

Natural Resource Management in Cities: A Key to Sustain People and Places through Ecotourism

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Abstract

Although the 21st century is the "Century of the Cities", the crucial importance of natural resources like urban wetlands often goes unacknowledged. There are synergistic examples of urban environments that actually foster vibrant wetlands, which are disappearing due to rapid urbanization. The IPCC fourth assessment report has identified urban areas as hotspots in terms of vulnerability to climate change. Wetlands, within or on the periphery of cities, are life supporting ecosystems; their role being "flood cushions" for cities, water purification, nutrient retention, carbon sequestration and maintaining climate stability. These are the functions they perform. While promoting a rich biological diversity, and helping in waste water/storm water treatment of the city and providing sources of livelihood have also been widely acknowledged. However, their present state of degradation calls for efficient management interventions.

Ecotourism is now being considered as a tool for sustainable development in natural resource management. Recently, the Ramsar Convention on Wetlands in 2012 has also recognized the value of sustainable tourism and recreation in and around wetlands for development, poverty alleviation, local empowerment, conservation and wise use, and a meaningful visitors' experience while achieving the targets of the Millennium Development Goals, Climate Change Adaptation and Mitigation and the Conservation of Global Biodiversity.

This article examines the salient features of ecotourism development from case studies in developing countries like Costa Rica, Kenya and India. Through a literature review, the article identifies the major and critical issues of ecotourism development, and from the lessons learnt, it attempts to identify some of the key elements for developing an approach towards building a model of sustainable ecotourism development for the East Kolkata Wetlands; a threatened, but an internationally recognized Ramsar site in India. The article further argues that this could also be replicated in other Indian cities, for the survival of their threatened wetlands, along with the sustenance of livelihoods of the marginal population depending on them.

Keywords: Urban Wetlands, Sustainability, Costs and Benefits, Community-

based ecotourism.

Introduction

Urban wetlands, besides being indispensable as sources of water, are life-supporting ecosystems, both in terms of environmental and socio-economic benefits. These vibrant wetlands, which are often the lifeline of many Indian cities, are fast disappearing due to rapid urbanization and burgeoning population. This is due to various developmental activities in and around the urban areas, draining and conversion of the wetlands, hydrological manipulations, siltation, lack of awareness of the local people and complex ownership patterns. The stresses on the urban wetlands are likely to be aggravated by the impacts of climate change on urban areas, as predicted by the IPCC fourth assessment report. Therefore, it is imperative that urban wetlands are considered as extremely important water management infrastructure and they should be embedded in the early planning process and policies of cities, especially Indian cities like New Delhi, Chennai, Bangalore and Kolkata, where wetlands have been depleting and are under serious threats in spite of a plethora of laws (Ghosh et al., 2011). Hence, there is an emergent need for adoption of new strategies such as ecotourism development in the wetlands, for their economic sustenance and conservation, within a city or its vicinity. This calls for developing a judicious, replicable model of ecotourism development, towards achieving the goals of sustainable development, with respect to the ecosystem, its people and the city.

While recognizing the importance of ecotourism development on urban wetlands for their sustainability, the aim of the article is to outline the major components or criteria of sustainable ecotourism development, through case studies of three exemplary destinations, which could also be applicable for ecotourism development on the threatened urban wetlands in Indian cities. Based on the inferences drawn from the case studies, the article attempts to develop an approach towards a model of sustainable ecotourism development, on the East Kolkata Wetlands (EKW), against the backdrop of its functions, attributes, problems and threats, and a strong ecotourism potential that has remained underutilized, so far. The EKW is widely acknowledged for its uniqueness and symbiotic role with the city of Kolkata, in terms of socio-economic and environmental benefits. However, since the analysis of the three case studies is entirely based on a review of available literature, further probing could not be done, which is a major limitation.

Significance and Relevance of Ecotourism in the Context of Cities and Urban Wetlands

Although there are several competing definitions of ecotourism, which have been revised repeatedly (Higham, 2007); a more comprehensive definition by IUCN, jointly published by UNEP and TIES is -Ecotourism is environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features – both past and present) that promotes conservation, has low negative visitor impact, and provides for beneficially active socio-economic involvement of local populations. (Wood, 2002)

Real ecotourism, as indicated by Martha Honey, has the following seven characteristics: 1) involves travel to natural destinations; 2) minimizes impact; 3) builds environmental awareness; 4) provides direct financial benefits for conservation; 5) provides direct financial benefits and empowerment for the local people; 6) respects local culture and 7) supports human rights and democratic movement (Honey, 2008).

Although all the existing definitions of ecotourism have stressed on “natural areas”, many researchers have argued that nature or naturalness is relative, and nature does exist in cities.

The concept of "Urban Ecotourism" which was further refined during the Urban Ecotourism Conference in 2004 (Planeta's 14th online event), has been seen as an ongoing opportunity to conserve biological and social biodiversity, create new jobs and improve the quality of life in an urban environment with goals almost similar to those of ecotourism (Freslon, 2010). While discussing the various benefits of commercial ecotourism operations in the urban context of New Zealand, Higham and Luck also assert that, modified areas can be acceptable as an ecotourism venue if they are well presented and managed, aesthetically pleasing and provide the opportunity to observe wildlife (Higham and Luck, 2002).

