

Managing Lake Tourism: Challenges Ahead

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Tourism industry: an introduction

Tourism is acclaimed to be one of the world's biggest revenue generating industries accounting for billions of dollars and thousands of jobs. The tourism sector is having multiplier effect on the economy and its contribution to the GDP is one of the highest and its ability to generate employment is much more than any other sector. It is the largest single employer and industry in several island nations. Urbanization, technological innovations, improvement in living standard, introduction of fuel efficient cars made journeys relatively easier. All these factors have generated a vibrant tourism activity and brought a boom in domestic tourism. Lakes have an aesthetic significance for attracting tourists. Lakes have attracted many since historical times. Today there are a number of established lake tourism destinations world over. Lake tourism assumes significance in the national economies of several European countries, Canada and New Zealand which have thousands of lakes with appropriate tourist infrastructure. England is known for its Lake District and lake tourism. Several lakes over here are attracting tourists. Studies and travelogues on lakes and their conservation bring out the importance of lakes in tourism planning, development and environmental protection. The 12th World Lake Conference TAAL 2007 held in Jaipur in November 2007 recognized the importance of lakes for domestic and recreational uses and ecotourism. The present paper takes an overview of managing lake tourism and highlights the challenges ahead. It outlines the threats before urban lakes, problems and constraints in lake tourism development, managing religious tourism and fairs along the lakes, importance of lakes for bird watching-threatened and well maintained sites. Some good tourism management practices followed at selected lake destinations (global and Indian) are also given. Some remedial actions, promotional measures like private and community participation in conservation and management are discussed.

Lakes as a resource for tourism

The concept of destination in tourism varies depending on the various stakeholders in the tourism business. Every destination is a unique whole, in which physical, historical, cultural, social, administrative or functional factors mix in a dynamic way producing a spatial and functional tourism reality. A lake as a tourist destination is generally a functionally compact regional whole with clear geographical limits.¹ A single lake destination is sometimes surrounded by a compact cluster of tourism activities. A lake destination in some cases is a part of a larger region (lake district destination) inside which there are several small lakes, and the whole region is connected. A lake resort offers various services to tourists. Lakes have an aesthetic significance particularly for attracting tourism. Lakes are well known tourism destinations at regional and local level. Lakes at several hill stations have attracted tourists since historical times. Because of the unusual and serene landscape at high altitude, these lakes attract large number of visitors. Lakes and wetlands are included in the list of tourists attractions on the tourism portals of respective states/ cities. Lakes are the popular areas set aside for public recreation and tourists are able to explore every facet of it. Tourists enjoy scenic journey around the lake and a boat trip towards lake islands including bird sanctuary. A vast expanse of bright blue water in the midst of dense forests, lofty mountains or barren landscape is marvelous and looks picturesque at the dawn, sunset or during full moon nights. The view of a lake shimmering in the spring sunshine is marvelous. The lakes declared as water bird sanctuaries are like fairylands for birds. Shorelines or banks of lakes attract both humans and a diverse community of plants and animals. The biodiversity of lakes make them important as natural resource for tourism. Lakes all over the world are used as a resource for ecotourism, natural tourism, leisure tourism and conference tourism and are attracting millions of tourists.

Initially lakes served as the only source of drinking water of the town or settlement developed along their banks or shore. Lakes contribute significantly to socio economic development of the surrounding region. Lakes provide various benefits that include influencing the microclimate, flood control, encouraging biodiversity and replenishing groundwater. Lakes act as sewage absorbers in cities, The microclimate of the area surrounding the lake benefits if the lake water level is maintained. The usage of lakes for sports, entertainment, swimming, fishing etc is of great importance to the public. Use of lake shores for residential,

¹ www.joensuu.fi/skk

commercial, development and recreation has increased world over. Through years of neglect, water has been allowed to deteriorate.

