Ecological Knowledge
FSTP	Faecal Sludge Treatment Plant	TMS	Tawa Matsya Sangh
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit	TNC	The Nature Conservancy
IBAs	Important Birds Areas	TNV	The Nature Volunteer
IKI	International Climate Initiatives	ULBs	Urban Local Bodies
IMP	Integrated Management Plan	WALMI	Water and Land Management Institute
KAP	Knowledge, Attitude and Practices	WII	Wildlife Institute of India
KAS	Kisan Adivasi Sangathan	WISA	Wetlands International South Asia
METT	Management Effectiveness Tracking Tool	WOTR	Watershed Organisation Trust
MIS	Management Information System	WRD	Water Resource Department
MoEFCC	Ministry of Environment, Forest and Climate Change	WTI	Wildlife Trust of India
		WWD	World Wetland Day
		WWF	World Wildlife Fund
		ZOI	Zone of Influence
		ZSI	Zoological Survey of India

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INTRODUCTION

Wetlands play a vital role in our well-being by providing drinking water, agricultural irrigation, and fishing opportunities, as well as fertile soil for cultivation. Wetlands provide services like natural flood control, protecting communities from disasters, while also supporting livelihoods through activities such as fishing, tourism, and crafts. Wetlands have long served as cultural and spiritual hubs, associating with rituals and local myths, reflecting their deep-rooted significance in human civilizations. Despite their importance, wetlands are often undervalued and face numerous threats, like pollution, encroachment, and climate change. A Communication, Capacity Building, Education, Participation and Awareness (CEPA) programme can systematically support governments in addressing these challenges and ensuring the sustainable management of wetlands by:

Bridging Knowledge Gaps

- CEPA helps public, policymakers, and stakeholders understand the ecological and economic value of wetlands and the services they provide.
- By highlighting the link between healthy wetlands and benefits like clean water, agriculture, and disaster resilience fosters greater appreciation and care.
- By integrating Traditional Ecological Knowledge (TEK) with modern science, CEPA enables communities to contribute effectively to wetland conservation.

Promoting Community Involvement and Supporting Policy Implementation

- CEPA builds political support and community buy-in for implementing laws and regulations for wetland conservation.
- CEPA can foster the participation of local stakeholders and communities to help evolve more effective policies and programmes for wetlands conservation.
- CEPA ensures the active participation of local communities, who often are the primary users of wetland resources, by involving them in decision-making and management of wetlands and their conservation.

Encouraging Behavioural Change

- CEPA promotes sustainable behaviours by raising awareness about practices that harm wetlands such as dumping waste, over-extraction of resources, and land reclamation.
- CEPA motivates individuals and communities to adopt eco-friendly practices, reducing pollution and supporting conservation initiatives.

Mitigating Specific Threats

- Pollution: Avoidance and remediation of waste and chemical flows into wetlands.
- Encroachment: Preventing infrastructure construction and development that would adversely impact wetland integrity.
- Climate Change: CEPA highlights the role of wetlands in carbon storage and adaptation, encouraging actions to protect them.

Enhancing Cultural and Emotional Connections

- CEPA builds upon cultural, religious, and aesthetic values that people have for wetlands to foster involvement in wetland conservation.

CEPA is important for fostering collaboration and innovation, spreading information, knowledge, values and goals. When applied to wetland conservation and management, CEPA becomes a critical strategy to protect and sustain these vital ecosystems. It supports capacity development, enabling various actors to take responsibility for Wetland Conservation.

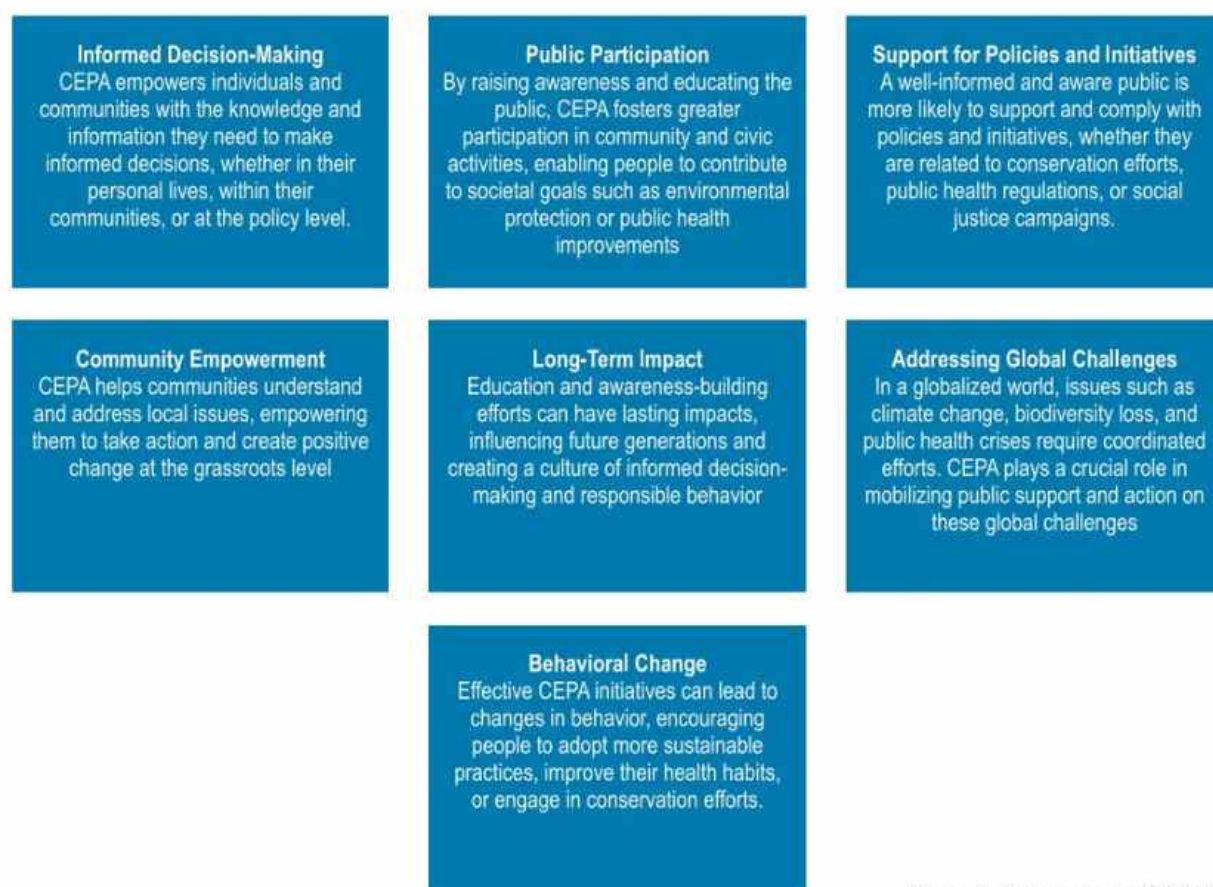


Figure 1: Components of CEPA

1.1

NATIONAL INITIATIVES AND PROGRESS ON CEPA

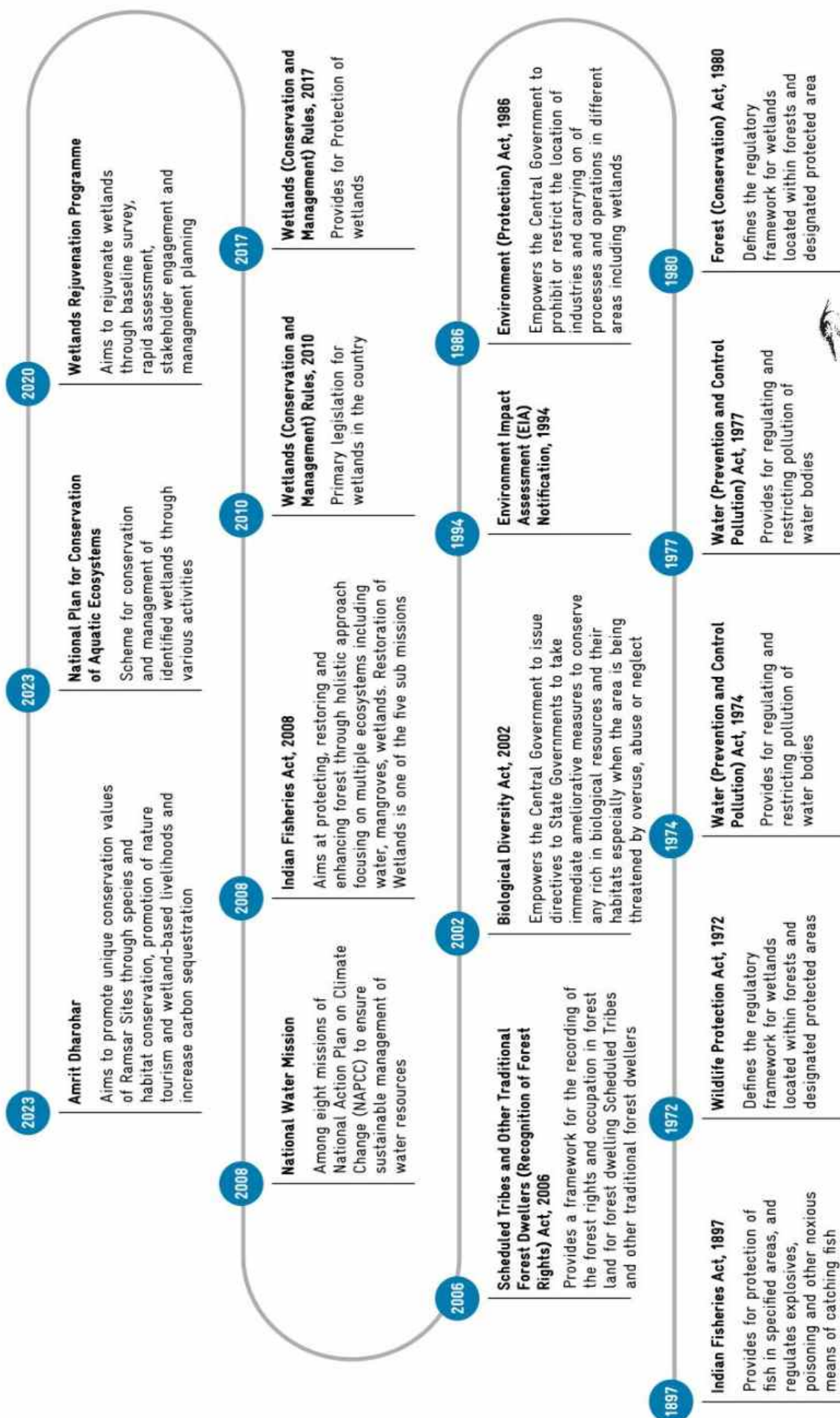
The Ministry of Environment, Forest and Climate Change (MoEFCC) is the nodal agency for all policy and programmatic aspects of wetlands conservation. The Ministry has a dedicated Wetlands Division to coordinate its various wetland initiatives. Wetland conservation draws strength from India's rich legacy of environmental conservation, enshrined in various policies, legislations and regulatory regimes. The Indian Constitution encapsulates this spirit in Article 51-A (g), stating that 'it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures'. CEPA strategies are integrated into various national wetland conservation efforts in India.

National Policy Framework Supporting CEPA in Wetland Conservation

India's commitment to wetland conservation is outlined through several national policies and programs, all of which emphasise the importance of CEPA in ensuring the effective management of wetlands. The National Plan for Conservation of Aquatic Ecosystems (NPCA), introduced in 2013, aims to integrate the ecosystem services and biodiversity of wetlands into development plans at both national and state levels. The plan promotes a shift from sectoral approaches to a more holistic, integrated management model that involves widespread public engagement and education.

Similarly, the Wetlands (Conservation and Management) Rules, 2017, under the Environment Protection Act (EPA), 1986 by the MoEFCC, Government of India, lay down a framework for wetland protection and governance. These rules ensure that communities and stakeholders are actively involved in the decision-making processes. They also underscore the importance of public consultation and participation, making CEPA a core component of wetland management efforts.





India's wetland conservation efforts are guided by the principle of participatory governance; a model involving local communities in management and decision-making processes. This approach is supported by:

- **Public Consultations:** As part of the Wetlands (Conservation and Management) Rules, 2017, the government has instituted regular public consultations, ensuring that stakeholders have a voice in the management of wetlands. This process fosters community-driven decision-making and ensures that conservation strategies align with local needs and perspectives.
- **Local Stakeholder Engagement:** Local communities are involved in discussions and the implementation of wetland conservation measures. By engaging them in data collection, wetland health monitoring, and implementing management plans, conservation efforts are more likely to be effective and sustainable.

Knowledge Base

- **Wetlands Inventory:** A remote sensing-based national wetlands inventory provides the spatial data framework for policy-making and programming. The National Wetland Atlas has been prepared by the Space Applications Centre using satellite imagery on a 1:50,000 scale.
- **Wetlands of India Portal:** A national wetland portal was launched in 2021 as an information hub for wetland authorities, site managers, administrators, decision-makers, students, and citizens. The portal currently has information on wetlands inventories; health cards of more than 600 wetlands; capacity building, education, participation and awareness activities; and learning and knowledge products and e-learning material. The portal provides a platform for the people of the country to learn more about wetlands and get involved in their conservation and management. For more information visit: <https://indianwetlands.in/>

Participatory Management with a 'Whole of Society' Approach

In May 2022, the MoEFCC launched Mission Sahbhagita as an important step towards participatory conservation and wise use of wetlands. The mission is structured on the

whole of society and the whole of government approach, bringing communities and primary stakeholders to the forefront (NCSCM, 2022).

To strengthen the role of citizens in wetlands conservation and management, the MoEFCC launched the Save Wetlands Campaign in 2023. The campaign aims to sensitise people about the values of wetlands, increase the coverage of Wetland Mitras and build citizen partnerships for wetland conservation. Through the campaign, the Ministry envisages turning wetland conservation into a people's movement and inspire, infusing pride and ownership amongst stakeholders to adopt sustainable lifestyles for healthy wetlands and promote wise use of wetlands, aligning with Mission Lifestyle for Environment.

Ramsar Convention and CEPA Guidelines

India, as a signatory to the Ramsar Convention on Wetlands, has adopted the CEPA guidelines set forth by the Convention.

- **World Wetlands Day (WWD):** Celebrated on February 2nd every year, WWD serves as a flagship CEPA initiative, bringing national attention to the importance of wetlands. Through exhibitions, competitions, and educational events across the country, the day helps spread awareness about wetland ecosystems and their conservation.
- **Educational Resources:** The government, in collaboration with environmental organisations, has produced a variety of educational tools to disseminate information on the value of Ramsar Sites and wetland ecosystems. These include documentaries, interactive workshops, and informational campaigns targeted at various segments of society, from schoolchildren to policymakers.

World Wetlands Day 2024 - National Event at Sirpur Lake, Indore (February 2-3, 2024)

The MoEFCC, in collaboration with the Government of Madhya Pradesh, organised a national event to celebrate WWD-2024 at Sirpur Lake, Indore. The event was supported by the Indore Municipal Corporation and Environmental Planning & Coordination Organisation (EPCO).

Interaction with Dr. Musonda Mumba, Secretary General of the Ramsar Convention and Sujit Kumar Bajpai, Joint Secretary, MoEFCC at Centre for Environment Education (CEE) Exhibition Stall at Sirpur Lake on World Wetland Day 2024



World Wetland Day 2024, Indore © Sarita Thakore/CEE (GIZ)

School Children Visiting CEE Exhibition Stall at Sirpur Lake on World Wetland Day 2024



World Wetland Day 2024, Indore © Sarita Thakore/CEE (GIZ)

CEE Exhibition Stall at Sirpur Lake on World Wetland Day 2024



World Wetland Day 2024, Indore © Navneet Wadkar/CEE (GIZ)

The theme of WWD-2024, 'Wetlands and Human Wellbeing', emphasised the critical role wetlands play in human health and prosperity, highlighting their contributions to flood protection, clean water, biodiversity, and recreation. The event began with the inauguration of an exhibition by Chief Minister Dr. Mohan Yadav and Dr. Musonda Mumba, Secretary General of the Ramsar Convention. Over 25 exhibitors, including representatives from various states, technical organisations, and government departments, participated. The exhibition featured stalls on wetland products, tourism, livelihoods, Mission LiFE, the Green Skill Development Programme, and wetland conservation efforts by MoEFCC. It also highlighted the 'Save Wetlands Campaign' with active participation from all States and Uts.

'Wetlands for LiFE': A Citizen Engagement Initiative for Wetland Conservation

Launched on WWD-2024 by Dr. Musonda Mumba, Secretary General of the Ramsar Convention on Wetlands, the 'Wetlands for LiFE' initiative is designed to engage citizens in wetland conservation through storytelling and participatory approaches. This program aims to inspire action and raise awareness about the importance of wetlands by leveraging Film Festivals, Media Consultations, and Media Student Engagement Programs. Organised by the Centre for Media Studies (CMS), the program is part of the 'Wetlands Management for Biodiversity and Climate Protection' project, which is being implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety (BMUKN) and supported by the International Climate Initiative (IKI). This collaborative project, in partnership with the MoEFCC, combines film festivals, media engagement, and capacity-building efforts to drive a collective movement aimed at the sustainable management and preservation of wetlands. The initiative successfully reached over 63,000 people digitally and directly engaged 5,405 youth, filmmakers, environmentalists, and government actors across India. It included the screening of more than 160 films, with a special focus on social impact storytelling. Additionally, 168 aspiring filmmakers were trained in using mobile devices to tell impactful stories, and 469 Wetland Mitras were enrolled across eight major Indian cities, further enhancing community participation in wetland conservation efforts.

Knowledge Partner Network

At the national scale, there is a Knowledge Partner Network for wetlands conservation research, academic institutions and Non governmental Organizations (NGOs) which includes Wetlands International South Asia (WISA), World Wildlife Fund (WWF)-India, Bombay Natural History Society (BNHS) and The Nature Conservancy (TNC) India. Their work includes research on wetland biodiversity and conservation, policy recommendations for wetland management and conservation and support for wetland eco-restoration projects and initiatives. WISA and WWF both are CEPA focal points for India.

1.2 STATE INITIATIVES ON WETLANDS CEPA



Madhya Pradesh State Wetland Authority (SWA)

The Government of Madhya Pradesh, in compliance with Wetlands Rules 2017, has constituted the State Wetland Authority (SWA) for conservation and management of Wetlands. The Government's Environment Department serves as the nodal agency, with the Environmental Planning and Coordination Organisation (EPCO) providing the technical and secretarial services. The SWA is responsible for the effective implementation of Wetland Rules, 2017, which includes policy development, regulatory structure, Integrated Management Plans (IMP), NPCA and their implementation, capacity building, research, networking, communication, awareness and enhancing financial resources for conservation of wetlands in the state.

The SWA has also constituted a technical and grievance committee in accordance with the Wetland Rules, 2017. The Technical Committee is mandated to review brief documents, integrated management plans, notification of the wetlands, and to advise on any technical matter of Wetlands referred by the Wetland Authority. The Grievance Committee provides a mechanism for hearing and forwarding the grievances from the concerned departments/agencies, raised by the public, to the Authority.

As part of its mandate, SWA is responsible for preparing and implementing conservation plans for identified wetlands, monitoring their ecological health through

Wetland Health Cards, and facilitating the nomination of key sites for Ramsar designation. Additionally, SWA is tasked with communication, education and raising public awareness for wetlands conservation. For more information about Madhya Pradesh SWA, use QR code or use the link provided here (<https://swa.mp.gov.in/>)

Wetland Mitra in Madhya Pradesh

Wetland Mitra is a voluntary association programme launched by the MoEFCC. A Wetland Mitra is defined as a motivated volunteer from diverse stakeholder groups working together to protect wetlands and actively engage in conservation initiatives to manage these natural resources. This programme is open to a diverse range of stakeholders including People living along wetlands; People residing in the catchment/zone of influence; Communities (fishermen, boatmen, etc.) who derive livelihood from wetlands; Bharat Scouts & Guides (BS&G), National Service Scheme (NSS), Accredited Social Health Activist (ASHA), Anganwadi Workers, Sanitation Workers at Panchayat Raj Institutions (PRI), Urban Local Bodies (ULBs), Schools, universities, colleges, NGOs, Civil Society Organisations (CSOs), Corporate houses, Industries, Government Department at District, State and Centre level, Religious institutions, ashrams, and faith-based organisations.

As of March 2025, about 2,584 Wetland Mitra registrations have been done in Madhya Pradesh (MoEFCC, 2020). This programme offers potential for citizenship engagement and requires a multi-layered structure, an annual calendar of activities, and facilitation.

Public Outreach on Wetlands by Madhya Pradesh SWA

The SWA has initiated a range of events to enhance public interest and understanding about wetlands. In 2023-2024, these included:

- Wetland City Dialogue:** Workshops were organised in 2024 at three Ramsar cities of Madhya Pradesh—Bhopal, Indore, and Shivpuri—by the School of Planning and Architecture (SPA), Bhopal, in collaboration with the SWA. These programs engaged over 300 participants, including students, local communities, local social and environmental groups, and departmental representatives. Four programs were

conducted at:

- Bhoj Wetland, Bhopal by the Bhopal Birds Conservation Society.
- Sirpur Wetland and Yashwant Sagar, Indore by The Nature Volunteer (TNV), Indore.
- Sakhya Sagar, Shivpuri by Madhav National Park, Shivpuri.

Wetlands and City Dialogues, Shivpuri 2024



Wetlands and City Dialogue, Shivpuri © Navneet Wadkar/CEE (GIZ)

- **Wetland Walk & Talk:** This program was conducted in 2024 along the banks of the Bhoj Wetland by the National Centre for Human Settlements and Environment, Bhopal (NCHSE). The event saw the participation of around 100 individuals, including wetland enthusiasts, students, and local residents, who actively contributed as 'Wetland Mitras'.
- **Online Talk with Wetland Mitras:** An online session was organised for Wetland Mitras from various districts of Madhya Pradesh. These participants were also registered under the 'Save Wetlands Campaign' on the MoEFCC, Government of India's portal. The session aimed to enhance their knowledge and involvement in wetland conservation efforts.
- **Bhoj Wetland Winter Bird Count Survey 2023-24:** The Bhoj Wetland Winter Bird Count Survey 2023-24 was jointly organised by the SWA and Bhopal Bird Conservation Society. The survey report is available on the SWA website (Bhopal Birds Conservation Society, 2024). Participants from across the state and country took part in the bird census, identifying bird species and their populations at various sites of the Bhoj Wetland. The survey's objectives included:
 - Preparing an updated checklist of birds during the

migratory season.

- Identifying Rare, Endangered, and Threatened species.
- Raising awareness about bird conservation.
- Promoting citizen science through widespread participation.
- Understanding long-term migration patterns to aid conservation efforts.

District Wetland Conservation Committees in Madhya Pradesh

In 2022, Madhya Pradesh's Environment Department constituted the DWCCs to enhance local-level conservation and management of wetlands. These committees, operational in all 53 districts of the state, are chaired by the respective District Collectors and include members from relevant departments, as well as nominated experts in the field of environmental conservation. Each DWCC includes officials from the District Forest Department, Public Health Engineering (PHE) Department Planning Department, Water Resource Department (WRD), Town and Country Planning, Agriculture Department, Fisheries Department, Pollution Control Board, and State Wetland Authority. The District Panchayat Chief Executive Officer (CEO) or Municipal Commissioner/Officer serves as the Member Secretary.

Pilot Programme with DWCC Line Department Govt. Officials, Shivpuri



Meeting with DWCC Line Department Govt. Officials, Shivpuri
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The DWCCs are entrusted with the responsibility of implementing the NPCA and other state and central schemes. Key functions include:

- Preparing district-level wetland inventories through

physical verification.

- Drafting wetland-specific brief documents as directed by the SWA.
- Coordinating with line departments for conservation efforts.
- Conducting awareness and capacity-building programs.
- Addressing grievances related to wetlands at the district level.

Madhya Pradesh SWA Website and Wetland Inventory Portal

The SWA Website and Wetland Inventory Portal, developed by M.P. State Electronics Development Corporation Ltd. (MPSEDC) with support from the State Wetland Authority, serves as a key tool for information on wetland conservation. The interactive website caters to environmentalists, students, researchers, and CSOs, providing access to publications, acts and rules, project details, and other resources related to wetlands in Madhya Pradesh. The Geographic Information System (GIS) based Wetland Inventory Portal uniquely disseminates comprehensive wetlands information, fostering better awareness and management (Environment Department, 2025).

Remote Sensing and Geographical Information System Labs for Real-Time Wetlands Monitoring

The Governing Council of EPCO has directed the development of a real-time monitoring mechanism for Ramsar Sites, designating the SWA as the watchdog for wetland conservation in Madhya Pradesh. Using Remote Sensing (RS) and GIS techniques, the GIS lab aims to monitor land use and land cover changes, assess wetland vegetation health, and identify environmental threats like pollution, sedimentation, invasive species, and encroachment. By integrating satellite data with ecological and biodiversity surveys, the lab supports habitat monitoring for key species and provides data for sustainable management strategies. Real-time monitoring ensures rapid anomaly detection, alerting, and decision-making, facilitating the creation of a GIS and Management Information System (MIS) based Decision Support System for the state's Ramsar sites.

Wetland City Accreditation for Indore

The Wetland City Accreditation, encouraged by the Ramsar Convention, recognises cities that demonstrate sustainable development while preserving their wetlands. This international accreditation highlights the ecological, socio-cultural, and economic significance of wetlands, promoting their conservation and sustainable management.

Madhya Pradesh has taken the lead, with the MP State Wetland Authority preparing technical proposals for Bhopal and Indore, which have been sent to the Ramsar Secretariat in Switzerland by the MoEFCC out of which Indore has received Wetland City Accreditation in 2024. Indore, situated along the Saraswati River, has a city area of 50,525 hectares and wetlands covering 920 hectares. The Ramsar-listed Yashwant Sagar and Sirpur Wetlands (designated in 2022) are complemented by lakes such as Bilawali Lake, Pipaliya Talab, and Piplyahana Talab, which provide water security, biodiversity habitats, and livelihood opportunities for residents.

Interpretation Centres: Advancing Wetland Conservation and Management

As of 2024, two interpretation centres for wetlands have already been established in Madhya Pradesh:

- **Jal Tarang Wetland Interpretation Centre:** Initially developed in 2004 under the Bhoj Wetland Project, aims to educate visitors about lake and wetland ecosystems, with a special focus on the Bhoj Wetland, the facility was renovated and modernised to improve visitor engagement with updated, meaningful information and foster public awareness about wetland conservation and the sustainable use of water resources. Interactive touch screens, updated audio-visuals, and working models have been installed. The renovated Jal Tarang Wetland Interpretation Centre was reopened to the public on World Environment Day, 5th June 2022.
- **Madhav National Park Interpretation Programme:** The Madhav National Park Interpretation Programme was designed to highlight the importance of lake conservation and garner community support for its maintenance, particularly among the residents of Shivpuri. At the request of the park management, the Centre for Environment Education (CEE) has developed an Interpretation Centre and wayside exhibits within the park to enhance visitor awareness and engagement.

Environment Education Programme (EEP)

The MoEFCC launched the National Green Corps (NGC) programme in 2001-2002 under the Environment Education, Awareness, and Training Scheme (MoEFCC, 2024). From 2022-23, the NGC programme was revamped as the Environment Education Programme (EEP) to broaden its scope and align with updated educational goals. It complements classroom knowledge with nature-based and hands-on learning, aligning with the National Education Policy (NEP), 2020. The objective of the scheme is to sensitise children and youth on environmental issues and motivate them toward sustainable lifestyles through diverse educational initiatives such as workshops, projects, exhibitions, campaigns, competitions, and nature camps.

EEP is implemented by EPCO in Madhya Pradesh with government aided and private schools and colleges, PRIs, ULBs, and others. Activities include workshops, nature camps, competitions, and campaigns, encouraging sustainable solutions with minimal environmental impact. The current approach invites proposals from schools and school clusters.

Department of Environmental Science & Limnology, Barkatullah University

The Department of Environmental Science & Limnology at Barkatullah University is a multidisciplinary Centre of excellence offering Masters and Ph.D. programs (Department of Environment Science & Limnology, 2024). It specialises in life sciences and aquatic ecosystems through its M.Sc. Environmental Science and Limnology program, M.Sc. in Limnology and Fisheries, and M.Phil. in Freshwater Ecology. Recognised as a Ph.D. research centre, the department contributes to knowledge on freshwater resources, land-water interactions, biodiversity, and the pollution across air, soil, and water, ecosystem conservation and management.

Meeting with Prof Vipin Vyas, Barkatullah University, Bhopal



Meeting at Barkatullah University, Bhopal © Navneet Wadkar/CEE (GIZ)

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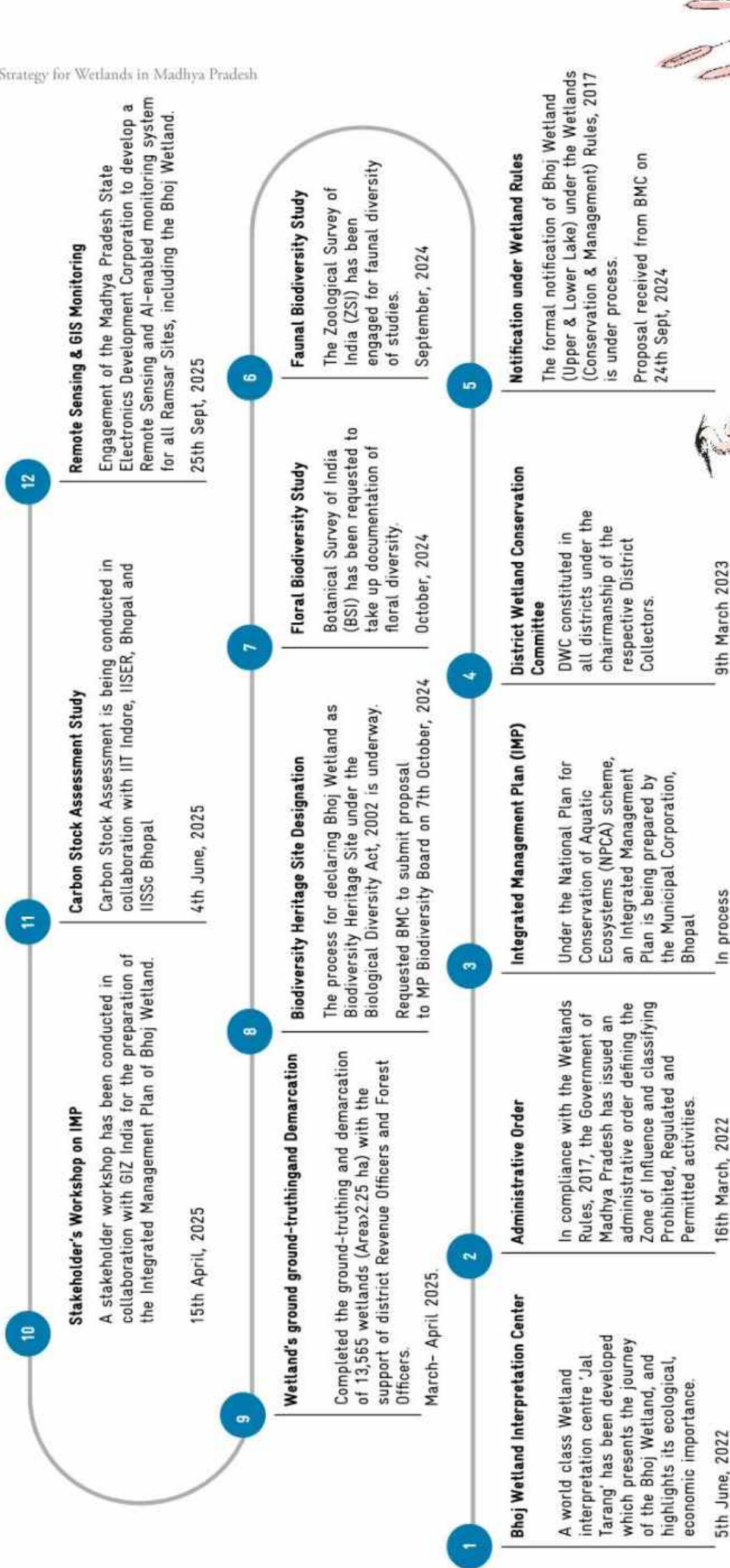
OTHER EXISTING INITIATIVES

NGOs and citizen groups are actively engaged in the conservation, management, and sustainable use of wetlands. Numerous voluntary initiatives by citizens, directly or indirectly connected to wetlands conservation, are underway in Madhya Pradesh. Here are some notable organizations and their specific contributions (Refer *Appendix 1* for their address and contact details).

Wetlands International South Asia (WISA)

WISA is dedicated to sustaining and restoring wetlands, their resources, and biodiversity in the South Asian region. Their interventions are based on a mix of technical knowledge, policy dialogue and field demonstrations for addressing various issues related to wetland management. The organization works on key aspects such as integrated wetland management, biodiversity conservation, climate resilience, and sustainable livelihoods for communities dependent on wetlands. They actively engage policymakers, planners, and influencers while emphasising citizen involvement for wetland conservation. In Madhya Pradesh, WISA implemented restoration work of Bhoj wetland in 1995-2005 with support from Japan Bank of International Cooperation. They had also organised training of government officials on integrated management of wetlands and Management Effectiveness Tracking Tool (METT) for Indian wetlands (Wetlands International South Asia, n.d.).

Conservation and Management Measures for Wetlands in Madhya Pradesh



The Nature Conservancy (TNC) India

TNC, the world's largest conservation organisation, works to protect lands and waters essential for life. In India, they collaborate with various stakeholders to implement science-based strategies for conserving critical ecosystems, including wetlands. The TNC India's efforts focus on revitalizing urban wetlands, ensuring these ecosystems continue to provide essential environmental and social benefits. The TNC India is actively engaged in restoring wetlands across Chennai and various other regions in the country. Additionally, TNC supports large-scale river restoration programs, such as Namami Gange and Namami Devi Narmade, which aim to rejuvenate and protect India's vital water bodies (The Nature Conservancy India, 2025).

The Nature Volunteers (TNV)

The Nature Volunteers (TNV), an Indore-based NGO and a not-for-profit organisation, works on wetland conservation, bird habitat protection, Save Tiger campaign, and raising environment and climate issues. They engage with diverse stakeholders, organise birdwatching camps, participate in bird surveys, conduct vulture counts, and create awareness through publishing books and events. They have also effectively used media to create awareness about wetlands and conservation needs, particularly in their campaigns to conserve Sirpur lake in Indore (The Nature Volunteers, 2021).

Bhopal Birds Conservation Society and Sarus Mitra

Bhopal Birds Conservation Society, a local group from Bhopal in collaboration with Wildlife Trust of India (WTI) is engaged in Sarus crane conservation in villages around Bhoj Wetland since 2013. It initiated the Sarus Mitra programme with farmers, raising awareness about the bird, wetland and protection of its nesting sites. This programme led to an increase in the Sarus population, from 24 to 330 (Bhopal Birds Conservation Society, 2021).

Centre for Environment Education (CEE)

CEE is an organization that develops innovative programs and educational materials, building capacity in the field of Education for Sustainable Development (ESD). CEE's work on wetlands focuses on engaging local stakeholders, including schools and community groups, to promote sustainable practices and stewardship of wetland

ecosystems. CEE developed Jal Tarang¹, an interpretation centre that aims to educate visitors about lake and wetland ecosystems, with a special focus on the Bhoj Wetland.