There are extensive research articles on wetlands of the world and their management, for sustainability of the ecosystem, as well as the people depending on them. Amongst them, many authors have addressed the advantages of ecotourism as a strategy for wetland protection and management while giving due consideration to the disadvantages also (Gerakes, 1992; Garrod and Wilson, 2003; Torrell et al., 2003, 2004; Wong, 2004; Mitsch et al., 2011; Zhu, 2012 etc.). Specifically in the context of wetlands within or near cities, many authors have emphasized the concept of adopting or developing sustainable ecotourism as a management strategy. The Putrajaya Wetland Project in Malaysia clearly demonstrates how wetlands can be an integral part of the city's urban greening, providing environmental friendly solutions in improving water quality, while playing a vital role in ecotourism, public education and scientific research (Roberts and Kanaley, 2006). In Hong Kong, wetland tourism has successfully grown in the Mai Po Marshes Nature Reserve and the Hong Kong Wetland Park, renowned for bird watching, while fulfilling the objectives of green tourism, education on environmental protection and wetland conservation. The unfulfilled need of the city dwellers to be close to nature has led to the success of ecotourism in the wetlands of Hong Kong (Cochrane, 2008). Australia has also integrated tourism with its urban wetlands by incorporating water sensitive urban designs in various park developments, such as the Gold Coast Beaches, Tamar Island Wetlands, Adelaide's Botanic Wetland and small constructed wetlands in Canberra (Commonwealth of Australia, 2012).

Wetlands within, or on the periphery of cities, while supporting a rich biodiversity, maintain hydrological balance as sources of water; their role being "flood cushions" for the cities. This involves water purification, nutrient retention, maintaining climate stability and carbon sequestration (Ghosh et al., 2011). In keeping with the concept of "wise use of wetlands", urban wetlands are being utilized for many environmental services such as waste water / storm water treatment in Phnom Penh in Cambodia, Luang Marsh in Laos PDR, Ho Chi Minh City in Vietnam, cities in China, Australia, as well as the East Kolkata Wetlands in India (Smardon, 2009). Urban wetlands, often utilized as fisheries are also common property resources, like forests and according to Ostrom, in many developing countries, the governments have failed to recognize and protect the property rights of their own people leading to their depletion and degradation (Ostrom, 2012). This calls for alternative management interventions such as ecotourism, as a strategy and tool for natural resource management, which also include the threatened urban wetlands, within and around cities for sustainability and development.

The Case Studies

There have been extensive studies proposing specific principles, criteria or guidelines, by which to judge ecotourism development success. However, Kline argues that the usefulness of prescriptions for ecotourism is likely to depend on specific circumstances of specific locations (Kline, 2001). Hence, it is essential to study destinations that are unique and exemplary, with respect to ecotourism development.

The Monteverde Cloud Forest Preserve (MCFP) in Costa Rica, is a successful private reserve,

occupying 10,500 hectares, and owes its origin to the Quaker families from Alabama in the United States, who had refused the Korean War Draft and settled in the cloud forests of Monteverde in 1951. Finally, in 1975, they leased their watershed reserve land to the Tropical Science Centre, a Costa Rican non-profit organization based in San Jose', with primary focus on scientific research. The MCFP, an ideal destination for scientists, once the home of the potentially extinct Golden Toad and is now home to some rare bird species, the Resplendent Quetzal and the Three-watt led Bellbird (Davis, 2009).

The IL Ngwesi Group Ranch (INGR) is a pioneering and most successful Maasai-owned community based ecotourism initiative in Kenya. With 8,645 hectares of community-managed land, located in Laikipia District north of Mount Kenya and the home of the critically endangered Black Rhinos, it was an outcome of the initiatives and efforts of the Kenya Wildlife Service and the owner of the Lewa Downs Conservancy, a neighbouring privately owned reserve, in need of further security. The major aims were to eradicate poverty of the Maasai tribes, to reduce their reliance on livestock and to reduce human-wildlife conflict (UNDP, 2012).

"Thenmala Ecotourism", Kerala, the first planned ecotourism destination in India, is an initiative of the Kerala Government through the Thenmala Ecotourism Project (TEP), formulated with the cooperation of the Forest, Irrigation and Tourism departments. It has developed near a dam with a reservoir surrounded by the Shenduruney Wildlife Sanctuary, endowed with a very rich biodiversity, covering about 108km². It is home to the most endemic and endangered tree species the *Gluta Travancorica*. The Thenmala Ecotourism Promotion Society (TEPS) was formed in 1998 to promote ecotourism activities in Thenmala and finally it was opened to the public in 2001 (Merson et al., 2012). Subsequently, this project has received many awards (Babu, 2012).

All the three destinations, though not near cities, are significant and successful models of ecotourism development, distinctly differing from each other in terms of governance and institutional context. The MCFP is a privately owned and managed reserve and the INGR is a community-based model, while the TEP is a government initiative. Hence, their experiences of both success and failure with respect to socio-economic, cultural and environmental attributes, need to be analyzed to understand the major components or criteria of a model for sustainable ecotourism that can be adopted elsewhere; more so in the case of the threatened urban wetlands in Indian cities.

A Comparative Analysis of the Three Destinations

Although all the three destinations have largely complied with the principles and goals of ecotourism, there are similarities as well as distinct differences found to be noteworthy in the context of a new proposal for ecotourism development. The major components of ecotourism are the natural-based component, and the sustainable management component with respect to different costs and benefits associated with the environmental, economic and socio-cultural impacts and the educational / interpretation components (Diamantis, 1999). Governance in resource management has also been widely recognized within which is embedded the aspects of participation, representation, deliberation, accountability, empowerment and social justice in multilayered organizational hierarchies (Fennell, 2008). Recent researches are also emphasizing on practices related to land use management, and their impact on natural resources, including water, soil, fertility, plants and animals and the significant role they play in ecotourism resource utilization and tourism facilities development (Bunruamkaew and Murayama, 2012). Weaver has advocated the importance of increased participation of international funding in tourism development, particularly for the world's poorest countries. Some of the organizations in this field are the World Bank, UN, USAID and the European Union.

(Weaver, 2001). Moreover, due to the global significance of ecotourism, international funding organizations, NGO's, governments and tour operators are recognizing ecotourism as a significant economic activity in developing countries (Honey, 2008). Many more components or criteria and critical issues related to sustainable ecotourism have been propounded in a plethora of existing literature. However, the comparative analysis of the three destinations with respect to some of the components or criteria depends on the literature that is available, on the three destinations.

