POLICY BRIEF

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Recommendations for the wise use of urban and peri-urban wetlands in Kolkata, India

Priyanie Amerasinghe, International Water Management Institute (IWMI), Colombo, Sri Lanka
Dipayan Dey, South Asian Forum for Environment (SAFE), Kolkata, West Bengal, India

Introduction

Urban and peri-urban wetlands provide services seen and unseen to millions of people and to the environment on which we rely. Wetlands support people's needs for food, water, fiber, fuel, medicine and livelihoods. Also, they provide vital "ecosystem services" such as purifying water, mitigating floods, absorbing carbon, providing cultural and recreational spaces, and ensuring there are nutrients for farming.

However, wetlands face serious risks. They are confronted by a range of threats flowing from modern life, such as urban development, pollution and agricultural use. To protect these crucial areas, this brief offers recommendations on the wise use of urban and peri-urban wetlands in Kolkata, India, as guidance to the Department of Environment in West Bengal and other decision makers.

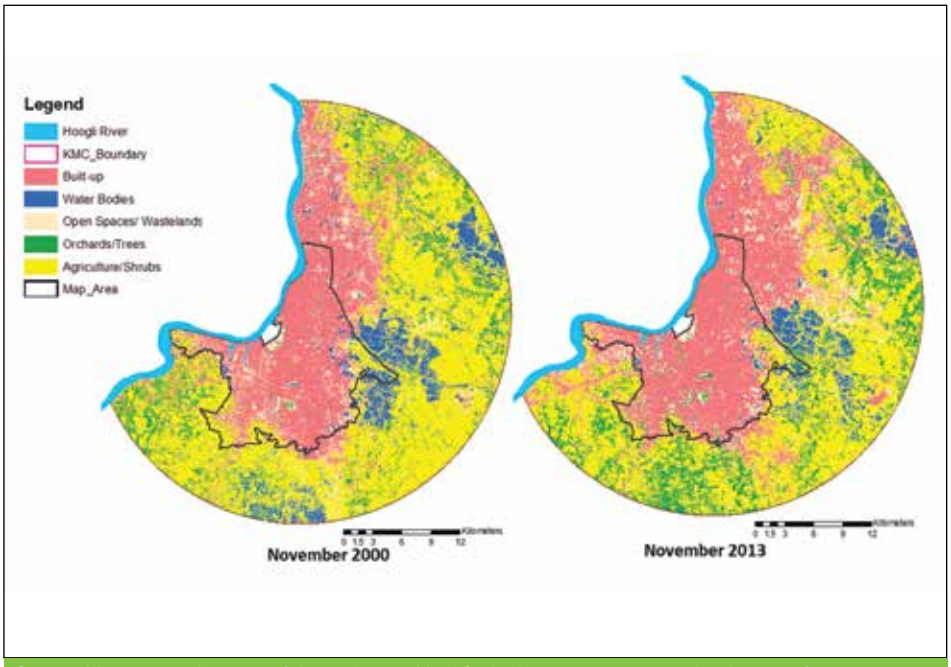
The recommendations are based on two sources. First, a research project carried out in Kolkata from 2012 to 2016 assessed the current status and use of wetlands in peri-urban areas (Figure 1). In this study, we reviewed how communities depend on wetlands for their livelihoods as well as how this dependency is affected by urbanization and the sustainable intensification of agriculture. Second, representatives from more than 10 government and nongovernmental institutions in Kolkata reviewed the results of this study and provided feedback. The final conclusions provide guidance for future policy change for the wise use of wetlands in Kolkata as well as in urban and peri-urban areas elsewhere in India.

Women washing their utensils and clothes in a peri-urban wetland in Kolkata, India (photo: IWMI).