Bombay Natural History Society (BNHS)

BNHS focuses on the conservation of nature, primarily biological diversity, through actions like research, education, and public awareness. They have identified Important Bird Areas (IBAs) across India, many of which are wetlands, to prioritise avian conservation efforts. The BNHS has launched 'Wetland Programme' which takes a multi-layered approach to studying wetland biodiversity and its conservation in India. It is currently active in key wetland ecosystems, including Chilika in Odisha, Point Calimere in Tamil Nadu, Pong Dam in Himachal Pradesh, and the creeks of Mumbai in Maharashtra. Recently it had organized a wildlife photography workshop in National Chambal Sanctuary, Morena (BNHS India, n.d.).

Other organizations like India WWF-India, The Habitat Trust, India Wetland Coalition, Salim Ali Centre for Ornithology and Natural History, Wildlife Institute of India (WII) etc. works at national level for wetland conservation and management and policy advocacy.

These collective efforts by NGOs and citizens play a crucial role in preserving India's wetlands, ensuring they continue to provide essential ecosystem services and support for biodiversity.

Wetlands Conservation Linked to Sectoral Initiatives

Wetland Conservation is closely linked with sectors such as watershed management, land use planning, greening, fisheries & agriculture, and water & sanitation. Many initiatives in these sectors have been underway across the state for several years by numerous community-based organisations, NGOs, and local bodies. Organizations like Watershed Organization Trust (WOTR), Bharatiya Agro Industries Foundation (BAIF), and Samaj Pragati Sahyog promote wetland conservation by addressing land degradation through participatory, science-based strategies. Their ridge-to-valley approach improves water quality, reduces sedimentation, and prevents degradation. Community engagement and tools like climate-resilient practices and GIS-based decision systems ensure sustainable wetland management. In the agriculture sector, initiatives by SREC through Pratishtha Farmers Producer

¹Supported by EPCO and developed by CEE

18,000 farmers in adopting water-efficient, sustainable farming methods. These efforts reduce nutrient runoff, enhance water quality, and promote wetland conservation. Regenerative Production Landscape (RPL) Collaborative focuses on regenerative farming to restore soil health, reduce emissions, and improve water

availability—indirectly benefiting wetlands and ecosystem conservation. These initiatives present an opportunity for strengthening and upscaling wetlands conservation.

Education, Communication, and Collectivisation in the Tawa Reservoir Wetland

The story of Tawa Reservoir is one of profound transformation, for both ecology and livelihoods. The construction of the Tawa Dam in 1978, displaced thousands of tribal and farming communities, leaving many impoverished and vulnerable. Fishing rights were initially controlled by private contractors who employed unsustainable practices and external labour, further marginalising the locals. Displaced communities, driven by necessity, resorted to illegal poaching until the early 1990s when they began organising under the guidance of the Kisan Adivasi Sangathan (KAS). Persistent protests resulted in the historic 1996 decision to grant fishing rights to these displaced groups, leading to the formation of the Tawa Matsya Sangh (TMS), a cooperative federation (Down to Earth, 2001).

The cooperative unified 33 displaced villages, promoting collective ownership and self-governance. Members managed fishing schedules, marketing strategies, and profit distribution, fostering autonomy and resilience within the community. Under TMS management, fish production and revenue surged, with annual yields tripling and incomes significantly improving. Measures like breeding season bans and deferred wages supported ecological balance and financial security. Education and collectivisation were vital to TMS's success, as social activists and fishery experts trained the community in sustainable practices like using selective nets to preserve fish populations.

Today, the Tawa Reservoir symbolises resilience and grassroots empowerment. Its designation as a wetland reflects its ecological importance, while TMS showcases the potential of community-led resource management. This journey highlights the role of education, communication, and collective action in restoring livelihoods and protecting ecosystems, presenting a powerful model for integrating marginalised communities into sustainable conservation efforts.

Wetlands in Media in Madhya Pradesh

Print media, particularly local Hindi newspapers, have been at the forefront in covering wetlands in Madhya Pradesh, highlighting the history, mythology and current condition of the wetlands. However, this coverage is highly skewed towards the few large wetlands like Bada Talab and Chhota Talab of Bhoj Wetland in Bhopal and Sirpur Lake in Indore. The coverage highlights pollution, encroachment, and residential and developmental projects and covers judicial recourse by citizen groups and activists. The English media largely cover systemic constraints, legal framework analysis, gaps in implementation by authorities. Apart from mainstream media establishments, niche media platforms like India Water Portal, Down to Earth and

Mongabay provide more in-depth coverage and critical analysis. Social media coverage of wetlands is in rather a nascent stage in the state and largely portrays wetlands as recreational sites, with rather limited or hardly any content exploring their ecological significance, cultural heritage, or community livelihoods. However it is also observed that many citizen groups & individuals are effectively using social media to highlight various threats to wetlands like encroachment, water hyacinth infestation, water pollution etc. Strengthening and engaging mass media content creators and whistleblowers through capacity building and providing authorized and easily accessible information and learning resources can greatly enhance awareness and advocacy for wetlands conservation.

1.4 NEED FOR A CONSOLIDATED CEPA STRATEGY FOR MADHYA PRADESH

Wetland conservation is a multifaceted challenge that demands the active involvement of all stakeholders. For this, CEPA must be understood as more than just an information dissemination tool. It should serve as a robust framework for building capacities, fostering local leadership, and enabling community-driven action.

The CEPA strategy is detailed in the following chapters. The next chapter describes the status of wetlands in Madhya Pradesh, ongoing conservation efforts, and the challenges in their protection and conservation in different regions. The following chapter draws out the need for CEPA in addressing these issues. The gender aspect in wetlands conservation is an integral part of this strategy.

The policy guidance and legislation from the central government, particularly the Wetland Rules of 2017 provide the overall direction for wetlands conservation in the whole country, including Madhya Pradesh. The Madhya Pradesh Government has laid the foundation by creating the State Wetlands Authority, which in turn has taken several initiatives for wetlands conservation and associated public engagement activities. Developing a CEPA strategy builds upon these efforts, takes these achievements forward and operationalises conservation plans.

The MP SWA is the primary holder of the CEPA strategy document. For effective implementation, DWCCs and the constituent line departments, will also have to actively take up structured CEPA activities. The strategy is necessary to support wetland protection, conservation and management through different line departments and their coordinated efforts. It includes technical capacity building of institutional stakeholders and public engagement through diverse approaches.

The CEPA strategy has the following key approaches

- **Enabling leadership among line department staff** through technical capacity building about wetlands conservation. This includes understanding their specific roles, the type of public engagement required, and the skills and action plans to implement such engagement.
- **Active participation of individuals and communities in conservation**, rather than just being passive recipients of information. For this, the departments and committees need to create institutional and non-formal spaces and allocate resources for meaningful, participatory engagement to move beyond traditional top-down methods and learn from and with communities.
- **A gender lens** that recognises the unique roles, contributions, and vulnerabilities of women and marginalised groups is integral to the strategy. This would ensure that the wetland conservation efforts are both effective and inclusive.

The proposed collaborative model envisages CEPA activities and wetlands conservation as integrated processes, which align with the aspirations and needs of local populations while addressing ecological imperatives. By adopting an inclusive, participatory, and community-supportive approach, the strategy aims to achieve shared ownership of the conservation efforts, where all stakeholders, especially communities, take responsibility for sustainable outcomes. This is expected to result in the protection and restoration of wetlands, improving the well-being of dependent communities and the public at large.

2 MADHYA PRADESH WETLANDS & CEPA

2.1 MADHYA PRADESH AND ITS WETLANDS

Madhya Pradesh hosts a diverse array of wetlands, including riverine systems, reservoirs, seasonal ponds, and floodplains, shaped by its varied geography and tropical monsoon climate. Conserving these ecosystems is important to ensure water security and ecological balance in the state, given the temperature and rainfall variations it experiences. Wetlands act as natural buffers, mitigating climate extremes by storing water during monsoons and releasing it during dry periods. Madhya Pradesh's wetlands are not just hydrological features but essential ecological, economic, and cultural assets that require integrated management approaches for sustainable conservation and community benefit.

The state's varied topography creates diverse wetland ecosystems in its eight distinct geographical regions: Vindhyan Scarpland, Malwa Plateau, Bundelkhand Plateau, Central Indian Plateau, Narmada-Son Valley, Satpura Range, Baghelkhand Plateau, and Chhattisgarh Plain. Major rivers like the Narmada, Chambal, and Tapi contribute to the formation of riverine wetlands and reservoirs, supporting irrigation, fisheries, and biodiversity. Reservoirs on perennial rivers like the Narmada also enhance wetland habitats while fulfilling human needs for water and energy. The state's soil diversity, including alluvial, black, red, and mixed soils, also affects wetland hydrology and productivity. For instance, black soils retain moisture well, contributing to wetland sustainability in certain areas, while alluvial soils near riverbanks enhance the fertility and productivity of riparian wetlands. These wetlands act as ecological niches, supporting biodiversity and regulating water cycles.

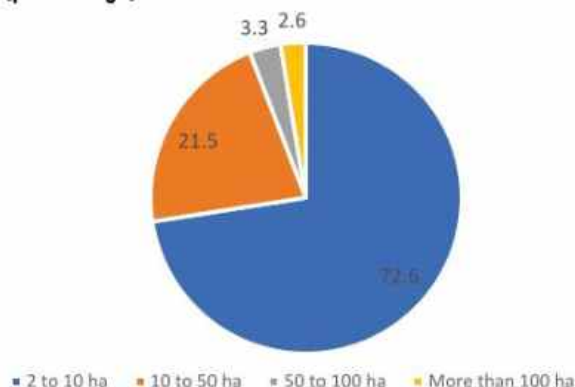
As of September 2025, a total of 13,566 wetlands with an area greater than 2 ha have been identified in the state. Ground-truthing has been completed for 13,500 wetlands, while verification for 65 wetlands remains pending. Demarcation activities have been finalized for 13,195 wetlands (MPSWA, 2025).

The total area of the 13,566 identified wetlands (each greater than 2 ha) is estimated at 460,451 ha, representing approximately 1.5% of the state's geographical area. When all wetlands are considered, irrespective of size, the cumulative area increases to 861,736 ha, which corresponds to approximately 2.8% of the state's geographical area. Madhya Pradesh records the highest number of newly identified wetlands in the country and ranks third among Indian states in terms of inland wetland extent. The state also holds the largest share of reservoirs nationally (24.7%) (Gupta et al., 2021).

Analysis of wetland size distribution reveals that the 2–10 ha category comprises 9,851 wetlands (72.6%), representing the

majority of all wetlands. The 10–50 ha category includes 2,910 wetlands (21.5%), while the 50–100 ha and >100 ha categories include 453 (3.3%) and 352 (2.6%) wetlands, respectively (MPSWA, 2025).

Areawise distribution of wetlands in Madhya Pradesh (percentage)



In terms of area contribution, the >100 ha category, despite constituting only 2.6% of the total number of wetlands, encompasses the largest total area, amounting to 324,733 ha (70.5%) of the state's wetland area. In contrast, the 2–10 ha category, which accounts for 72.6% of all wetlands, contributes only 42,784 ha (9.3%) to the total wetland area (MPSWA, 2025).

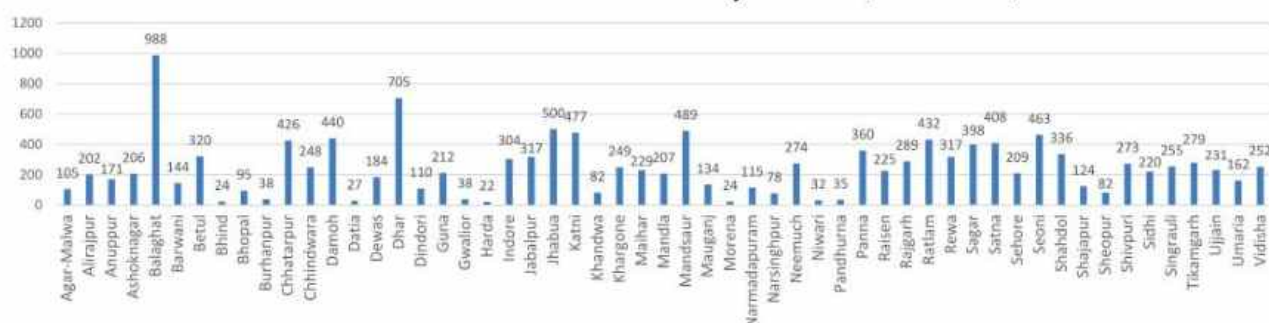
Of the total wetlands in Madhya Pradesh, natural inland

wetlands occupy 327,700 ha (38%), while man-made inland wetlands cover 534,035 ha. When compared to 2006–07 data, the area under natural inland wetlands has decreased by 10,128 ha, whereas man-made inland wetlands have increased by 92,592 ha. In terms of wetland type, reservoirs and barrages represent the largest share, covering 486,091 ha (56.4%), followed by rivers and streams at 327,457 ha (38%). Other categories include tanks/ponds (47,922 ha), waterlogged areas, lakes, oxbow lakes, and riverine wetlands (Gupta et al., 2021).

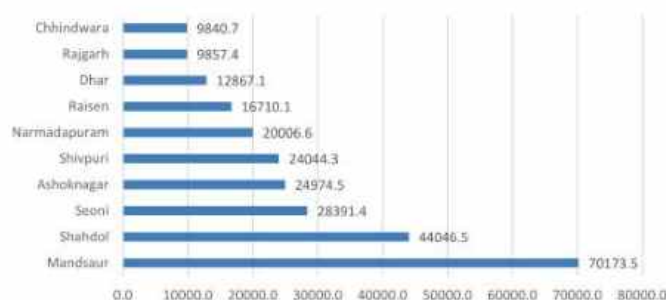
A decadal comparison (2017–18 versus 2006–07) indicates an overall increase in wetland area, primarily due to the expansion of reservoirs, tanks/ponds, and rivers/streams, reflecting a substantial growth in man-made wetlands. The observed expansion has been largely driven by the construction and development of reservoirs and tanks/ponds across the state (Gupta et al., 2021).

District-level analysis of wetlands greater than 2.25 ha reveals that Mandsaur (70,173.50 ha), Shahdol (44,046.50 ha), and Ashoknagar (24,974.53 ha) possess the largest wetland areas, significantly contributing to the state's overall wetland extent. In terms of wetland count, the districts of Balaghat (988), Chhatarpur (426), Ratlam (432), Katni (477), and Jhabua (500) record the highest numbers of wetlands (MPSWA, 2025).

District wise number of Wetlands in Madhya Pradesh (Area>2.25 ha)



Top Ten Districts by Total Area of Wetlands (Area>2.25 ha)



The state's substantial forest cover and its proximity to many wetlands provide critical ecosystem services. Wetlands near protected areas like Kanha National Park or Karera Bird Sanctuary offer habitats for local and migratory waterbirds, and species such as the marsh crocodile, amphibians, and other aquatic species, creating biodiversity hotspots. For example, Sakhya Sagar Lake is home to 19 indigenous fish species, crucial for maintaining the lake's biodiversity and supporting populations of piscivorous birds. The lake serves as a habitat for 73 bird species, including migratory waterfowl that typically arrive in winter, though their numbers have noticeably declined in 2023-24 due to the invasive water hyacinth. The lake is also a critical habitat for the marsh crocodile (*Crocodylus palustris*), a Schedule I species protected under the Indian Wildlife (Protection) Act of 1972.

The state's tropical monsoon climate, characterised by seasonal rainfall concentrated during the southwest monsoon, makes wetlands vital for water storage and distribution. They buffer against variable rainfall, which ranges from 70 cm in the northwest to 160 cm in the south, by recharging groundwater and maintaining water availability during dry seasons. Wetlands are crucial for

climate regulation and cooling, controlling high summer temperatures and variability in winter temperatures. They help mitigate extreme heat effects in nearby regions and provide microclimates for flora and fauna.

Ramsar Sites

As of February 2025, the following sites are designated as Wetlands of International Importance under the Ramsar Convention

- **Bhoj Wetland:** Comprising the Upper and Lower Lakes in Bhopal, designated in 2002.
- **Sirpur Lake:** Located in Indore, designated in 2022.
- **Yashwant Sagar:** A reservoir in Indore district, designated in 2022.
- **Sakhya Sagar:** Situated in Shivpuri district, designated in 2022.
- **Tawa Reservoir:** Recently added to the list of Ramsar sites in 2024.

Yashwant Sagar, Indore (Ramsar Site)



Yashwant Sagar, Indore © Satish Awate/CEE (GIZ)

2.2 LOCAL COMMUNITY PERSPECTIVES

2.2.1

PEOPLE'S ASSOCIATIONS WITH WETLANDS IN MADHYA PRADESH

In Madhya Pradesh, as elsewhere, wetlands hold a significant place in the lives of various communities and individuals. They foster diverse connections based on livelihoods, culture, recreation, and ecological interest. For communities directly dependent on wetlands, various small and large ponds, tanks, lakes and riverine wetlands spread across the rural landscape provide essential resources like fish, irrigation water, and raw materials supporting local economies. Traditional community-based water management practices in Madhya Pradesh are deeply rooted in local ecological knowledge and collective action. Practices such as shared fishing rights, voluntary labour for conservation, and community management of water reservoirs, sustained livelihoods while fostering social cohesion and ecological balance, though within a feudal system and with its pitfalls. Pond and tank creation and their maintenance during droughts, supported by community reserves of millets as payments, was a widespread practice in the state. These practices served as an early form of state-sponsored rural employment guarantee during periods of distress. The Gond Kings, who ruled Central India covering modern-day Madhya Pradesh for nearly 350 years in the mid-fourteenth century, are well known for their water management. During colonial times, these systems were disrupted by policies that centralised control over natural resources, undermining local governance structures and prioritising revenue generation over sustainability. Traditional practices were dismissed as unscientific, while state-controlled systems replaced community-led management. This shift, combined with the commodification of resources and the weakening of customary rights, led to the decline of these practices.

In recent years, a concerted effort has been made to revive these traditions, blending traditional wisdom with modern conservation techniques. In doing this, the communities, with the support of NGOs and local governments, are reclaiming their roles as stewards of natural resources. One example of this revival is fishing cooperatives in Mandla district, where village ponds (taalabs) are managed by

community-led groups facilitated by organisations like the Foundation for Ecological Security. Traditionally, these ponds were shared resources with sustainability ensuring community rules. They supported fisheries, irrigation, and domestic needs. After colonial and post-independence disruptions, these practices fell into neglect. Today, cooperatives have been re-established to desilt ponds, secure fishing rights, and enforce bylaws against overfishing, providing equitable benefits and enhancing nutrition and incomes.

In Jhabua district, the Bhil tribal tradition of Halma, which involves voluntary collective labour (shramdan), has been revitalised by the Shivganga Abhiyan. Historically, Halma united communities to build and maintain water conservation structures, ensuring sustainable resource use. The practice was weakened by disruptions in tribal governance. Since 2010, annual Halma events have mobilised thousands of villagers to construct trenches and pits for soil and water conservation, restoring landscapes and fostering a renewed sense of community ownership.

Traditional systems for maintaining reservoirs like tanks and johads were once integral to village life, providing water for irrigation, livestock, and domestic use. With colonial centralisation, the community's role in maintaining these systems diminished, leading to neglect and siltation. Recent restoration efforts, involving desilting, repairing embankments, and re-establishing community management, have improved groundwater recharge and biodiversity while reasserting the importance of local stewardship.

The associations people have with wetlands are linked with their specific knowledge, cultural values and concern about the wetland health. For example, Yashwant Sagar, a Ramsar Site and reservoir on the Gambhir River in Indore district, supports the livelihoods of many local communities, particularly traditional fisher groups like Batham, Kaahaar, Manjhi, and Kewat. Around 1,900 people from Gurdakhedi and Gulawat villages, from 13 other nearby villages, rely on the wetland for fishing, lotus harvesting, and seasonal agriculture, making them key stakeholders in its management and conservation. These communities possess valuable traditional knowledge about the wetland's biodiversity. During discussions in 2024 on fish diversity trends, they identified 13 indigenous fish species, two of which (Kalwat and Raiya) have become locally extinct, while also noting the near extinction of white lilies and a decline in blue lotus populations.

Woman of Kewat, fisher community collecting water lilies from Yashwant Sagar



Lotus Valley on the banks of Yashwant Sagar supports tourism based livelihoods for local communities. © Satish Awate/CEE (GIZ)

Wetlands are multi-use areas, especially larger ones. For example, Yashwant Sagar also harbors 'Lotus Valley', a popular tourist attraction, drawing visitors who seek its tranquil beauty, photographers capturing scenic vistas, and families enjoying recreational outings. Thus, besides the fisher community, other stakeholders also include tourists,

citizens of Indore who depend on the wetland for water, farmers in the catchment area, and industries contributing to pollution. The ecological health of Yashwant Sagar is crucial to sustaining these diverse groups, highlighting the need for conservation efforts that require multi-stakeholder approaches.

Person from Dhobi community washing clothes at Karbala Stream near Sakhya Sagar



Dependencies on rivers and wetlands, Shivpuri © Satish Awate/CEE (GIZ)

Smaller water bodies and riverine wetlands, such as those along the Narmada River, also play significant roles in cultural and spiritual practices. These sites often host rituals like idol immersion during Ganesh Chaturthi and Durga Puja, as well as daily flower offerings, reflecting their importance to religious visitors and communities.

Urban citizens are increasingly concerned about the condition of wetlands, advocating for their conservation as essential environmental resources. The Upper and Lower Lakes in Bhopal, part of the Bhoj Wetland system, are focal points for such efforts, with citizen groups raising awareness about pollution and encroachment.

2.2.2

A GENDER LENS

Women's association with water management assumes different forms: from domestic provisioning and fetching of water and its use in household chores, directing wash water from utensils to a kitchen garden, to managing farm irrigation, to planting, harvesting and selling lilies for livelihood. Gender inclusivity acknowledges the different roles, knowledge systems, agency and contributions of men, women, and gender-diverse individuals in wetland

ecosystems while addressing structural inequalities that may limit participation. Various policies of the Government of India and the Ramsar Convention promote gender inclusivity (Ramsar Convention on Wetlands, 2018). Wetland conservation and management, including CEPA activities, must also adopt a gender-inclusive approach to ensure equitable benefits and effective outcomes.

The SWA and DWCCs will need to adopt a range of approaches to ensure gender inclusivity, including in training programmes, preparing management plans, developing programmes, decision-making forums, during implementation of these plans and programmes and ongoing management processes. Based on the guidance on mainstreaming gender under the Ramsar Convention, some key considerations for Gender Inclusivity in CEPA activities in Madhya Pradesh are as follows (Aguilar, 2021a):

- **Participatory Assessments Recognising Differential Impacts:** Men and women often experience the benefits and challenges of wetland ecosystems differently. Women may rely on wetlands for water, food, and medicinal plants, while men may be involved in fishing or large-scale agriculture. Conservation strategies must recognise these distinct dependencies. To understand these different realities, the following approaches are recommended

- Conduct gender-disaggregated assessments to understand the specific roles, needs, and challenges faced by men and women in wetland use and management.
- Engage women and marginalised groups in identifying conservation priorities.
- **Overcoming Barriers and Promoting Inclusive Governance:** Socio-cultural norms, unequal access to resources, and limited decision-making power often prevent women from participating fully in wetland governance. Overcoming these barriers is critical to inclusivity. This can be ensured by
 - Incorporating gender considerations into wetland management policies and action plans.
 - Promoting legal frameworks that protect women's rights to access and benefit from wetlands.
- **Ensuring Representation and Promote Women's Leadership:** Equal representation of men and women in decision-making bodies and community-level governance is essential to balance perspectives and priorities. This can be ensured through
 - Supporting women's leadership in wetland management committees and CEPA initiatives.
 - Highlighting role models and success stories of women in wetland conservation.
- **Recognising Gendered Knowledge:** Women often have extensive TEK, particularly in areas like plant use, water quality, and sustainable resource management. This knowledge is valuable for conservation planning. It can be utilized to
 - Develop gender-sensitive CEPA materials that address women's roles and contributions to wetland conservation.
- **Building Capacity:** Women may require additional training or resources to participate effectively in conservation programs, particularly in technical or scientific roles. Therefore it is required to provide
 - Provide training tailored to women, including technical skills, leadership, and entrepreneurship in wetland-related activities like ecotourism or sustainable fisheries.
- **Engaging Men as Allies**
 - Include men in gender-awareness training to foster shared responsibility and collaboration.
 - Address stereotypes and encourage equitable household and community roles in conservation.
- **Monitoring and Evaluation**
 - Use gender-sensitive indicators to track progress and measure the impact of wetland conservation initiatives on different genders.
 - Adapt programs based on feedback from diverse groups.

Women-led Solution for Waste Management and Conserving River

HelpUsGreen has addressed a centuries-old waste problem with a women-led solution that significantly benefits both the environment and the livelihoods of marginalised communities. In India, Nepal, and Bangladesh, the religious practice of showering flowers at temples and mosques results in annual disposal of 8 million tonnes of floral waste, contributing to the pollution of the Ganges River and threatening public health.

By pioneering its "flower-cycling" technology, HelpUsGreen collects 11.4 tonnes of this floral waste daily, employing women manual scavengers—historically among the lowest in the caste system. This initiative not only cleans the sacred Ganges but also empowers these women by providing stable employment, dignity, and social acceptance. The women convert the waste into hand-crafted organic fertilisers, natural incense, and biodegradable packaging, tapping into a market for eco-friendly alternatives. HelpUsGreen has established self-help groups, enabling women to control their earnings and achieve financial independence. As a result, many families have seen their incomes increase by six times, leading to better living conditions, access to healthcare, and even funding for girls' education—119 girls now attend school, a prospect previously unimaginable.

Despite facing challenges in scaling production to meet demand, HelpUsGreen's impact is profound: it changes the mindset about waste disposal, engages governmental interest, and elevates the status of women in their communities, illustrating a cohesive model where environmental sustainability and economic empowerment go hand in hand (Aguilar, 2021a).

Women Revive Ponds for Water Security in Bundelkhand

In Madhya Pradesh's drought-prone Bundelkhand, Ganga Rajput, a woman farmer from Chaudhary Khera village, has led women of her village to successfully revive ponds. Once a marginalized farmer, she was at the frontline of the revival of the centuries-old *Baba Talaab* built by the Chandela kings. *Baba Talaab* was once a source of water for the village, but later abandoned for nearly 40 years due to a prevailing superstition. "*The men were afraid to do anything because of the prevailing superstition but women showed a lot of courage*," Ganga recalls, referring to the prevailing story that a former village head lost his children after trying to restore it. As *Baba Talaab* and eventually hand pumps in the village dried up, the water crisis became severe. Women had to walk long distances to fetch the water.

With support from Parmarth Samaj Sevi Sansthan, a social organization led by Bundelkhand's waterman Sanjay Singh, Ganga mobilized 30 women to form a community collective called Jal Saheli (Women Friends of Water) in 2019. Initially, they faced resistance to reviving the pond, and to overcome it, they collectively performed rituals to appease the local deity. People who had been growing crops in the dry land of the *Baba Talaab* also opposed the revival of the talaab. As a part of the revival process, *Jal Sahelis* cleaned up the talaab area, removed silt, and built a check dam. In the monsoon season, water would collect in the talaab, recharging groundwater and providing irrigation. During rabbi season, water was released in the Bachheri river and then the talaab area was available for sowing. "*This year (2020) in the summer, there was no shortage of water*," Ganga expressed proudly. Farmers who once opposed the initiative now benefit by cultivating wheat on the pond bed.

Nearby in Agrotha village, 19-year-old Jal Saheli Babita Rajput led 200 women in digging a 350-foot channel to divert rainwater from a forested hill into their 70-acre pond. "*At first, people did not believe this would work. But we women said, if we don't try, nothing will change*," Babita said. Along with reviving the pond, the women planted 250 saplings to protect the forest and improve rainfall.

Parmarth Samaj Sevi Sansthan's Pani Panchayats have now trained *Jal Sahelis* in 27 villages, bringing both water security and social change. "*Men once felt it was insulting for women to step out. Now women sit in gram panchayat meetings and lead discussions on water management*," said Parmarth's Sanjay Singh (Niyogi, 2021).

2.3 MAJOR THREATS TO WETLANDS IN MADHYA PRADESH

The major threats to wetlands in Madhya Pradesh include:

- **Pollution**, primarily from inadequately treated domestic sewage and municipal solid waste. Depending on the surrounding land use, pollution also stems from untreated effluents from micro, small and medium industries, and urban and agricultural runoff.
- **Habitat destruction and degradation** due to encroachment and land conversion for construction, infrastructure development and agriculture.
- **Invasive Alien Species**, like various fish species like African catfish (*Clarias gariepinus*), Tilapia (*Oreochromis mossambicus*), Armoured Sucker Fish (*Hypostomus plecostomus*), Thai Mangur (*Clarias batrachus*), Grass carp (*Ctenopharyngodon idella*), Silver carp (*Hypophthalmichthys molitrix*), Chinese pomfret (*Piaractus brachipomus*), Water Hyacinth (*Eichhornia crassipes*), and Prosopis (*Prosopis juliflora*), Ipomoea (*Ipomoea carnea*) compete with native species, and alter the ecosystem processes.
- **Excessive use of water and groundwater** for irrigation and other purposes affects wetland hydrology, primarily in the north-western districts of Madhya Pradesh (CGWP 2022).

EPCO had conducted preliminary water tests of wetlands in Madhya Pradesh as part of wetland rejuvenation programme under MoEFCC. The water tests indicated that

- Most lakes, tanks, ponds etc. situated in urban areas are eutrophic, with a sharp decline in the availability of utilisable water. Though the situation is not as grave as

that in urban areas, there is an increase in sewage and wastewater from rural settlements flowing into adjoining water resources, making their condition quite poor, as witnessed in urban lakes.

- All the water bodies have common symptoms of sewage inflow, dumping of solid wastes, and encroachment in the fringe area, siltation, weed infestation and religious activities. It is, therefore, essential to conserve these important aquatic resources with appropriate conservation measures and promoting awareness activities.

The Wetland health cards of Madhya Pradesh, as presented on the Wetlands of India Portal, indicate that while the ecological landscape of the wetlands was still mostly preserved in terms of land use and hydrological connections, issues such as water pollution and the presence of invasive species persist. Overall, the findings highlight the importance of implementing effective pollution control measures, eradicating invasive species, and adopting integrated management plans for wetlands to ensure their long-term conservation. The major threats to Ramsar wetlands in Madhya Pradesh are as follows:

Ramsar site	District	Major threats to wetlands	
		At the site	Around the site
Bhoj Taalab (Upper & Lower lake)	Bhopal	• Inflow of sewage/waste (50.47 MLD in Upper lake and 31.63 MLD in Lower lake) • Bathing, washing clothes, vehicles • Growth of aquatic weeds • Trapa and Lotus cultivation • Unmanaged fishery • Boating • Immersion idols • Siltation: Annual siltation of 1-2.6 cm and sedimentation rate of 367 m³/km² • Reduction of Storage Capacity and Water spread	• Encroachment in the catchment area and slum expansion • Unmanaged tourism • Agriculture runoff: Intensive use of fertilizers and pesticides • Unmanaged grazing of cattle • Dumping of solid waste
Sakhya Sagar	Shivpuri	• Inflow of sewage/waste • Boating • Growth of aquatic weeds: Prolific growth of water hyacinth • Change in temperature and precipitation impacting wetland hydrology, vegetation and fauna	• Unmanaged tourism • Agriculture runoff: Intensive use of fertilizers and pesticides • Dumping of solid waste • Water abstraction • Bathing, washing clothes, vehicles, dumping of solid wastes
Sirpur Lake	Indore	• Inflow of sewage/waste • Boating • Growth of aquatic weeds • Unmanaged fishery • Change in temperature and precipitation impacting wetland hydrology, vegetation and fauna	• Encroachment in the catchment area • Unmanaged tourism • Agriculture runoff: Intensive use of fertilizers and pesticides • Dumping of solid waste • Water abstraction

Tawa Reservoir	Narmadapuram	• Unmanaged tourism • Unmanaged fishery and aquaculture • Growth of aquatic weeds • Change in temperature and precipitation impacting wetland hydrology, vegetation and fauna	• Unmanaged tourism • Water abstraction • Agriculture runoff: Intensive use of fertilizers and pesticides • Unmanaged grazing of cattle
Yashawant Sagar	Indore	• Inflow of household, urban sewage/waste • Growth of aquatic weeds • Unmanaged fishery and aquaculture • Boating, tourism • Siltation	• Encroachment in the catchment area and near shoreline • Unmanaged tourism • Agriculture runoff: Intensive use of fertilizers and pesticides • Unmanaged grazing of cattle • Dumping of solid waste • Water abstraction

Water Hyacinth Infestation in Sakhya Sagar, Shivpuri in Year 2023



Water Hyacinth Infestation, Shivpuri © Satish Awate/CEE (GIZ)

Road construction near the Shoreline of the Bhoj Talab, Bhopal



Prohibited Activities near Wetland, Bhopal © Navneet Wadkar/CEE (GIZ)

2.4 CONSULTATIONS AND PILOT EVENTS

To start the consultation process, a list of stakeholders—including government officials, academicians, NGO and CSO members, and citizen groups from Indore, Bhopal, and Shivpuri—was obtained from the State Wetland Authority (SWA), Bhopal. A series of in-person and online meetings were held with stakeholders to discuss wetland threats, opportunities for citizen engagement in conservation and wise use of wetlands. Field visits were carried out across the three locations to gather ground-level insights. In Bhopal, the team visited Bisankhedi, Itkhedi, Khajuri, and Mungalia Chap villages in the Bhoj Wetland catchment to meet farmers, fishers, villagers, and Wetland Mitras. In Indore, visits were made to Sirpur Lake and the villages of Fulkaradiya, Gurdakhedi, and Gulawat (Lotus Valley)

around Yashwant Sagar, including interactions with the Kewat fisher community and women's groups engaged in tourism activities. In Shivpuri, the team joined a Citizens' Dialogue organized by SPA and SWA and interacted with officials, NGO representatives, and citizen groups, as well as visited Jadhav Sagar, the Material Recovery Facility (MRF), a zero-waste residential area and school, fishers in Kota village, and members of the Dhobi community. The detailed list of participants has been attached in the *Appendix 2*. Four pilot initiatives were conducted at Ramsar sites focusing on different community groups: fishers and tourism-linked villagers at Yashwant Sagar, farmers in the Bhoj Wetland catchment, school and college teachers, and representatives of departments in the District Wetland Conservation Committee (DWCC) in Shivpuri. The information about the pilot sites have been provided in the *Appendix 3*. Details of the pilots events are as follows:

Yashwant Sagar, Indore Pilot Event

The details of the pilot event conducted at the Yashwant Sagar are as follows:

Number of days	Number of unique participants
2	137
Target Groups	Number of resource persons
Fisher Community in 9 villages viz. Badarkha, Badi Kalmer, Fulkaradiya, Gulawat, Gurdakhedi, Hatod, Jamudi Sarwar, Mirzapur, Reshamkendra Khajuriya	10
Activities	Methods
Creating a timeline of the wetland	Participants recall and record on a chart
Ecosystem benefits and trends in benefits	Station round
Identification of values and cases of valuation of ecosystem benefits	Presentation and discussions
List threats to wetlands and connections to people	Discussion
List and prioritizing threats	Station round
Regulatory framework for wetlands in Madhya Pradesh	Presentation followed by a discussion on citizen's experience
Experiences from Maharashtra by community woman and Foundation for Economic and Ecological Development	Film screening and presentation on approach, challenges and achievements
Ecosystem functioning and interrelationships	Web of Life Activity
Wetland water sample testing	Demonstration and presentation

Fulkaradiya Pumping Station Village near Yashawant Sagar, Indore



Fulkaradiya Village, Indore © Navneet Wadkar/CEE (GIZ)

Bhoj Talaab, Bhopal Pilot Event

The details of the pilot event conducted at the Bhoj Talaab are as follows:

Number of days	Number of unique participants
3	140
Target Groups	Number of resource persons
Farmer community in 26 villages viz. Amala, Aume, Badjhiri, Bilkin Ganj, Chote Zagariya, Dehariya, Dhamkundi, Haridwar, Himotia Mahalpur, Huvdi, Itarasi, Jhagariya Khurd, Kadiya, Khurchani, Mandla, Mugliya Chap, Narel, Narmada Puram, Palasi, Ramarpedhi, Saplet, Sarvar, Semri, Somaltal, Teelakhedi	10

Activities	Methods
Farmers Lab: Trichoderma-based input production	Lab establishment and hands-on training and demonstration
Food diversity changes over generations	What's in my plate exercise and its presentation
Timeline of agriculture	Focused Group Discussions (FGDs) and presentation
Wetland conservation and agriculture	Presentation and discussion
Importance of organic farming	Presentation and discussion
Understanding Soil Microbiome and Trichoderma: Significance and how it works	Presentation
Sarus & Farmers: Experiences and Way Forward	Film screening and presentation
Understanding agriculture production system	Station round

Bhoj Talaab Shoreline near Bisankhedi Village



Bhoj Talaab Shoreline, Bhopal © Navneet Wadkar/CEE (GIZ)

Sakhya Sagar, Shivpuri Pilot Events

The details of the pilot event conducted with school teacher at the Sakhya Sagar are as follows:

Number of days	Number of unique participants
2	50
Target Groups	Number of resource persons
School teachers of EEP of 1 town and 14 villages viz. Bhatanwada, Bhangarh, Bhundibora, Dholagar, Gopalpur, Kalathar, Karmangala, Khaurghat, Parichchca, Pohari, Seesai Sadak, Shivpuri, Surwaya, Tanpur, Wilokala	8

Activities	Methods
Biodiversity mapping and lake walk	Experience and observe the ecosystem, focusing on biodiversity, water and other aspects, using observation sheets as an aid
Wetland ecosystem and Ramsar designation	Presentation and discussion
Role of CEPA strategy and formal education in wetland conservation	Presentations and review of observation sheets, and audit sheets formats/ activities and note suggestions
Identify threats and discuss the roles of various departments	Group discussion, listing on the poster
Understand influence zones, sources of pollution and management	Guided tour to key drainage points, washerman site, MRF and Sewage Treatment Plant (STP)
Pilot test audit and observation formats (water, waste, biodiversity, electricity)	Visit to school and actual audit
CEPA approaches for students and outlining draft activity manual prepared through EEP	Participants listing and prioritization of activities helpful to develop EEP activity manual
Discussion on structured involvement of EEP, District Institutes of Education and Training (DIET), NSS & Wetland Mitra and concluding session	Presentation and discussion

The details of the pilot event conducted with DWCC Line Departments Govt. Officials at the Sakhya Sagar are as follows:

Number of days	(UADD), WRD,
2	
Target Groups	Number of unique participants
DWCC – Government officials; 14 departments PRO, Education, Agriculture, Land record, PHE, Horticulture, Forest, Executive Engineer-Nagar Palika, Fisheries, PWD, SWA, Urban Administration and Development Department	26
	Number of resource persons
	7

Activities	Methods
Our Connection with Wetlands	Experience sharing on 'My Personal connection'
An Introduction to Sakhya Sagar and Ramsar Designation	Presentation and discussion
Exploring Departmental Connections, Benefits & Roles with wetlands	Listing and presentation on the poster
Role & functioning of DWCC, mandates, Boundaries	Quiz and 'put chit in the box' activity
Need and Opportunities for Citizen Engagement	Prepare a matrix of opportunities for engagement by departments individually and with other depts.
Approaches for Effective Engagement; Choosing Appropriate Media	Presentation
Department-wise action plans on prioritized CEPA opportunities	Preparation and presentation of plans

Madhav National Park and Sakhya Sagar, Shivpuri



Madhav National Park and Sakhya Sagar, Shivpuri © Satish Awate/CEE (GIZ)

2.5 STAKEHOLDER MAPPING BASED ON THREATS & STRATEGY

The previous sections have presented a brief history of the changing patterns of governance, dependencies and condition of wetlands in Madhya Pradesh. Considering the

main threats to wetlands in different parts of the state, the following table presents the related enablers and other stakeholders and the role of CEPA is addressing the issues.