Governance and Institutional Structure

All the three destinations differ from each other with respect to governance and institutional parameters. The MCFP is a private non-profit reserve, administered by the Tropical Science Centre with insignificant involvement of the communities in the decision making process (Davis, 2009). In case of the TEP, there is the TEPS at the administrative level and community based organizations such as Eco-development Committees under the Forest Department Authority and Self-Help Groups under Kudumbashree Programme at the operational level. However, for further success of the TEP, Babu has suggested the need for a clear strategy to promote public and private partnership (Babu, 2012). In contrast to the other two destinations, the organizational hierarchy of the INGR starts with the IL Ngwesi Community Trust Committee. This consists of representatives from the Maasai communities and a legal advisor for reviewing and forwarding proposals to the next level. The Group Committee constituted of only Maasai Community members led by a Board of Directors comprised of elected members of the community and external experts. The Group Ranch Committee takes decisions on behalf of the entire community (UNDP, 2012). Amongst all the three destinations, the involvement and representation of the local communities is more successful in the governance and institutional structure of the INGR and the various success stories associated with it is largely due to its participatory decision-making, equity in benefit sharing amongst the shareholders, good governance, partnerships and community ownership.

Ecotourism Activities, Amalgamation and Zoning

All the three destinations have strong natural asset bases and activities related to ecotourism. However, the TEP differs from the other two, as it has envisaged eco-friendly general tourism, ecotourism and pilgrimage tourism. It has adopted a strategy of developing an eco pilgrimage circuit from Thenmala with Sabarimala, the famous pilgrimage centre as the focus of the circuit, along with four other Ayappa temples (Biju, 2006). Moreover, the TEP satisfies all four categories of eco-tourists, namely dedicated, general, casual and recreational (George and Zachariah, 2011). Besides, the principles of zoning have been specifically adopted here that comprises of a Culture Zone, Adventure Zone, Leisure Zone, a Deer Rehabilitation Centre, guided trekking tours and bird watching trails (Ecotourism Directorate, 2012). As pointed out by Ibrahim, the TEP has restricted the eco-friendly general tourism to the periphery of the sanctuary and the "real" ecotourism in the "core" area or within the sanctuary (Merson et al., 2012), which also has strong relevance to the carrying capacity of the destination. While both the MCFP and the INGR have many other add-on attractions in the vicinity, the MCFP in order to attract more tourists preferred an "adventure model". Consequently, the unique character that attracted visitors in the first place has lost its significance, and in future, tourism influx may reduce once similar adventure experiences available elsewhere (Davis, 2009).

Land use Management

The land use management at the MCFP was the outcome of the integrated efforts of the

Tropical Science Centre and the Quakers to preserve the forestlands. Subsequently, the Monteverde Conservation League took birth, to promote additional land acquisition through land purchase for forest protection (Davis, 2009). On the other hand in the INGR, land use management involved the division into specific settlement areas and conservation areas. The conservation area was further divided into a core zone of 500 hectares and a larger buffer zone of 6000 hectares, within which grazing was allowed to reduce the impact of droughts (UNDP, 2012). In the TEP, most of the land is under the jurisdiction of the Forest Department, with some under the control of the Irrigation Department (Merson et al., 2012).

International Funding

Both the MCFP and the INGR receive aids from several international funding organizations (Davis, 2009) (UNDP, 2012). However, no such partnership exists in the TEP. Dasenbrock argues that foreign donors, who are not fully aware of the concerned ecosystems, can destabilize the government's control in conservation efforts and lead to a lack of coordination in carrying out environmental policy (Dasenbrock, 2002).

Socio-economic Costs and Benefits

Wood opines that the evaluation of ecotourism's economic contribution to local people depends largely on the success of local vendors (Wood, 2002). In the MCFP, there has been a shift in local economy from agriculture to ecotourism and the positive economic growth of the entire region is largely attributed to the MCFP, which brings more jobs than farm jobs. Most of the households in the region depend on ecotourism for employment (71%), with very few on agricultural activities (19.5%), (Amador, 2004). According to researchers, the Monteverde region benefits economically, by increased foreign exchange due to tourists spending in hotels, restaurants and souvenir shops, but an increased number of tourists also lead to inflation or the increase in price of local goods (Koens et al., 2009).

In the INGR, created job opportunities include staff for the lodge, conservancy rangers, from ongoing infrastructural projects and income generation through development of artisan handicraft making by women's group, with access given for micro-credit facilities. There has been an increase in household income from livestock and agriculture through improved land use management (UNDP, 2012). In 2006, the number of households employed in tourism and non-tourism jobs was 40 and 30% respectively (Deau and Marshall, 2008).

There are contradictory reports on the socio-economic benefits in Thenmala. According to George et al., majority of the local people (above 70%) have enjoyed both monetary as well as non-monetary benefits of ecotourism. 30% of the local people were employed in construction activities at the centre, in shops, as tourist guides or employed in different zones on a daily or contract basis. Besides, 30% of the women working there are from the nearby areas (George and Zachariah, 2011). On the contrary, Ibrahim opines that the TEP has not benefited the local people in any way. Less than 5% of the people recruited belong to the local areas, and local people employed as tourist guides do not receive any training or regular wages (Merson et al., 2012).