KEY POLICY RECOMMENDATIONS

1. **Define urban and peri-urban wetlands** as productive landscape elements to acknowledge and protect the vast range of ecological, social and economic benefits they provide to urban dwellers and others.
2. **Promote inclusive governance** of urban and peri-urban wetlands to ensure buy-in from local communities, and to increase the likelihood that wise use practices will be implemented and sustained.
3. **Prevent conflict by recognizing the ways communities are currently using wetland resources** when implementing the recently released Wetlands (Conservation and Management) Rules, issued by the Ministry of Environment, Forest and Climate Change (MoEFCC) in September 2017 (MoEFCC 2017).
4. **Develop a state-level policy** that encompasses peri-urban and urban wetlands to ensure wise use and to support the new Wetlands (Conservation and Management) Rules issued in 2017.
5. **Establish a state-level authority,** as recommended by the government, to consider all wetland matters within the state under one organization.
6. **Recognize all types of wetlands,** including East Kolkata Wetlands (Figure 2), that perform important social, ecological and environmental services, and prepare an inventory that is evidence based.

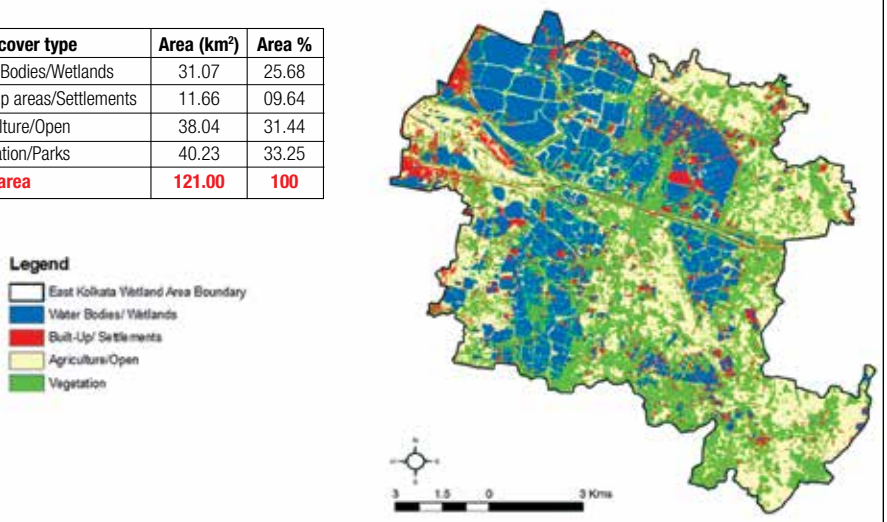
FIGURE 1. STUDY AREA AND LAND COVER CHANGES IN URBAN AND PERI-URBAN AREAS OF KOLKATA, INDIA.



Source: Maps created as part of the project entitled *Optimizing water resource development for poverty alleviation: Combining Green (natural) and Grey (built) infrastructure.*

FIGURE 2. EAST KOLKATA WETLANDS (2011).

Land cover type	Area (km²)	Area %
Water Bodies/Wetlands	31.07	25.68
Built-up areas/Settlements	11.66	09.64
Agriculture/Open	38.04	31.44
Vegetation/Parks	40.23	33.25
Total area	**121.00**	**100**



Source: Map created as part of the project entitled *Optimizing water resource development for poverty alleviation: Combining Green (natural) and Grey (built) infrastructure.*

CURRENT STATE OF URBAN AND PERI-URBAN WETLANDS

Globally

Wetlands are the most rapidly degrading ecosystems globally, due to a host of threats. Urbanization is a key driver that results in encroachment and habitat destruction, uncontrolled drainage and landfilling, overexploitation of fish resources, discharge of wastewater and industrial effluents, uncontrolled siltation and weed infestation, ill-effects of fertilizers and pesticides, and other such anthropogenic pressures (McInnes 2013).

Box 1. Ramsar principles for the planning and management of urban and peri-urban wetlands.