Threat	Enablers	Other stakeholders	Role of CEPA	Current Initiatives of SWA
Availability of boundary demarcation & notification	Land Records Department, District Collector, SWA	WRD, ULBs, Rural Development Department, Forest Department	Public participation in defining, accepting and maintaining wetland boundaries.	Training of more than 5000 frontline staff from the Revenue and Forest Departments has been conducted on wetland boundary demarcation and ground-truthed procedures. In compliance with the directions of the Hon'ble Supreme Court, around 13,565 wetlands across the State have been ground-truthed and boundary demarcated in close coordination with the Revenue, Forest, and District Administration departments. The formal notification of 10 Wetlands under the Wetlands (Conservation & Management) Rules, 2017 is under process.
Expansion of agriculture into wetland areas	SWA, Revenue Department, Agriculture Department	WRD, Municipal Corporations, Gram Panchayats, Farmers	Communication about wetland health and benefits, impact of encroachment, boundaries, permissible/regulated/prohibited activities and penalties; Support communication, capacity building and participation in regenerative agriculture practices & alternatives such as eco-tourism & value-addition	Agriculture activities are regulated activities and Implementation of Wetlands (Conservation and Management) Rules, 2017 to monitor conversion of wetland areas for cultivation. The Madhya Pradesh State Wetland Authority has engaged the services of Madhya Pradesh State Electronics Development Corporation to develop a Remote Sensing and AI-enabled monitoring system for all Ramsar Sites, including the Bhoj Wetland.

Threat	Enablers	Other stakeholders	Role of CEPA	Current Initiatives of SWA
Building construction and Infrastructure development	Town & Country Planning Department, District Collector, Municipal Commissioner, CEO of Zilla Panchayat, ULBs, SWA	Revenue Department, Forest Department, Municipal Corporations, Land Records Department, Tourism Department	Communication about wetland health and benefits, impact of encroachment, boundaries, permissible/regulated/prohibited activities and penalties	Enforce restriction on construction within the notified wetland, 50 meter from FTL and its Zone of influence (ZOI) as per the Wetlands (Conservation and Management) Rules, 2017 and GoMP administrative order dated 16.03.2022 to identified Prohibited, regulated & Permitted activities. Coordination among Urban Development, Bhopal Municipal Corporation, District Collector, Revenue, and Environment Departments for monitoring and regulation. Awareness and stakeholder engagement to sensitize local authorities, and communities on the ecological importance of wetlands.
Invasive Alien Species	Madhya Pradesh State Biodiversity Board (MPSBB), Fisheries Department, Forest Department SWA	Agriculture Department, Horticulture Department, Zoological Survey of India (ZSI), Botanical Survey of India (BSI)	Communication on Invasive & Alien Species, their origins and hazards; Capacity Building in quarantine, biosafety, identification, and management of invasive alien species; Citizen engagement on avoiding sewage discharge in wetlands leading to spread of invasive alien species like Water Hyacinth; Communication and participation for removal of invasive alien species; Capacity building for quality Fishery Seed production and access; Education and capacity building in plantation and eco-restoration	The expert services of Zoological Survey of India (ZSI) has been engaged documents faunal diversity, while the Botanical Survey of India (BSI) has been requested to carry out documentation of floral diversity in the Ramsar sites wetlands. These studies aim to generate a comprehensive understanding of wetland biodiversity and ecosystem services. Based on the findings, the Zoological Survey of India (ZSI) and the Botanical Survey of India (BSI) are expected to propose appropriate conservation and management plans for the control and management of Invasive Alien Species in Ramsar sites wetlands.

Threat	Enablers	Other stakeholders	Role of CEPA	Current Initiatives of SWA
			programme combining community knowledge and modern scientific tools; CEPA on gardening, aquarium and invasive alien species involving both public and providers/enterprises: Using the People's Biodiversity Register (PBR) process to document and create awareness on and management of invasive alien species.	
Industrial effluents	Madhya Pradesh Pollution Control Board (MPPCB), SWA	Madhya Pradesh Industrial Development Corporation, Federation of Indian Chambers of Commerce and Industry (FICCI), Corporate India Wetland Coalition	Communication about wetland health and benefits, impact of pollution, boundaries, permissible/regulated/prohibited activities and penalties; Exhibitions, training to MPPCB, industries and service providers on identification of pollutants, best practices and technologies for modification of industrial processes, solid and liquid waste, effluent treatment and management; Training to MPPCB on innovations in pollution monitoring and water testing reports of wetlands, information dissemination, timely communication of alerts, and enforcement methods; Orientation of MPPCB to develop CEPA programmes for public participation in Environmental Quality Management (EQM).	Strict enforcement of Wetlands (Conservation and Management) Rules, 2017 and Water (Prevention and Control of Pollution) Act, 1974 to prevent discharge of effluents into wetlands. Regular monitoring of effluent discharge points by the State Pollution Control Board (SPCB). Periodic water quality assessment by State Pollution Control Board (SPCB) of identified wetlands.

Threat	Enablers	Other stakeholders	Role of CEPA	Current Initiatives of SWA
Micro-plastics Pollution	SWA, UA&H Deptt, Env't. Deptt, MPPCB, CPCB, MPSWA	ULBs, CPCB, MPPCB, EPCO, MPSWA, AIIMS, Universities, Fisheries Department	Awareness and communication about micro-plastic sources, impacts on wetlands, and sustainable alternatives; Community-led monitoring, clean-up drives, and involving local groups, fishers, and industries in reducing micro-plastic pollution;	
Agriculture runoff	MPPCB, SWA	Agriculture Department, Fisheries Department, WRD, Fertilizer & Pesticide Manufacturers, Farmer Producer Organizations (FPOs)	Communication on impacts of agricultural runoff on wetland health and its impacts on humans and wildlife; Communication on the precision application of agricultural inputs; Education and Capacity Building on cluster-based Organic) Inputs production techniques, application protocols and local enterprise development for value-added products, supply chain and marketing, and relevant Department/ Schemes to receive financial and technical support for the same.	Under the National Plan for Conservation of Aquatic Ecosystems (NPCA) scheme, the Municipal Corporation, Bhopal is preparing an Integrated Management Plan that incorporates measures for the control of agricultural runoff in the Bhoj Wetland.
Untreated sewage	MPPCB, Municipal Corporations/C EO of Zilla Panchayat, SWA	PHE Department, WRD, Technical support agencies, e.g, Bremen Overseas Research and Development Association (BORDA), GIZ	Policy briefings on sewage and septage management and preparation of a state policy with a participatory approach engaging all stakeholders; Training for PHE Department staff on nature-based solutions, faecal sludge management, and Decentralized Wastewater Treatment Systems (DEWATS) and Detailed Project Report (DPR) preparation	Strict enforcement of the Wetlands (Conservation and Management) Rules, 2017, and relevant municipal sewage regulations is required to ensure that the discharge of sewage into wetlands with an area greater than 2.25 ha is strictly prohibited. Regular monitoring of sewage inflow points by State Pollution Control Board (SPCB).

Threat	Enablers	Other stakeholders	Role of CEPA	Current Initiatives of SWA
Domestic waste	MPPCB, Municipal Corporation/ CEO of Zilla Panchayat, SWA	SWM and Health department and functionaries of Municipal Corporations, Councils and Panchayats, Public Work Department to setup robust systems for Construction & Domestic waste, e-waste, and biomedical waste management as per the Environment Protection Act and rules for different categories of waste	Training for relevant depts and functionaries about Solid Waste Management (SWM) Rules 2024 and best practices in setting up or strengthening waste management systems for all categories of waste (domestic, construction and demolition waste, plastic wastes, biomedical waste from different categories of generators including homes, e-waste etc.) with the approach of waste reduction, decentralised, source segregation and other guidelines and hierarchies of Swachh Bharat Mission (SBM); Training on effective public outreach, preparing Request for Proposals (RFPs) and monitoring public outreach by contracted agencies and service providers.	As per Rule 4(2) of the Wetlands (Conservation and Management) Rules, 2017, the disposal of solid waste, e-waste, and biomedical waste including domestic waste into wetlands with an area greater than 2.25 ha is strictly prohibited.
Unregulated tourism and cultural events/mega events	MPPCB, Forest Department, Gram Panchayat, Municipal Corporation, SWA	Tourism Department, Eco-tourism Board & Private Tour Operators	Policy framing and promoting responsible tourism and large cultural events at wetlands; Training & skill development on responsible tourism on concept, planning & infrastructure, waste management, mobility, eco-friendly products & services, interdepartmental convergence & equitable benefit sharing Integrating CEPA for tourists in the tourism infrastructure and management activities.	Implementing strict waste management and sanitation measures during events by local bodies. Organizing Awareness campaigns for tourists, event organizers, and local communities on wetland conservation. Enforce permission system for events with conditions to minimize ecological impact by local administration. Regular monitoring and enforcement by local authorities to prevent unauthorized activities.

Threat	Enablers	Other stakeholders	Role of CEPA	Current Initiatives of SWA
Over-extraction of water and groundwater	WRD, Central Ground Water Board (CGWB)	Agriculture Department, Gram Panchayat, Municipal Councils & Corporations, Water and Land Management Institute (WALMI)	Communication and training regarding the status of groundwater using the CGWB and state reports, methods and schemes for groundwater and aquifer mapping, recharge, water-efficient cropping, especially in over-exploited, critical and semi-critical blocks¹; Capacity building for aquifer mapping and management; Participatory process towards formulating Groundwater Policy and Act for regulation, wise-use, and conservation of groundwater.	Water extraction is a regulatory activity. Ministry of Jal Shakti (department of water resources, river development and Ganga rejuvenation) (Central ground water authority) issued guidelines to regulate and control ground water extraction in India notification 24th September, 2020.
Public Information	SWA & DWCC	Public Relations Officer (PRO) and Relevant Departments	Mass communication on wetland and climate regulation Dos and Don'ts; Inspiration stories of community participation in wetland conservation; Responsible consumption of products and services linked to wetland conservation.	The Environment Department, Government of Madhya Pradesh, constituted District Wetland Conservation Committees (DWCCs) in all districts in the year 2022 under the chairmanship of the respective District Collectors. These committees have been established to organize awareness and outreach programmes at the district level and to facilitate the redressal of wetland-related grievances for ensuring effective resolution. Madhya Pradesh State Wetland Authority (MPSWA) has organized various state-level events such as World Wetland Day, World Environment Day, Swatchta Pakhwada and "Ek Ped Maa Ke Naam" and other related public engagement programmes. Additionally, more than 3,000 Wetland Mitras have been registered across Madhya Pradesh.

¹Indore, Mandsaur, Narmada, Ratlam, Shajapur, Ujjain, Barwani, Bhopal, Dewas, Niwari, Rajgarh, Tikamgarh, Agar Malwa

2.6

STAKEHOLDERS FOR WETLAND CONSERVATION

Stakeholders were identified and categorized based on their level of influence, interest, and direct interaction with wetlands. Such categorization helps guide engagement and conservation strategies effectively. Steps followed for prioritization are as follows:

Step 1: Stakeholder Mapping

Initially, a comprehensive list was developed to identify all individuals, groups, and institutions connected to wetland ecosystems based on their dependence, influence, or potential impact on conservation. These stakeholders included

- Citizens (urban and rural communities), tourists
- Schools (teachers and children)
- Higher education institutes and youth groups, Wetland Mitra
- Relevant government departments (agriculture, fisheries, forestry, water resources, education, tourism)
- City planners
- Industrial representatives
- Farmers
- Fishing communities
- Tourism operators and enterprises

To validate and expand the initial list, the CEE team conducted site visits to four Ramsar wetland sites in Bhopal, Indore, and Shivpuri. Consultations were held with local communities, fisher groups, farmers, municipal authorities, and key officials from departments such as forestry and agriculture. The key insights gathered were as follows:

Ecological and Biodiversity Insights

- The Bhoj and Sirpur wetlands host diverse aquatic flora and fauna. However, invasive species like water hyacinth pose a significant threat.
- Biodiversity, including Sarus cranes and local fish species, faces threats from pollution and habitat degradation.

Community Connection

- Fisher and farming communities are vital stakeholders but often lack access to modern infrastructure, financial resources, and knowledge for sustainable wetland use.
- Citizen forums and initiatives like Wetland Mitras show potential but require structured support and training.
- Youth engagement remains limited due to a lack of awareness and employment opportunities.
- Local communities, especially fisher communities hold valuable knowledge about biodiversity and ecological health of wetlands; which is in need of recognition, scientific documentation and integration in conservation processes.

Institutional Insights

- The SWA has developed a comprehensive digital inventory but faces constraints in human and financial resources.
- Technical and grievance committees for wetlands exist but suffer from inconsistent stakeholder participation.
- Indore's success in urban groundwater recharge through collective efforts presents a replicable model.

Challenges Identified

- Urban expansion, untreated sewage discharge, and unsustainable tourism practices contribute to wetland degradation.
- Academic institutions and local authorities face financial constraints for research and conservation initiatives.
- Encroachment and infrastructure development threaten catchment areas and lead to habitat loss.
- Poor coordination among administrative authorities hampers effective conservation efforts.

Recommendations for Conservation Strategies

- Strengthen District DWCCs and enhance capacity building for administrative staff.
- Develop IMP for wetlands involving local communities and academic institutions.
- Launch citizen science initiatives and biodiversity awareness programs targeting schools and communities.

- Encourage sustainable tourism practices, including waste management systems and training for boat operators.
- Promote alternative livelihoods and organic farming near wetland areas to mitigate pollution risks.

These insights formed the foundation for a structured stakeholder analysis.

Stakeholder Categories

- High dependence, High Interest in Conservation
- High Dependence, Low Interest in Conservation
- Low Dependence, High Interest in Conservation
- Low Dependence, Low Interest in Conservation

Step 2: Stakeholder Analysis and Prioritization

An adapted Eisenhower Matrix was employed to evaluate stakeholders based on stakes & dependence, and their interest in conservation efforts.

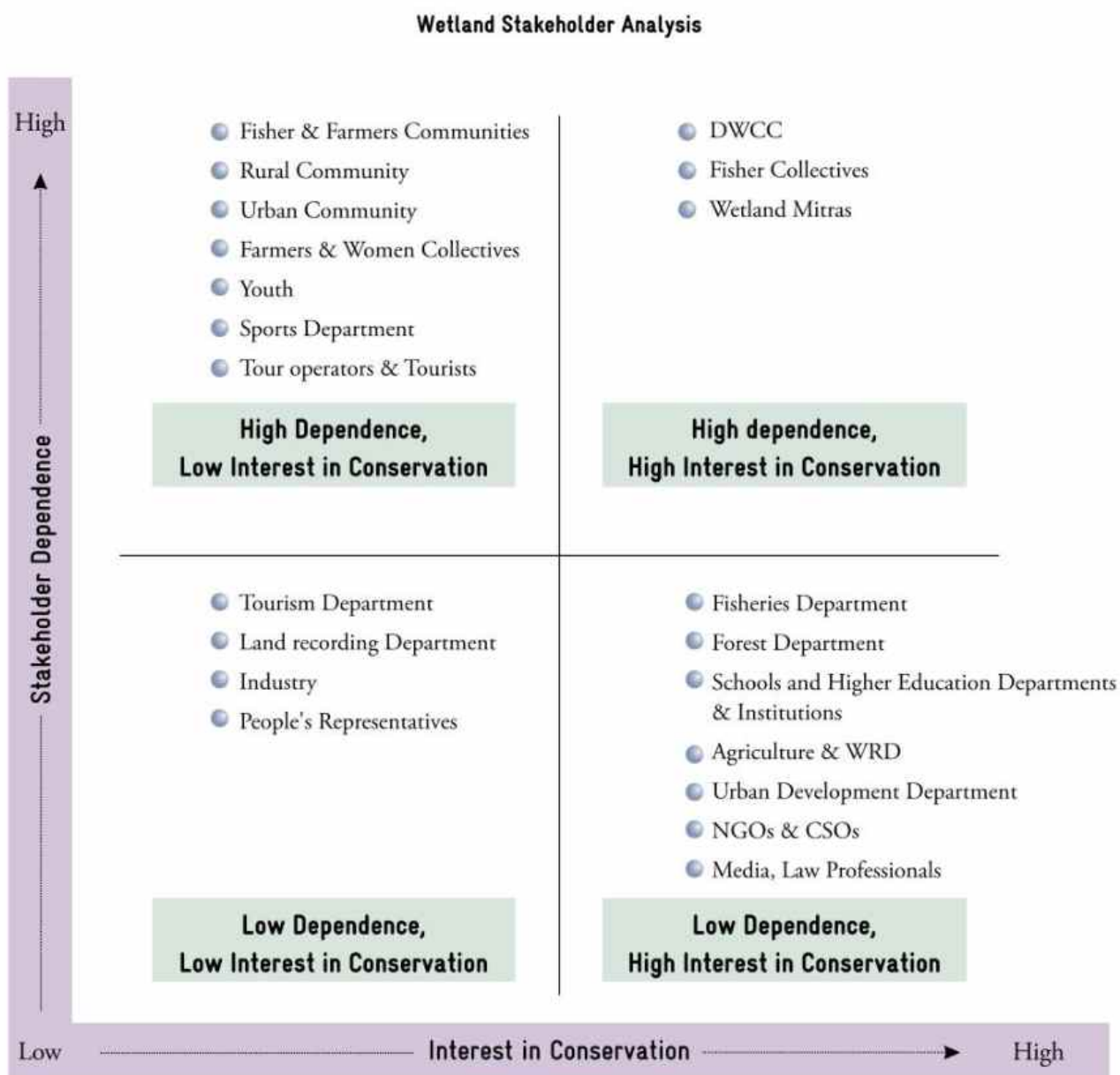


Figure 6: Wetland Stakeholder Analysis

2.7 Integrated Management Plan (IMP) for Districts

The Wetlands (Conservation and Management) Rules, 2017, and the NPCA promote integrated wetland management based on conservation and wise use. The 2019 NPCA Guidelines outline the format for preparing an IMP, which details wetland features, ecosystem services, governance, stakeholders, and a strategic action and monitoring plan. A national workshop was organised jointly by the MoEFCC, GIZ and EPCO with participation from several State Wetland Authorities and Knowledge Partners in Bhopal in the year 2023 to develop a two-step IMP preparation format with the introduction

of the Framework Management Plan approach. The IMP process adopted the approach and IMP proposals focus on structure, requirements, timeline, etc. As per the scope provided by NPCA, only site specific IMPs can be developed and district level IMPs are not allowed. It leads to unequal focus and utilization of resources on important wetlands while ignoring the vast majority of other wetlands in various districts of the state. There is a need to develop both state level and district level IMPs to address this concern while Ramsar and other significant sites can have exclusive site focussed IMPs. Towards this, DWCCs need to be strengthened and activated with adequate resources to engage with different stakeholders and external experts as per need to design and implement IMPs.



3

CEPA STRATEGY

The vision of the Ramsar Convention on Wetlands' Programme on CEPA is to 'Prevent, stop and reverse the degradation of wetlands and use them wisely' and the overarching Goal is 'People taking action for the wise use of wetlands'. These also underpin the proposed strategy for Madhya Pradesh. The government policy and legislation for wetlands conservation is already laid out. CEPA activities support the state and district government in designing targeted awareness campaigns, education and training programmes and people's participation through informing the public about the values and ecosystem services provided by wetlands, engaging them in conservation efforts and promoting wise use of wetlands.

It is imperative to understand gender as a critical lens for both, understanding roles and impacts linked to wetland conservation and designing strategy and activities. The SWA and DWCCs will need to adopt a range of approaches to ensure gender inclusivity, including in training programmes, preparing management plans, developing programmes, decision-making forums, during implementation of these plans and programmes and ongoing management processes. Based on the guidance on mainstreaming gender under the Ramsar Convention, some key considerations for Gender Inclusivity in CEPA activities such as participatory assessment, promotion of inclusive governance, ensuring representation and promoting leadership, recognizing women's traditional ecological knowledge, capacity building on wetland dependent livelihoods and inclusion of gender sensitive indicators in monitoring and evaluation framework mentioned in earlier chapter are also applicable in Madhya Pradesh (Aguilar, 2021a).

3.1 SHORT-TERM OBJECTIVES

To develop an overall state-level CEPA strategy for wetland conservation, management and wise use targeted for different stakeholders, government officials of different departments and at different levels and locations.

To complement strategies and activities of site specific IMPs developed for wetland conservation in Madhya Pradesh.

To initiate development of a system with dedicated human resources, fund allocation for CEPA activities for conservation of wetlands.

3.2 MEDIUM-TERM OBJECTIVES

- To integrate CEPA components in existing government schemes and programmes directly or indirectly related to wetland conservation.
- To provide guiding CEPA tools, techniques, approaches and strategies for government officials of various departments at various levels.

3.3 LONG-TERM OBJECTIVE

- To provide a dedicated framework and guiding document to support efforts for wetland conservation and wise use, that integrate new strategies and approaches of communication, capacity building, education and participation in existing government programmes, schemes and IMPs in Madhya Pradesh.

3.4 SUGGESTED CEPA STRATEGIES FOR PRIORITIZED GROUPS

3.4.1

PRIORITIZED GROUP: FISHER COMMUNITY

Rationale

Fishing communities' livelihoods directly depend on the health of wetlands. They are among the most vulnerable and dependent communities, often negatively affected by wetland degradation. However, they can also contribute to challenges such as overfishing and introducing exotic and invasive species, leading to unintended consequences. Despite this, they possess valuable traditional and experiential knowledge about wetland ecology. Across the country, these communities have demonstrated their effectiveness as stewards of wetland conservation when empowered with rights, mandates, and the necessary capacities for sustainable use.

Role in Wetland Management & Conservation

Fishing communities play a direct & proximal role in wetland management and conservation. They can actively participate in monitoring fish species, populations, aquatic flora, and bird diversity, contributing valuable insights. Fisher collectives in collaboration with schools or colleges can help in periodic water quality testing. Restoration activities should be guided by site-specific plans, including the removal of invasive plant species like *Ipomoea* sp. or

exotic fish species, and the reintroduction of native flora by blending community wisdom with scientific expertise.

Fisher Community: Knowledge, Attitude and Practices (KAP)

- The Fisher Community has deep knowledge of wetland biodiversity, resource use, and seasonal patterns, offering valuable insights for conservation. They value wetlands for livelihoods and food security, willing to adopt conservation practices aligned with their livelihood, and respect traditional knowledge and community leaders. Youth are aware of the need for education and technical skills. They follow traditional, seasonally adapted fishing and resource management methods, engage in low-level farming during summer. They are adopting government promoted systems like IMC based cage culture and show interest in collective management of wetlands and sustainable livelihood opportunities.

Gaps identified in KAP

The community lacks formal involvement in developing and updating PBRs and has limited participation in conservation and sustainable use planning. Awareness and access to scholarships, schemes, and affirmative action opportunities are inadequate. Documentation and record-keeping of wetland-based activities are weak, and women's participation in Fishing Collectives remains underutilized. The community needs support to create educational and creative materials to preserve traditional knowledge and promote pride in their experience. Awareness of laws, sustainable fishing techniques, and waste management in tourism is limited. There is also a lack of periodic dialogues with authorities, weak systems for collectivization, and limited focus on branding sustainable products and services. For detail KAP analysis refer to *Appendix 4*.

Suggested Activities for Fisher Community

- Below are suggested activities for fishing communities. These suggested initiatives will empower them as key stakeholders in wetland conservation. It will help to promote sustainable practices, facilitate knowledge sharing, and ensure long-term ecological and livelihood benefits for the community.

Activity District and State level review of status of wetlands in PBRs	Frequency and Scale Once in 10 years State level for all districts (2% sample of PBRs prepared for villages in proximity of 13566 wetlands, that is about 300 PBRs). Engaging district level experts for review of PBRs and finalization in a state level stakeholder workshop
Who Involves MPSBB	
Who Coordinate SWA	Indicative Cost and Existing Schemes 30,00,000
Work Anchoring MPSBB	

Activity Development /update of PBRs with wetland focus where Fisher Community is able to contribute their knowledge and practices, sharing and contestations related to wetland resources, its biodiversity, uses, dependencies, threats and population trends. As part of this process, also prepare 1. A timeline of significant events, changes to wetlands and community associations with wetlands and 2. Undertake Studies on non-fish wetland food resources, their availability and sustainable use.	Work Anchoring Mandatory work under Biological Diversity Act 2002, technically and financially supported by MPSBB. Alternatively there could be a special project on Paramparagat Matsya Gyan (PMG) by the Fisheries Department for this process with Fisher Communities across the state.
Who Involves MPSBB in collaboration with Wetland Managers and NGOs with requisite skills to facilitate quality PBR processes	Frequency and Scale Once in 10 years. Reviews at district and state level, while PBR updation process at local level. There are 2,232,822 persons involved in fisheries activities in Madhya Pradesh (PIB 25.3.2022)
Who Coordinate DWCC	Indicative Cost and Existing Schemes 10,00,000 Initially for 5 Ramsar sites and 5 other large wetlands in Madhya Pradesh totalling 10 wetlands (1 lakh per site)

Activity Use participatory approaches to develop and implement IMPs of selected wetlands in each district of the state in convergence with existing schemes for wetlands, Jalshakti and Swachh Bharat with Fisher as a priority steward group along with other citizen groups.	Work Anchoring SWA
Who Involves Wetland Managers and NGOs	Frequency and Scale Once in 5 years. District Level Planning with bottoms up participatory planning using inputs from PBRs.
Who Coordinate DWCC	Indicative Cost and Existing Schemes 34,50,000 5 Ramsar Sites and 18 large wetlands (5% of >100 ha wetlands), totalling 23 wetlands; Rs 1,50,000 per site

Activity

Creating murals at community centres depicting local history and biodiversity of wetland involving local artists preferably from within the community, using local art forms/styles

Who Involves

Gram Panchayat

Who Coordinate

DWCC

Work Anchoring

SWA for pilots and communication material development with the help of Regional Museum of Natural History (RMNH), Department of Culture and Adivasi Lok Kala Academy

Frequency and Scale

Once in a generation.

Local

Indicative Cost and Existing Schemes

10,00,000 for pilots and developing communication material. (10,000 per Gram Panchayat.)

From village development grants

Activity

Developing a range of learning & remembrance materials such as story books, painting books, and calendars, using local stories, traditional & experiential knowledge, and practices associated with wetlands.

Who Involves

SWA

Who Coordinate

SWA

Work Anchoring

Tribal Museum, RMNH, Department of Culture and Fishery Department, Social Justice Department

Frequency and Scale

Over 5 years.

State level, ideally organized culturally distinct region wise such as Gondwana, Bhil region, Malwa, Baghelkhand, Bundelkhand, Nimad and such.

Indicative Cost and Existing Schemes

50,00,000

Activity

Special scholarships/schemes to promote participation of Fisher Community youth (gender inclusive) in Fishery Sciences, Limnology and allied higher education streams.

Who Involves

Education Department

Who Coordinate

SWA & Social Justice Department

Work Anchoring

Social Justice Department Special Scholarship Programme covering 8th to 12th Standard and Graduation Level.

Frequency and Scale

Over 10 years.

Spread across state, for all traditional fishing communities

Indicative Cost and Existing Schemes

This recommendation is a suggestion to Social Justice Department and budget for this activity can be formulated based on available funds with the department

Activity

Develop and disseminate multimedia case stories on the importance of and promoting the participation of women in Fishing Collectives as well as in community leadership roles. Organize annual award functions in recognition of women leaders.

Who Involves

Fisheries Department

Who Coordinate

SWA

Work Anchoring

Women in Wetland Management programme by SWA

Frequency and Scale

Annual.

District and State Level

Indicative Cost and Existing Schemes

37,50,000

(Rs.50000 per district and Rs.10,00,000 for state level recognition)

Activity

Create a Repository of CEPA products for

1. Communities to understand the wetland ecosystem and its functioning, legal provisions around wetland conservation for periodic dialogue by responsible authorities on updating legal provisions and address community concerns, especially through participatory, scientific and socially just interpretation of 'Wise Use' of wetlands.
2. Impacts of livelihoods on wetlands such as:
 - a. Fishing - introduction of invasive species, techniques, and seasonal limits/bans, use of motorboats for monitoring purposes, fishing and other purposes such as tourism.
 - b. Agriculture in the low tank level during the summer season for its potential negative impact from the use of synthetic fertilizers and pesticides and promoting organic practices.

Who Involves

Wetland Managers, DWCC and Fisheries Department.

Who Coordinate

SWA

Work Anchoring

CEPA project

Frequency and Scale

5 years.

State Level Development of CEPA resources supporting local processes

Indicative Cost and Existing Schemes

50,00,000

Lump sum towards research, and design development.

3.4.2**PRIORITIZED GROUP: FARMER COMMUNITY****Rationale**

Farmers, particularly those who are small and marginal, significantly rely on wetlands for irrigation, making them essential stakeholders in wetland conservation. Wetlands provide crucial resources such as grasses and other fodder species vital for sustaining livestock, including buffaloes, cattle, and sheep. However, their farming practices can influence the ecological health of these wetlands, especially with synthetic fertilizers, herbicides, and pesticides. The dependence of farming communities on wetlands underscores their pivotal role. Farmers face key threats such as land use changes, encroachment, and wetland degradation. Thus, they are critical players in both its preservation and rehabilitation.

Role in Wetland Management & Conservation

Farmers are vital stakeholders in the conservation and management of wetlands due to their direct reliance on these ecosystems and their potential to influence practices that promote ecological health.

- **Regulation of Water Use:** Farmers can implement sustainable practices to optimize water use for irrigation, contributing to the maintenance of wetland hydrology.
- **Pollution Abatement:** By adopting environmentally friendly farming techniques, they can mitigate the runoff of fertilizers and pesticides, which is essential for maintaining water quality in wetlands.
- **Advocacy and Stewardship:** Farmers can act as influential advocates for wetland conservation, leveraging their socio-political capital to promote sustainable practices and policies within their communities.
- **Conservation of Key Species:** Their involvement is critical in the protection of flagship wetland species, such as the Sarus crane, by fostering habitats that support biodiversity.

Farmer Community: Knowledge, Attitude, and Practices

Farmers play a widespread role in wetland conservation due to their location and direct interaction with these ecosystems through agriculture. Evaluating their KAP uncovers key strengths and gaps that can guide the development of targeted strategies for more effective engagement and support in sustainable farming practices.

Farmers understand the ecosystem services provided by wetlands and they are aware of the negative impacts of agriculture such as excessive water withdrawal, encroachments, and pollution on wetland health. They recognize the importance of collectives and sustainable farming, but lack crucial data and understanding about water and wetland pollution. Farmers are already focussing on sustainable farming, forming collectives like FPOs and water user associations, adopting organic farming though at a slow pace.

Gaps Identified

There is a lack of effective communication channels to convey the benefits of wetlands and significant gaps in understanding sustainable agricultural practices, especially production of organic inputs locally. Farmers have limited

knowledge of tools, resources, and financial support to form collectives and establish sustainable farming. There is a need for more practical training and hands-on capacity-building opportunities. Lack of data and understanding about water and wetland pollution leads to low awareness and weak decision-making. Gaps in capacity building in governance, equitable, fair, sharing of responsibilities and benefits and transparency reduce trust, create internal disputes and limit effective collective action. There is a lack of comprehensive planning and integration of wetland catchment management and limited capacity and resources within collectives. Technical knowledge and infrastructure for organic input production remain insufficient, and enforcement of water use regulation and encroachment removal is inconsistent. For detailed KAP analysis and gaps identified, refer to *Appendix 5*.