Regarding the utilization of revenue generated, unlike the MCFP where utilization of all the revenue from the park is for operating expenses, an endowment fund and scientific research, significantly at the INGR, re-investment and utilization of the generated revenue is in different infrastructural projects, education and extensive health outreach services. However, since the foundation of the Eco-Lodge by INGR in 1996, there was inflation in the price of land, food and other goods and services (Deau and Marshall, 2008). Besides, especially in the developing countries, a major share of all tourist money paid in the host countries either never reaches

the destination countries or leaks out of the destination countries, caused by profit leakage. The profit leakage is due to import of goods and services that include purchase of consumables, such as food and drinks, import of building materials, financial capital, employment of foreigners, payment for promotion and advertisement in foreign countries by travel agencies and other companies and repatriation of profits by foreign owners of hotels and other services. However, the only leakage occurring at the INGR is for imported services, which are about 20% of the total holiday cost per visitor (Ramser, 2007) and according to researchers, there is hardly any revenue leakage in the MCFP (Koens et al., 2009).

Socio-cultural Costs and Benefits

Considering the socio-cultural aspects of ecotourism development, Monteverde, despite having a close-knit community, the shift from dairy farming to tourism has led to an environment of competitive business, along with rare outbreaks of violence. An interesting cultural diversity in the form of "agro-tourism" has emerged, whereby tourists and educational groups visit farms (Davis, 2009). The INGR on the other hand highlights the traditional tribal culture, their skills in Bee Keeping and knowledge about traditional medicines derived from indigenous plants (African Pro-poor Tourism Development Centre, 2006). Several websites related to ecotourism in Kenya reveal, that the unique selling point of the INGR is the visits to the cultural *bomas* or local community and the INGR exhibits various cultural activities by the local communities along with their curios and artefacts. A significant achievement of the TEP is the specific Culture Zone dedicated to the traditional culture of Kerala (Merson et al., 2012).

Environmental Costs and Benefits

The environmental costs and benefits in all the three destinations are different, but significant. In the MCFP, the rapid growth of ecotourism is largely responsible for the disappearance of the Golden Toad (Honey, 2008). The heavy influx of visitors, everywhere, searching for rare birds, zipping through canopy tours, mountain-biking, jeep riding, boating etc., coupled with the increase of immigrants have given rise to several environmental concerns. There is a lack of grey water treatment, sewage systems, adequate trash removal, air quality concerns, the loss of habitat through deforestation (Ernst, 2004), the increasing vehicular traffic and concerns over water pollution (Davis, 2009). The high entry fee has also failed to curb the number of visitors. Giving due regard to the carrying capacity, the MCFP finally began limiting the number of visitors (Abell and Winig, 1997). Another major achievement is the Environmental Education Program, whereby students are educated on cloud forest ecology and environmental issues (Monteverde Cloud Forest 40th Anniversary).

The INGR, while responding to climate change by shifting from pastoralism to agriculture, aimed to make it 100% conserved. Using alternative fuel sources for fire, solar panels for energy, minimizing the rate of deforestation, enforcement of Conservation regulations and byelaws were adopted that prohibited tree felling, poaching, killing of animals etc. Consequently, there has been a significant increase in biodiversity, while benefiting the surrounding areas. Here, various research institutions also conduct researches (UNDP, 2012). An eco-lodge is a tourist accommodation facility that meets certain primarily international environmental criteria (Wood, 2002). The USP of the INGR is the award winning eco-lodge that has adopted several energy efficiency practices (African Horizons, Il Ngwesi Eco-Lodge, Laikipia, Kenya).

During the execution of the TEP, concerning environmental conservation, the authorities avoided felling even a single tree, or damaging the ecology anywhere. Other significant efforts include the introduction of battery-operated boats, identifying plastic free zones and creating

this as a zero-waste project (Babu, 2012).

Summary

The major components or criteria that have emerged from the above discussion which appear to be relevant for ecotourism development on urban wetlands, in and around Indian cities are as follows:

1. Determining the appropriate type of governance and institutional structure, with respect to local community empowerment, involvement and participation.
2. Identifying the potential ecotourism activities depending on the nature – based components including utilization of unique socio-cultural assets, scope for amalgamating ecotourism with other forms of tourism and strategic zoning of ecotourism activities.
3. Adoption of suitable and effective land use management strategies.
4. Determining the role of international funding organizations with respect to community benefits and conservation.
5. Exploring the potential socio-economic costs and benefits, with respect to employment opportunities for the local people, equity in benefit sharing, utilization of revenue generated for conservation and community benefits, and controlling profit leakage and inflation in price of land and goods.
6. Examining the potential socio-cultural costs and benefits, with respect to the particular destination.
7. Determining the potential environmental costs and benefits with respect to carrying capacity of the destination, implementation of environmental hazard management strategies and Environmental Education Programs.

It is imperative to explore the above components, identified from case studies in the context of the East Kolkata Wetlands, for developing sustainable ecotourism that may have the potential for replication in other urban wetlands of India. This should take into consideration the opinion of the experts related to wetland conservation and ecotourism, and the various stakeholders of the wetlands, thereby leading to the formulation of relevant policies and guidelines.

Towards An Ecotourism Development Approach for an Urban Wetland - the East Kolkata Wetlands (EKW), Kolkata, India