- **Policy principle 1:** Wetlands and the range of services they provide are essential elements of the supporting infrastructure of urban and peri-urban settlements.
- **Policy principle 2:** The wise use of wetlands contributes to socially and environmentally sustainable urban and peri-urban areas.
- **Policy principle 3:** Any further degradation or loss of wetlands as a result of urban development or management should be avoided, and where not possible, any impacts should be mitigated and any residual effects appropriately compensated for by offsets such as wetland restoration.
- **Policy principle 4:** The full participation of indigenous and local communities, municipalities and government sectors involved in urban and peri-urban spatial planning and wetland management decision making is vital to creating sustainable urban and peri-urban settlements.
- **Policy principle 5:** The threat of natural calamities and human-made disasters and their impacts on urban populations and wetlands requires government priority and convergent actions to enhance resilience to disasters.

Source: Ramsar 2012.

The Ramsar Convention (1971), an intergovernmental treaty for the conservation and wise use of wetlands, has brought attention to wetland conservation, and many governments have invested in protecting wetlands.

It is estimated that the proportion of the world's population living in cities will be 66% by 2050, up from 10% in 2014 (UN 2014). Visualizing this trend, and in an attempt to safeguard the natural resource base in urban and peri-urban wetlands, Ramsar, in collaboration with UN-Habitat, has put forth guiding principles for planning and managing wetlands in urban areas. Five policy principles were highlighted for the national and local governments engaging in urban planning and wise use of wetlands (Box 1).

Wetland loss in urban and peri-urban areas has not been estimated; however, studies show that overall wetland loss has occurred at a rate of 64% to 71% per year since 1900 (Davidson 2014). Wetland loss in Europe and America has been reversed; In Asia, wetland loss and degradation is largely due to agricultural practices coupled with urbanization. With 89% of its population living in urban centers, Australia has realized the urgency to safeguard its wetlands, and has provided the necessary guidance for urban planning and management of wetlands through their government programs (DSEWPAC 2013).

India

India is a signatory to the Ramsar Convention. However, despite many efforts, the scenario for Indian wetlands is grave. A total of 26 wetlands in the country have been designated as Ramsar sites. However, according to conservative estimates, nearly 30% of natural wetlands have been lost during the past five decades (Kumar et al. 2017).

DEFINITIONS

- **Urban and peri-urban areas:** Urban areas are encompassed by cities, while peri-urban areas refer to the landscape interface between the city and rural areas. The peri-urban area is considered a transition area where activities have links with the city and exchange of products takes place.
- **Wetlands:** As per the international treaty on wetlands, entitled the Ramsar Convention, wetlands include all lakes and rivers, underground aquifers, swamps and marshes, wet grasslands, peatlands, oases, estuaries, deltas and tidal flats, mangroves and other coastal areas, coral reefs, and all human-made sites such as fish ponds, rice paddies, reservoirs and salt pans (RCS 2013).
- **Ecosystem services:** These are the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational and aesthetic benefits; and supporting services, such as nutrient cycling, critical in, for example, agricultural production. The vast range of ecosystem services provided by wetlands also includes the provision of water security to millions of people in rapidly growing towns and cities.
- **Wise use:** This is the vision of ecosystem management developed under the Ramsar Convention. It recognizes the many interrelationships and interdependencies between wetland ecosystems and people, and it calls for a balanced and pragmatic approach to halting and reversing the widespread loss and degradation of wetlands in most parts of the world. Central to this pragmatism is the recognized need to directly address trade-offs between wetland conservation and human development needs, while ensuring ecological integrity.

Wetland awareness programs for schoolchildren in Kolkata, India (photo: IWMI).

The use of wetlands for irrigation in Kolkata, India (photo: IWMI).

Until recently, the lack of a comprehensive national policy on wetlands has resulted in all the important wetlands in India being threatened by urban encroachment, solid waste dumping and habitat loss. A study, which assessed ecosystem benefits, threats and management strategies, suggested that wetland management strategies can only be effective if physical (hydrology, land use) and socioeconomic aspects are addressed in tandem. Only then is it possible to deal with the changes that alter wetland functions (Bassi et al. 2014).