Activity Establishment of Organic Input Manufacturing Centres with FPOs in the catchment area of wetlands, one each in all 428 Tehsils and support for training and communication materials. (Rs.100000 for Lab/Centre development and Rs.50,000 for Training and communication materials per Lab/Centre)	Who Coordinate Agriculture Department and SWA Work Anchoring National Mission on Organic/Natural Farming Frequency and Scale Once. Tehsil level across the state
Who Involves Agriculture Department through FPOs	Indicative Cost and Existing Schemes 6,42,00,000 (Rs.1,50,000 per tehsil) (Lab manual and set of posters have been designed under the pilot and are available for mass production, dissemination)

Activity Designing CEPA package using multimedia tools on 1. Awareness of regulations and impacts of agriculture on the health of wetlands through excessive withdrawal of water, encroachments, and pollution due to fertilizer and pesticide runoffs 2. Understanding the significance and tools available to form collectives, establish sustainable farming practices and frameworks, accessible certification systems like Participatory Guarantee System (PGS) and financial and other technical resources from Government and Non-Government sources.	Who Involves Agriculture Department, Fisheries Department, FPOs, NGOs Who Coordinate Agriculture Department and SWA Work Anchoring CEPA project by SWA Frequency and Scale Recurring, before and during production cycles. Design at the State Level to be adapted at the District level and disseminated locally Indicative Cost and Existing Schemes 50,00,000 Lump sum towards research, and design development.
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3.4.3

PRIORITIZED GROUP: TOURISTS AND TOURISM ENTERPRISES

Rationale

Tourists and tourism enterprises are important stakeholders in wetland conservation. Tourism-related enterprises include hotels, restaurants, transportation, and travel agencies. They also include businesses that offer attractions, experiences, and other services. Tourism can help enhance appreciation of wetlands and the need for their conservation, and support the local economy. On the other hand, tourism places pressure on essential resources such as food and water and strains infrastructure, including roads and waste management systems. Poor management of solid and liquid waste generated by tourism activities, such as public toilet usage and littering, can degrade wetlands and harm biodiversity.

Role in Wetland Management & Conservation

Tourists and tourism-based enterprises can play a crucial role in wetland management by adopting eco-friendly practices and actively participating in conservation efforts. They can contribute through participatory monitoring of tourist activities, ensuring responsible behaviour near wetland areas. Local tourism enterprises, especially women and members of fishing communities, can benefit from capacity-building and skill-development programs to promote sustainable tourism practices. Additionally, landscape and infrastructure planning for decentralized tourism can reduce the burden on sensitive wetland areas. Conducting carrying capacity studies and monitoring tourist inflow will help maintain ecological balance. Developing eco-friendly infrastructure guidelines and organizing cleanliness drives on occasions such as World Wetland Day and World Tourism Day can further foster responsible tourism and wetland conservation.

Tourist and Tourism Enterprises: Knowledge, Attitude and Practices

Tourists and tourism enterprises have direct interactions with these sensitive ecosystems. Evaluating their Knowledge, Attitude, and Practices (KAP) highlights strengths and gaps that can guide effective engagement strategies to promote responsible and sustainable tourism, ensuring the protection and long-term health of wetlands.

Tourists are aware of popular tourist attractions near wetlands and have a basic understanding of tourism activities' impact on the local environment. They are interested in exploring and enjoying the natural beauty of wetlands and are willing to engage in clean-up drives and environmental campaigns when well-organized. Some tourists participate in guided tours, recreational activities, and occasional clean-up events organized by responsible tour operators.

Gap Identified

Tourists and tour operators generally lack knowledge about the meaning & scope of ecotourism, what all constitute sustainable tourism practices, and the ecological importance of wetlands in biodiversity conservation. There is inadequate awareness about eco-friendly infrastructure alternatives, waste management protocols, and wetland carrying capacity. Tour operators often prioritize profits over environmental sustainability, perceive limited responsibility toward minimizing environmental footprints, and show little appreciation for the role of women and local fishing communities. Poor waste management, overcrowding at natural heritage sites, limited involvement in participatory monitoring, and absence of systematic, contextualized eco-friendly tourism guidelines or monitoring mechanisms further hinder sustainable tourism. For detailed KAP analysis and gaps identified, refer to *Appendix 6*.

Activity

Undertake demonstration projects at some of the Ramsar sites / key sites to prepare and pilot a tourism circuit and infrastructure development (e.g. access, transport management, toilets, waste management, and interpretation facilities) based on carrying capacity studies, with community institutions and enterprises and frame guidelines for existing schemes/new scheme

Who Involves

Wetland Managers & Tourism Department

Who Coordinate

SWA

Work Anchoring

State Ecotourism Development Board/Tourism Development Board

Frequency and Scale

One time
Local

Indicative Cost and Existing Schemes

5,00,00,000 * 5 Ramsar sites i.e. 25,00,00,000

Activity Develop guidelines and conduct training on 1. How to estimate carrying capacity of wetland tourism site carrying capacity, 2. Use carrying capacity estimates to inform site infrastructure development, management plans and create local regulations on access to tourist numbers, spreading of tourists to avoid crowding, provision of services of transport, waste management, sanitation, information, safety etc. 3. Continued participatory monitoring of tourist activities with tour operators/ enterprises 4. Creating and managing eco-friendly tourist infrastructure near wetlands. 5. Training of Trainers to arrange district level orientations for tourism enterprises and communities	Who Involves State Ecotourism Development Board/Tourism Development Board at state level and DWCC at district level.
	Who Coordinate SWA
	Work Anchoring State Ecotourism Development Board/Tourism Development Board
	Frequency and Scale One time with decadal review State
	Indicative Cost and Existing Schemes 35,00,000

Activity Design templates for district-specific communication material basket (related to historical, cultural, ecological aspects, ecosystem benefits of wetlands, threats, good practices for tourists) Develop site-specific materials for all districts with local adaptations	Work Anchoring State Ecotourism Development Board/Tourism Development Board
Who Involves DWCC	Frequency and Scale One time District
Who Coordinate SWA	Indicative Cost and Existing Schemes 2,75,00,000 (Rs.500,000 per district) Mix of district specific content basket to choose as well as design for site specific local adaptation

Activity Facilitate the formation of community-based tourism collectives and enterprises	Frequency and Scale One time with the decadal review Local
Who Involves Wetland Managers, Tourism Development Board	Indicative Cost and Existing Schemes 100,00,000 (Rs.20,00,000 per site x 5 Ramsar/relevant sites as first phase)
Who Coordinate DWCC	
Work Anchoring District Planning Committee (DPC)/ Tourism Development Board	

Activity Skill development of the local community, especially women, fishers, and farmers, for sustainable practices of hospitality, local cuisine, nature and culture interpretation and guides, marketing, bookings, and finance management, and monitoring for carrying capacity.	Who Coordinate DWCC
Who Involves Wetland Managers, Tourism Development Board	Work Anchoring DPC/Tourism Development Board
	Frequency and Scale One in 5 year Local
	Indicative Cost and Existing Schemes 50,00,000

Activity Cleanliness drives on wetland day, tourism day etc.	Frequency and Scale Once in a year Scale local/districtLocal
Who Involves State Wetland Authority	Indicative Cost and Existing Schemes 55,00,000 (Rs.100,000 per district)
Who Coordinate DWCC	
Work Anchoring Tourism Department	

3.4.4

PRIORITIZED GROUP: SCHOOLS

Rationale

Schools can help foster environmental awareness, nurture eco-conscious behaviours, and enable hands-on conservation experiences. Engaging students in understanding and protecting wetlands not only shapes their environmental values but also equips them with practical skills for lifelong conservation efforts. Schools can provide an early platform for students to understand the ecological, cultural, and economic significance of wetlands. By cultivating environmental responsibility at a young age, schools can help develop future leaders and advocates for wetland conservation. Integrating conservation into school activities can foster a culture of sustainability, encouraging students to adopt environmentally friendly practices in their daily lives.

Role in Wetland Management & Conservation

Schools and the education system play a vital role in conservation by fostering environmental awareness and shaping future generations into responsible and proactive citizens. By learning about wetland ecosystems, students gain the knowledge and skills needed to contribute meaningfully to conservation efforts both now and in adulthood. They can engage in raising community awareness, participating in wetland monitoring, and undertaking direct restoration activities such as native plantation and clean-up drives. Indirect actions, like promoting waste reduction and sustainable practices at home, educational institutions, and within the community, further support these efforts. By integrating practical learning and building community connections, schools can become powerful catalysts for wetland protection and sustainable management, inspiring lifelong stewardship of the environment.

Schools: Knowledge, Attitude and Practices

Wetland ecosystems are not sufficiently covered in standard school curricula, leading to inadequate understanding among students. Students may have limited personal connection and knowledge about wetlands in their neighbourhood. Students may express awareness about environmental issues and recognize the importance of wetlands. Some students participate in school projects and occasional activities related to wetland conservation. Students occasionally participate in awareness activities such as rallies, painting competitions and plantation drives.

Gaps Identified

There is a significant gap in student's understanding of practical aspects of wetland conservation, such as restoration techniques or local monitoring methods. Many students, especially in urban areas, lack a deep emotional connection with the natural environment, particularly wetlands, leading to lower environmental stewardship. They may have little personal motivation to engage actively in wetland conservation and may not see the direct link between their daily actions (e.g., waste disposal) and wetland health, limiting their sense of responsibility. Many students do not have opportunities for hands-on involvement in wetland conservation or restoration activities. School projects are often short-term or one-off, missing sustained community efforts. There is limited collaboration with local environmental organizations, authorities, and communities to engage students in meaningful conservation actions. Even for relatively widespread activities of plantation, there is little or no process followed to engage students and teachers in understanding sites, identifying relevant species, protection and responsibility sharing. For detailed KAP analysis and gaps identified, refer to *Appendix 7*.

Activity

Develop Wetland Focus in EEP and Learning Materials in form of Teachers Handbook on Wetland focussed Classroom Activities, Action Projects including school-community partnerships w.r.t. framework developed through pilot event comprising 5 broad areas as below:

1. Schools- Community Engagement Programmes:

1. Engage with local stakeholders, such as washermen, farmers, and fishermen, interview them to understand the socio-economic dependencies on wetlands and the impacts of degradation.
2. Organize student-led awareness drives to educate families and local communities about the importance of wetlands, focusing on pollution reduction, waste management, and water conservation.
3. Host fairs or exhibitions showcasing students' projects like eco-bricks, best-out-of-waste innovations, and wetland-themed artwork to spread awareness.

2. Collaborative Projects:

1. Form school clusters to coordinate regular monitoring of local wetlands, documenting changes in water quality, biodiversity, and human activity over time.
2. Promote school projects focused on waste management, such as mapping waste sources, creating soak pits for wastewater, and implementing small-scale treatment solutions.
3. Encourage schools to "adopt" a nearby wetland for conservation action, including clean-ups, awareness campaigns, and periodic biodiversity monitoring.

3. Student-Led Action Projects:

1. Mobilize students, teachers, and parents to organize clean-up drives around wetlands to remove waste and prevent pollution.
2. Launch school-wide initiatives to reduce single-use plastics by encouraging alternatives such as cloth bags and reusable bottles.
3. Set up compost units within schools to manage organic waste and encourage segregation of dry, wet, and hazardous waste.

4. Field-Based Activities: 1. Organize field visits to local wetlands where students can observe and record plants, birds, insects, and other fauna using tools like observation sheets and basic ecological methods (e.g., the quadrat method). 2. Wetland Monitoring Projects: water quality, flora, fauna, and human activity using observation tools and water-testing kits. Findings can be submitted to local authorities for reporting. 3. Water Quality Testing: Using portable water testing kits for parameters like pH, turbidity, and dissolved solids. Discuss the impact of pollutants on wetland health and aquatic life. 4. Site Visits to Faecal Sludge Treatment Plants (FSTPs) and Solid Waste Recovery Units to help students understand how urban waste impacts wetlands and witness solutions in action.

5. School Based Activities:

1. Interactive Games and Discussions: Use tools like the "Web of Life" activity to demonstrate interconnections in the wetland ecosystem and discuss the impacts of pollution on biodiversity.
2. Thematic Art, Debate, and Writing Competitions: Conduct competitions on topics like "Wetlands and their Importance" or "My Role in Protecting Wetlands" to promote creativity and critical thinking.
3. Waste and Water Audits: Encourage students to conduct classroom or school-wide audits to monitor water usage, waste generation, and energy consumption, linking results to conservation action plans.

Who Involves

EPCO-EEP Cell

Who Coordinate

SWA

Work Anchoring

EEP of MoEFCC and SWA CEPA provisions

Frequency and Scale

One time resource development for an annual program. Schools across the state

Indicative Cost and Existing Schemes 25,00,000

EEP/ New provision

Activity

Integration of wetland focus in Mowgli Utsav at Pench National Park through activity package and resource development

Who Involves

EPCO-EEP Cell

Who Coordinate

SWA

Work Anchoring

EEP of MoEFCC and SWA CEPA provisions

Frequency and Scale

One-time resource development for Annual functions

Indicative Cost and Existing Schemes 5,00,000

Activity

Integrate Wetland Education into Curricula: Incorporate wetland conservation topics, such as ecosystem services, threats, and solutions, into formal curricula. Include concepts such as biodiversity monitoring, water quality testing, and the role of wetlands in climate regulation, through Syllabus and Textbook Review, Board of Studies, Writers Groups meetings and workshops/assignments.

Who Involves

Education Department

Who Coordinate

SWA

Work Anchoring

Syllabus and Textbooks development programme/
Process financially supported by SWA

Frequency and Scale

Once in 10 years State

Indicative Cost and Existing Schemes 5,00,000

3.4.5**PRIORITIZED GROUP: UNIVERSITIES AND YOUTH COMMUNITY****Rationale**

University students and youth communities must develop a deep understanding of wetlands to contribute meaningfully to conservation efforts during their academic careers and later in their adult lives. By gaining knowledge about wetlands, these groups can actively raise awareness, engage in restoration initiatives, and drive change within their local communities. Fostering a strong commitment to wetland conservation lies in empowering these individuals to become environmental stewards who lead sustainable practices and influence others.

Role in Wetland Management & Conservation

University students and youth communities have the opportunity to learn about wetland ecosystems comprehensively, gaining the skills and knowledge necessary to become proactive and informed citizens. They can play a critical role in wetland management and conservation by engaging in activities that protect and restore these vital ecosystems.

Universities and Youth: Knowledge, Attitude and Practices

Some youth are aware of wetlands and their general importance. Youth communities may express interest in environmental issues and wetland conservation. Some youth participate in some wetland conservation activities.

Gaps Identified

Young people need to fully understand the critical aspects & services wetlands provide, such as biodiversity, water purification, climate regulation and flood control. There is limited understanding of how wetlands are affected by climate change and how their conservation can mitigate climate impacts. Youth needs to be aware of local or global legal frameworks (e.g., Ramsar Convention) and how to engage in policy advocacy. Youth often have a short-term focus on immediate issues rather than long-term environmental sustainability. There is a general lack of collective actions, and many underestimate the personal impact of their actions (e.g., reducing plastic waste, conserving water) on wetland ecosystems. Community engagement in wetland conservation is minimal. Youth may face barriers to taking leadership roles and have limited networking with experts, NGOs, or government bodies, restricting opportunities for collaboration, mentorship, or meaningful conservation action. For detailed KAP analysis and gaps identified, refer to *Appendix 8*.

Suggested Activities for Universities and Youth Community

Here are some suggested activities for Universities in Madhya Pradesh and a long-term engagement plan for Wetland Mitras.

Activity Recognition of Chairs in Wetlands Studies (e.g. Anupam Mishra Chairs) in different disciplines (botany, zoology, ecology, fisheries, limnology, landscape, culture, social work etc). Development of modules on wetlands, conservation and restoration to be integrated into Environment Science and other relevant courses and encouragement of inter-disciplinary masters and PhD research on wetland conservation and restoration, nature-based solutions for water pollution remediation. Annual higher education and research symposium on wetlands.	Who Involves Higher Education Department Who Coordinate SWA Work Anchoring Higher Education Annual Plan Frequency and Scale Annual, Continuous, state wide (16 State Universities) Indicative Cost and Existing Schemes 3,30,00,000 (Rs 30,00,000 each for one university each from 11 agro-climatic zones-demand driven inviting proposals)
Activity Involve Masters or Ph.D. Student for research studies of trapa and lotus cultivation (Bhoj, Yashwant Sagar and other wetlands), including cultivation, plant varieties, associated species, practices, socio-economic aspects, social and environmental linkages with wetland management Who Involves University	Who Coordinate SWA Work Anchoring Universities Frequency and Scale Annual and Local Indicative Cost and Existing Schemes To be estimated in discussion with concerned department
Activity Involve Masters or Ph.D Students in research studies of cattle grazing (Sirpur, Yashwant Sagar and other wetlands) including extent, plant varieties, associated species, practices, socio-economic aspects, social and environmental linkages with wetland management (considering the role of cattle in wetlands) Who Involves Universities	Who Coordinate SWA Work Anchoring University Frequency and Scale Annual and Local Indicative Cost and Existing Schemes To be estimated in discussion with concerned department

Suggested Activities for Wetland Mitra

To inspire long-term community engagement building upon the existing Wetland Mitra programme, establishing a Wetland Mitra Fellowship, modelled after initiatives like Teach for India or Gram Shilpi, would empower young

conservation leaders to work for at least two years on wetland restoration, awareness, and capacity-building projects.

Activity	Who Involves DWCC
1. Establish a Wetland Mitra Fellowship seeking applications from Wetland Mitras and shortlisting from SWA	Who Coordinate SWA
2. Develop an Annual Calendar of Activities, coordination and felicitation of exemplary work for Wetland Mitra	Work Anchoring SWA
3. Orientation module for Wetland Mitras on IMPs, wetland health cards and PBR preparation/ update, community engagement in restoration, vigilance and reporting, supporting schools and colleges in wetlands related projects and activities, celebration of Wetlands Day, Biodiversity Day and related events, and knowledge, communication and management skills for the same.	Frequency and Scale Annual District & State
	Indicative Cost and Existing Schemes 38,00,000 (Rs. 25,000 per fellowship * 2 per district and Rs.10000 per district and Rs.500,000 for state level events)

3.4.6

PRIORITIZED GROUP: NGOs

Rationale

NGOs, especially those involved in biodiversity conservation, natural resources management, and livelihood enhancement can help in wetlands conservation through mobilizing public support, community engagement, and developing locally relevant livelihoods and conservation initiatives. Those working in watershed management, agriculture or other rural livelihoods often have good community connect and skills for public engagement, gender inclusion, project management and multi-stakeholder approaches and would find it appropriate to integrate community-based wetlands conservation into their programmes.

Role in Wetland Management & Conservation

NGOs can help orient stakeholders on sustainable wetland management practices, facilitate community engagement in the preparation of IMPs and preparation and implementation of community projects aligned with wetland management plans. Their engagement can enable a strategic and structured approach for wetlands conservation, wise use and sustainable management.

Different NGOs have different focus areas. Some NGOs that have been actively involved in wetlands conservation have focused on biodiversity, and wetlands as bird habitat. Some NGOs have a wetlands adjacent sectoral focus, such as sustainable agriculture, watershed management, rural livelihoods etc.

Synergizing the programmes and contributions of different NGOs with expertise on wetlands conservation, allied or adjacent sectors (such as watershed development and sustainable agriculture), and skills in community mobilization and multi-stakeholder approaches can support the State Wetlands Authority and the DWCC.

NGOs: Knowledge, Attitude and Practices

NGOs collaborate with governmental and academic institutions to collect, analyze, and share ecological data, and develop best practices for sustainable wetland management and restoration. They conduct orientation and skilling for stakeholders, advocate for wetland protection, and support stronger environmental regulations. NGOs facilitate community participation, engage local communities in participatory management, aware and to an extent empower stakeholders to adopt sustainable practices, and promote alternative livelihoods such as eco-friendly tourism, sustainable fishing, organic farming, and climate-resilient land-use practices.

Gaps Identified

Inadequate resources and lack of accessible platforms for citizen participation often exclude those most dependent and having lived, experiential knowledge about wetlands from participating in wetland monitoring and management. Data collection methods often lack uniformity and standardization, and the absence of standardized protocols can lead to inconsistencies in citizen science initiatives. Further, effectively translating scientific research into actionable policy recommendations is challenging. Capacity-building and livelihood support

programs may lack long-term sustainability, market linkages, or alignment with cutting-edge scientific research. Some NGOs prioritize immediate outcomes or may take rigid stances against development, leading to conflicts with policymakers and businesses. Limited openness to collaboration with government or private entities, restricted access to advanced tools (e.g., GIS, satellite data, analytical software), and difficulty sustaining community-based management participation hinder holistic and long-term wetland conservation strategies. For detailed KAP analysis and gaps identified, refer to *Appendix 9*.

Suggested Activities for NGOs

Below are suggested activities for NGOs. These initiatives will strengthen their role as key stakeholders in wetland conservation, enabling them to promote sustainable

practices, foster collaborative engagement, and contribute to the long-term ecological health of wetlands.

Activity Develop a training modules in the local language on the importance of wetlands ecology and hydrology for sustainable water management, soil health, and biodiversity conservation and Wetland Rules and Guidelines for integrating into sustainable farming practice, watershed management activities carried out by NGOs* and conduct these training, awareness sessions and workshops. Who Involves SWA, DWCC with support from NGOs	Who Coordinate SWA Work Anchoring SWA Frequency and Scale State Indicative Cost and Existing Schemes 40,00,000
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*NGOs working in Water, Water and Sanitation, Watershed Management, Landscape Restoration, Ecosystem Restoration management, etc. Nature Education and Conservation, and similar types.

3.4.7

PRIORITIZED GROUP: URBAN AND RURAL COMMUNITIES

Rationale

Rural and urban communities are both crucial stakeholders in wetland conservation for several reasons, especially in the context of rapid urbanization, which has dramatically affected the nation's wetlands.

Urban Communities

- Urban communities are often more aware of environmental issues due to access to education and

information. They can advocate for sustainable practices and policies that protect wetlands from reckless development. They can implement sustainable practices in their daily lives that reduce pollution and water usage, indirectly benefiting wetland health.

- Urban areas are typically the centres for real estate development and urban planning. Decisions made by city authorities can have direct consequences on wetland conservation. Engaging urban communities in these decisions can lead to more sustainable outcomes.
- Urban populations depend on wetlands for ecosystem services such as flood regulation, water purification, and recreational spaces. Recognizing the value of these services can drive urban residents to support conservation initiatives.

Rural Communities

- Rural communities often depend on wetlands for their livelihoods, including agriculture, fishing, and grazing. Sustainable management of wetlands is essential for their economic sustenance and food security.
- Rural communities possess TEK that has been passed down through generations. This knowledge can inform effective conservation strategies and practices tailored to local ecosystems.
- Wetlands hold cultural and spiritual significance for rural populations. Engaging these communities in conservation efforts can help preserve their cultural heritage and foster a sense of stewardship.
- Rural areas are typically home to diverse flora and fauna reliant on wetlands. Protecting these habitats is vital for maintaining biodiversity, which benefits both rural and urban communities.
- Involving rural communities in decision-making processes regarding wetland management ensures their voices, needs, and rights are recognized, fostering collaboration between rural and urban stakeholders.

Urban Communities: Knowledge, Attitude and Practices

Urban communities often have limited knowledge about the location, types, and functions of nearby wetlands; understanding of the benefits of wetlands may be superficial or focused on aesthetic value. They have a generally positive attitude towards nature but limited connection to specific wetland ecosystems; more likely view wetlands as recreational spaces or scenic landscapes. They participate in occasional clean-ups or educational events and express support for environmental organizations, including financially.

Gaps Identified

Urban communities at large lack awareness of wetlands' role in flood control, water purification, and significance of wetland biodiversity; often have misconceptions viewing them as "wastelands of dumping sites". They have limited understanding of links between urban activities, waste practices, and wetland health. They have limited personal stake and awareness of threats; and tendency to prioritize urban development over wetland preservation. Inconsistent

and fragmented engagement in conservation; unsustainable consumption patterns; lack of toilets and functional STPs causing sewage discharge; idol immersions and associated material dumping, increasing encroachment near wetlands are key areas of concern. For detailed KAP analysis and gaps identified, refer to *Appendix 10*.

Rural Communities: Knowledge, Attitude and Practices

Rural communities possess traditional ecological knowledge (TEK) about local wetlands, including species, seasonal changes, and resource management. They understand the direct link between wetland health and livelihoods such as fishing and agriculture. Their attitude is generally positive due to direct dependence and cultural significance, with a strong sense of place and connection to the environment. They engage in traditional practices like controlled fishing, community level governance and sustainable harvesting and actively participate in local wetland management initiatives given the opportunity and enabling environment.

Gaps Identified-Urban Communities

Rural communities generally lack scientific understanding of wetland ecosystem functions and broader ecological importance and are not fully aware of ways to deal with impacts of external pressures like upstream pollution and climate change. Their traditional ecological knowledge (TEK) is often undervalued or not integrated into formal conservation strategies at all. There is a lack of knowledge & practices about waste segregation, sanitation management, responsible idol immersion, and impacts on wetland health. They likely prioritize short-term economic gains over long-term wetland health and are resistant to changes in traditional practices in absence of insurance against potential losses due to change in prevailing practices. There is a lack of confidence to participate and contribute experiential knowledge about ecosystem, uses, and species. Often these practices may not be adapted to current pressures such as increased population and climate change. They lack access to resources and support for sustainable practices and face pressure from land developers. Over-extraction of water and encroachment near wetlands are also major issues.

Suggested Activities for Urban and Rural Communities

Cities such as Chennai, Hyderabad, Bhopal, and Indore are encountering numerous challenges due to rapid urbanization, and wetlands are significantly impacted as a result. Adopting a holistic approach that aligns the

interests of both urban and rural communities is essential for effective conservation. Here are some suggested activities:

Activity Sustainable Water Resource Management, In village clusters that are over-extracting water from the wetland and in the catchment, water conservation and management initiatives may be designed or strengthened with the help of the WRD. Participatory processes may be initiated for sustainable management of water resources, wetlands, including water balance, water resources associated with the wetland (precipitation, watershed, aquifer, usage, outflow, water quality etc), regulatory information, responsible use, groundwater recharge based on aquifer studies especially through public recharge areas, etc may be prepared	Who Involves Gram Panchayat Who Coordinate DWCC Work Anchoring WRD under Madhya Pradesh Participatory Irrigation Management Act Frequency and Scale Annual Local Indicative Cost and Existing Schemes 55,00,000
Activity Participation in management of invasive alien plants & animal species, repopulating natives, and eco-restoration Who Involves Gram Panchayat Who Coordinate CEO/Block Development Officer (BDO)	Work Anchoring Forest Dept, Horticulture, SBB, academicians, researchers, Limnology Frequency and Scale As per requirement/situation Indicative Cost and Existing Schemes To be supported under Meenakshi Pond Scheme (sub-scheme under National Rural Employment Guarantee Scheme)
Activity Community participation in wetlands dialogues on Wetlands Day or similar observation, or towards preparation/ review of IMPs Develop an inclusive protocol for conducting citizens Jal Samvad that helps to elicit KAP related to wetlands of different segments of the local community, supplement their awareness about wetlands, potential impacts of climate change, provide information about national policies and programs for wetlands conservation, and facilitates public deliberation for local action plans. Such Jal Samvads can serve as venues for community learning about wetlands and participatory action planning in alignment with government policy and rules.	Who Involves DWCC, ULBs and Gram Panchayats Who Coordinate DWCC Work Anchoring DWCC Frequency and Scale Annual, on Wetlands Day or similar observation, or towards preparation/ review of IMPs Indicative Cost and Existing Schemes 55,00,000 (Rs.100,000 per district)

Activity

Develop / adapt platform and resources for citizen participation with help of teachers and Jan Bhagidari Samiti in wetlands monitoring and updation of Wetland Health Cards after every 5 years (20-25 wetlands in each district) covering various indicators of ecosystem health, aquatic animals (especially fish) and plant species as rural populations may be familiar with these taxa (going beyond bird databases), and develop local language interfaces in collaboration with the Govt of India Bhashini initiative (or other appropriate agency).

Who Involves

ULBs and Gram Panchayats through schools and colleges, NGOs and Wetland Mitras

Who Coordinate

DWCC

Work Anchoring

DWCC

Frequency and Scale

Annual Local

Indicative Cost and Existing Schemes

1,10,00,000 (2,00,000 per district)

Citizen Science platform and resources to be developed by the Limnology Department of Barkatullah University, Bhopal in collaboration with other Universities and colleges under SWA funded project.

Activity

Outreach for responsible waste management: Continue promotion under Swachh Bharat Mission (SBM) of waste reduction, segregation at source, and strengthen systems for reuse, recycling, and composting. Integrate content about the impact of waste pollution on wetlands for waste generators, service providers and municipal staff.

Who Involves

SWM department, SWM service providers and agencies contracted for citizens engagement

Who Coordinate

DWCC

Work Anchoring

SWM department

Frequency and Scale

Every month till systems are set up and functioning, and periodically as per need.

City-wide and as per need in localities without 100% door to door segregated waste collection

Indicative Cost and Existing Schemes

To be supported under SBM

Activity

Continued promotion of installation of toilets in slum localities and their effective functioning as part of Swachh Bharat Mission-Urban (SBM-U) highlighting the need to protect water sources, using the experience of Amrit Dharohar thus far.

Who Involves

SBM and Municipal bodies

Who Coordinate

DWCC

Work Anchoring

Sewerage/ Sanitation Dept, PWD

Frequency and Scale

As per local needs

Indicative Cost and Existing Schemes

To be estimated in discussion with concerned department

Activity

Promote responsible cultural connections with wetlands, especially related to immersion of idols and associated materials, e.g. Green Ganesh Campaign by EPCO; this may include a study of existing cultural practices, documenting access, economics, livelihoods, environmental aspects of such practices, dialogues on acceptable adaptations, adaptation of the ecosystem of interventions related to eco-friendly idols and other objects, and campaigns for positive reconnections with wetlands and responsible practices.

Who Involves

Faith-based groups, temple trusts, community leaders

Who Coordinate

DWCC

Work Anchoring

Heritage Board, National Institute of Design (NID), Kala Parishad, Sanskruti Vibhag

Frequency and Scale

Annual/ seasonal as per the frequency of main cultural events. Statewide, city-wide

Indicative Cost and Existing Schemes

1,00,00,000

20L for studies, 10L for designs (product, landscape), 10L for pilots, 10L for campaign design, 50L for mass media campaign implementation

Activity

Community meetings to assess housing needs, establish wetland boundaries, communicate risks (e.g. flooding, water-borne and vector-borne diseases) of encroachment of housing in the proximity of wetlands, clear marking of the boundary with marking stones, signage, consumer awareness through media about risks in building too close to wetlands (Bhoj, Sirpur and other wetlands where encroachment is an issue).

Who Involves

Housing Board, Social Development department/ Urban Community Development department and community-based NGOs involved with informal settlements

Who Coordinate

DWCC

Work Anchoring

Housing Board, Social Development department/ Urban Community Development department

Frequency and Scale

Annual

For each settlement

Indicative Cost and Existing Schemes

To be estimated in discussion with concerned departments.

3.4.8
**PRIORITIZED GROUP: LAND RECORDS DEPARTMENT,
TOWN & COUNTRY PLANNING DEPARTMENT**
Rationale

The Land Records Department conducts land surveys and prepares maps to accurately demarcate property boundaries. It maintains updated records of land ownership, possession, and classification (such as agricultural, residential, or industrial) and tracks land-use changes. The department also plays a key role in the digitization of land records, making them accessible online. Additionally, it supports land reclamation efforts and oversees the allocation of land to beneficiaries under various government schemes.

Role in Wetland Management & Conservation

Land Records Department conducts land surveys and prepares maps to demarcate property boundaries, maintains updated records of land ownership, possession, classification (e.g., agricultural, residential, industrial), and changes in land-uses, and digitizes land records to make them accessible online. These are essential to prevent encroachment and illegal activities. The department also helps in reclamation efforts, and allocation of land for beneficiaries under various government schemes. By maintaining and updating land classification records, the department has to ensure that wetlands are recognized and protected as sensitive ecological zones. Monitoring land-use changes will help to identify unauthorized conversions and supports timely interventions. The department also provides geospatial and mapping data, aiding conservation

planning and restoration efforts.

The Building Permission Department regulates construction activities, evaluating and granting permissions for building projects, to ensure compliance with zoning regulations and environmental guidelines. This helps to prevent encroachments and minimize adverse impacts on wetlands. Enforcing setback norms and flood buffer zones helps safeguard wetland ecosystems and maintain natural water flow patterns. The department also has the responsibility to ensure that construction projects incorporate eco-friendly infrastructure, such as effective waste and drainage management systems, to prevent pollution of wetlands.

**Land Records, Town & Country Planning: Knowledge,
Attitude and Practices**

They have familiarity with land surveys, mapping, and property demarcation, along with expertise in maintaining land ownership, possession, and classification records and tracking land-use changes. They understand building regulations, zoning laws, and infrastructure planning guidelines, with a commitment to ensuring legal compliance in land allocation and construction permissions. They show interest in digital accessibility of land records and transparent governance, recognizing the importance of urban planning and infrastructure development. Their practices include effective management of land surveys, demarcation, and data digitization, regular enforcement of building use permissions and infrastructure regulations, and monitoring land use for compliance with zoning rules.

Gaps Identified

They have limited knowledge of wetland ecology, biodiversity, and environmental importance, and insufficient awareness of legal frameworks and eco-sensitive zone guidelines. There is limited appreciation of wetlands in land and construction decisions, preference for development over ecological preservation, and inadequate

engagement with stakeholders and local communities. Weak enforcement of buffer zones and setback norms, limited incorporation of eco-friendly construction guidelines, insufficient participation in wetland restoration, monitoring, or management, and lack of approaches for inclusive public participation and conflict resolution are observed. For detailed KAP analysis and gaps identified, refer to *Appendix 11*.

Suggested Activities for the Land Records department, Building Use Permission department

Hands-on training, collaborative engagements, and exposure visits can significantly empower staff from the respective departments, enabling them to perform their duties more effectively and contribute meaningfully to sustainable wetland management. Below are a few suggested activities for capacity building.

Activity Training Module development and conduct training modules with Informative sessions to enhance knowledge about 1. Physical structure of different types of wetlands 2. Necessity of marking wetland boundaries 3. Technical knowledge of identifying appropriate boundaries for different types of wetlands Field visits, visual materials and case studies to 1. Appreciate wetland ecosystems, structure and function, 2. Identify ecosystem benefits and role in human wellbeing 3. Understand factors affecting ecosystem health 4. Negative impacts of degraded wetlands Practical sessions on identifying, marking, and notifying wetland boundaries	Who Involves Land Record Department (RCVP Noronha Academy of Administration & Management/ Patwari Training Institute) Who Coordinate SWA Work Anchoring Land Record Department, Wetland Manager Frequency and Scale Once in a year, District Level Indicative Cost and Existing Schemes To be worked out in consultation with Revenue Department (Module Development: Rs. 500,000 District level training including onsite, hands on sessions: Rs. 1000 per person* number of Patwari + Land Surveyors to be integrated in to existing annual trainings, meets at district level)
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3.4.9

PRIORITIZED GROUP: CITY PLANNERS

Rationale

Encroachment on wetland boundaries—both marked and unmarked—along with poorly planned infrastructure for basic urban services poses significant threats to wetland ecosystems. Planners and officials responsible for creating and implementing urban development frameworks are uniquely positioned to mitigate these risks. By incorporating wetlands into master plans and development guidelines, they can ensure that wetlands are protected and leveraged for their environmental, social, economic, and

climate resilience benefits. Sustainable urban planning can prevent encroachment, improve water management, and promote green infrastructure that integrates wetland conservation. City planners' strategic interventions are essential for balancing urban development with the preservation of wetlands, safeguarding both the natural environment and the well-being of urban populations.