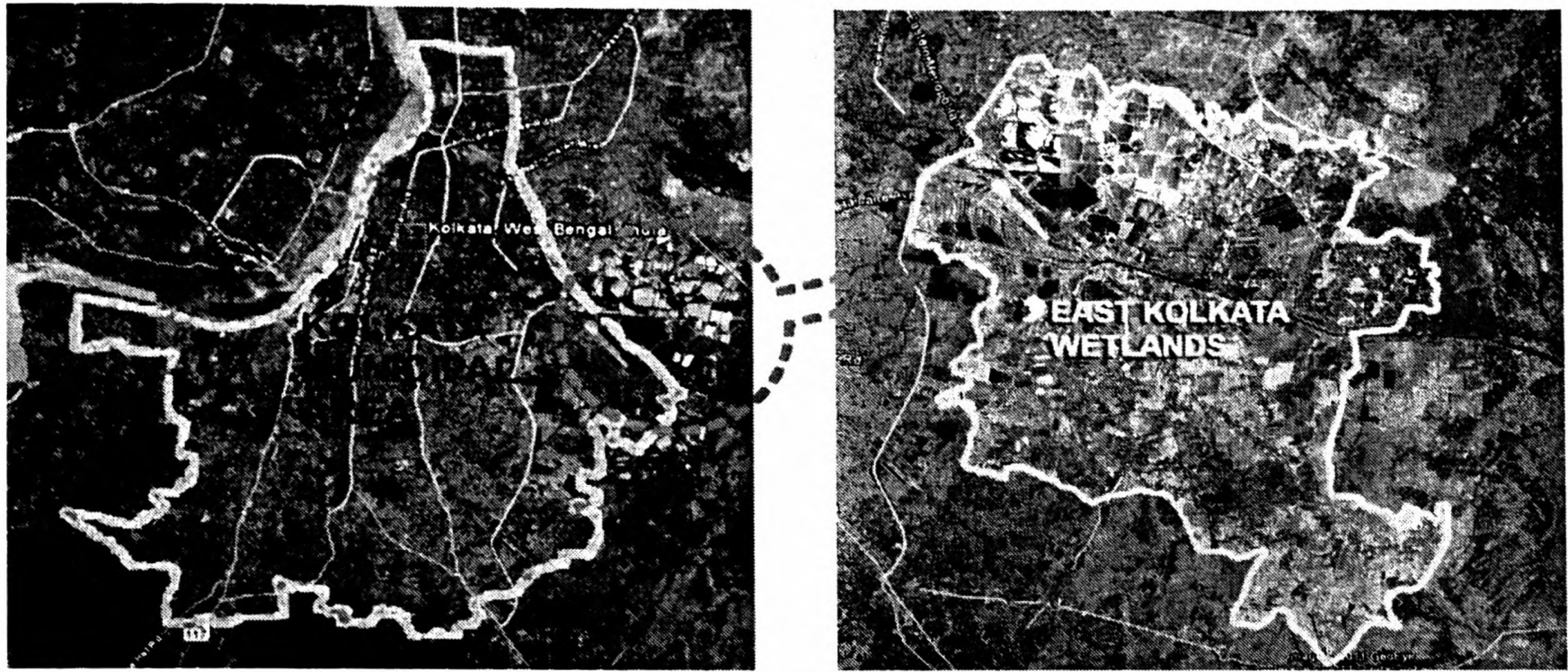


Fig 1: Location of East Kolkata Wetlands,
Source: Google Earth

The EKW, comprising of natural and manmade wetlands covering 12,500 hectares, is adjacent to the eastern part of the city of Kolkata. Designated as a “wetland of international

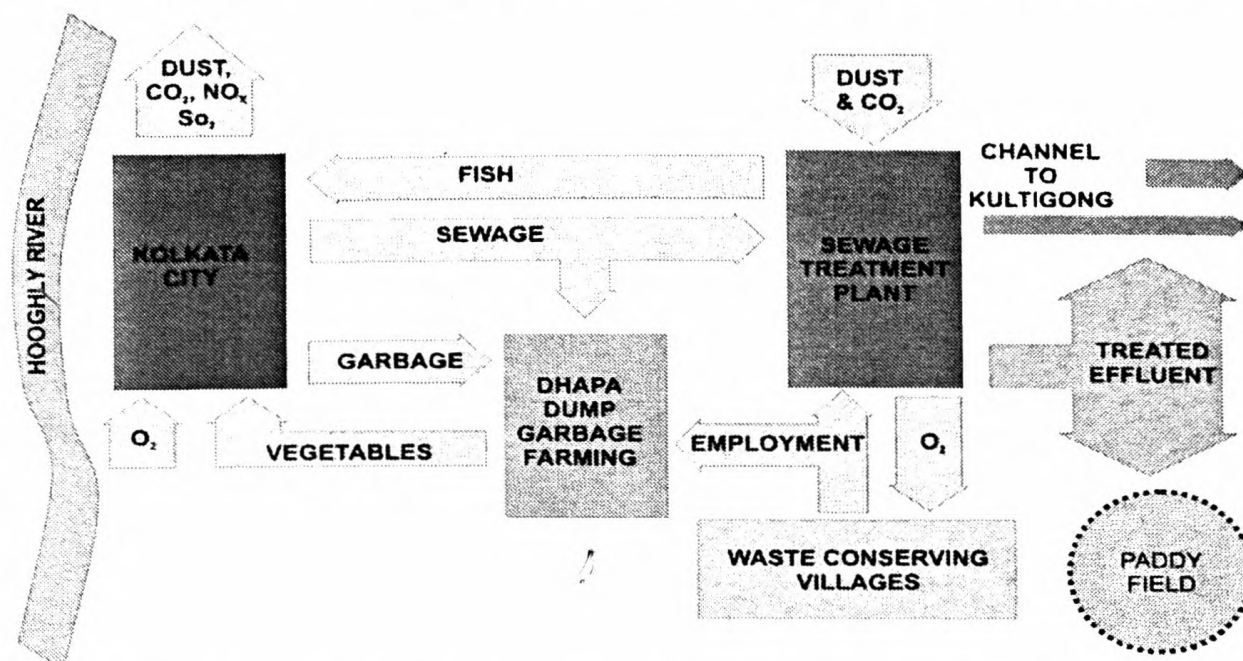


Fig 2: Waste Water Recycling System in the East Kolkata Wetlands

Source: Authors

importance” by the Ramsar Convention and internationally acclaimed for its “wise-use and resource recovery practices”, this Waste-Recycling Region is the world’s largest and unique waste-water fed aquaculture system practicing pisciculture, agriculture and vegetable farming on a garbage substrate. The sewage water of the city drains into the EKW through channels to the fishponds, which act as natural oxidation ponds thereby treating the wastewater. The effluent from fishponds is utilised for irrigation of the agricultural area and the final run-off, drains into the Kulti River. This natural wastewater treatment process treating more than 880