In the context of climate change, the mitigation potential of wetlands is very high: wetlands with fast-growing and productive plants, such as mangrove trees, can sequester large amounts of carbon. For example, coastal marshes and mangroves capture, on average, between 6 and 8 tonnes of carbon dioxide (CO_2) equivalent per hectare per year, which is about two to four times greater than global rates observed in mature tropical forests (Ramsar 2015).

Yet, urban planning for the conservation of wetlands is still poorly addressed. In and around cities, urbanization and planning for development and growth almost always take priority over the conservation of wetland ecologies, even though many urban poor and peri-urban communities depend on the ecosystem services of the wetlands for their livelihoods and well-being (Das et al. 2015; SANDRP 2018).

LEGAL FRAMEWORK FOR WETLANDS IN INDIA

A legislative framework for governing wetlands began to take shape with The Environment (Protection) Act, 1986, which mentions wetland protection. The legislation on wetlands has later been elaborated in subsequent policies, but effective implementation has been and continues to be a challenge.

The National Environment Policy 2006 recognizes the ecosystem services provided by wetlands and emphasizes the need to set up a regulatory mechanism for all wetlands to maintain their ecological character, and ultimately support their integrated management. The Wetlands (Conservation and Management) Rules 2017 supersede the Wetlands (Conservation and Management) Rules 2010 for the effective conservation and management of wetlands throughout India. In 2013, the National Plan for Conservation of Aquatic Eco-systems, which was established by merging the National Wetlands Conservation Program and the National Lake Conservation Plan, rolled out the action plans and schemes for wetland conservation and wise use.

Several other existing pieces of legislation are relevant to wetland conservation and wise use: the Indian Fisheries Act, 1857; Indian Forest Act, 1927; Forest (Conservation) Act, 1980; Wildlife

(Protection) Act, 1972; the Water (Prevention and Control of Pollution) Act, 1974; the Water Cess Act, 1977; Environment (Protection) Act, 1986; Wildlife (Protection) Amendment Act, 1991; and the Biodiversity Act, 2002.

Today, Indian wetlands are managed under the MoEFCC (MoEFCC 2018). Under the new Wetlands (Conservation and Management) Rules 2017, it is prohibited to (i) convert wetlands into non-wetland uses, including encroachment of any kind; (ii) set up any industry and expand existing industries; (iii) manufacture, handle, store or dispose of construction and demolition waste, hazardous substances or waste, and electronic waste; (iv) dump solid waste; (v) discharge untreated wastes and effluents from industries, cities, towns, villages and other human settlements; (vi) construct anything of a permanent nature except for boat jetties; and (vii) poach (MoEFCC 2017).

CONSIDERATIONS FOR THE WISE USE OF URBAN AND PERI-URBAN WETLANDS

Valuing the productivity of wetlands

Wetlands are productive landscapes that generate a vast range of benefits, i.e., ecosystem services, which directly and indirectly support human well-being and India's gross domestic product (GDP). Benefits include climate resilience, largely through their flood regulation and carbon sequestration potential (Ramsar 2001; Ramsar 2015), habitat for biodiversity and aquifer recharge, among others.

The guiding principles for planning and managing wetlands put forth by Ramsar and UN-Habitat state that wetlands and the range of services they provide are essential elements of the supporting infrastructure of urban and peri-urban settlements, and that the wise use of wetlands contributes to socially, economically and environmentally sustainable urban and peri-urban areas (Ramsar 2012).

Recognizing this value, wetlands are viewed and treated as 'green infrastructure' in several regions of North America and Europe (WWAP and UN-Water 2018). In this perspective, government and private sector investments in the wise use of wetlands can be seen as safeguarding public goods and protecting the economic viability of investments, respectively. Quantifying economic and other benefits directly and indirectly derived from wetlands can help inform and encourage such investments.

Furthermore, including a qualitative valuation of wetland benefits can help reflect that some of these values are especially important for low-income groups, providing them with ecological safety nets. Indexing the benefits that communities receive from wetlands that are common property can help inform regulatory frameworks for the management of wetlands, including accounting for the opportunity costs that communities might incur by foregoing some of their use of wetlands in order to ensure wetland preservation.