Role in Wetland Management & Conservation

City planners prepare master plans and development strategies. They can help safeguard wetlands by ensuring wetland boundaries are recognized and protected in city and master plans, with clearly defined protection and buffer zones. They must consider wetland integrity and

conservation when planning infrastructure and services, including solid and liquid waste management, transportation, green spaces, watershed management, flood control, and groundwater recharge, to minimize the adverse impacts of urban habitation on wetlands.

Planners can also contribute by developing IMPs for wetlands that incorporate environmental, social, and economic aspects. Additionally, they should support DWCCs and relevant departments in planning for wetland-dependent activities such as sustainable tourism, fisheries, and agro-processing, ensuring wetlands are managed holistically and sustainably.

City Planners: Knowledge, Attitude and Practices

City planners have understanding of urban development planning and infrastructure design, with familiarity with zoning regulations, land use policies, and environmental guidelines. They possess technical knowledge of stormwater management, flood mitigation, and drainage systems, with a commitment to promoting sustainable urban development and recognition of the importance of green spaces and water management. They show willingness to engage with government agencies and other

stakeholders for environmental considerations. Their practices include preparation of master plans and development guidelines for city growth and infrastructure, implementation of zoning laws and flood mitigation measures, and integration of basic green infrastructure in urban designs.

Gaps Identified

City planners have limited awareness of wetland ecological functions and benefits, insufficient knowledge of boundaries, protection guidelines, and buffer zones, and lack exposure to integrated wetland management frameworks. There is limited prioritization of wetland conservation, low engagement with community-led initiatives and traditional knowledge, and insufficient appreciation of wetlands for climate resilience, biodiversity, and community well-being. Recognition and protection of boundaries, inclusion of buffer zones, consideration in waste management and groundwater recharge planning, and collaboration with DWCCs for wetland-dependent livelihoods and tourism are minimal. For detailed KAP analysis and gaps identified, refer to *Appendix 12*.

Suggested Activities for City Planners

A comprehensive training course for city planners focused on sustainable wetland management is essential for integrating ecological considerations into urban planning. By enhancing their skills and knowledge, planners will be better equipped to navigate the complexities of urban development while safeguarding vital wetland ecosystems, ultimately leading to more resilient and sustainable cities.

Activity

Mandatory in-service course through the state administration training academy and expert organizations (RCVP Noronha Academy of Administration & Management, and SPA, Bhopal etc.) on environment planning / stand-alone course on planning for wetlands protection and conservation.

The course should cover comprehensive aspects of wetland planning, including master planning, integrated wetland management, and planning for economic activities such as tourism, fisheries, and agri-processing. It should address EIA requirements, wetlands-related knowledge systems, and survey methods essential for effective plan preparation. The curriculum must also focus on strategies for restricting high-impact developments that could harm wetlands, identifying and managing data requirements for wetland protection, and incorporating practical examples and case studies. These case studies should highlight success stories in wetland conservation through master planning, tourism site

planning, micro-planning, and participatory approaches with wetlands-dependent communities. Additionally, the course should cover methods for the valuation of wetland benefits and demonstrate how these concepts can be seamlessly integrated into master and micro-planning frameworks.

Who Involves

State Administration Training Academy

Who Coordinate

State Administration Training Academy and DWCC

Work Anchoring

State Administration Training Academy, SPA Bhopal

Frequency and Scale

Once in 5 years, Course/Module can be revisited after 5 years

Indicative Cost and Existing Schemes

15,00,000

3.4.10

PRIORITIZED GROUP: INDUSTRIES

Rationale

Industries operating near wetlands have a significant influence on the health and sustainability of these ecosystems. Industrial activities, particularly those involving effluent discharge, resource extraction, and infrastructure development, can contribute to pollution, habitat degradation, and changes in wetland hydrology. Conversely, industries also rely on wetlands for essential ecosystem services such as water filtration, flood control, and biodiversity, which indirectly support economic stability. By adopting sustainable practices, industries can mitigate their environmental impact and contribute positively to wetland conservation.

Role in Wetland Management & Conservation

Industries can support wetland conservation by adopting sustainable practices that minimize their environmental impact, as mandated by law. They must implement and maintain advanced effluent treatment systems to prevent pollution and protect wetland ecosystems, and adopt resource efficiency through reduced water usage and recycling industrial waste. Transitioning to green technologies that reduce emissions and waste helps mitigate industrial impacts on wetlands.

Industries can participate in water quality monitoring and collaborate with stakeholders to ensure real-time data sharing and pollution control. Additionally, industries can engage in community-led conservation initiatives through Corporate Social Responsibility (CSR) activities and build partnerships with local stakeholders.

Documenting and sharing best practices in wetland-friendly operations can encourage the adoption of sustainable solutions across sectors. Through these efforts,

industries can demonstrate environmental stewardship, support local communities, and foster a collaborative approach where conservation and economic development go hand in hand, ensuring long-term sustainability for wetlands.

Industries: Knowledge, Attitude and Practices

Industries have understanding of effluent treatment systems and waste management practices, with awareness of the environmental benefits of adopting resource-efficient processes and green technologies. They are familiar with CSR initiatives and their role in supporting local conservation activities and show willingness to invest in technological upgrades for waste and emission reduction. They have interest in CSR-driven community engagement projects related to conservation and openness to collaborating with stakeholders for sustainability efforts. Their practices include adoption of effluent treatment systems, implementation of waste recycling and resource-efficient production techniques, and participation in CSR initiatives for community awareness and conservation activities.

Gaps Identified

Industries have limited knowledge of the ecological importance of wetlands and their role in biodiversity, flood control, and water filtration, and insufficient understanding of regulatory guidelines and best practices for wetland-friendly operations. There is lack of awareness about participatory monitoring systems for water quality management and limited recognition of wetlands as critical ecological resources. Some industries prioritize economic growth over environmental sustainability and show resistance to additional regulatory compliance. Inconsistent real-time water quality monitoring, limited adoption of green technologies and eco-friendly production processes, and lack of structured efforts to document and share best practices for wetland-friendly operations are observed. For detailed KAP analysis and gaps identified, refer to *Appendix 13*.

Suggested Activities for Industries

Capacity building, regulatory support, and collaborative conservation initiatives can enhance industries' role as responsible stakeholders in wetland conservation. Here are some suggested activities:

Activity Assess and rank industries located in the wetland catchment area • Sensitize industry on wetland importance and seek their voluntary support through CSR for wetland conservation • Mandatory compliances of effluent discharge, waste management practices, and overall impact on wetland health. • Involvement in networking and capacity building as part of industry associations for estate level management of industrial waste, pollution and adverse impacts on the environment. • CSR and employee engagement in wetlands conservation.	The rating system will help prioritize industries for regulatory interventions, compliance improvement and partnerships in wetlands conservation. Who Involves State Department (Water, Pollution) Who Coordinate DWCC Work Anchoring SWA and MPPCB Frequency and Scale Valid period of Assessment (2 years) District Level/State Level Indicative Cost and Existing Schemes 10,00,000
Activity Compile case studies of industries employing effective effluent treatment technologies, showcasing their positive environmental impact on wetlands. Share these success stories to inspire others to adopt sustainable practices. Who Involves SWA with MPPCB and industries association	Who Coordinate SWA Work Anchoring MPPCB and industries associations Frequency and Scale Once in 3 Years, District/State Level Indicative Cost and Existing Schemes 7,00,000
Activity Annual event/ engagement of DWCC with industries associations and CSR managers to contribute through CSR and employee engagement, enrol as Wetland Mitras to foster accountability and collaboration in conservation activities. Who Involves DWCC	Who Coordinate DWCC Work Anchoring Dept of Industries/ Industrial estates Frequency and Scale Yearly, district level Indicative Cost and Existing Schemes 1,00,000

3.4.11

PRIORITIZED GROUP: DISTRICT WETLAND CONSERVATION COMMITTEES (DWCC)

Rationale

It is critical to bridge the Knowledge-Practice Gap and training in CEPA helps DWCC members, who often come from diverse technical backgrounds translate legal mandates into practical community action. Often members may know what to protect, but lack the skills in how to effectively engage local citizens and other stakeholders, which is essential for successful conservation. Enforcement and integrated management is often ineffective without community buy-in. When communities understand the ecological and economic benefits of wetlands, they become partners in enforcement, significantly reducing violations. CEPA training can ensure DWCC members hold meaningful consultation meetings, enabling locals to provide valuable, traditional ecological knowledge (TEK). This can ensure the IMPs are scientifically sound and socially acceptable.

Role in Wetland Management & Conservation

The District Wetland Conservation Committee (DWCC) plays a crucial role as the on-ground implementation and monitoring arm for wetland management and conservation, operating under the direction of the State Wetland Authority (SWA). Its primary role is operationalizing Identification and Notification of wetlands, Data Compilation, Monitoring and Enforcement, Preventing Prohibited Activities, Reporting to SWA, Management Plan Implementation, Inter-departmental Coordination, Community Engagement and Grievance Redressal, Data and Resource Mobilization. The DWCC, typically chaired by the District Collector, acts as the eyes and ears of the SWA, ensuring that conservation efforts are localized, integrated, and responsive to immediate threats

training materials often support basic knowledge transfer. They are aware of the need to identify and notify wetlands under the Rules. The inclusion of NGOs/Experts in the DWCC structure reflects an openness to collaborative efforts. DWCCs primarily engage in practices mandated by the SWA such as attending meetings, compiling departmental data, and addressing immediate encroachment complaints.

Gaps Identified

There is a lack of specialized ecological knowledge about wetland types, their biodiversity, and hydro-ecological functions. There is limited detailed knowledge among non-core members such as local body representatives, junior staff, regarding the 'List of Prohibited Activities' and the process and quality parameters for preparing the 'Integrated Management Plan' (IMP). Low capacities in using advanced monitoring tools such as remote sensing data is another area for improvement. Wetland conservation often remains a secondary priority compared to immediate developmental goals such as infrastructure, revenue generation, viewing it primarily as a regulatory hurdle rather than a crucial natural infrastructure. There is insufficient appreciation of the communities' traditional ecological knowledge and their potential as primary conservation partners. A general tendency to treat wetland management as the exclusive responsibility of the Forest or Irrigation departments, rather than a truly inter-departmental, collective ownership. The practice is often reactive, focusing on enforcement & stopping prohibited activities, rather than proactive management. Lack of statutory recognition under the Rules and inadequate resource allocations in terms of both specialized human resource and budgetary allocations often results in ineffective inter-departmental coordination and minimal systematic practices for awareness creation and public participation as required by the Wetland Conservation Rules. For detailed KAP analysis and gaps identified, refer to *Appendix 14*.

District Wetland Conservation Committees: Knowledge, Attitude and Practices

DWCC members, particularly District Collectors and other key departmental heads (Forest, Irrigation, Revenue), possess high-level administrative knowledge of the legal mandate (Wetland Rules, 2019). The presence of MoEFCC, Ramsar Convention and State Wetland Authority (SWA)

Activity

Develop orientation modules and IEC materials using core content developed by SWA and domain experts for different line department staff on wetlands as an important ecological infrastructure and ecosystem services, wetland conservation legal frameworks, policies and programs, roles and ways to integrate wetlands conservation in district level planning and implementation and department specific indicators.

The rating system will help prioritize industries for regulatory interventions, compliance improvement and partnerships in wetlands conservation.

Who Involves

DWCC

Who Coordinate

SWA, especially to ensure quality, synergy and guiding district specific contextualization of content, ideally developed centrally engaging with domain experts as a cost effective approach.

Work Anchoring

SWA/DWCC Annual Plan

Frequency and Scale

Updation Every 5 years, District level state wide

Indicative Cost and Existing Schemes

100,000 per district

Activity

Conduct annual orientation, engaging external domain experts as per need; for district level line departments staff on status and significance of wetlands and ways to integrate wetland conservation measures and indicators into respective department programs.

Who Involves

DWCC

Who Coordinate

SWA

Work Anchoring

SWA/DWCC annual plans

Frequency and Scale

Annual and District level, state wide.

Indicative Cost and Existing Schemes

25,000 per district

Activity

Annual Fairs & Felicitation Program, on best practices in wetlands conservation by various Departments, NGOs, School-Colleges, Research Institutions, Communities and Industry & Business from District.

Who Involves

DWCC

Who Coordinate

SWA

Work Anchoring

SWA/DWCC Annual Plans

Frequency and Scale

Annual and District level, state wide

Indicative Cost and Existing Schemes

50,000 per district (additional co-funding through CSR and other partnerships generated at district level)

3.5

SHORT, MEDIUM AND LONG TERM CLASSIFICATION OF ACTIVITIES

Activities are classified as Short Term, Medium Term and Long Term. A combination of duration required, urgency and possibility to start with have been considered. There is a possibility for subjective interpretation.

SHORT-TERM ACTIVITIES	
FISHER COMMUNITY	1. District and State level review of status of wetlands in PBRs 2. Use participatory approaches to develop and implement IMPs of selected wetlands in each district of the state in convergence with existing schemes for wetlands, Jalshakti and Swachh Bharat with Fisher as a priority steward group along with other citizen groups. 3. Create a Repository of CEPA products for i. Communities to understand the wetland ecosystem and its functioning, legal provisions around wetland conservation for periodic dialogue by responsible authorities on updating legal provisions and address community concerns, especially through participatory, scientific and socially just interpretation of 'Wise Use' of wetlands. ii. Impacts of livelihoods on wetlands such as: a. Fishing - introduction of invasive species, techniques, and seasonal limits/bans, use of motorboats for monitoring purposes, fishing and other purposes such as tourism. b. Agriculture in the low tank level during the summer season for its potential negative impact from the use of synthetic fertilizers and pesticides and promoting organic practices.
FARMER COMMUNITY	4. Establishment of Organic Input Manufacturing Centres with FPOs in the catchment area of wetlands, one each in all 428 Tehsils and support for training and communication materials. 5. Designing CEPA package using multimedia tools on i. Awareness of regulations and impacts of agriculture on the health of wetlands through excessive withdrawal of water, encroachments, and pollution due to fertilizer and pesticide runoffs ii. Understanding the significance and tools available to form collectives, establish sustainable farming practices and frameworks, accessible certification systems like Participatory Guarantee System (PGS) and financial and other technical resources from Government and Non-Government sources.
TOURISTS AND TOURISM ENTERPRISES	6. Develop guidelines and conduct training on i. How to estimate carrying capacity of wetland tourism site, ii. Use carrying capacity estimates to inform site infrastructure development, management plans and create local regulations on access to tourist numbers, spreading of tourists to avoid crowding, provision of services of transport, waste management, sanitation, information, safety etc. iii. Continued participatory monitoring of tourist activities with tour operators/ enterprises iv. Creating and managing eco-friendly tourist infrastructure near wetlands. v. Training of Trainers to arrange district level orientations for tourism enterprises and communities 7. Design templates for district-specific communication material basket (related to historical, cultural, ecological aspects, ecosystem benefits of wetlands, threats, good practices for tourists) and Develop site-specific materials for all districts with local adaptations. 8. Cleanliness drives on wetland day, tourism day etc.

SCHOOLS	9. Develop Wetland Focus in EEP/NGC and Learning Materials in form of Teachers Handbook on Wetland focussed Classroom Activities, Action Projects including school-community partnerships w.r.t. framework developed through pilot event comprising 5 broad areas as below: - Schools- Community Engagement Programmes: - Engage with local stakeholders, such as washermen, farmers, and fishermen, interview them to understand the socio-economic dependencies on wetlands and the impacts of degradation. - Organize student-led awareness drives to educate families and local communities about the importance of wetlands, focusing on pollution reduction, waste management, and water conservation. - Host fairs or exhibitions showcasing students' projects like eco-bricks, best-out-of-waste innovations, and wetland-themed artwork to spread awareness. - Collaborative Projects: - Form school clusters to coordinate regular monitoring of local wetlands, documenting changes in water quality, biodiversity, and human activity over time. - Promote school projects focused on waste management, such as mapping waste sources, creating soak pits for wastewater, and implementing small-scale treatment solutions. - Encourage schools to "adopt" a nearby wetland for conservation action, including clean-ups, awareness campaigns, and periodic biodiversity monitoring. - Student-Led Action Projects: - Mobilize students, teachers, and parents to organize clean-up drives around wetlands to remove waste and prevent pollution. - Launch school-wide initiatives to reduce single-use plastics by encouraging alternatives such as cloth bags and reusable bottles. - Set up compost units within schools to manage organic waste and encourage segregation of dry, wet, and hazardous waste. - Field-Based Activities: 1. Organize field visits to local wetlands where students can observe and record plants, birds, insects, and other fauna using tools like observation sheets and basic ecological methods (e.g., the quadrat method). 2. Wetland Monitoring Projects: water quality, flora, fauna, and human activity using observation tools and water-testing kits. Findings can be submitted to local authorities for reporting. 3. Water Quality Testing: Using portable water testing kits for parameters like pH, turbidity, and dissolved solids. Discuss the impact of pollutants on wetland health and aquatic life. 4. Site Visits to Faecal Sludge Treatment Plants (FSTPs) and Solid Waste Recovery Units to help students understand how urban waste impacts wetlands and witness solutions in action. - School Based Activities: - Interactive Games and Discussions: Use tools like the "Web of Life" activity to demonstrate interconnections in the wetland ecosystem and discuss the impacts of pollution on biodiversity. - Thematic Art, Debate, and Writing Competitions: Conduct competitions on topics like "Wetlands and their Importance" or "My Role in Protecting Wetlands" to promote creativity and critical thinking. - Waste and Water Audits: Encourage students to conduct classroom or school-wide audits to monitor water usage, waste generation, and energy consumption, linking results to conservation action plans. 10. Integration of wetland focus in Mowgli Utsav at Pench National Park through activity package and resource development
UNIVERSITIES AND YOUTH COMMUNITY	11. Involve Masters or Ph.D. Students for research studies of trapa and lotus cultivation (Bhoj, Yashwant Sagar and other wetlands), including cultivation, plant varieties, associated species, practices, socio-economic aspects, social and environmental linkages with wetland management 12. Involve Masters or Ph.D Students in research studies of cattle grazing (Sirpur, Yashwant Sagar and other wetlands) including extent, plant varieties, associated species, practices, socio-economic aspects, social and environmental linkages with wetland management (considering the role of cattle in wetlands)

UNIVERSITIES AND YOUTH COMMUNITY	13. i. Establish a Wetland Mitra Fellowship ii. Develop an Annual Calendar of Activities, coordination and felicitation of exemplary work for Wetland Mitra iii. Orientation module for Wetland Mitras on IMPs, wetland health cards and PBR preparation/ update, community engagement in restoration, vigilance and reporting, supporting schools and colleges in wetlands related projects and activities, celebration of Wetlands Day, Biodiversity Day and related events, and knowledge, communication and management skills for the same.
NGOs	14. Develop a training modules in the local language on the importance of wetlands ecology and hydrology for sustainable water management, soil health, and biodiversity conservation and Wetland Rules and Guidelines for integrating into sustainable farming practice, watershed management activities carried out by NGOs* and conduct these training, awareness sessions and workshops.
URBAN AND RURAL COMMUNITIES	15. Community participation in wetlands dialogues on Wetlands Day or similar observation, or towards preparation/ review of IMPs, i. Develop an inclusive protocol for conducting citizens Jal Samvad that helps to elicit KAP related to wetlands of different segments of the local community. ii. Supplement their awareness about wetlands, potential impacts of climate change, provide information about national policies and programs for wetlands conservation, and facilitates public deliberation for local action plans. iii. Such Jal Samvads can serve as venues for community learning about wetlands and participatory action planning in alignment with government policy and rules. 16. Outreach for responsible waste management i. Continue promotion under SBM of waste reduction, segregation at source, and strengthen systems for reuse, recycling, and composting. ii. Integrate content about the impact of waste pollution on wetlands for waste generators, service providers and municipal staff. 17. Promote responsible cultural connections with wetlands, especially related to immersion of idols and associated materials, e.g. Green Ganesh Campaign by EPCO; this may include a study of existing cultural practices, documenting access, economics, livelihoods, environmental aspects of such practices, dialogues on acceptable adaptations, adaptation of the ecosystem of interventions related to eco-friendly idols and other objects, and campaigns for positive reconnections with wetlands and responsible practices.
LAND RECORDS DEPARTMENT, TOWN & COUNTRY PLANNING DEPARTMENT	18. Capacity Building i. Training Module development and conduct training modules with Informative sessions to enhance knowledge about a. Physical structure of different types of wetlands b. Necessity of marking wetland boundaries c. Technical knowledge of identifying appropriate boundaries for different types of wetlands ii. Field visits, visual materials and case studies to a. Appreciate wetland ecosystems, structure and function, b. Identify ecosystem benefits and role in human wellbeing c. Understand factors affecting ecosystem health d. Negative impacts of degraded wetlands iii. Practical sessions on identifying, marking, and notifying wetland boundaries

INDUSTRIES	19. Compile case studies of industries employing effective effluent treatment technologies, showcasing their positive environmental impact on wetlands. Share these success stories to inspire others to adopt sustainable practices.
	20. Annual event/ engagement of DWCC with industries associations and CSR managers to contribute through CSR and employee engagement, enrol as Wetland Mitras to foster accountability and collaboration in conservation activities.
District Wetland Conservation Committees	21. Develop orientation modules and IEC materials using core content developed by SWA and domain experts for different line department staff on wetlands as an important ecological infrastructure and ecosystem services, wetland conservation legal frameworks, policies and programs, roles and ways to integrate wetlands conservation in district level planning and implementation and department specific indicators. The rating system will help prioritize industries for regulatory interventions, compliance improvement and partnerships in wetlands conservation.
	22. Conduct annual orientation, engaging external domain experts as per need; for district level line departments staff on status and significance of wetlands and ways to integrate wetland conservation measures and indicators into respective department programs.
	23. Annual Fairs & Felicitation Program, on best practices in wetlands conservation by various Departments, NGOs, School-Colleges, Research Institutions, Communities and Industry & Business from District.

MEDIUM-TERM ACTIVITIES

Fisher Community	1. Development /updtation of PBRs with wetland focus where Fisher Community is able to contribute their knowledge and practices, sharing and contestations related to wetland resources, its biodiversity, uses, dependencies, threats and population trends. As part of this process, also prepare 1. A timeline of significant events, changes to wetlands and community associations with wetlands and 2. Undertake Studies on non-fish wetland food resources, their availability and sustainable use.
	2. Creating murals at community centres depicting local history and biodiversity of wetland involving local artists preferably from within the community, using local art forms/styles.
	3. Developing a range of learning & remembrance materials such as story books, painting books, and calendars, using local stories, traditional & experiential knowledge, and practices associated with wetlands.
	4. Special scholarships/schemes to promote participation of Fisher Community youth (gender inclusive) in Fishery Sciences, Limnology and allied higher education streams.
	5. Develop and disseminate multimedia case stories on the importance of and promoting the participation of women in Fishing Collectives as well as in community leadership roles. Organize annual award functions in recognition of women leaders.
TOURISTS AND TOURISM ENTERPRISES	6. Undertake demonstration projects at some of the Ramsar sites / key sites to prepare and pilot a tourism circuit and infrastructure development (e.g. access, transport management, toilets, waste management, and interpretation facilities) based on carrying capacity studies, with community institutions and enterprises and frame guidelines for existing schemes/new scheme.
	7. Facilitate the formation of community-based tourism collectives and enterprises.
	8. Skill development of the local community, especially women, fishers, and farmers, for sustainable practices of hospitality, local cuisine, nature and culture interpretation and guides, marketing, bookings, and finance management, and monitoring for carrying capacity.

URBAN AND RURAL COMMUNITIES	9. Sustainable Water Resource Management In village clusters that are over-extracting water from the wetland and in the catchment, water conservation and management initiatives may be designed or strengthened with the help of the WRD. Participatory processes may be initiated for sustainable management of water resources, wetlands, including water balance, water resources associated with the wetland (precipitation, watershed, aquifer, usage, outflow, water quality etc), regulatory information, responsible use, groundwater recharge based on aquifer studies especially through public recharge areas, etc may be prepared 10. Participation in management of invasive alien plants, repopulating natives, and eco-restoration. 11. Develop / adapt platform and resources for citizen participation with help of teachers and Jan Bhagidari Samiti in wetlands monitoring and updation of Wetland Health Cards after every 5 years (20-25 wetlands in each district) covering various indicators of ecosystem health, aquatic animals (especially fish) and plant species as rural populations may be familiar with these taxa (going beyond bird databases), and develop local language interfaces in collaboration with the Govt of India Bhashini initiative (or other appropriate agency). 12. Continued promotion of installation of toilets in slum localities and their effective functioning as part of Swachh Bharat Mission-Urban (SBM-U) highlighting the need to protect water sources, using the experience of Amrit Dharohar thus far. 13. Community meetings to assess housing needs, establish wetland boundaries, communicate risks (e.g. flooding, water-borne and vector-borne diseases) of encroachment of housing in the proximity of wetlands, clear marking of the boundary with marking stones, signage, consumer awareness through media about risks in building too close to wetlands (Bhoj, Sirpur and other wetlands where encroachment is an issue).
CITY PLANNERS	14. Mandatory in-service course through the state administration training academy and expert organizations (RCVP Noronha Academy of Administration & Management, and SPA, Bhopal etc.) on environment planning / stand-alone course on planning for wetlands protection and conservation. The course should cover comprehensive aspects of wetland planning, including master planning, integrated wetland management, and planning for economic activities such as tourism, fisheries, and agri-processing. It should address EIA requirements, wetlands-related knowledge systems, and survey methods essential for effective plan preparation. The curriculum must also focus on strategies for restricting high-impact developments that could harm wetlands, identifying and managing data requirements for wetland protection, and incorporating practical examples and case studies. These case studies should highlight success stories in wetland conservation through master planning, tourism site planning, micro-planning, and participatory approaches with wetlands-dependent communities. Additionally, the course should cover methods for the valuation of wetland benefits and demonstrate how these concepts can be seamlessly integrated into master and micro-planning frameworks.
INDUSTRIES	15. Assess and rank industries located in the wetland catchment area 1. Sensitise industry on wetland importance and seek their voluntary support through CSR for wetland conservation 2. Mandatory compliances of effluent discharge, waste management practices, and overall impact on wetland health. 3. Involvement in networking and capacity building as part of industry associations for estate level management of industrial waste, pollution and adverse impacts on the environment. 4. CSR and employee engagement in wetlands conservation.

LONG-TERM ACTIVITIES	
SCHOOLS	1. Integrate Wetland Education into Curricula: Incorporate wetland conservation topics, such as ecosystem services, threats, and solutions, into formal curricula. Include concepts such as biodiversity monitoring, water quality testing, and the role of wetlands in climate regulation, through Syllabus and Textbook Review, Board of Studies, Writers Groups meetings and writeshops/assignments.
UNIVERSITIES AND YOUTH COMMUNITY	2. Recognition of Chairs in Wetlands Studies (e.g. Anupam Mishra Chairs) in different disciplines (botany, zoology, ecology, fisheries, limnology, landscape, culture, social work etc). Development of modules on wetlands, conservation and restoration to be integrated into Environment Science and other relevant courses and encouragement of inter-disciplinary masters and PhD research on wetland conservation and restoration, nature-based solutions for water pollution remediation. Annual higher education and research symposium on wetlands.

4

STORIES FROM THE GROUND

4.1

SUSTAINING LIVES, NURTURING RESILIENCE: THE FISHERFOLK AND WOMEN OF YASHWANT SAGAR WETLAND

The Yashwant Sagar Wetland, located approximately 20 kilometres from Indore, has provided vital resources to nearby villages, including Fulkaradiya and Gurdakhedi, since its construction between 1930 and 1936. This wetland has been essential for providing fish, grazing land for livestock, and irrigation for agricultural fields. However, its ecosystem has faced degradation due to droughts, invasive species like Tilapia, pollution, and the impacts of unchecked tourism. In response, a pilot program was organised on 29-30 July 2024 in these villages to engage local fisher communities and women involved in lotus flower sales and tourism-related activities in conservation efforts.

The event began with a community-led exercise where villagers created a timeline of the wetland's history. Elders discussed significant events such as the floods of 2006 and the droughts that affected the area. They also noted changes in biodiversity, including the decline in fish species like Raiya and the introduction of red lilies in 2008. The villagers highlighted the rise of tourism in Lotus Valley and

the tensions it has created between villages. Despite these challenges, there was a collective desire to restore the wetland to ensure its continued benefits. During the programme, participants engaged in an exercise to identify the ecosystem services provided by Yashwant Sagar. Divided into groups, they reflected on the wetland's role in providing fish, recharging groundwater, and supporting local wildlife. These discussions emphasised the interconnectedness of the wetland with the livelihoods of local communities, reinforcing the need for its preservation.

A session titled “तालाब के लाभ, लाभ के मूल्य” helped participants understand the broader value of the wetland. They learned about different methods of valuing wetlands, including market-based approaches and substitute cost methods. This session led to a greater appreciation among the villagers for the tangible benefits of the wetland, such as its role in supporting local livelihoods and maintaining ecological balance. The programme also featured presentations from women leaders, including Shalu Kolhe, who shared her experiences in wetland restoration and the establishment of a cage-culture fishery business in Maharashtra. Her success served as inspiration for the women of Fulkaradiya and Gurdakhedi, demonstrating the potential for women to lead wetland conservation and sustainable business initiatives.

Dr. Dinesh Damde (SWA) Conducting Session on Legal Framework



Session on Legal Framework of Wetlands Conservation & Management, Indore © Sanskriti Menon/CEE (GIZ)

To engage youth in conservation, a 'Ropes and Ladder' game was organised, teaching the principles of wetland conservation and sustainable fishing practices. Additionally, community youth received hands-on training in water quality testing, learning to measure dissolved oxygen, pH, and turbidity.

Women of Kewat (fishing) Community Rope and Ladder Game



Rope and Ladder game, Indore © Sanskriti Menon/CEE (GIZ)

Session on water sample collection and testing



Wetland Water Testing, Indore © Suraj Jagdhane/CEE (GIZ)

tourism industry in Lotus Valley, including disputes over land ownership and benefit-sharing between Gulawat and Gurdakhedi. Unregulated tourism has led to overcrowding, traffic jams, waste, and safety concerns. A presentation on sustainable tourism planning provided solutions such as eco-friendly infrastructure, diversification of tourist sites, and community-based management. A dialogue facilitated between the villagers revealed their willingness to work together and find solutions to ensure that tourism benefits all stakeholders without harming the wetland. Women from Gurdakhedi voiced the need for fair benefit-sharing mechanisms.

An architect's presentation on sustainable tourism planning offered practical ideas: eco-friendly infrastructure, diversification of tourist sites, and collective management to avoid overburdening any one village. The pilot programme at Yashwant Sagar saw active participation from the fisherfolk and women of Gurdakhedi and Fulkaradiya, who brought their deep-rooted connection and traditional knowledge of the wetland to the forefront. The fisher communities, including Batham, Kaahaar, Manjhi, and Kewat, shared valuable insights during the sessions, drawing from their extensive experience in fishing and lotus harvesting. Their understanding of the wetland's biodiversity and ecosystem services enriched discussions on sustainable practices, particularly in the sessions on wetland's ecosystem benefits and valuation.

Station Round Activity with Women Gurdakhedi to Understand Tourism related Needs



Participatory planning for wetland conservation & management, Indore © Suraj Jagdhane/CEE (GIZ)

Participants of Pilot Event Organized at Gurdakhedi village near Yashwant Sagar, Indore



Yashwant Sagar Pilot Event, Indore © Suraj Jagdhane/CEE (GIZ)

Women from these villages played an equally significant role, reflecting on their evolving livelihoods shaped by the wetland. They highlighted their involvement in activities such as lotus harvesting and tourism-related initiatives like selling lotus flowers, offering decorated swings, and organising cycle rides in the scenic Lotus Valley. During the programme, they voiced their aspirations to formalise

and expand their participation in tourism while learning from other women-led wetland restoration initiatives.

The pilot programme provided an opportunity for community members to share their traditional knowledge and explore the potential for collective efforts to manage and restore the wetland.

Guidance on Community Participatory Assessment and Planning Events

- It is necessary to understand your audience, their setup i.e. the context in which they live and the near-medium terms situations.
- It is important to clear their doubts –the purpose of meeting/training etc.
- Engagement methods—try different ways to involve them and let them speak.
- Don't overload them with information.
- Provide information creatively, and engagingly such as group work, games, and show and tell, hands-on methods (Water testing). Group work can be conducted in several ways like station round/ carousel technique, role play, recall and review, etc.

Before planning any activity for community: Observe and Understand

- The community is living a real life in that area. Do not overrule it.
- Citizen Participation in CEPA activities/events depends on many factors, which need careful consideration such as distance from their residence, even location within the village can influence participation of certain communities and women.

- Clear communication on who should participate and why helps in ensuring relevant participation. Always be accommodative to community representatives' suggestions.
- The participation of community leaders in the planning process is important.
- It is critical to have formal communication with concerned authorities including Gram Panchayat regarding any event planning.
- Dynamics within the community and between communities/villages may affect the participation in the event. Therefore it is important to study these dynamics and have clear communication with all stakeholders
- While organizing the event, it is important to take local cultural aspects into consideration. For example, women in Fulkaradiya village were unwilling to travel to the main village panchayat building for this event. As their participation was important, a tent was raised in their hamlet for this event.
- In a typical village situation, remember that organizing food, and refreshments needs to factor in the redundancies to cope with fluctuations in numbers on either side.

- It is important to ensure messaging on eco-friendliness through event management in terms of eco-friendly material use and waste management.
- Remember the community is constantly judging you as well.
- You cannot change their living conditions through events or workshops, so do not over-commit or create false hope.

Designing Communication for Community and Citizen

- Be clear about your purpose and objective.
- If you need community support towards wetland conservation, build their trust. This can be done through trust-building activities.
- If a particular behaviour is causing a problem, try to enact it and let the first solution come from participants.
- Facilitate to build consensus among them.

• Conclusion

It is very important to develop strategies for the wise use of wetland resources, balancing ecological health and community needs. This needs data-based planning and participatory methods can provide valuable information for such a planning process. It is pertinent to utilize the traditional and experiential knowledge (TEK) of the fisher community for biodiversity conservation. In the case of Yashwant Sagar, existing documentation available at Ramsar portal does not make any reference to the local community and knowledge base and practices which are critical for wetland conservation. They have a nuanced understanding of various taxa, behaviours and ecological health of the wetland. Eco-restoration strategies developed using TEK have proven to be both cost-effective and ensure better participation and ownership development.

It is also important to enhance the capacity of the fisher community and tourism operators through training and awareness programs in areas such as hospitality, new product development, marketing, waste management and collective governance. Also it is required to foster the collaboration between citizen groups and government agencies for effective wetland management.

Addressing Conflict Situation

- Interpersonal conflict needs to be addressed through different forums but let there be dialogue to highlight if this has a bearing on wetland health.
- Conflicts related to rules/regulations/community rights need to be addressed at appropriate level.
- Conflict resolution is a complex and often a long drawn process, events can be integrated into such a process, by organizing dialogue between contesting parties and arbitration authorities, formal or informal as per situation. At times mere listening up, transparency and sharing facts on benefits, eligibility and selection criteria may help.