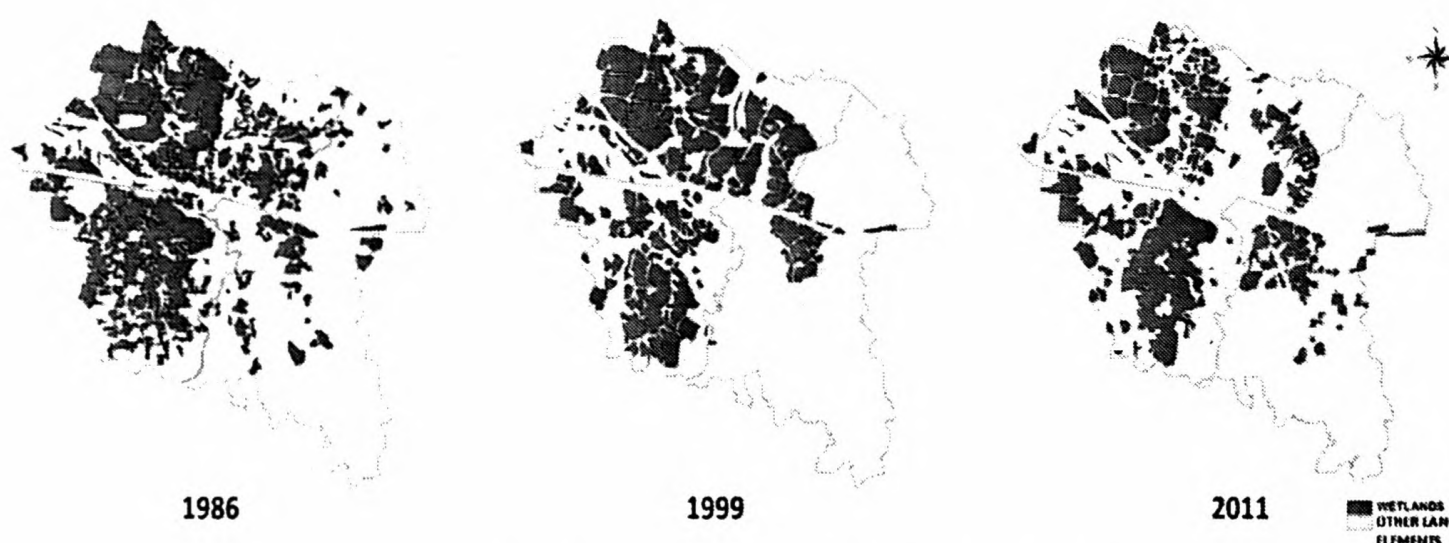


Fig 3: Maps showing Land use Change of the East Kolkata Wetlands

Source: Gupta, S. (2013)

MLD saves the city authorities from spending Rs 400 crores on capital expenditure, for the construction of a sewage treatment plant, as well as other recurring maintenance costs. However, parts of EKW are depleting at the rate of 0.97%, per year, primarily due to human encroachment and contamination (Ghosh et al., 2011).

Land Use Pattern

Table 1: Land use Change of EKW

Year	Wet land area (sq km)	Other land elements (sq Km)	Total area (sq km)	% of wetland
1986	41.065	92.925	133.99	30.64
1999	35.279	98.711	133.99	26.32
2011	33.082	100.908	133.99	24.68



Fig 4: Land use/Land cover map of East Kolkata Wetlands 2011

Source: Gupta. S. (2013)

The changing land use pattern of the EKW, followed by the decrease in the total wetland area, over a period from 1986 to 2011 is evident from Fig. 3 and Table 1. Fig. 4 and Table 2 indicate the area of land existing under different uses in 2011, which also depicts the predominance of agricultural land in the EKW (Gupta, 2013).

Table 2: Land use of EKW 2011

Sl. No	Land use	Area in Sq Km	Area in %
1	Wetlands	33.082	24.68
2	Vegetation	11.474	8.56
3	Canal	3.127	2.33
4	Built up with vegetation	26.757	19.96
5	Vacant land	6.211	4.63
6	Road	0.728	0.54
7	Agricultural land	52.611	39.26

It is evident from Fig.3, 4 and Table 1 and 2 that within the EKW, conversion of wetlands to agricultural land and subsequently to other urban uses is prevalent. Hence, for preservation of the wetlands against conversion, it may be prudent to adopt ecotourism as a strategy for effective land use management.

Functions and Attributes of EKW:

The EKW supplies about one-third of the daily fish requirement of the city of Kolkata and 15,000 MT of paddy per annum. Approximately 1.5 lakh (100,000) inhabitants live either directly or indirectly off the EKW. Besides fishermen and agricultural farmers, it also supports the livelihoods of porters, retailers, traders and countless other businessmen (Biswas, 2009). While treating the sewage and wastewater of the city naturally, these wastewater fishponds also sustain the livelihoods of 90,000 odd fishermen. Garbage farming, practiced by a certain section of the people, not only helps in environmental conservation, but also facilitates income generating activity and supplies around 150 MT of vegetables to the city every day. Had the EKW ceased to exist, the problems due to flooding would have increased manifold. It also plays a major role in ground water recharge, nutrient retention and has recreational and aesthetic utilities too. Moreover, it has immense value as a reservoir of biodiversity (Ghosh et al., 2011).