Urban and peri-urban communities' potential loss of livelihoods from reduced wetland use can be compensated through novel financial approaches. Under a concept popularly known as 'a bio-rights scheme', wetland inhabitants are supported through a micro-credit scheme to safeguard the ecosystem services that they depend on. For instance, when resource utilization reaches a maximum, the savings earned from the micro-credit program supports them through lean periods. The main investors could be the government and/or insurance companies (van Eijk and Kumar 2009).

However, ensuring the wise use of urban and peri-urban wetlands is dependent on a definition of wetland ecologies within urban and peri-urban settings, which is acceptable to all, non-ambiguous and non-discriminatory. Recognizing wetlands as a land use category in policy and planning—establishing clear rules and regulations for their use and conservation—will help reduce conflicts of interests and gaps in policy frameworks. The wise use of wetlands should support some basic principles, such as maintaining the natural hydrological cycle in the catchment; understanding the ecological successions of the ecosystem; preventing pollution; managing invasive species; wisely using resources; developing policies for protection and regulations for management; and establishing incentives for wetland dwellers to preserve wetlands.

Inclusive governance of wetlands to foster buy-in and wide-ranging benefits

In general, the wise use of wetlands hinges on local communities' endorsement of the concept of wise use. The wise use concept promotes a continued flow of benefits to people through sustainable wetland management as well as community governance approaches, similar in policy and practice to those of community forest management (Shutzer 2013).

Community-level consultations, stakeholder partnerships and participatory planning (including with women) can help ensure policy

Fishing in a peri-urban wetland in Kolkata, India (photo: IWMI).

formulations that are relevant and acceptable to communities. Relevant institutions to engage include civil society organizations, community-based organizations, indigenous people's groups, academia and practitioners. Gender-sensitive approaches and processes will be beneficial at all levels.

Complementing wetland governance and management plans with a strong monitoring and evaluation system can ensure that adequate feedback is received from all stakeholders and beneficiaries as well as non-beneficiaries. Use of information and communication technology (ICT)-based monitoring systems can make such activities feasible.

Ownership versus common property rights

Wetlands are a common property resource, and over the years, users have managed these resources in a manner that is non-confrontational. Therefore, the new Wetlands (Conservation and Management) Rules 2017 should be adopted having a good understanding of the current conservation activities carried out by stakeholders. The stakeholder platforms that exist can be used to effectively bring about good governance practices.

Many wetlands are privately owned; however, management regulations and common property rights for a certain wetland should not change with the transfer in ownership rights, something which would need to be reflected in the adoption of the policy.

In cases of private, joint and/or state-owned wetland ecosystems, the recommendations should safeguard the interests of all wetland users. Management regulations should adopt gender-sensitive methods in the decision-making processes and be equitable.

A state-level policy for the wise use of wetlands

The new Wetlands (Conservation and Management) Rules 2017 represent a strong, unambiguous and equivocal regulatory framework for the wise use of wetlands at the national level, formally acknowledging the considerable developmental contributions well-managed wetlands can make. They also recognize India's commitment to the Ramsar Convention.

Now, at the state level, where effective governance should take place, a well-considered regulatory framework based on consultative processes should be given high priority. As per the Indian government's recommendations, each state should establish a state wetland authority to be responsible for the enactment of the wetland policy, rules and regulations. The state wetland authority should not only manage those wetlands that have Ramsar status, but also create an inventory of all the wetlands and further identify those that are of internal importance based on the criteria set by Ramsar.

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Contact

Priyanie Amerasinghe, Senior Researcher: Human and Environmental Health, International Water Management Institute (IWMI) (p.amerasinghe@cgiar.org).

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International Water Management Institute (IWMI)

127 Sunil Mawatha, Pelawatta, Battaramulla, Colombo, Sri Lanka
Email: wle@cgiar.org, Website: wle.cgiar.org, Thrive: wle.cgiar.org/thrive

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