Catalysing Change: Lessons from Shalu Kolhe

Shalu Kolhe, a prominent community leader from the Dhiwar fisher community in Vidarbha, Maharashtra, has become a symbol of resilience and innovation in wetland conservation. Hailing from a region historically reliant on lakes and tanks for irrigation, she has been at the forefront of efforts to revive degraded wetland ecosystems. Together with her community, Shalu Kolhe has led initiatives to tackle invasive species, restore indigenous aquatic plants, and rehabilitate fish populations.

Shalu Kolhe of Foundation for Economic and Ecological Development (FEED), Gondia conducting session on lake rejuvenation



Session on Lake Rejuvenation, Indore © Suraj Jagdhane/CEE, (GIZ)

During the Yashwant Sagar pilot event, Shalu Kolhe shared her remarkable journey of community-led wetland restoration. She spoke about the challenges posed by habitat degradation, invasive species, and unsustainable fish farming practices in her region. Her experiences provided the fisher community at Yashwant Sagar with actionable insights into collective action, sustainable practices, and the potential of women-led eco-restoration initiatives.

Through interactive dialogues, she inspired the participants by detailing how the Dhiwar community successfully restored lakes by removing invasive species like *Ipomea fistulosa*, reintroducing indigenous aquatic plants, and conserving certain lakes exclusively for native fish species. Shalu also emphasised the importance of women's participation in wetland governance and demonstrated how their leadership can address social and ecological issues simultaneously.

Her contributions during the pilot event not only resonated deeply with the fisher community but also motivated local women to explore leadership roles in ecosystem restoration. By illustrating practical steps and showcasing the success of collective action, Shalu Kolhe became a catalyst for change, bridging knowledge and action for the sustainable management of Yashwant Sagar.

4.2

EMPOWERING FARMERS FOR WETLAND CONSERVATION: INSIGHTS FROM THE BHOJ WETLAND PILOT WETLAND

The Bhoj Wetland, a Ramsar Site covering 3,201 hectares, is home to over 160 bird species, including the White Stork and the Sarus Crane. Despite its ecological and cultural importance, the wetland faces increasing pressures from urban expansion and unsustainable agricultural practices. To address these challenges, a pilot event was held in September 2024 to empower farmers, including women and youth, as key stakeholders in conservation efforts.

Registration of pilot event with farmers in Badziri village, Bhopal



Bhoj Talaab Pilot Event, Bhopal © Navneet Wadkar/CEE (GIZ)

The initiative focused on establishing a Farmers' Lab, where participants were trained to produce *Trichoderma*-based microbial consortia. These organic inputs, which act as fungicides, insecticides, and plant growth promoters, provide an alternative to chemical inputs. A team of 4-5 trained individuals can produce enough organic inputs to cover up to 1,000 acres of farmland. This approach offers a cost-effective and scalable solution for promoting regenerative agriculture while protecting the wetland ecosystem.

Demonstration of *Trichoderma* based Input Production at Pratishtha FPO, Badziri, Bhopal



Trichoderma based input lab, Bhopal © Navneet Wadkar/CEE (GIZ)

Dr. Santosh Chavan Demonstrating Various Forms of Trichoderma Inputs



Trichoderma Inputs, Bhopal © Navneet Wadkar/CEE (GIZ)

The event included activities to help farmers reflect on the relationship between agriculture and wetlands. One exercise revealed the shift from traditional crops like millet, desi moong, and sesame to market-driven crops such as wheat and rice. Participants recognised the impact of this change on both their livelihoods and the wetland's biodiversity. As a result, they committed to reintroduce traditional crops through pilot demonstration plots to restore both the nutritional and ecological value of their farming systems.

Publication of 'Trichoderma based Input Production Lab Manual'



Publication of 'Trichoderma based Input Production Lab Manual', Bhopal © Sarita Thakore/CEE (GIZ)

Farmers also discussed the economic challenges of modern farming, particularly the high costs associated with synthetic fertilisers and pesticides. Through an exercise on production costs and profits, they realised that organic inputs could significantly reduce costs while improving soil

health and productivity. This understanding reinforced the economic resilience and environmental benefits of organic farming.

Another key activity involved mapping the historical changes in agriculture and wetlands in the area. Farmers reflected on how technological advancements, such as the introduction of electric pumps and synthetic pesticides, had affected their practices and the wetland's health. This exercise led to proposals to integrate traditional knowledge with modern practices to minimise ecological harm.

The event also highlighted the importance of partnerships for achieving sustainable change. Organisations like Pratishtha FPO, facilitated by Solidaridad, played a key role in providing training, market access, and support to farmers. Farmers expressed the need for ongoing advisory services, high-quality seeds, and soil testing labs to make informed decisions. They also emphasised the importance of local infrastructure, such as solar pumps and agricultural ponds, to improve resilience against climate change and conflicts with wildlife.

By the end of the event, farmers had developed preliminary plans for aligning agriculture with wetland conservation. They made commitments to create model demonstration farms, scale organic input production, and implement biodiversity-friendly farming practices. The pilot event demonstrated that with the right knowledge, tools, and collaboration, farmers can play an active role in sustainable development and wetland conservation.

Village Farmers Presenting Economics of Various Crops



Economics of Crop Production Session, Bhopal © Sarita Thakore/CEE (GIZ)

This initiative offers a model for integrating agricultural practices with wetland conservation. It shows that conservation efforts are more effective when local

communities are involved, and that empowering farmers with the right resources can lead to sustainable solutions for both agriculture and wetlands.

Conclusion

Farming practices in the catchment area greatly influence the ecological integrity of the wetlands; a shift from synthetic chemical-based production systems leading to nutrient overloading, harmful chemical residues and pollution of wetlands, towards the adoption of organic and regenerative methods of agriculture is critical for maintaining ecological integrity. For that purpose, farmers expressed the need for information and awareness about various government schemes of organic farming through training programmes, assistance for organic manure production and availability of organic fertilisers and pesticides in input shops. Farmers also felt that if a soil testing lab at the village level is made available, it will be convenient to test the soil and apply synthetic fertilizers more precisely. Farmers also require solar pumps, agriculture ponds, spray drones, accurate local weather advisories and support for animal husbandry. Recently farmer-wild animals conflict has increased in this region and farmers have demanded speedy compensation for losses incurred due to animal attacks.

Farmers need education and information on quality seeds, simple seed testing, information about different pests of various crops and preventive and curative measures, information about high-yielding crop varieties, information about the process of making organic fertilisers, water requirements of crops and drought-resistant varieties. Farmers also expressed the necessity of information about value addition in agriculture production, various processing technologies and training on governance and management of farmer's collectives.

4.3

A JOURNEY OF LEARNING AND ACTION: TEACHERS AND SCHOOLS AS STAKEHOLDERS FOR WETLAND CONSERVATION

The Sakhya Sagar Reservoir in Shivpuri, Madhya Pradesh, is a critical ecosystem that supports biodiversity and local livelihoods. Despite its designation as a Ramsar wetland of international importance, it faces significant threats, including wastewater pollution, agricultural runoff, and

invasive species. These challenges prompted the need for a community-driven conservation approach, with schools identified as key partner.

A two-day pilot programme was held near Sakhya Sagar on November 27th and 28th, 2024, with the goal of orienting teachers to experiential approaches for wetland conservation education and practical tools to engage students in learning about and acting to protect the wetland. The orientation began with a field visit to Sakhya Sagar Wetland. Many teachers reported that this was their first visit to the lake. The teachers were provided observation sheets and oriented to using the quadrat method to study plant and bird species. The hands-on activity provided teachers with a deeper understanding of the wetland's ecosystem, emphasising the interconnectedness of the environment and prompting questions about protecting this fragile system. The use of structured observation as a learning method was discussed.

Walk at Madhav National Park to document biodiversity around the lake



Lake Walk and Biodiversity Mapping, Shivpuri © Satish Awate/CEE (GIZ)

Documentation of Various Grasses near the Lake Using Quadrat Method



Lake Biodiversity Mapping, Bhopal © Shambhavi Krishna/GIZ

The visit also included a tour of the Municipal Solid Waste MRF, where teachers saw how segregated waste is processed for recycling, rather than polluting the wetland. This visit underscored the importance of waste management at the source and demonstrated how small actions, such as waste segregation and composting, can have a significant impact on environmental conservation.

Visit to Waste Collection Centre in Shivpuri



Visit to Waste Collection Centre, Shivpuri © Satish Awate/CEE (GIZ)

At the washermen's site, teachers spoke with locals who rely on the wetland for their livelihoods. This interaction emphasised the human cost of pollution and the importance of protecting the wetland not only as an ecosystem, but as a resource for local communities.

The teachers participated in the "Web of Life" game, which illustrated the interdependencies in nature. The game helped participants understand how disruptions in the ecosystem, such as the loss of clean water or biodiversity, can have cascading effects. This reinforced the message that even small actions, like reducing waste or conserving water, can contribute to the health of the wetland.

On the second day, teachers visited the FSTP in Santushti Colony, where they learned how untreated wastewater, a major pollutant of wetlands, can be treated and repurposed for irrigation and green spaces. This visit highlighted the potential of local solutions to address environmental challenges. Teachers also visited Happy Days School, where students showcased their environmental projects, including composting units and eco-bricks made from waste materials. The projects demonstrated the practical, creative solutions that students can implement in their communities.

At the end of the programme, teachers reflected on their experiences and developed action plans for their schools. These plans included initiatives such as classroom audits on water and waste management and student-led biodiversity monitoring on school campuses. The programme emphasised the value of experiential learning—connecting classroom education with real-world environmental issues—to foster a deeper understanding of wetland conservation.

Group activity to List Threats to Wetlands



Threats to Wetlands Activity, Shivpuri © Sanskriti Menon/CEE (GIZ)

The programme demonstrated the important role that schools can play in environmental education and community-driven conservation efforts. By integrating education into conservation strategies, the pilot highlighted the potential for schools to be key players in protecting wetlands for future generations.

Participating teachers appreciated the different learning approaches and indicated:

- a. While teachers are generally aware of environmental and civic issues, the training helped to update the understanding and link it to the context of wetlands and connect content learning to sustainability action.
- b. Place-based education is a powerful learning approach with well-thought-out activities to support students in observing and interpreting the natural environment and its quality.
- c. The visit to the landfill helped obtain insights into the scale of the issue of waste generation, the importance of individual and community action to prevent waste leakage, and how the catchment is linked to the health of the wetland.

- d. Positive examples of action such as the FSTP at Santushti Colony and the functional compost pit at the school are inspirational
 - e. The interview with washermen helped develop empathy and showed how pollution affects people who directly depend on and interact with the natural environment.
2. Several concepts are present in textbooks and curricula, however, such activities are helpful to trigger the students' interest, provide practical learning, and connect to the local situation.
 3. Some of the constraints mentioned by teachers are
 - a. Time and capacity to carry out activities.
 - b. For conducting field trips, directives are needed from the District Education Officer
 4. The EEP scheme enables schools to propose and take up small projects for learning and action for wetlands conservation. School clusters can take up coordinated projects for wetland visits, monitoring, and catchment-based activities like waste management audits, waste segregation and composting projects.
 5. Teachers also mentioned forest excursions for students arranged by the Forest Department as part of the "Van Anubhuti" programme, which presents opportunities for learning about wetlands.
 6. As indicated by action plans developed by teachers, most schools can implement classroom or school-based activities like games, school audits etc.

Conclusion

Involving schools and colleges in learning about and caring for wetlands is essential. The scope of learning materials and approaches must include the following as appropriate for different age groups:

- Wetland ecosystems diversity, components, structure and function
- How to monitor wetland health
- Human linkages with wetlands and direct and indirect values and benefits
- Threats to wetlands
- Conservation actions at different scales
- Institutional systems, policy and governance for wetlands conservation

Both formal and nonformal education and engagement approaches are needed. All government and private schools under various boards of education (including Jawahar Navodaya Vidyalaya and Kendriya Vidyalaya), government and private colleges, and university departments may be engaged.

The EEP programmes implemented by the MoEFCC and EPCO, which acts as the State Nodal Agency in Madhya Pradesh is the most appropriate vehicle to integrate project-based learning for wetlands conservation education. Similarly, the Van Anubhuti programme of the Forest Department is another important vehicle for the convergence of wetlands conservation education. Higher secondary, college and university students may be involved in wetlands monitoring and contributing to the PBRs.

An Educators' Manual and supplementary materials containing visual guides, information, monitoring kits, lesson plans, student activities and project ideas will be helpful for the EEP coordinators, teachers, forest officials, Wetland Mitras and volunteers. District-level orientation programmes will help to activate the interest of teachers and resource persons in wetlands conservation and streamline the convergence in the DWCC.

4.4

BRIDGING GAPS: COLLABORATIVE DIALOGUE WITH THE DISTRICT WETLAND CONSERVATION COMMITTEE AND DEPARTMENTS FOR SAKHYA SAGAR CONSERVATION

In early December 2024, a workshop of the different line departments of the Shivpuri district administration was organised to discuss wetlands conservation, with a focus on the challenges facing the Sakhya Sagar Wetland. The meeting marked a significant step toward improving coordination and addressing conservation issues.

The workshop began with an activity called "My Connection with Wetlands," where participants shared personal stories about the wetlands. These stories revealed their deep cultural and personal significance, while also highlighting the growing threats of pollution,

encroachment, and mismanagement. This emotional connection set the tone for the workshop, fostering a shared commitment to protecting and restoring the wetland.

The workshop focused on different aspects of wetland conservation. The Range Forest Officer from Madhav National Park gave a presentation on the ecological importance of the wetland and its Ramsar designation. The officer explained how the wetland serves as both a habitat for wildlife and a resource for local communities. Participants identified key threats, such as stormwater runoff, untreated sewage, and invasive species. Using a large chart, they mapped the roles of various departments in addressing these issues. As departments shared their perspectives, it became clear that many of the issues were interconnected, cutting across traditional boundaries of responsibility. For example, the problem of untreated sewage entering Sakhya Sagar required a coordinated response from the Municipality, PWD, and the State Wetland Authority. Similarly, participants highlighted the ambiguity in roles regarding lake deepening—a potential solution to regulate water levels and improve wetland health. Was this the responsibility of the PWD, the Gram Panchayat, or another entity? This dialogue underscored the need for clear interdepartmental protocols and regular communication.

Listing of threats to Wetlands and Challenges faced by Various Government Departments



Threats to Wetlands Activity, Shivpuri
© Satish Awate/CEE (GIZ)

The dialogue was not limited to challenges. Participants also shared innovative solutions and potential synergies. For instance, the Public Relations Department proposed leveraging social media campaigns to raise awareness about the Wetland Rules and permissible activities. The

Education Department suggested adding wetland conservation topics to school curricula, and the Fisheries Department emphasised the importance of involving local fishers to promote sustainable practices. A quiz on Wetland Rules helped participants gain a better understanding of the regulations and their responsibilities.

The most impactful session was the group activity focused on citizen engagement. Participants brainstormed ways to involve local communities in wetland conservation, such as organising citizen science initiatives and launching awareness campaigns in schools and villages. This exercise highlighted the role each department could play in fostering a participatory approach to wetland management.

Matrix drawing activity to list opportunities for citizen engagement and interdepartmental convergence



Opportunities for Citizen's Engagement, Shivpuri
© Ashok Thorve/CEE (GIZ)

The workshop concluded with a meeting with the District Collector, who reviewed the group's findings and strategies. The Collector provided updates on plans to address untreated sewage, a major issue for the wetland, and commended the strategies developed by the group for public engagement and awareness.

Conclusion

The CEPA Strategy for Wetland Conservation workshop has laid a strong foundation for collaborative and actionable efforts toward preserving the Sakhya Sagar wetland. Through interactive sessions, engaging activities, and insightful discussions, participants better understood the interconnected roles of various departments, stakeholders, and communities in wetland conservation. Key takeaways included innovative strategies for citizen

engagement, improved clarity on departmental responsibilities, and the importance of a cohesive, multi-sectoral approach to addressing threats and challenges. Moving forward, it is crucial to operationalize recommendations identified during the sessions. Strengthening interdepartmental collaboration, mobilizing adequate resources, and prioritizing community participation will be pivotal for implementing effective conservation measures. Special emphasis must be placed on leveraging CEPA's outreach potential through targeted awareness programs, capacity building, and innovative

media tools to engage citizens and local stakeholders in wetland preservation.

By fostering sustained efforts, aligning departmental goals, and embracing participatory approaches, the DWCC can establish Sakhya Sagar as a model for wetland conservation, ensuring its ecological and social benefits for future generations. The momentum built during this pilot should inspire broader, state-wide action in aligning CEPA strategies with wetland conservation priorities across Madhya Pradesh.

District Wetland Conservation Committee (DWCC) of the Shivpuri District



DWCC Meeting, Shivpuri © Avinash Madhale/CEE (GIZ)

responsibilities, and the importance of a cohesive, multi-sectoral approach to addressing threats and challenges. Moving forward, it is crucial to operationalize recommendations identified during the sessions. Strengthening interdepartmental collaboration, mobilizing adequate resources, and prioritizing community participation will be pivotal for implementing effective conservation measures. Special emphasis must be placed on leveraging CEPA's outreach potential through targeted awareness programs, capacity building, and innovative media tools to engage citizens and local stakeholders in wetland preservation.

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Summary of Stakeholders-wise CEPA Actions

1. Stakeholder

Fisher Community

Suggested Actions

District and State level review of status of wetlands in PBRs.

Development /updaton of PBRs with wetland focus where Fisher Community is able to contribute their knowledge and practices, sharing and contestations related to wetland resources, its biodiversity, uses, dependencies, threats and population trends. As part of this process, also prepare 1. A timeline of significant events, changes to wetlands and community associations with wetlands and 2. Undertake Studies on non-fish wetland food resources, their availability and sustainable use.

Use participatory approaches to develop and implement IMPs of selected wetlands in each district of the state in convergence with existing schemes for wetlands, Jalshakti and Swachh Bharat with Fisher as a priority steward group along with other citizen groups.

Creating murals at community centres depicting local history and biodiversity of wetland involving local artists preferably from within the community, using local art forms/styles

Developing a range of learning & remembrance materials such as story books, painting books, and calendars, using local stories, traditional & experiential knowledge, and practices associated with wetlands.

Special scholarships/schemes to promote participation of Fisher Community youth (gender inclusive) in Fishery Sciences, Limnology and allied higher education streams.

Effective affirmative action for recruitment of Fisher Community members in the Fisheries Development department.

Develop and disseminate multimedia case stories on the importance of and promoting the participation of women in Fishing Collectives as well as in community leadership roles. Organize annual award functions in recognition of women leaders.

Create a Repository of CEPA products for

1. Communities to understand the wetland ecosystem and its functioning, legal provisions around wetland conservation for periodic dialogue by responsible authorities on updating legal provisions and address community concerns, especially through participatory, scientific and socially just interpretation of 'Wise Use' of wetlands.
2. Impacts of livelihoods on wetlands such as:
 - a. Fishing - introduction of invasive species, techniques, and seasonal limits/bans, use of motorboats for monitoring purposes, fishing and other purposes such as tourism.
 - b. Agriculture in the low tank level during the summer season for its potential negative impact from the use of synthetic fertilizers and pesticides and promoting organic practices.

2. Stakeholder

Farmer Community

Suggested Actions

Establishment of Organic Input Manufacturing Centres with FPOs in the catchment area of wetlands, one each in all 428 Tehsils and support for training and communication materials. (Rs.100000 for Lab/Centre development and Rs.50,000 for Training and communication materials per Lab/Centre)

Designing CEPA package using multimedia tools on

1. Awareness of regulations and impacts of agriculture on the health of wetlands through excessive withdrawal of water, encroachments, and pollution due to fertilizer and pesticide runoffs
2. Understanding the significance and tools available to form collectives, establish sustainable farming practices and frameworks, accessible certification systems like PGS and financial and other technical resources from Government and Non-Government sources.

3. Stakeholder

Tourist and Tourism Enterprises

Tourism Department Officials

Suggested Actions

Develop guidelines and conduct training on

1. How to estimate wetland tourism site carrying capacity,
2. Use carrying capacity estimates to inform site infrastructure development, management plans and create local regulations on access to tourist numbers, spreading of tourists to avoid crowding, provision of services of transport, waste management, sanitation, information, safety etc.
3. Continued participatory monitoring of tourist activities with tour operators/ enterprises
4. Creating and managing eco-friendly tourist infrastructure near wetlands.
5. Training of Trainers to arrange district level orientations for tourism enterprises and communities

Undertake demonstration projects at some of the Ramsar sites / key sites to prepare and pilot a tourism circuit and infrastructure development (e.g. access, transport management, toilets, waste management, and interpretation facilities) based on carrying capacity studies, with community institutions and enterprises and frame guidelines for existing schemes/new scheme.

Design templates for district-specific communication material basket (related to historical, cultural, ecological aspects, ecosystem benefits of wetlands, threats, good practices for tourists)

Develop site-specific materials for all districts. local adaptation.

4. Stakeholder

Tourism Enterprises

Suggested Actions

Facilitate the formation of community-based tourism collectives and enterprises

Skill development of the local community, especially women, fishers, and farmers, for sustainable practices of hospitality, local cuisine, nature and culture interpretation and guides, marketing, bookings, and finance management, and monitoring for carrying capacity.

Cleanliness drives on wetland day, tourism day etc.

Stakeholder

Schools

Suggested Actions

Schools Develop Wetland Focus in EEP and Learning Materials in form of Teachers Handbook on Wetland focussed Classroom Activities, Action Projects including school-community partnerships w.r.t. framework developed through pilot event comprising 5 broad areas viz 1: Schools- Community Engagement Programmes, 2. Collaborative Projects for monitoring, 3. Student-Led Action Projects, 4. Field-Based Activities including site visits, water testing, multi year biodiversity monitoring. 5. School Based Activities using games, arts, audits etc.

Integration of wetland focus in Mowgli Utsav at Pench National Park through activity package and resource development

Integrate Wetland Education into Curricula: Incorporate wetland conservation topics, such as ecosystem services, threats, and solutions, into formal curricula. Include concepts such as biodiversity monitoring, water quality testing, and the role of wetlands in climate regulation, through Syllabus and Textbook Review, Board of Studies, Writers Groups meetings and workshops/assignments.

5. Stakeholder

Universities and Youth Community

Suggested Actions

Recognition of Chairs in Wetlands Studies (e.g. Anupam Mishra Chairs) in different disciplines (botany, zoology, ecology, fisheries, limnology, landscape, culture, social work etc).

Development of modules on wetlands, conservation and restoration to be integrated into Environment Science and other relevant courses and encouragement of inter-disciplinary masters and PhD research on wetland conservation and restoration, nature-based solutions for water pollution remediation.

Annual higher education and research symposium on wetlands.

Involve Masters or Ph.D. Student for research studies of trapra and lotus cultivation (Bhoj, Yashwant Sagar and other wetlands), including cultivation, plant varieties, associated species, practices, socio-economic aspects, social and environmental linkages with wetland management

Involve Masters or Ph.D Students in research studies of cattle grazing (Sirpur, Yashwant Sagar and other wetlands) including extent, plant varieties, associated species, practices, socio-economic aspects, social and environmental linkages with wetland management (considering the role of cattle in wetlands)

6. Stakeholder

Wetland Mitra

Suggested Actions

1. Establish a Wetland Mitra Fellowship
2. Develop an Annual Calendar of Activities, coordination and felicitation of exemplary work for Wetland Mitra
3. Orientation module for Wetland Mitras on IMPs, wetland health cards and PBR preparation/ updation, community engagement in restoration, vigilance and reporting, supporting schools and colleges in wetlands related projects and activities, celebration of Wetlands Day, Biodiversity Day and related events, and knowledge, communication and management skills for the same.

7. Stakeholder

Non-Governmental Organizations

Suggested Actions

Develop learning modules in the local language on the importance of wetlands ecology and hydrology for sustainable water management, soil health, and biodiversity conservation and Wetland Rules and Guidelines for integrating into sustainable farming practice, watershed management activities carried out by NGOs.*

Conduct workshops and awareness sessions about wetlands' ecological and economic importance and approaches for citizen engagement including Wetland Mitras.

8. Stakeholder

Urban and Rural Communities

Suggested Actions

Water abstraction:

In village clusters that are over-extracting water from the wetland and in the catchment, water conservation and management initiatives may be designed or strengthened with the help of the WRD. Participatory processes may be initiated for sustainable management of water resources, wetlands, including water balance, water resources associated with the wetland (precipitation, watershed, aquifer, usage, outflow, water quality etc), regulatory information, responsible use, groundwater recharge based on aquifer studies especially through public recharge areas, etc may be prepared

Community participation in management of invasive alien plants, repopulating natives, and eco-restoration

Community participation in wetlands dialogues on Wetlands Day or similar observation, or towards preparation/ review of IMPs. Develop an inclusive protocol for conducting citizens Jal Samvad that helps to elicit KAP related to wetlands of different segments of the local community, supplement their awareness about wetlands, potential impacts of climate change, provide information about national policies and programs for wetlands conservation, and facilitates public deliberation for local action plans. Such Jal Samvads can serve as venues for community learning about wetlands and participatory action planning in alignment with government policy and rules.

Develop / adapt platform and resources for citizen participation in wetlands monitoring with an annual updation of Wetland Health Cards covering various indicators of ecosystem health, aquatic animals (especially fish) and plant species as rural populations may be familiar with these taxa (going beyond bird databases), and develop local language interfaces in collaboration with the Govt of India Bhashini initiative (or other appropriate agency).

Outreach for responsible waste management: Continue promotion under SBM of waste reduction, segregation at source, and strengthen systems for reuse, recycling, and composting. Integrate content about the impact of waste pollution on wetlands for waste generators, service providers and municipal staff.

Continued promotion of installation of toilets in slum localities and their effective functioning as part of SBM (U) highlighting the need to protect water sources, using the experience of Amrit Dharohar thus far.

Promote responsible cultural connections with wetlands, especially related to immersion of idols and associated materials, e.g. Punaravartan campaign in Maharashtra; this may include a study of existing cultural practices, documenting access, economics, livelihoods, environmental aspects of such practices, dialogues on acceptable adaptations, adaptation of the ecosystem of interventions related to eco-friendly idols and other objects, and campaigns for positive reconnections with wetlands and responsible practices.

Community meetings to assess housing needs, establish wetland boundaries, communicate risks (e.g. flooding, water-borne and vector-borne diseases) of encroachment of housing in the proximity of wetlands, clear marking of the boundary with marking stones, signage, consumer awareness through media about risks in building too close to wetlands (Bhoj, Sirpur and other wetlands where encroachment is an issue).

9. Stakeholder

Land Records Department, Building Use Permission Department

Suggested Actions

Training Module development and conduct training modules with Informative sessions to enhance knowledge about

1. the physical structure of different types of wetlands
2. necessity of marking wetland boundaries
3. technical knowledge of identifying appropriate boundaries for different types of wetlands

Field visits, visual materials and case studies to

1. Appreciate wetland ecosystems, structure and function,
2. Identify ecosystem benefits and role in human wellbeing
3. Understand factors affecting ecosystem health
4. Negative impacts of degraded wetlands

Practical sessions on identifying, marking, and notifying wetland boundaries.

Suggested Actions

Mandatory in-service course through the state administration training academy and expert organizations (RCVP Noronha Academy of Administration & Management, and SPA, Bhopal etc.) on environment planning / stand-alone course on planning for wetlands protection and conservation.

The course should cover comprehensive aspects of wetland planning, including master planning, integrated wetland management, and planning for economic activities such as tourism, fisheries, and agri-processing. It should address EIA requirements, wetlands-related knowledge systems, and survey methods essential for effective plan preparation. The curriculum must also focus on strategies for restricting high-impact developments that could harm wetlands, identifying and managing data requirements for wetland protection, and incorporating practical examples and case studies. These case studies should highlight success stories in wetland conservation through master planning, tourism site planning, micro-planning, and participatory approaches with wetlands-dependent communities. Additionally, the course should cover methods for the valuation of wetland benefits and demonstrate how these concepts can be seamlessly integrated into master and micro-planning frameworks.

10. Stakeholder

Industries

Suggested Actions

Assess and rank industries located in the wetland catchment area based on

- Mandatory compliances of effluent discharge, waste management practices, and overall impact on wetland health.
- Involvement in networking and capacity building as part of industry associations for estate level management of industrial waste, pollution and adverse impacts on the environment.
- CSR and employee engagement in wetlands conservation

The rating system will help prioritize industries for regulatory interventions, compliance improvement and partnerships in wetlands conservation.

Compile case studies of industries employing effective effluent treatment technologies, showcasing their positive environmental impact on wetlands. Share these success stories to inspire others to adopt sustainable practices.

Annual event/ engagement of DWCC with industries associations and CSR managers to contribute through CSR and employee engagement, enrol as Wetland Mitras to foster accountability and collaboration in conservation activities.

APPENDIX 1: ADDRESS AND CONTACT DETAILS OF NGOS WORKING FOR WETLAND CONSERVATIONS

1. **World Wide Fund for Nature (WWF) India**
Address: 172 B, Lodhi Estate, New Delhi- 110003
Tel: +91 11 4150 4815
Email: contact@wwfindia.net
2. **Bombay Natural History Society (BNHS)**
Address: Opp.Lion Gate, Shaheed Bhagat Singh Road, Fort, Mumbai 400 001, Maharashtra, India
Email: info@bnhs.org
3. **The Nature Conservancy (TNC) India**
Address: 37, Second Floor, Link Road, Lajpat Nagar, Part-3, New Delhi-110024
Email: incontact@tnc.org
4. **Wetlands International South Asia**
Address: Module No. 003, Ground Floor, NSIC Business Park,
Okhla Industrial Estate, New Delhi-110020, India
Email: wi.southasia@wi-sa.org
Tel: +91 11 46038906
5. **India Wetland Coalition (IWC)**
Address: CII – ITC Centre of Excellence for Sustainable Development
Thapar House, 2nd Floor, 124 Janpath
New Delhi – 110001
Email: ibbi@cii.in
6. **Care Earth Trust**
Address: 5, Sri Nivas, 21st St, Thillaiganga Nagar, Nanganallur, Chennai, Tamil Nadu 600061
Phone No: 044 43588550
7. **Vanashakti**
2nd Floor Nandakumar, Pawar House, MD Kini Rd, opp. Shubhlaxmi HSG,
Nahur, Friends Colony, E, Mumbai, Maharashtra 400042
Phone: +91-9967632302
Email: vanashakti@gmail.com
8. **Bhumi's Revive Lakes Project**
Address: 3/2, Karpaga Vinayagar Koil Street, Alandur, Chennai – 600016, India
Phone: 87544-13255
Email: contact@bhumi.ngo
9. **The Habitats Trust**
Address: A9, Block A, Sector 3, Noida, Uttar Pradesh, 201307
Phone: +91 1203667180, +91 8826488993
Email: info@thehabitatstrust.org
10. **The Nature Volunteers (TNV)**
Address: 130, Sutar Gali, Indore, MP
Email: volunteersnature@gmail.com

APPENDIX 2: NAMES AND DESIGNATION OF STAKEHOLDERS FROM FOUR RAMSAR SITES IN MADHYA PRADESH WITH WHOM THE CEE TEAM INTERACTED

1	Dr Vipin Vyas	Dean, Dept. of Life Sciences, Barkatullah University, Bhopal
2	Dr Abhilasha Bhavsar	HoD, Dept of Limnology, Barkatullah University, Bhopal
3	Mr Lokendra Thakkar Mr Manohar Patil Mr Dinesh Damde Dr Manoj Vishwakarma Mr Abhishek Dixit	Officer Incharge, SWA, EPCO, GoMP Executive Engineer, SWA, EPCO, GoMP Asst. Scientific Office, SWA, EPCO, GoMP Asst. Scientific Office, SWA, EPCO, GoMP Scientific Assistant, SWA, EPCO, GoMP
4	Mr Arun Gurtu	Retd DGP Police and member of Bhopal Citizen Forum
5	Mr Abhilash Khandekar	Roving Editor, Daily Lokmat times and President, The Nature Volunteers (TNV), Indore
6	Dr Pradeep Nandi	Director General, NCHSE, Bhopal
7	Mr Saurabh Popli	Associate Professor, Department of Landscape Ecology, Bhopal
8	Mr Amit Malaviya	Wetland Mitra
9	Ms Padmapriya Balkrishnana Dr Mphammad Khali	IFS, Park Director, Van Vihar, Bhopal
11	Mr Chinmay Mishra	Editor, Sarvodaya Press
12	Mr O P Joshi	Retd. Prof, Department of Botany, PMB Gujarati Science College, Indore
13	Mr Anil Gupta	Exe Engineer, IMC and NO
14	Mr Virag Saxena	Consultant involved in IMP development for Sirpur
15	Mr Ritesh Khabia	Wild Warriors, Indore
16	Mr Siddharth Goswami	Biotin.in (Sirpur documentary film)
17	Mr Imran	Wetland Mitra, Sirpur Lake, Indore
18	Dr Dipnarayan Ganguly	Scientist-C, NCSCM, Chennai, Tamil Nadu
19	Mr Abhilash Mishra	Asst. Commissioner, IMC
20	Ms Megha Burvey	Taru Leading Edge
21	Mr Bhalu Mondhe	Padma Shree awardee, photographer and wildlife activist
22	Mr L P Singh	Public Work Dept. Nagar Palika, Shivpuri
23	Ms Uma Rana	Lion's Club, Shivpuri
24	Mr Anil Kumar Soni	Asst. Director, MAdhav National Park, Shivpuri
25	Mr Yogesh Sharma	Sanitary Inspector, Shivpuri Municipal Council

APPENDIX 3: INFORMATION ABOUT YASHWANT SAGAR, BHOJ TAALAB, SAKHYA SAGAR

About Yashwant Sagar

Yashwant Sagar is a man-made reservoir on Gambhir river, located around 26 km west of Indore near Hatod village on Indore-Depalpur Road in the Indore district of Madhya Pradesh. The submergence area of this lake is 822 ha and its catchment area is 2,650 ha. It is also one of the 19 IBAs of Madhya Pradesh. It's a freshwater reservoir with open fields on almost all its sides. Yashwant Sagar reservoir was built by the erstwhile ruler of Holkar State of Indore, Yashwant Rao Holkar in 1930 to fulfil multipurpose objectives such as irrigation and supply of drinking water. Presently it is mainly used for water supply to the city of Indore and is also being used for fish culture on a commercial scale.

The catchment area of this wetland is predominantly agricultural. Yashwant Sagar is considered to be a stronghold of the vulnerable Sarus Crane in central India. The lake backwaters have plenty of shallow areas, conducive for waders and other waterfowl. As the water level recedes, many islands are roosting sites for waterfowl. Due to its vast shallow reed beds, the wetland is considered heaven to many winter migratory birds. The wetland supports significant populations of species like *Apus affinis*, *Acridotheres tristis*, *Bubulcus ibis*, *Microcarbo niger*, *Amaurornis phoenicurus*, *Hirundo rustica*, *Pastor roseus*,

Columba livia, *Hirundo smithii*, *Himantopus himantopus*, *Psittacula krameria*, and *Dendrocygna javanica*, which is representative and significantly helps in maintaining the biodiversity of the region owing to the large variety of ecological functions performed by the above-mentioned diverse range of species (*Ramsar Information Sheet: Yashwant Sagar*, 2022). In year 2018-20, bird census was conducted in Yashwant Sagar which founds 76 species of wetland birds, 16 species of birds of prey, 64 species of ground feeding birds, 65 species of arboreal birds, 5 species of nocturnal birds and 7 species of aerial feeding birds (*Ramsar Site Information Service*, 2022b). In total 23420 birds of these species have been reported (*Ramsar Site Information Service*, 2022a).