Problems and Threats:

Field visits, focus group discussions, stakeholders' opinions, and other secondary sources of information reveal numerous problems and threats, challenging the very existence of the EKW. At the metropolitan level, due to the absence of an ecologically sensitive plan for the city of Kolkata, rapid urbanization, illegal encroachment and indiscriminate real estate development has led to urban sprawl, on the east and south of Kolkata, affecting the fragile ecosystem on its periphery. There is reduced quantity and quality of wastewater essential for pisciculture. There is increasing siltation of the drainage channels due to the high cost associated with desiltation, changing land-use patterns from wetlands to fish farms to agriculture, heavy metal concentration due to discharge of untreated industry effluents, threat of land subsidence due to falling trend in hydraulic head, and a significant biodiversity loss over a period. There is the lack of financial assistance from funding organizations for maintenance of the wetlands by the local communities due to complex ownership pattern and absence of valid legal documents. Moreover, there is a change in the livelihood patterns of the local communities, whereby many are opting for non-wetland based activities such as wage labourers in formal and informal sectors, construction workers and domestic labourers in emerging residential developments in the vicinity. Since fisheries do not provide year round employment, the younger generation is now losing interest in traditional pisciculture.

Ecotourism Potential:

Recently, records show about 106 aquatic plants in the EKW. Economically important plant species with medicinal values, those used as vegetables by local communities, as well as those used for thatching, pulp, and other uses exist here. It is home to 4 amphibian species, 19 reptilian species and about 248 bird species (90 aquatic, 11 semi aquatic and 147 terrestrial species). The common water birds found here are Cormorants, Herons, Gulls, Terns, Egrets, and Jacanas etc. Due to poly-culture, selected species of fish are cultivated here, such as Indian Major Carps, Minor Carps, Exotic Carps and Tilapias. It is also home to the endangered mammal marsh mongoose (Bhattacharya et al., 2012).

The pristine water bodies of the EKW are already becoming a picnic site. Field enquiry by the authors reveal that an NGO, South Asian Forum for Environment (SAFE), while expressing concern on the need to supplement the livelihoods of the poor fishermen, have stressed on launching ecotourism in the EKW, which is already attracting tourists interested in bird watching, boating, picnicking, photography etc. SAFE has already taken commendable initiatives in developing ecotourism spots within the EKW, by involving the local communities

in the decision-making process, as well as training many of them in hospitality and management.

Planning for Sustainable Ecotourism Development in the EKW:

With reference to the above three case studies and considering the strong ecotourism potential of the EKW, it is important that this 12,500 hectares of internationally acclaimed Ramsar site, under serious threat, be given the status of a Protected Area. A Protected Area, as defined by IUCN is "a clearly defined geographical space, recognized, dedicated and managed through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values". The EKW, therefore, may be placed under IUCN Category VI (Protected area with sustainable use of natural resources) (Dudley, 2008). However, similar to the Annapurna Conservation Area Project in Nepal, the local residents may live within the boundaries as well as own their private property and maintain their traditional rights and access to the use of natural resources for their subsistence.

It is evident that the INGR is an outstanding example of community based ecotourism with its participatory approach and equity in benefit sharing wherein the principles followed, may be adopted for the governance of ecotourism activities in case of the EKW. According to the Annual Report (2007-2008) by SAFE, about 83.74% of the wetland dwellers are either poor or socially underprivileged and thousands of people sustaining on the use of the wetlands, do not even have access to basic health, education and sanitation facilities. Hence, as in the INGR, it is essential to utilize the revenue generated from ecotourism for community well-being, with adequate steps to minimize revenue leakage. Moreover, employment opportunities generated in connection with ecotourism activities or development of infrastructural facilities should cater to the requirements of the local people, along with adequate capacity building of local communities. Apart from the conventional nature-based, educational, recreational or adventure based ecotourism activities, visits to the traditional fishing villages and home-stays should be encouraged, as this would directly benefit the local people economically and ensure tourism to have a low impact. Notably, the EKW already has a significant number of stakeholders, both within and outside the ecosystem that include fish producers and other user groups, the East Kolkata Management Authority (EKWMA), associations such as Fish Producers' Association, NGOs and various government organizations (Bunting et al., 2011). However, EKWMA comprising of representatives from all the organizations is presently responsible for the management of the EKW and the East Kolkata Wetlands (Conservation and Management) Act, 2006 is primarily applicable in case of any dispute arising in the management of EKW (Ghosh et al., 2011). Hence, any proposal for ecotourism development will need the prior approval of the EKWMA. It is also evident that ecotourism development will need the participation of all the stakeholders mentioned above. Most importantly, it should be ensured that the local people have a strong voice in the decision making process, because participation in Botswana Community Based Natural Resource Management program turned out to be "planner centred." The communities there were minimally involved in the design and implementation of the proposed programs and decisions were often already made by government agencies without informing them (Juska and Koenig, 2006).

The importance of zoning is evident from the above case studies. New cities and townships, which have already developed on the immediate periphery of the EKW, such as Salt Lake City, New Town Rajarhat, and East Kolkata Township, are posing a great challenge to the ecosystem.

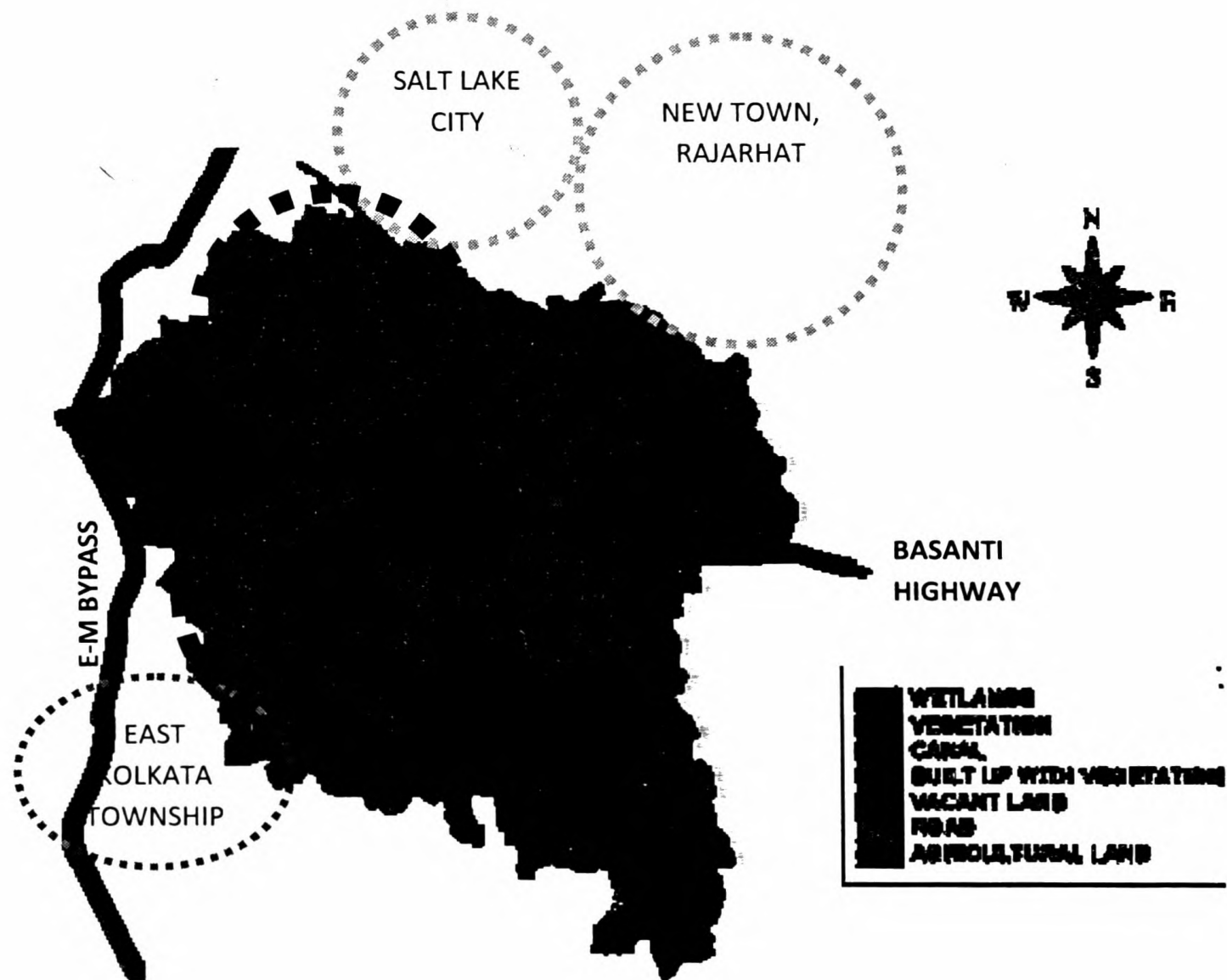


Fig 5: Proposed Land use Management of East Kolkata Wetlands for Ecotourism

Hence, it is essential to designate the remaining clusters of wetlands existing, which are ecologically sensitive areas within this Ramsar site as “core areas”, which should be used only for non-destructive research and educational aspects of ecotourism. It is also essential to designate the surrounding or adjoining areas to the “core areas” as “buffer zones” which shall allow for low impact ecotourism activities and development, to render economic benefit, primarily to the local communities in an ecologically responsive manner.

The significance of carrying capacity of a destination and its visitor management are obvious from the above case studies. Moreover, due to the proximity of the EKW to the city of Kolkata and for maximization of economical benefits driven by unregulated market forces, ecotourism may tend towards commercial tourism leading to its further degradation eventually. Since the EKW is an ecologically fragile and vulnerable ecosystem, it is essential to determine its tourism carrying capacity which is, “the maximum number of tourists that may visit a tourist destination, at the same time, without causing destruction of the physical, economic, socio-cultural environment and an unacceptable decrease in quality of visitors’ satisfaction” (Nghie et al., 2007). As inferred from the case studies, from the point of view of environmental sustainability, determining the carrying capacity, construction of eco-lodges owned and operated by local communities, following environmental sustainable practices and initiating environmental education programs are imperatives for sustainable ecotourism development in the EKW.

For sustainable ecotourism in the EKW, partnerships with international donor organizations

may also prove effective, but it should be restricted to projects related to poverty alleviation and community well-being of the EKW.

Conclusions

Considering the sustainability issues of the EKW and its people, the comparative analysis of socio-economic, socio-cultural, environmental and ecological costs and benefits, in the case studies already discussed above, there is no doubt that ecotourism development should be adopted as a strategy for sustainability of urban wetlands such as the EKW. The EKW is a unique ecosystem with a rich biodiversity and dependent communities who form a significant part of the city's population. Therefore, from the components or criteria of sustainable ecotourism that have emerged from the above case studies, it can be concluded that a community based ecotourism, where communities will be recognized as active stakeholders should be adopted as a model for the EKW, as well as other urban wetlands too within or around the Indian cities. It is essential to establish community based ecotourism with a strong participatory approach for natural resource conservation, income generation of the communities depending on the wetlands, as well as for their capacity building so that the local people will have substantial control and involvement in the ecotourism project, and substantial amount of the benefits will retain within the community. It is also essential to study the scope of utilization of existing natural and socio-cultural assets within the EKW for ecotourism, and the scope of amalgamating ecotourism in the EKW with other forms of tourism in the city of Kolkata. Moreover, an effective land use management framework with distinct "core" and "buffer" areas has to be developed whilst giving due regards to the environmental sustainability issues, such as determination of carrying capacity of the EKW for ecotourism, formulation and implementation of environmental best practices and implementation of environmental education programs within the EKW. Contemplating ecotourism development on urban wetlands in the context of natural resource management, in or around cities and its people is important for sustainability and development. However, there may be other components and dimensions besides those discussed above related to urban ecotourism, as well as community based ecotourism on urban wetlands, further exploration of which is required for incorporation into the proposed model.

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