The wetland serves as an important habitat for indigenous fish carp species like *Cyprinus carpio*, *Labeo rohita*, and *Wallago attu*, which are native to South and South-East Asia. These three species form an important component of reservoir fishery. Yashwant Sagar serves as feeding and spawning grounds for several fishes such as *Cyprinus carpio*, *Labeo rohita*, and *Wallago attu*. These species periodically use (disperse/migrate) the site throughout the year to complete their life-cycles. The study conducted in 2014 has identified 39 fish species and they are as follows (Sharma, 2014)

Category	Fish species
Major Carps	<i>Labeo Catla</i> , <i>Cirrhina mrigala</i> , <i>Cirrhina reba</i>
Minor Carps	<i>Labeo calbasu</i> , <i>Labeo bata</i> , <i>Labeo gonius</i> , <i>Labeo sinbriatus</i> , <i>Puntius sarana</i> , <i>Puntius sophore</i> , <i>Puntius ticto</i> , <i>Puntius titius</i> , <i>Garna gotyla</i> , <i>Lepidocephalichthys guntea</i>
Cat Fishes	<i>Wallago attu</i> , <i>Ompak bimaculatus</i> , <i>Mystus bleekere</i> , <i>Mistus tengara</i> , <i>Mystus seenghala</i> , <i>Mystus cavasius</i> , <i>Clarius batrachis</i> , <i>Clarius striatus</i> , <i>Heteropneustes fossilis</i> .
Murrels	<i>Channa gachua</i> , <i>Channa marulius</i> , <i>Channa stratus</i> .
Exotic Fishes	<i>Cyprinus carpio</i>
Miscellaneous Fishes	<i>Notopterus notopterus</i> , <i>Notopterus chitala</i> , <i>Mastacembelus armatus</i> , <i>M. pancalus</i> , <i>Xenentodon cancila</i>

About Bhoj Taalab

The Bhoj Wetland consists of two lakes (Upper & Lower lakes) which are man-made reservoirs. The Upper lake created in the 11th century by constructing an earthen dam across the Kolans river and the lower lake constructed nearly two centuries ago immediately downstream of the Upper lake, have catchments of 361 and 9.6 sq.km, respectively. The Deccan trap basalts and Vindhyan sandstones are the principal rock formations in the catchment area of Bhoj wetland. Upper lake is surrounded by Van Vihar National Park on the south, human settlements on the east and north and agriculture fields on the west whereas the lower lake is surrounded by human settlements from all sides. Both the wetlands with an area of 3201 ha together were designated as a Ramsar site in 2002. It is an unique man made wetland, characteristic to the Central Indian Plateau region. During the past 900 years the ecosystem has stabilized and presently it represents a near natural wetland.

The wetland supports a wide variety of flora and fauna. Diverse flora provide ideal habitat in the form of food and shelter for a large number of birdlife. The wetland is rich in terms of phytoplankton, zooplankton, macrophytes, aquatic insects and birds (both resident and migratory) diversity.

Break up of bio-diversity of Bhoj Wetland are as follows:

1. Terrestrial & Aquatic plants: 106 species (Belonging to 87 genera of 46 families), including 14 rare species.
2. Phytoplankton: 208 species comprising of 106 species of Chlorophyceae, 37 species of Cyanophyceae, 34 species of Euglenophyceae, 27 species of Bacillariophyceae and 4 species of Dinophyceae
3. Zooplankton: 105 species (Rotifera-41, Protozoa-10,

Cladocera-14, Copepoda-5, Ostracoda-9, Coleoptera-11, Diptera-25)

4. Fish fauna: 43 species (natural and cultured species)
5. Insects: 98 species of 10 families
6. Reptiles and Amphibians: More than 10 species (including 5 species of tortoise)

Wetland supports mainly 3 types of vegetation consisting of more than 100 terrestrial/marshy plant species and 34 aquatic species. The aquatic species could be categorized as floating forms (10 in number), submerged forms (14 in number) and emergent forms (10 in number). Rare or less abundant/endangered plants are *Centella asiatica*, *Hygrophiza aristata*, *Trigonella occulta*, *Vernonia elegnifolia*, *Aponogeton natans*, *Desmodium diffusum*, *Fimbristylis ferrusima* etc.

The Upper Lake has 14 weed fish species such as *Barilius bola*, *Chanda nama*, *Chanda ranga*, *Esomus danricus*, *Gadusia chapra*, *Neomachilus botia* and 17 predatory fish species such as *Calrias batrachus*, *Channa gachuna*, *Glossogobius giuris*, *Heteropneustes fossilis*, *Maccognathus aculeatum*, *Mastocembelus pancalus*. Similarly, Lower Lake has 11 weed fish species such as *Chanda nama*, *Chanda ranga*, *Chela labruca*, *Colisa faciatus*, *Gadusia chapra*, *Osteabrama cotio*, *Oxyaster baicala*, *Punitius sarana*, *Punitius ticto*, *Rasbora daniconious*, *Xenentodon cancilla* and 9 predatory fish species of *Channa gachua*, *Channa punctatus*, *Clarius batracus*, *Gorra gotula*, *Glossobobius giuris*, *Heteropneustes fossils*, *Mestacembalus armatus*, *Nandus nandus*, *Notopterus notopterus*. The commonly culturable fishes in Upper and Lower Lake are *Catla catla*, *Cairrhinus mrigala*, *Cyprinus carpio*, *Labeo rohita*.

About Sakhya Sagar

The Sakhya Sagar reservoir, an artificial lake located on the outskirts of Shivpuri town within Madhav National Park, presents a diverse landscape that includes open water, marshes, plantations, and a small area of agricultural land. The northeastern section retains water and marsh habitats for most of the year, while the northwestern area dries up periodically. Characterized by its shallow, alkaline, and nutrient-rich waters, this wetland enhances the region's natural beauty and serves as a crucial water source for local wildlife. It provides a habitat for a wide range of species,

including migratory waterfowl and the mugger crocodile, a major attraction for tourists. In total, the wetland supports 19 species of fish, 9 species of reptiles, and 19 mammal species & 73 bird species.

The lake is surrounded by the Madhav National Park. The northern side of the lake is a hilly area and minor drains join Sakhya Sagar. The Eastern part of the lake covers small urban and rural settlements and major feeder drains come from Jadhav Sagar Lake. The western side of the lake is a downstream and dam line. The water flows through the spillway and flows towards Madhav Lake.

There is excessive dependence on surface water for the survival of the wetland and wild animals of Madhav National Park. Factors negatively affecting the site include storms and flooding; housing, sewage and urban wastewater within and outside the site; water abstraction from the surroundings; agricultural effluents, and livestock farming within the site and surrounding areas; invasive non-native/ alien species within the site; recreational tourism activities. In recent years invasion of water hyacinth aided by discharge of sewage from the city has become a serious threat.

Madhav National Park is home to antelopes like nilgai, chinkara, chowsinga, and deer including chital, sambar, and barking Deer and mammals such as leopard, wolf, jackal, wild dog, and porcupine. Sakhya Sagar is an important biodiversity support system and depends on a wide variety of flora and fauna. Its perennial water bodies have suitable water levels at the time when migratory birds approach and arrive in this area. Also in the winter season, aquatic vegetation provides ample food and space for them to live in various locations and habitats of Sakhya Sagar. The biodiversity details of Sakhya Sagar are as follows (Ramsar International, 2022):

1. Aquatic plants: 16 species
2. Bottom sediment flora & fauna: 26 species (includes Mollusca-11)

3. Fish fauna: 19 species (natural and cultured species)
4. Birds: 73 Species (including water/terrestrial/migratory/ local migratory/local residents etc.)
5. Reptiles: 9 species and 1 species of Amphibian
6. Mammals - 19 species includes Chinkara (*Gazella gazella*), Four-horned antelope (*Tetracerus quadricornis*), Sambar (*Rusa unicolor*), Chital (*Axis axis*), Nilgai (*Boselaphus tragocamelus*)

The 73 species of birds are from 18 different families out of which 25 are resident, 29 are resident migratory and 19 are migratory bird species which include *Tachybaptus ruficollis*, *Ardeola grayii*, *Anser-anser*, *Circus aeruginosus*, *Grus grus*, *Hydrophasianus chirurgus*, *Ceryle rudis* (Arya & Mishra, 2016).

Of 16 aquatic plant species recorded, 9 are free floating, 4 are submerged hydrophytes, 1 is emergent and 2 are marginal hydrophytes. The dominant families are Nymphaeaceae, Hydrocharitaceae and Araceae (Ramsar International, 2022).

Sakhya Sagar supports significant populations of at least nineteen indigenous fish species which spawn and breed in its habitat. The fish species found here are a mix of riverine and wetland habitat specialists which are critical to maintaining the overall biodiversity of the region.

APPENDIX 4: FISHER COMMUNITY- KAP ANALYSIS AND IDENTIFIED GAPS

Knowledge	Attitude	Practice
- The Fisher Community has a deep understanding of wetland biodiversity, resource usage, and ecological dependencies. - They hold experiential knowledge of non-fish wetland food resources and their seasonal availability. - The community can recall and share significant events, changes in wetland ecosystems, and their long-standing associations with wetlands, which are valuable for conservation insights.	- The Fisher Community demonstrates a strong attachment to wetlands, recognizing their importance for livelihoods and food security. - Willingness to adopt conservation practices when these align with livelihood benefits. - Respect for traditional knowledge and community leaders who guide fishing and wetland-related activities. - Growing awareness among some members, especially youth, about the need for education and technical skills for better opportunities in fisheries and wetland management.	- The Fisher Community has long-established traditional practices for fishing and wetland resource management. - They engage in fishing activities with seasonal adaptations based on weather patterns and wetland conditions. - Some community members use motorboats for monitoring and tourism-related purposes. - Farming activity in low tank levels during summer, supporting additional livelihoods. - Demonstrate interest in collective resource management when it benefits livelihoods. - Community has the potential to create locally sustainable products and services linked to wetland resources.

Gaps Identified	Gaps Identified	Gaps Identified
• The community lacks formal involvement in the development and updating of PBRs to document wetland biodiversity, uses, and threats systematically. • Limited participation in planning conservation and sustainable use strategies for wetlands based on scientific assessments. • The community requires support to create educational and remembrance materials, such as storybooks, painting books, and calendars, using local styles to preserve and share traditional knowledge. • Awareness and access to scholarships and schemes for youth pursuing education in Fisheries Sciences, Limnology, and related fields remain inadequate. • They face challenges in accessing affirmative action for recruitment in fisheries development departments, limiting their representation in decision-making and development roles. • Creative expression opportunities, such as murals in community centres to depict the history and connection between wetlands and the community, are yet to be fully explored.	• Limited awareness and communication on government schemes and beneficiary criteria, contributing to a sense of discrimination due to their political marginalization. • The community lacks orientation and support for documentation and record-keeping related to wetland-based economic activities, which are essential for better resource management and development planning. • Women's participation in Fishing Collectives and community leadership roles remains underutilized and unrecognized. • The community needs a stronger sense of pride in their traditional knowledge and respect for individuals with extensive experience. • Insufficient motivation and support for youth to pursue higher education in Fisheries Science, Limnology, and Wetland Management, or to seek recruitment in relevant government departments.	• Limited access to resources and legal education on wetland conservation laws and their implications. • Lack of periodic dialogues with responsible authorities to address concerns and update the community on legal interpretations, particularly the concept of 'Wise Use of Wetlands.' • Insufficient awareness of better fishing techniques, seasonal bans and strategies to prevent introduction of invasive fish species. • Dependence on synthetic fertilizers and pesticides for farming near wetlands, with limited promotion of organic alternatives. • Tourism services by fishers often lack waste management protocols and disturb wetland flora and fauna, especially birds. • Lack of wetland tourism plan of regional or international standards for sustainable tourism with equitable benefit sharing. • Weak systems for collectivization and protocol development to ensure sustainable practices and wise use of wetland resources. • Limited focus on branding sustainable products and services for better economic outcomes.

APPENDIX 5: FARMER COMMUNITY – KAP ANALYSIS AND IDENTIFIED GAPS

Knowledge	Attitude	Practice
• Ecosystem Services: Farmers understand the ecosystem services provided by wetlands, including irrigation, groundwater recharge, and flood protection. • Regulations and Environmental Impact Awareness: There is a general awareness among farmers about agricultural regulations and the negative impacts of practices such as excessive water withdrawal, encroachments, and pollution from fertilizers and pesticides on wetland health. • Collectives and Sustainable Practices: Farmers recognize the importance of forming collectives and the need for sustainable farming frameworks to enhance agricultural practices Gaps Identified • Communication of Ecosystem Services: There is a lack of effective communication channels, such as print and audio-visual media, to fully convey the benefits of wetlands to a broader audience. • Sustainable Practices Knowledge: There are significant gaps in understanding sustainable agricultural practices, particularly in producing organic inputs at individual and collective levels. • Access to Resources and Tools: Farmers have limited knowledge of the tools and resources available to form collectives and establish sustainable farming frameworks, including accessing financial support from Government and Non-Government sources. • Capacity Building Opportunities: There is a need for more practical training and hands-on opportunities that can enhance the farmers' knowledge and skills in sustainable practices and resource management.	• Water and Wetland Pollution: Lack of Data Farmers often lack crucial data and understanding about the impact of water and wetland pollution on agriculture. Without access to key facts, they are unaware of how polluted water and degraded wetlands affect crop yields, water availability, and overall farming productivity. This knowledge gap hinders informed decision-making and effective environmental management, ultimately harming their livelihoods. • Farmers' Attitudes Toward Collectives: Gaps in Equality, Fairness, and Transparency Farmers' attitudes toward collectives are shaped by the principles of equality, fairness, and transparency. However, many feel these principles are not fully applied, leading to unequal resource distribution and a lack of trust. Without transparency in decision-making, farmers struggle with internal disputes, limiting the effectiveness of collectives and hindering cooperation for mutual benefit.	• Wetland Catchment Area Management for Sustainable Farming: Farmers are increasingly focusing on sustainable farming practices. • Gap Identified: There is a lack of comprehensive planning and integration of wetland catchment management across the farming community, leading to uneven implementation and missed opportunities for maximizing productivity. • Formation of Collectives (Focussed Interest Groups, FPOs, Water User Associations): Farmers are organizing into focused interest groups, FPOs, and water user associations to collaborate on improving farming practices and water management. • Gap Identified: Limited capacity and resources in these collectives often hinder their full potential in driving change. Not all farmers are adequately engaged or represented in these groups. • Organic Inputs Production and Utilization: Farmers are increasingly adopting organic farming methods, producing organic inputs, and scaling their use within catchment areas. • Gap Identified: There's insufficient technical knowledge and infrastructure to support widespread organic input production, leading to inconsistent practices and lower adoption rates, especially among smaller farmers. • Encroachment Removal and Water Use Regulation: Efforts are being made to remove encroachments on wetlands and regulate water use for agriculture. • Gap Identified: Enforcement of water use regulations and removal of encroachments remains inconsistent due to legal, logistical, and political challenges, which limits the overall effectiveness of these measures.

APPENDIX 6: TOURISTS AND TOURISM ENTERPRISES - KAP ANALYSIS AND IDENTIFIED GAPS

Knowledge	Attitude	Practice
- Tourists are aware of popular tourist attractions near wetlands and have a basic understanding of tourism activities' impact on the local environment. Gaps Identified - Tourists and tour operators may lack knowledge about the concept of ecotourism and sustainable tourism practices. - Limited knowledge about the ecological importance of wetlands and their role in biodiversity conservation. - Lack of information on eco-friendly alternatives for infrastructure development. - Insufficient awareness about waste management protocols and wetland carrying capacity.	- Tourists are interested in exploring and enjoying the natural beauty of wetlands. - They are willing to engage in clean-up drives and environmental campaigns when well-organized. Gaps Identified - Tour operators perceive limited responsibility toward minimizing the environmental footprint of tourist activities. - Tour operators often prioritize profits over environmental sustainability. - Lack of appreciation for the role of women and local fishing communities in sustainable tourism.	- Participation in guided tours and recreational activities near wetlands. - Involvement in occasional clean-up events by some responsible tour operators. Gaps Identified - Poor waste management practices, including littering near wetlands. - Overcrowding of sensitive areas without consideration of carrying capacity limits. - Limited involvement in participatory monitoring and infrastructure planning for decentralized tourism. - Absence of systematic eco-friendly tourism guidelines or monitoring mechanisms.

APPENDIX 7: SCHOOLS - KAP ANALYSIS AND IDENTIFIED GAPS

Knowledge	Attitude	Practice
• Limited Curriculum Integration: Wetland ecosystems are often not sufficiently covered in standard school curricula, leading to a lack of comprehensive understanding among students. • Local Context Understanding: Students may have limited personal connection and knowledge about wetlands in their neighbourhood, and thus little concern and action for wetlands conservation. • Practical Knowledge: There is a gap in students' understanding of the practical aspects of wetland conservation, such as restoration techniques or local monitoring methods.	• Disconnect from Nature: Many students may lack a deep emotional connection with the natural environment, particularly wetlands, leading to lower levels of environmental stewardship. • Environmental Inaction: While students may express awareness about environmental issues, there is often a lack of strong personal motivation to engage in wetland conservation actively. • Sustainability Disconnect: Students may not always see the direct link between their personal daily actions (e.g., waste disposal) and the health of wetlands, limiting their sense of responsibility.	• Insufficient Engagement in Hands-on Conservation: Many students do not have opportunities for hands-on involvement in wetland conservation or restoration activities, limiting practical learning experiences. • Lack of Support for Long-term Projects: School projects on wetland conservation may be short-term or one-off events, missing the chance to build ongoing, sustained efforts in the community. • Limited Community Collaboration: There is often a gap in building partnerships with local environmental organizations, authorities, and communities to engage students in meaningful conservation actions.

APPENDIX 8: UNIVERSITIES AND YOUTH COMMUNITY - KAP ANALYSIS AND IDENTIFIED GAPS

Knowledge	Attitude	Practice
Universities		
• Fragmented Curriculum: While some academic programs include wetland conservation, others do not integrate this topic sufficiently or fail to emphasize its importance across disciplines (e.g., urban planning, engineering). • Limited Cross-Disciplinary Knowledge: Wetland conservation knowledge is often siloed in environmental sciences, neglecting the interdisciplinary connections with economics, urban planning, and policy-making. • Insufficient Local/Global Case Studies: Students may lack exposure to diverse case studies that could demonstrate both successful wetland restoration projects and ongoing challenges in different parts of the world.	• Lack of Active Engagement in Advocacy: Although students may learn about wetlands in theory, they may not feel strongly motivated to advocate for their protection outside of academic contexts. • Complacency in Sustainable Practices: Many students may not fully adopt sustainable behaviours or feel that their individual actions won't make a significant difference, especially when it comes to larger environmental issues like wetland loss. • Lack of Ownership: There may be insufficient emphasis on creating a sense of ownership or responsibility towards the wetlands in their local or regional contexts, reducing the likelihood of students becoming long-term advocates.	• Limited Opportunities for Fieldwork: Many students, even in environmental science programs, have few opportunities for hands-on experience in wetland conservation or research, particularly in real-world settings. • Barriers to Community Involvement: Universities may lack structured partnerships with local communities or wetland sites, hindering collaborative restoration efforts and active student involvement. • Inadequate Collaboration with Stakeholders: There is often a disconnect between university research and real-world implementation of wetland conservation efforts, particularly when it comes to engaging policymakers or local authorities.
Youth Community		
• Lack of Awareness About Wetland Ecosystem Services: Many young people may not fully understand the critical services wetlands provide, such as biodiversity, water purification, and flood control, leading to undervaluation. • Limited Understanding of Climate Change Impact: There is often a lack of detailed knowledge about how wetlands are affected by climate change and how their conservation can mitigate climate impacts. • Inadequate Understanding of Legal and Policy Frameworks: Youth communities may be unaware of existing local or global legal frameworks (e.g., Ramsar Convention) that protect wetlands or how they can engage in policy advocacy.	• Short-Term Focus: Youth communities may be more focused on immediate issues, such as social media trends or entertainment, rather than long-term environmental sustainability and the importance of wetland conservation. • Lack of Collective Action Mindset: There is often a lack of detailed knowledge about how wetlands are affected by climate change and how their conservation can mitigate climate impacts. • Underestimation of Personal Impact: Many youth may not understand that their actions (e.g., reducing plastic waste, and conserving water) can have a direct and measurable impact on wetland ecosystems.	• Minimal Community Engagement in Wetland Conservation: Youth groups may not have the resources or organization to engage in meaningful wetland restoration, monitoring, or advocacy activities. • Barriers to Leadership Roles: While there is interest in environmental conservation, young people may not always have the leadership training or support to take significant action on wetland issues. • Limited Networking with Experts and NGOs: Youth communities may lack connections to experts, NGOs, or government bodies working in the field of wetland conservation, limiting opportunities for collaboration or mentorship.

APPENDIX 9: NGOs - KAP ANALYSIS AND IDENTIFIED GAPS

Knowledge

NGOs actively collaborate with governmental and academic institutions to collect, analyze, and share ecological data, contributing to global databases such as Ramsar Sites of International Importance.

NGOs are adept at developing and adapting best practices for sustainable wetland management, restoration techniques, and conservation strategies tailored to local contexts.

NGOs can conduct orientation and skilling for different stakeholders, government agencies, local authorities, and communities, building technical skills and raising awareness about wetland management and sustainable practices.

Gaps Identified

- Data collection methods sometimes lack uniformity and standardization, limiting the integration of findings into national or international frameworks.
- Effectively translating scientific research into actionable policy recommendations that can influence decision-makers.
- Capacity-building initiatives may lack long-term sustainability.

Attitude

NGOs actively advocate for the protection and restoration of wetlands, shaping public discourse and influencing environmental priorities.

They generally support stronger environmental regulations and ensuring wetland conservation remains on government agendas.

NGOs can foster meaningful community participation by empowering local stakeholders to adopt sustainable wetland practices.

Gaps Identified

- Some NGOs may exhibit a rigid stance against development activities near wetlands, leading to conflicts with policymakers and businesses seeking balanced solutions.
- A tendency to prioritize immediate outcomes can lead to inadequate follow-through for long-term wetland sustainability.
- In some cases, a lack of openness to collaboration with government or private entities hinders holistic conservation strategies.

Practice

NGOs effectively engage local communities in participatory management, fostering a sense of stewardship and local accountability.

NGOs support alternative livelihoods, such as eco-friendly tourism and sustainable fishing, reducing unsustainable pressures on wetlands.

They conduct capacity-building programs to encourage organic farming and climate-resilient land-use practices around wetlands.

Gaps Identified

- Sustained participation in community-based management programs can be challenging without continuous support.
- Livelihood support programs may lack market linkages, limiting their long-term success.
- Training programs sometimes lack alignment with cutting-edge scientific research and innovation.
- The absence of standardized protocols can lead to inconsistencies in data collected through citizen science initiatives.
- Many NGOs have limited access to sophisticated tools such as advanced GIS systems, satellite data, and analytical software.

APPENDIX 10: URBAN AND RURAL COMMUNITIES - KAP ANALYSIS AND IDENTIFIED GAPS

Urban and Rural Communities: Knowledge, Attitude and Practices		
Knowledge	Attitude	Practice
Urban Communities		
May have limited knowledge about the location, types, and functions of nearby wetlands. Understanding of the benefits of wetlands may be superficial or focused on aesthetic value.	May have a generally positive attitude towards nature but limited connection to specific wetland ecosystems. May view wetlands as recreational spaces or scenic landscapes.	May participate in occasional clean-ups or educational events. May support environmental organizations financially.
Gaps Identified • Lack of awareness of the crucial role wetlands play in flood control, water purification, and biodiversity. • May not understand the connection between urban activities and wetland health. • Misconceptions about wetlands as "wastelands" or breeding grounds for mosquitoes. • Lack of knowledge about waste segregation practices, support for construction of toilets and sanitation management, responsible idol immersion and impacts on wetland health.	Gaps Identified • May not perceive a direct personal stake in wetland conservation. • May be apathetic or unaware of the threats facing wetlands. May prioritize urban development over wetland preservation.	Gaps Identified • Lack of consistent engagement in wetland conservation activities. • Consumption patterns may contribute to wetland degradation (e.g., excessive water use, pollution from household products). • Limited understanding of how individual actions impact wetland health. • Lack of toilets and functional STP facility lead to untreated sewage discharge into wetlands leading to contamination and eutrophication • Increasing encroachment of housing in the proximity of
Rural Communities		
Possess TEK about local wetlands, including plant and animal species, seasonal changes, and resource management techniques. Understand the direct link between wetland health and their livelihoods (fishing, agriculture, etc.).	Generally positive towards wetlands due to direct dependence and cultural significance. May view wetlands as providing essential resources and services. Strong sense of place and connection to the local environment.	Engage in traditional resource management practices (e.g., controlled fishing, sustainable harvesting of plants). May actively participate in local wetland management initiatives.

Gaps Identified: May lack scientific understanding of wetland ecosystem functions and broader ecological importance. May not be aware of the impacts of external pressures (e.g., upstream pollution, climate change). TEK may be undervalued or not integrated into formal conservation strategies. Lack of knowledge about waste segregation practices, support for the construction of toilets and sanitation management, responsible idol immersion and impacts on wetland health.	Gaps Identified: May prioritize short-term economic gains over long-term wetland health (e.g., unsustainable resource extraction). May be resistant to changes in traditional practices, even if those practices are no longer sustainable. Lack of confidence among rural communities to participate and contribute experiential knowledge about ecosystem, uses, invasive and native species among others. Lack of confidence among rural communities to participate and contribute experiential knowledge about ecosystem, uses, invasive and native species among others.	Gaps Identified: Practices may not be adapted to current pressures (e.g., increased population, climate change). May lack access to resources and support for implementing sustainable practices. May face pressure from external forces (e.g., land developers). The over-extraction of water from wetlands and in the catchment area. Encroachment of housing in the proximity of wetlands The over-extraction of water from wetlands and in the catchment area. Encroachment of housing in the proximity of wetlands
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APPENDIX 11: LAND RECORDS DEPARTMENT, TOWN & COUNTRY PLANNING DEPARTMENT - KAP ANALYSIS AND IDENTIFIED GAPS

Knowledge	Attitude	Practice
Familiarity with land surveys, mapping, and property demarcation processes. Expertise in maintaining land ownership, possession, and classification records and tracking land-use changes. Understanding of building regulations, zoning laws, and infrastructure planning guidelines.	Commitment to ensuring legal compliance in land allocation and construction permissions. Interest in supporting digital accessibility of land records and transparent governance. Recognition of the importance of urban planning and infrastructure development.	Effective management of land surveys, demarcation, and data digitization. Regular enforcement of building use permissions and infrastructure regulations. Monitoring land use for compliance with zoning rules.
Gaps Identified - Limited knowledge of wetland ecology and biodiversity, and their environmental importance. - Insufficient awareness of legal frameworks for wetland protection and guidelines for eco-sensitive zones. - Lack of comprehensive knowledge about sustainable building construction and management / operation near wetlands.	Gaps Identified - Limited appreciation of the environmental value of wetlands in land and construction decisions. - Preference for prioritizing development goals over ecological preservation. - Inadequate engagement with environmental stakeholders and local communities.	Gaps Identified - Weak enforcement of buffer zones and setback norms near wetlands. - Limited incorporation of eco-friendly construction guidelines to minimize environmental damage. - Insufficient participation in wetland restoration, monitoring, or management efforts. - Lack of approaches for inclusive public participation and conflict resolution mechanisms in identifying wetland boundaries.

APPENDIX 12 CITY PLANNERS-KAP ANALYSIS AND IDENTIFIED GAPS

Knowledge	Attitude	Practice
Understanding of urban development planning and infrastructure design. Familiarity with zoning regulations, land use policies, and environmental guidelines. Technical knowledge of stormwater management, flood mitigation, and drainage systems.	Commitment to promoting sustainable urban development. Recognition of the importance of green spaces and water management in urban planning. Willingness to engage with government agencies and other stakeholders for environmental considerations.	Preparation of master plans and development guidelines for city growth and infrastructure. Implementation of zoning laws and flood mitigation measures. Integration of basic green infrastructure in urban designs.
Gaps Identified - Limited awareness of the ecological functions and benefits of wetlands. - Insufficient knowledge of wetland boundaries, protection guidelines, and the importance of buffer zones. - Lack of exposure to integrated wetland management frameworks and their incorporation into city plans.	Gaps Identified - Limited prioritization of wetland conservation due to competing development pressures. - Insufficient appreciation of wetlands as valuable assets for climate resilience, biodiversity, and community well-being. - Low engagement with community-led initiatives and traditional knowledge for wetland conservation.	Gaps Identified - Inconsistent recognition and protection of wetland boundaries in development plans. - Limited inclusion of wetland buffer zones in urban layouts. - Poor consideration of wetlands in solid and liquid waste management and groundwater recharge planning. - Lack of Integrated Wetland Management Plans and minimal collaboration with District Wetland Conservation Committees (DWCCs) for wetland-dependent livelihoods and tourism.

APPENDIX 13: INDUSTRIES - KAP ANALYSIS AND IDENTIFIED GAPS

Knowledge	Attitude	Practice
Understanding of effluent treatment systems and waste management practices. Awareness of the environmental benefits of adopting resource-efficient processes and green technologies. Familiarity with CSR initiatives and their role in supporting local conservation activities.	Willingness to invest in technological upgrades for waste and emission reduction. Interest in CSR-driven community engagement projects related to conservation. Openness to collaborating with stakeholders for sustainability efforts.	Adoption of effluent treatment systems in some industries to manage pollution. Implementation of waste recycling processes and resource-efficient production techniques. Participation in CSR initiatives for community awareness and conservation activities.
Gaps Identified	Gaps Identified	Gaps Identified
- Limited knowledge of the ecological importance of wetlands and their role in biodiversity, flood control, and water filtration. - Insufficient understanding of regulatory guidelines and best practices for wetland-friendly industrial operations. - Lack of awareness about participatory monitoring systems for water quality management.	- Prioritization of economic growth over environmental sustainability in some cases. - Limited recognition of wetlands as critical ecological resources requiring conservation. - Resistance to additional regulatory compliance related to wetland protection.	- Inconsistent real-time water quality monitoring and sharing of data with stakeholders. - Limited adoption of green technologies and eco-friendly production processes. - Lack of structured efforts to document and share best practices for wetland-friendly industrial operations.

APPENDIX 14: DWCCs - KAP Analysis and Identified Gaps

Knowledge	Attitude	Practice
Possess high-level administrative knowledge of the Wetland Rules, 2019 and legal mandates. Awareness of the need to identify and notify wetlands under the Rules. MoEFCC, Ramsar Convention and MPSWA training materials support basic knowledge transfer.	The inclusion of NGOs/Experts/Citizen's groups in the DWCC structure reflects collaborative efforts. Awareness of roles as for wetland management and conservation.	Primarily engage in practices mandated by the MPSWA such as attending meetings, compiling departmental data, and addressing immediate encroachment complaints. Ensures the conservation efforts are localized, integrated, and responsive to immediate threats.
Gaps Identified	Gaps Identified	Gaps Identified
- Limited specialized ecological knowledge about wetland types, their biodiversity, and hydro-ecological functions. - Limited detailed knowledge among supporting staff regarding the 'List of Prohibited Activities' and the IMP preparation process. - Limited capacities in using advanced technologies and monitoring tools	- Wetland conservation often remains a secondary priority compared to immediate developmental goals such as infrastructure, revenue generation. - Insufficient appreciation of the communities' traditional ecological knowledge and their potential as primary conservation partners. - Tendency to treat wetland management as the exclusive responsibility of certain departments, rather than an inter-departmental ownership.	- Focus on reactive activities such as enforcement & stopping prohibited activities, rather than proactive management. - Lack of statutory recognition under the Rules and inadequate resource allocations (Human resources, finances). - Inefficient inter-departmental coordination and minimal systematic practices for awareness creation and public participation

APPENDIX 15: ROPES AND LADDERS GAME

Things Required

Roll dice, rope and ladder sheet printed on 8 x 8 ft flex, positive messages printed on green card and negative messages printed on orange card

Method

Take turns rolling the dice and moving along the game board. If you land on the top of a ladder, pick one of the green cards and read and discuss the message in the group loudly. If you land on the bottom of the rope, pick one of the orange cards and read and discuss the message loudly.

Examples of Messages on the Green Card (ladder)

1. Served local dishes to tourists for breakfast/lunch
2. Instead of thermocol/plastic/paper plates, used steel leaves or paper plates and bowls
3. While taking tourists for wetland trail around the lake, gave information about aquatic plants, fish and birds
4. During the boat ride in the lake, gave information about aquatic plants, fish and birds to the tourists
5. Disallowed tourists to consume alcohol and smoking near the lake
6. Gathered information about the flora, fauna, fishes and birds of the lake and flora and fauna of its surrounding area
7. Formed the collective (company or cooperative) of villagers to provide tourism service in and around the lake
8. Cultivated vegetables/flowers on household sewage water/constructed soak pit near the house
9. Took the feedback about services provided from tourists and discussed among the group to address the complaints
10. Initiated segregation of waste into wet and dry waste, made compost from wet waste and gave dry waste to gram panchayat's garbage collection vehicle
11. Collected empty plastic bottles, crushed them to flatten and gave them to the scrap dealer
12. While welcoming the tourist, gave the information about what to do and what not to do
13. Plantation of native trees and aquatic plants, arrangement of drinking water, purchase of plastic

bottle crushing machines etc. like development activities were done from the tourism fee collected through the Gram Panchayats

Examples of Messages on the Orange Card (Rope)

1. Served breakfast and meals in plastic and thermocol plates and bowls
2. Without taking permission from the authorities, started boating activities for tourists in the lake
3. Did not treat Sewage water of the house, which led to generation of mosquito breeding sites
4. Prevented women in the family from attending tourism collective meetings
5. Collected plastic bottles and chips wrappers around the lake and burnt to dispose this garbage
6. Hunted migratory and local birds in the lake
7. Rode motor boats with fast in the pond causing damage to aquatic plants and bird nests
8. Released seeds of invasive fish seeds (e.g. thai mangur, tilapia) in the lake
9. Neither welcomed tourists nor gave them instructions about do's and don'ts in and around the lake



APPENDIX 16: ACTIVITY ON HISTORY TIMELINE OF WETLANDS

Things Required

Chart papers, markers, cut-out stickers of probable events around wetlands (e.g. invasive fish species, water hyacinth)

Method

Decide on a specific historical period for which you want to gather information. Also, gather preliminary information through discussions with elderly residents around the wetland, community leaders, and online resources about the wetland and its history. Make some ready-made stickers of these historical events.

Convene a group of community members to brainstorm key events and approximate the year in which these events happened. Arrange the events chronologically on the drawn history timeline. Creatively use the ready-made stickers to save time.

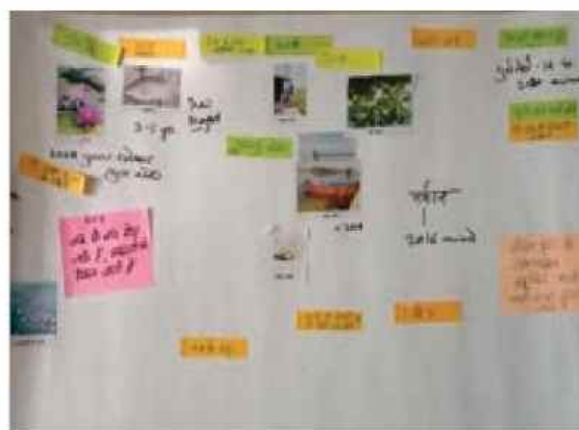
If the year/date is unclear, guide the community with other major events/festivals that occurred around that time. For example, if that event happened around which festival (Holi, Diwali etc)?

Encourage everyone to contribute their knowledge and perspectives by adding details and personal stories. Try to connect interrelations between historical events. For example, if the water hyacinth infestation increased exponential after release of sewage water in the lake?

Sample questions to capture historical events related to wetlands

- When was the dam construction started and when was it completed?
- In which year, the lake dried completely and what were the reasons? In which year, the lake overflowed?
- What were the fishing methods, fishing nets, types of nets, or boats? When did the use of cotton fishnets stop and when the use of nylon fish nets started?
- Since when the use of motor boats started?
- Which are the various aquatic plants in the lake and near the shoreline of the lake? Which are native species and which species arrived later? When did non-native species arrive and who brought/planted these in the lake? Which native aquatic plants vanished from the lake and when did it happen? When did invasive species (e.g. water hyacinth) start appearing and growing here?
- Which are the various fish species in the lake? Which are native species and which species arrived later? When did non-native species arrive and who released the seeds of these species in the lake? Which of the native fish species are now not found in the lake and since when?
- When was the fishermen's cooperative society formed?
- When did sewage water drain to the lake first happen? When did drain of untreated industrial effluents to the lake first happen?
- When did tourism activities start near the lake? When did boating activity for tourists start?
- What are the different types of birds? Have you seen any change in population over time? Has there been a change in the population of Sarus Crane? If it's declining, since when does the decline start?

History Timeline of Yashwant Sagar, Indore



History Timeline of Yashwant Sagar, Indore © Satish Awate/CEE (GIZ)

History Timeline of Wetland Activity at Village: Fulkaradiya, Indore



History Timeline Activity, Indore © Suraj Jagadhane/CEE (GIZ)

APPENDIX 17: PRESENTATION ON LAKE HABITAT RESTORATION, INDIGENOUS FISH PRODUCTION AND BAMBOO CAGE AND PEN FOR FISH SEED PRODUCTION

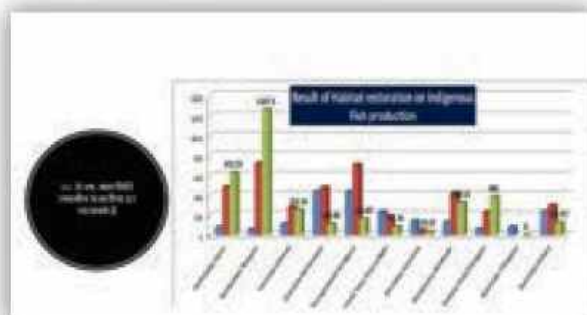

Foundation for Economic and Ecological Development

तालाब और आजीविका

शालू कोट्टे



वजस्पती रोपणा



पृष्ठ १५ मातृकीनी स्थानीय प्रजातीयोक्त संवर्धन





२०४ स्थानीय वजस्पती प्रजातीय संवर्धन

***Ipomoea fistulosa* वेजस्पती निर्मुलन**



महिलाओं की मातृकीनी पालन पद्धति





प्रक्रिया: बाँवू पित्रा

पेन बांधना



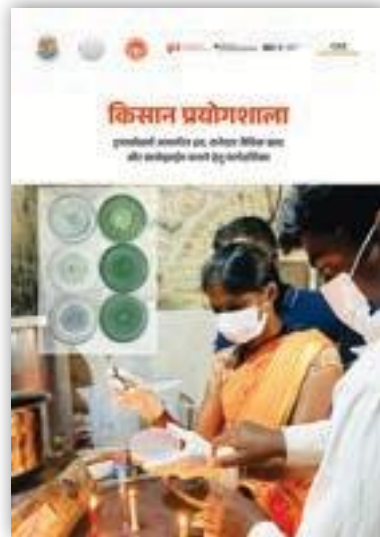
खाद्य आपूर्ति एवं बीज विक्री



APPENDIX 18: PRESENTATION ON LANDSCAPE PLANNING OF LOTUS VALLEY TOURISM AT YASHWANT SAGAR, INDORE



APPENDIX 19: MANUAL AND POSTERS OF TRICHODERMA-BASED INPUTS PRODUCTION LAB



Download the full manual
using this QR Code



APPENDIX 20: 'WHAT'S IN MY PLATE' ACTIVITY TO CAPTURE FOOD AND AGROBIODIVERSITY HISTORY

Introduction

Food is an important part of our culture and an expression of cultural identity. The diversification of farming influences the dietary diversity in the households. Changes in cropping patterns and farming practices has an impact on food diversity and nutritional security of households.

Food consumption and production in the catchment area of the wetland have a considerable impact on wetlands and on the environment. Food needs to be responsibly sourced and consumed, as well as healthful. Synthetic input-based intensive food production contributes to climate change, eutrophication and acid rain, as well as the depletion of biodiversity.

Things required

Chart papers, markers

Method

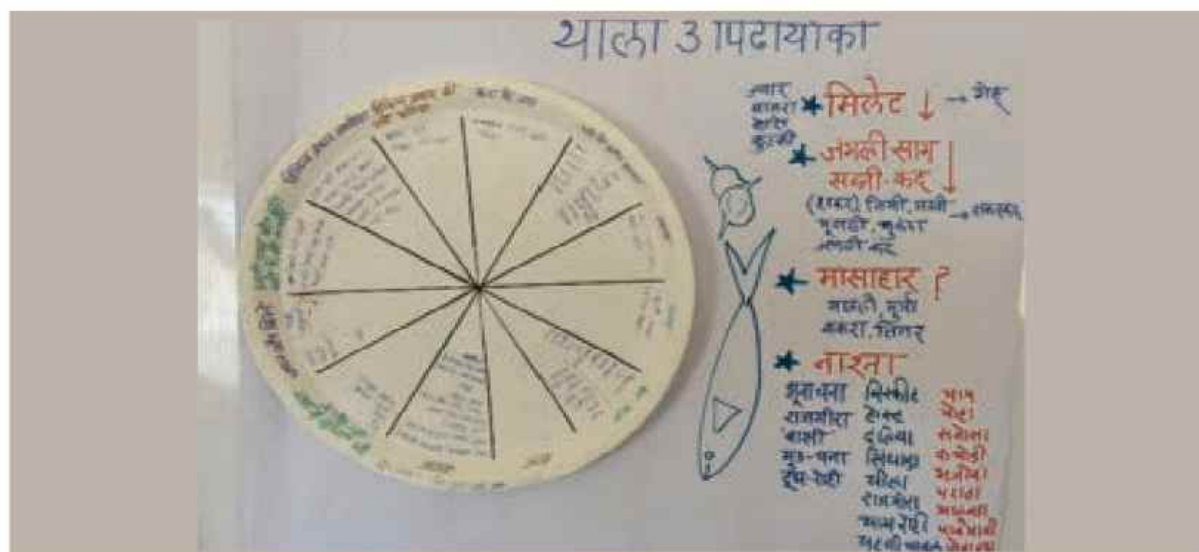
Ask participants to list different food items they eat including varieties of the food content. For example, varieties of rice.

Ask participants to fill three different plates: a plate of their own, one for their parent, aunt, or uncle when they were child of same age and one for their grandparent or other elder person when they were child of same age.

Apart from this, one separate thali can be filled for food items consumed on special occasions/festivals. Refer to the following categories while noting food items:

Bread/Chapati types and varieties	Rice and varieties
Amti, varan, liquid curries of different types	Vegetables, usual of different types
Pulses, legumes or dals of different types	Tubers and their names
Different types of chutneys and pickles	Different types of salads
Different types of papads	Different types of drinks such as buttermilk, panha
Fruits	Meat and its types e.g. mutton, chicken, fish, crab
Snacks	

Discuss how food items, their content, source (home cooked or market), varieties of food content (rice, millets, vegetables) have changed over course of time.



APPENDIX 21: ACTIVITY ON VILLAGE HISTORY TIMELINE

Introduction

Mapping of the village history through participatory methods can provide information about transition in agriculture production system practices, agro-biodiversity etc. The transition in production practices such as use of synthetic fertilizers, pesticides, cropping pattern etc. in the catchment area of the wetland has bearing on wetland health. Therefore it is important to trace the village history to plan interventions in villages of the catchment area.

Things required

Chart paper, marker, pen, notebook

Method

Decide on a specific historical period for which you want to gather information. Also, gather preliminary information through discussions with elderly residents around the villages of the wetland, community leaders, and online resources about the wetland and its history. Make some ready-made stickers of these historical events.

Convene a group of community members to brainstorm key events and approximate the year in which these events happened. Arrange the events chronologically on the drawn history timeline. Creatively use the ready-made stickers to save time.

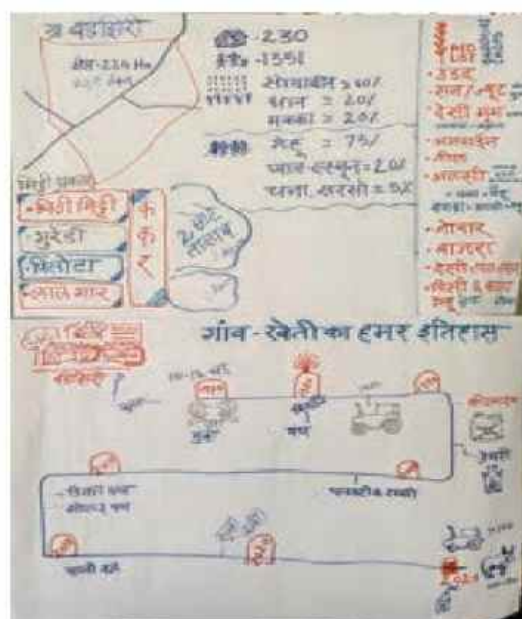
If the year/date is unclear, guide the community with other major events/festivals that occurred around that time. For example, if that event happened around which festival

(Holi, Diwali etc)? Encourage everyone to contribute their knowledge and perspectives by adding details and personal stories. Try to connect interrelations between historical events. For example, if the groundwater started depleting after the change in the cropping pattern?

Sample Questions to Capture Historical Events related to Wetlands

1. Types of lands/soils found in the village and their observed characteristics
2. The crops currently grown in the village and the names of their varieties – find out if the seeds are produced locally or bought from the shop
3. Which are the crops and/or crop varieties that are not grown presently in the village they were present previously?
4. Which of the local varieties of crops are still grown even presently in the village?
5. Which are the new crops/crop varieties when did farmers start growing them?
6. When did hybrid milching animals first arrive in the village?
7. Impact of these hybrid varieties of crops and hybrid milching animals on the local ecosystem?
8. Total population, different communities, their occupation?
9. Find and record when the following things first arrived in the village and who brought them. If you get different information about something, record it.

Item	Year	Name of the person	Comments
Electric pump			
Diesel pump			
Solar pump			
Urea, Sufala etc.			
Pesticides, Insecticides			
Weedicides			
Pesticide spray			
Jersey cow			
HF cow			
Dairy			
Tractor			
Harvester			
Borewell			
Agriculture Pond			



Village History Timeline, Bhopal © Satish Awate/CEE (GIZ)

APPENDIX 22: EXAMPLES OF SCHOOL-BASED ACTIVITIES FOR PROMOTION OF WETLAND CONSERVATION

Schools hold immense potential to serve as catalysts for wetland conservation by nurturing environmental awareness, promoting hands-on learning, and inspiring community-driven action. Below are a variety of suggested activities for schools, categorized into classroom activities, fieldwork, action projects, and community engagement:

School-based Activities

- **Interactive Games and Discussions**
Use tools like the 'Web of Life' activity to demonstrate interconnections in the wetland ecosystem and discuss the impacts of pollution on biodiversity.
- **Thematic Art, Debate, and Writing Competitions**
Conduct competitions on topics like 'Wetlands and their Importance' or 'My Role in Protecting Wetlands' to promote creativity and critical thinking.
- **Waste and Water Audits**
Encourage students to conduct classroom or school-wide audits to monitor water usage, waste generation, and energy consumption, linking results to conservation action plans.
- **Student-Led Action Projects**
Mobilize students, teachers, and parents to organize clean-up drives around wetlands to remove waste and prevent pollution.
- Launch school-wide initiatives to reduce single-use plastics by encouraging alternatives such as cloth bags and reusable bottles.
- Set up compost units within schools to manage organic waste and encourage segregation of dry, wet, and hazardous waste.

Field-Based Activities

- Organize field visits to local wetlands where students can observe and record plants, birds, insects, and other fauna using tools like observation sheets and basic ecological methods (e.g. the quadrat method).
- Wetland Monitoring Projects: water quality, flora, fauna, and human activity using observation tools and water-testing kits. Findings

can be submitted to local authorities for reporting.

- **Water Quality Testing:** Using portable water testing kits for parameters like pH, turbidity, and dissolved solids. Discuss the impact of pollutants on wetland health and aquatic life.
- **Site Visits to FSTP and Solid Waste Recovery Units** to help students understand how urban waste impacts wetlands and witness solutions in action.

Schools- Community Engagement Programmes

Engage with local stakeholders, such as washermen, farmers, and fishermen, and interview them to understand the socio-economic dependencies on wetlands and the impacts of degradation.

Organize student-led awareness drives to educate families and local communities about the importance of wetlands, focusing on pollution reduction, waste management, and water conservation.

Host fairs or exhibitions showcasing students' projects like eco-bricks, best-out-of-waste innovations, and wetland-themed artwork to spread awareness.

Collaborative Projects

- Form school clusters to coordinate regular monitoring of local wetlands, documenting changes in water quality, biodiversity, and human activity over time.
- Promote school projects focused on waste management, such as mapping waste sources, creating soak pits for wastewater, and implementing small-scale treatment solutions.
- Encourage schools to 'adopt' a nearby wetland for conservation action, including clean-ups, awareness campaigns, and periodic biodiversity monitoring.

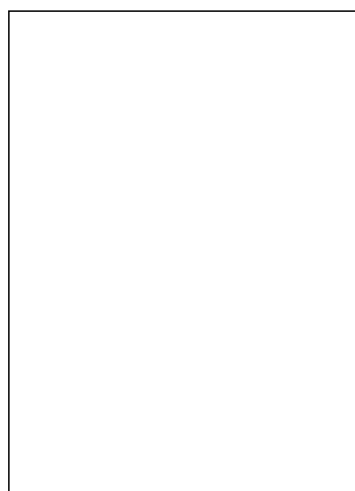
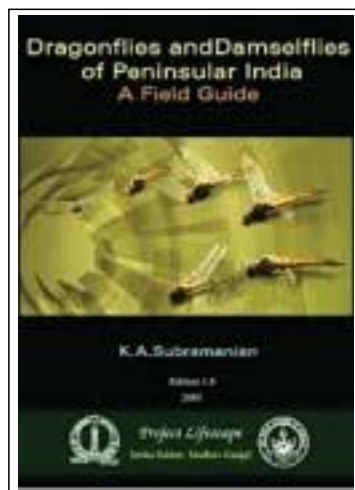
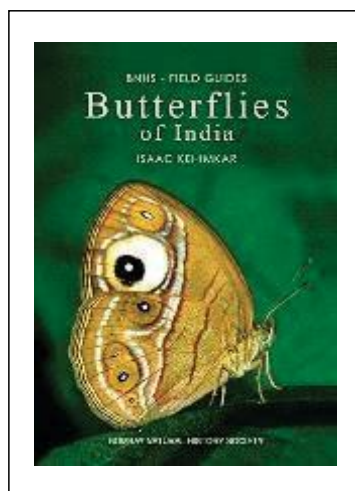
Some sample data collection sheets are as follows:

[illegible]

3. Beschreibe die a) neue, b) alte und c) gemeinsame Identität!
4. Begründe, weshalb die Identität (a) und (b) nicht?
5. Beschreibe die Identität (a) und (b)!
6. Begründe, weshalb die Identität (a) und (b) nicht?

लालाजान पर विभिन्न वास्तुशिल्प

[illegible]



APPENDIX 24: BIODIVERSITY MAPPING RESOURCE KIT

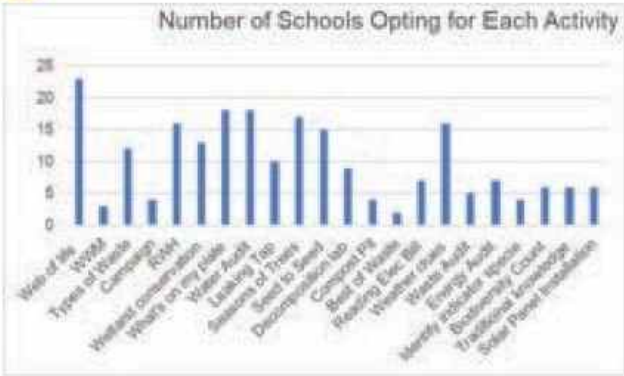
(developed by CEE under Maharashtra Gene Bank (MGB) Project)



Similar resource kit development contextualized to Madhya Pradesh for wetland biodiversity mapping by schools and local youth is recommended.

APPENDIX 25: SCHOOL PREFERENCE OF ACTIVITIES

From a basket of activities demonstrated and discussed with the group, participant schools made the following selection of activities focussed on wetland conservation as relevant for their context and possible implementation. This contributes to potential activity handbook development and inclusion in financial support programmes by EPCO under EEP with a statewide network of schools.



APPENDIX 26: ACTIVITY ON MY CONNECTION WITH WETLANDS

Method

‘My connection with the wetland activity is an ice breaking activity which can be conducted with the participants to help them to explore their connection with the wetlands, benefits and services they get from the wetland.

Participants can be asked to write a paragraph or draw a picture elaborating any past or present memory about their connection with wetlands. Each participant can then share this experience with the group.

My Connection with Wetlands Activity



My Connection with Wetlands, Shivpuri © Sanskriti Menon/CEE (GIZ)



My Connection with Wetlands, Shivpuri © Ashok Thorave/CEE (GIZ)

Things Required

If two departments are involved, stick the sticky note at the cross sectional cell of two departments. If only one department is involved, stick the sticky note at the cross section of that department.

Also discuss the needs, resources required for the specific CEPA activity implementation

Departmental Matrix to Capture CEPA Needs and Opportunities for Citizen Engagement

Ask participants to think on whether this CEPA need can be addressed within the department or help of another department is required.



Departmental Needs and Opportunities for Citizen's Engagement



Opportunities for Citizen's Engagement, Shivpuri © Ashok Thorave/CEE (GIZ)

APPENDIX 29: WETLAND RULES AWARENESS QUIZ AND ACTIVITY

How to Do

The sample questions related to wetlands, wetlands rules and regulations and list of few permitted, regulated and prohibited activities have been provided.

The questions can be posed to group and anyone who knows the answer, can respond.

For the clear understanding of the nature of activities permissible, regulated and prohibited, the chits of these listed activities are provided to each participant. Three different coloured bowls indicating permissible, regulated and prohibited are kept in front and they are asked to classify the chits in these three categories and place the chits in respective bowls.

Through these activities, participants updated their knowledge about the Wetlands Rules and the nature of activities that are permissible, regulated or prohibited through these rules.

Sample List of Questions

1. Wetlands (Conservation and Management) Rules 2017 are notified under which law or act?
2. Wetland Rules 2017 will be applicable to which wetlands?
3. How many Ramsar sites are there in Madhya Pradesh at present?
4. The new Ramsar site declared by Ramsar Secretariat is located in which district of Madhya Pradesh?
5. There are 13566 wetlands of more than 2.25 hectare area in the state. As of today, the process of notifying how many wetlands of the state in the first phase is underway by the M.P. State Wetland Authority?
6. Who is the Chairman of the National Wetland Committee?
7. Who is the Chairman of the State Wetland Authority of MP?

8. When was the SWA formed by the Madhya Pradesh Government?
9. When was the DWCC formed by the Madhya Pradesh Government?
10. Who is the Chairman of the DWCC?
11. Which two committees have been constituted under SWA?
12. How many meetings of technical and complaint committees should be held in a year?
13. How many meetings of SWA should be held in a year?
14. What are functions of Wetland Mitras?

Sample List of Permitted, Regulated and Prohibited Activities

Permitted Activities

1. Ecological rehabilitation and rewilding of nature
2. Wetlands inventory, assessment and monitoring
3. Research
4. Communication, environmental education and participation activities
5. Management planning
6. Habitat management and conservation of wetland-dependent species
7. Community-based ecotourism (with minimum construction activities)
8. Harvesting of wetlands products within regenerative capacity
9. Integrating wetlands as nature-based solutions for climate change mitigation and adaptation.

Regulated Activities

1. Subsistence level biomass harvesting (including traditional practices)
2. Sustainable culture fisheries practices (in private lands)
3. Plying of non-motorized boats
4. Desilting, in case where wetlands inflow regimes and water-holding capacity are impacted by siltation (note that 'deepening' activities are not the same as 'desilting')
5. Construction of temporary nature

Prohibited Activities

1. Conversion for non-wetland uses including encroachment of any kind
2. Setting up of any industry and expansion of existing industries
3. Solid waste dumping
4. Manufacture or/and handling or/and storage or/ and disposal (covered under respective rules) of
 - construction and demolition waste
 - hazardous substances
 - Hazardous Micro- organisms, Genetically engineered organisms or cells
 - E-wastes
5. Discharge of untreated wastes and effluents from industries, cities, towns, villages and other human settlements
6. Any construction of a permanent nature except for boat jetties within 50 metres from mean high flood level observed in the past ten years calculated from the date of commencement of these rules
7. Poaching

APPENDIX 30: CEPA ACTIVITIES PRESENTED AT THE DWCC MEETING, SHIVPURI

तालवाडी कि झरना नियरणी / मॉनिटरिंग

- तालवाडी झरना के बारे में जानकारी
- तालवाडी झरना के बारे में जानकारी
- तालवाडी झरना के बारे में जानकारी

तालवाडी का पुनर्विकास/रूपांतरण

- तालवाडी झरना के पुनर्विकास/रूपांतरण के बारे में जानकारी
- तालवाडी झरना के पुनर्विकास/रूपांतरण के बारे में जानकारी
- तालवाडी झरना के पुनर्विकास/रूपांतरण के बारे में जानकारी

तालवाडी के जलसहण क्षेत्र में जैविक खेती

- तालवाडी के जलसहण क्षेत्र में जैविक खेती के बारे में जानकारी
- तालवाडी के जलसहण क्षेत्र में जैविक खेती के बारे में जानकारी
- तालवाडी के जलसहण क्षेत्र में जैविक खेती के बारे में जानकारी

तालवाडी और पर्यटन

- तालवाडी और पर्यटन के बारे में जानकारी
- तालवाडी और पर्यटन के बारे में जानकारी
- तालवाडी और पर्यटन के बारे में जानकारी

तालवाडी झरना - पुनर्वास योजना

तालवाडी झरना - विकास योजना

तालवाडी झरना - पर्यटन योजना

कपड़ा प्रबंधन

विभिन्न धारा और अन्य जानकारी के अनुसार

जिला पेटेंट संरक्षण समिति बैठक के लिए विचारार्थ CEPA के मुद्दे

1. जिला पेटेंट संरक्षण समिति बैठक के लिए विचारार्थ CEPA के मुद्दे
2. जिला पेटेंट संरक्षण समिति बैठक के लिए विचारार्थ CEPA के मुद्दे
3. जिला पेटेंट संरक्षण समिति बैठक के लिए विचारार्थ CEPA के मुद्दे
4. जिला पेटेंट संरक्षण समिति बैठक के लिए विचारार्थ CEPA के मुद्दे



कार्यालय कलेक्टर (शहरी विकास) जिला शिवपुरी (म.प्र.)

क्रमांक / डूडा / 2024 / 943

शिवपुरी दिनांक 03/12/2024

जिला वेटलैण्ड संरक्षण समिति बैठक दिनांक 03.12.2024

: कार्यवाही विवरण ::

कलेक्टर एवं जिलाधीश, शिवपुरी की अध्यक्षता में दिनांक 03.12.2024 को कलेक्टर कार्यालय, शिवपुरी में वेटलैण्ड्स के संरक्षण हेतु Citizen Engagement Strategy तैयार करने के संदर्भ में जिला वेटलैण्ड संरक्षण समिति की बैठक आयोजित की गयी। बैठक में उपस्थित सदस्यों की सूची संलग्न है।

बैठक के प्रारंभ में कलेक्टर महोदय एवं अध्यक्ष DWCC, शिवपुरी ने बैठक में उपस्थित सभी सदस्यों का स्वागत एवं परिचय प्राप्त किया। तदोपरांत कलेक्टर महोदय की अनुमति से श्री लोकेंद्र ठक्कर, प्रभारी अधिकारी, राज्य वेटलैण्ड प्राधिकरण, एफको द्वारा भारत सरकार, MoEFCC एवं GIZ के संयुक्त तत्वाधान में वेटलैण्ड संरक्षण परियोजनांतर्गत प्रदेश के रामसर साइट्स के संरक्षण एवं प्रबंधन में स्थानीय सहभागिता हेतु Citizen Engagement Strategy तैयार करने का कार्य Centre for Environment Education (CEE) द्वारा किया जा रहा है। इस संदर्भ में शिवपुरी जिले में दिनांक 27 एवं 28 नवम्बर 2024 को जिले के ईको क्लब्स प्रमारियों की 02 दिवसीय कार्यशाला संपन्न की गयी। श्री ठक्कर द्वारा यह भी अवगत किया गया कि दिनांक 02-03 दिसम्बर को जिला वेटलैण्ड संरक्षण समिति के अधिकारियों एवं संबंधित विभागों के प्रतिनिधियों को कार्यशाला में प्रशिक्षण दिया गया।

कलेक्टर महोदय द्वारा सभी सदस्यों को अवगत किया कि साख्य सागर के संरक्षण हेतु माननीय एनजीटी द्वारा दिए गए निर्देशों का अनुपालन किया जा रहा है जिसमें मुख्य रूप से एक मुख्य नाले का डायवर्जन, सॉलिड वेस्ट के रोकथाम हेतु लोहे की जाली तथा शीघ्र ही डिब्रीडिंग मशीन द्वारा जलकुम्भी उन्मूलन भी किया जाना प्रस्तावित है।

तत्पश्चात CEE के कार्यक्रम संचालक श्री सतीश आबटे द्वारा उपरोक्तानुसार संपन्न चारों दिवस में की गयी गतिविधियों के बारे में विस्तार से बताया गया एवं DWCC से संबंधित 02 दिवसीय प्रशिक्षण कार्यक्रम में संबंधित अधिकारियों, विषय विशेषज्ञों से प्राप्त सुझावों / मार्गदर्शन आधारित प्रस्तुतीकरण (संलग्न) किया गया। कलेक्टर महोदय द्वारा सभी बिन्दुओं पर विस्तार पूर्वक चर्चा की गयी। चर्चा उपरांत निम्नानुसार निर्देश दिए गए -

- माननीय उच्चतम न्यायालय, माननीय एनजीटी एवं भारत सरकार, MoEFCC द्वारा वेटलैण्ड संरक्षण एवं प्रबंधन नियम 2017 के नियम 4 के पालन हेतु जारी दिशा निर्देशों का पालन सुनिश्चित किया जाए।
- NPCA योजना अंतर्गत शिवपुरी के तालाबों के संरक्षण हेतु क्रियान्वित परियोजना के सार्थक परिणाम एवं उद्देश्य की पूर्ति हेतु परियोजना को यथाशीघ्र पूर्ण किया जाना आवश्यक है, जिससे कि साख्य सागर का संरक्षण सुनिश्चित किया जा सके।
- वेटलैण्ड नियम की धारा 5 (4) के परिपालन में भारत सरकार द्वारा ISRO के सहयोग से तैयार वेटलैण्ड इन्वेंटरी (National Wetland Inventory and Assessment, 2011) के आधार पर राज्य वेटलैण्ड प्राधिकरण द्वारा MPSEDC के सहयोग प्रदेश के वेटलैण्ड्स की डिजिटल इन्वेंटरी तैयार की गयी है, जिसमें 15152 वेटलैण्ड्स (>2.25 hac.) शामिल हैं, उक्त सूची में शिवपुरी जिले के उल्लेखित सभी तालाबों / वेटलैण्ड्स के आधिपत्य एवं सीमांकन की जानकारी प्रथमतः तैयार की जावे।

क्रमशः.....02

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4. तालाबों / वेटलैण्ड्स की जल गुणवत्ता सुधारने के उद्देश्य से उनके आसपास कृषि क्षेत्रों में पेस्टीसाइड्स / फर्टिलाइजर्स के उपयोग को कम करने हेतु कृषि विभाग द्वारा जन-जागरूकता के माध्यम से प्रयास किए जायें।
5. वेटलैण्ड्स संरक्षण एवं प्रबंधन में जिले के स्व-सहायता समूह की सहभागिता के संबंध में संभावनाएं तलाशी जाएं।
6. ग्रामीण क्षेत्र के वेटलैण्ड्स को ग्रामीण आजीविका मिशन अंतर्गत वेटलैण्ड संरक्षण कार्य से जोड़ा जाए।
7. जिले के ऐतिहासिक कुएँ, बाँवड़ियों एवं वेटलैण्ड्स को चिन्हित कर उन्हें संरक्षित करने के साथ ही उनके आसपास ईको टूरिज्म को प्रोत्साहित करने हेतु जिला पुरातत्व, पर्यटन एवं संस्कृति परिषद द्वारा प्रस्ताव तैयार किए जायें।
8. वेटलैण्ड्स की उपयोगिता एवं महत्व को रेखांकित करने हेतु आगामी विश्व वेटलैण्ड्स दिवस 02 फरवरी 2025 पर विशेष रूप से जन-जागरूकता कार्यक्रमों का आयोजन किया जाए।
9. DWCC हेतु आयोजित कार्यशाला में प्राप्त सुझावों / अनुशंसाओं पर कार्यवाही करने हेतु संबंधित विभागों द्वारा प्रस्ताव तैयार किए जाएं।
10. साख्य सागर या जिले के अन्य महत्वपूर्ण तालाबों में CEPA Strategy के अंतर्गत सुझाए गए कार्यों हेतु राज्य वेटलैण्ड प्राधिकरण, एंफो द्वारा यथा संभव आर्थिक अनुदान उपलब्ध कराने हेतु प्रस्ताव प्रेषित किये जायें।

बैठक धन्यवाद प्रस्ताव के साथ संपन्न हुई।

(कलेक्टर महोदय द्वारा अनुमोदित)

(उमेशचन्द्र कौरव)

डिप्टी कलेक्टर/परियोजना अधिकारी

जिला शहरी विकास अभिकरण

जिला-शिवपुरी

शिवपुरी दिनांक 03/12/2024

पृ.क्रमांक/डूडा/2024/५१५५

प्रतिलिपि:- सूचनार्थ एवं आवश्यक कार्यवाही हेतु।

1. संयुक्त सचिव, भारत सरकार (वेटलैण्ड डिवीजन) की ओर।
2. सदस्य सचिव, MOPD राज्य वेटलैण्ड प्राधिकरण भोपाल की ओर।
3. टीम लीडर, वेटलैण्ड प्रोजेक्ट, GIZ, नई दिल्ली की ओर।
4. कार्यक्रम संचालक, पर्यावरण शिक्षण केंद्र पुणे की ओर।
5. संबंधित विभाग प्रमुख जिला शिवपुरी की ओर पालनार्थ।

डिप्टी कलेक्टर/परियोजना अधिकारी

जिला शहरी विकास अभिकरण

जिला-शिवपुरी

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Links of important resources

Ramsar Convention

- 14th CoP November 2022 Resolution XIV.8 The new CEPA approach Ramsar CEPA OP-SC58-draft paper-comments
https://www.ramsar.org/sites/default/files/documents/library/xiv.8_cepae.pdf
- Communication, Education and Public Awareness (CEPA) A Toolkit for National Focal Points and NBSAP Coordinators
cepa_toolkit_english.pdf (ramsar.org)
https://www.ramsar.org/sites/default/files/documents/library/cepa_toolkit_english.pdf
- A Guide to Participatory Action Planning and Techniques for Facilitating Groups
Visual mapping exercise (ramsar.org)
https://www.ramsar.org/sites/default/files/documents/library/outreach_actionplanning_guide.pdf
- 2010 China : National Communication, Education and Public Awareness(CEPA) Plan for Wetland Protection Microsoft Word - CEPA plan for wetland protection in China 20100107.docx (ramsar.org)
https://www.ramsar.org/sites/default/files/documents/library/outreach_actionplan_china.pdf
- France : CEPA Planning Tool for Wetlands 2012 – 2014
CESP FINAL (ramsar.org)
https://www.ramsar.org/sites/default/files/documents/library/france_national_cepaplan_2012-2014_e.pdf
- Ramsar CEPA Programme
The CEPA Programme | The Convention on Wetlands, The Convention on Wetlands (ramsar.org)
<https://www.ramsar.org/our-work/activities/cepa-programme>

MoEFCC

- Wetlands of India Portal
<https://indianwetlands.in/>
- E learning module on Wetlands
<https://indianwetlands.in/resources-and-e-learning/online-courses-training-material/>
- Ongoing initiatives on wetlands in India (central)
indianwetlands.in/wp-content/uploads/library/1707221982.pdf
- Cultural Significance of Indian Wetlands
<https://indianwetlands.in/wp-content/uploads/library/1682400894.pdf>
- Wetlands Ethos
<https://indianwetlands.in/wp-content/uploads/library/wetland-conversion-ethic.pdf>
- Decadal Change Atlas
<https://indianwetlands.in/wp-content/uploads/library/1643777982.pdf>
- All inventories on wetlands published by MoEFCC
<https://indianwetlands.in/resources-and-e-learning/national-wetland-inventory-assessment/>
- Student Corner (Engagement material on wetlands for students)
<https://indianwetlands.in/get-involved/student-corner/>
- Guidelines for Wetlands Rules
<https://indianwetlands.in/wp-content/uploads/library/guideline-of-implementation.pdf>
- Guidelines on National Plan for Conservation of Aquatic Ecosystems (centrally sponsored scheme on wetlands) 2024
<https://indianwetlands.in/wp-content/uploads/library/1707297851.pdf>
- Details on Amrit Dharohar initiative
<https://indianwetlands.in/wp-content/uploads/library/1686136200.pdf>
- Details about notified wetlands and regulatory updates
<https://indianwetlands.in/our-work/wetlands-conservation-and-management-rules-2017/>
- Natural Capital of Wetlands
<https://indianwetlands.in/wp-content/uploads/library/natural-capital-of-wetland.pdf>
- The Economics of Ecosystems and Biodiversity India Initiative Interim Report
<https://indianwetlands.in/wp-content/uploads/library/TEEB-INDIA-INITIATIVE-Interim-Report.pdf>
- Inspiring stories of change from ground
<https://indianwetlands.in/get-involved/make-a-difference/>
- Wetland Mitra Registration Form official
<https://savewetlandscampaign.in/swc/mitra>
- Amrit Dharohar - Factbook on 75 Ramsar Sites
<https://indianwetlands.in/wp-content/uploads/library/1683182884.pdf>
- Wetland Mitra Pledge
<https://indianwetlands.in/wp-content/uploads/2022/01/Wetland-Mitra-Pledge.pdf>
- Green Renuka Fair - how collective action of multi-stakeholders including community members brought change on ground
<https://youtu.be/bzH9dgP6tK0?si=0FLUSGelxm31GaM->



People Dependencies on Yashwant Sagar, Indore © Satish Awate/CEE (GIZ)

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