Historical background of lake tourism in India

The foundation of the present day tourism in India may be traced back to the British period during which a number of hill stations and lake resorts came into being and were developed mainly to cater to the needs of the Britishers. The case of Kodai canal and Nainital, famous lake towns in the south and north India clearly illustrates this. Kodai lake was created in 1863 by Sir Hendry Levinge. He was previously the Collector of Madurai, who retired and settled in Kodai. He constructed the bund to form a lake and stocked the lake with fish. He brought the first boat from Tuticorin. In 1890, a boat club was formed. In 1910 a new boathouse was constructed. The boat service was opened to the public and tourists in 1932. Since then Kodai canal has been the most popular hill station of South India. Boat Pageant and Flower Show held during the summer festival are now the added attractions for tourists.²

Mr. P. Barren was the first Britisher to visit Nainital. He was so impressed by the natural beauty of the place that he sought permission of the government for building a house at Nainital. The settlement was set-up in 1842 and a municipality in 1850.³ Due to cool climate and proximity to Delhi and UP Plains, Nainital was made the summer capital of the United Provinces in 1860. The systematic development of the township and provision of various amenities and services like roads, parks, offices and schools was accompanied by growth of settlement around the lake. Many urban functions and a number of services and facilities were developed in the settlement. It also emerged as a leading centre in India for western type schooling. Thereafter, Nainital experienced rapid development as a tourist resort. There was vast scope for development of tourism due to its salubrious climate and scenic beauty. Big upsurge in the tourist activity led to the growth of hotel and accommodation, restaurants and other infrastructure. The emergence of travel agency business in major lake cities boosted domestic tourism. In the following decades, infrastructure building activities were followed by wide publicity. This made a significant impact upon domestic tourism scene. There was a large scale expansion of television network. A number of popular audio visual publicity programmes were launched to create wide awareness among people about places of tourist interest in India. Various travel companies also launched programmes to publicize their tour itineraries. The boom in domestic tourism at the national level had its echo in lake towns also.

Lake Tourism: Threats and challenges

A variety of environmental goods and services provided by lakes make them vulnerable to human demand. Society's demands for economic gains have contributed to the deterioration of water quality and aesthetic value of lakes. Over the years the value of lakes and water bodies/ wetlands is dwindling. Many lakes world over have been destroyed or decayed. Several lakes within or at the periphery of urban areas are either destroyed or slowly dying or drained and converted to other uses. The water level of the lakes is reducing due to loss of catchment. Change in urban land use are taking place with reclamation of land from lakes, for real estate development. Lakes have become dumping grounds for effluents, both domestic and industrial as well as agricultural runoff. Coastal lakes have been seriously affected due to an imbalance in salinity levels. Port activities close to coastal lakes are also having detrimental impact on the lakes. Lakes at several hill stations, which attracted tourists are losing out to thoughtless tourism. High altitude lakes in Ladakh and Himalayas are the fragile ecosystems threatened due to increased tourism. Common problem in case of urban lakes is encroachment on the lake fringe area which gets exposed when water level falls after rains. Lakes are subject to rapid population growth, urbanization, industrialization, mining development, growth of irrigated agriculture in the surrounding region and impact of climate change. These processes have altered ecosystem processes and resulted in several threats on lakes including loss of biodiversity, over-fishing, eutrophication, proliferation of invasive weeds, siltation, toxic contamination and over extraction of water. Eutrophication affects all types of water use.

Lakes are closed ecosystems. Hence pollution tends to accumulate there. High rate of pollution and silting of the lake are causes of very serious concern. Lakes have been very adversely affected by increased turbidity of water and presence of waste material and garbage on the surface. Owing to continued silting, several lakes have reduced their capacity to hold water and their mean depth. Due to accumulation of

² Website of Tamil Nadu Tourism

³ Pant, Pushpa, Growth of Tourism in Nainital, Geographical Review of India, Vol. 62, June 2000.

organic matter, the dissolved oxygen level gets reduced resulting in death of a large number of fish. It is estimated that 0.5-1% of the world reservoir volume is lost from sedimentation annually. The problem of sedimentation leads to water shortage and non utilization of reservoirs and depletion of resource base of the country. The problem of sedimentation is most acute in case of man-made reservoirs and dams.

Environmental implications of growth of lake tourism

Tourism industry is closely related to environmental conservation. Rapidly developing travel and tourism pattern of the modern period led to the large scale commercial exploitation of natural resources and environment. It has caused considerable stress on environment. Tourism has caused negative impact on several lakes. Areas within easy reach of large population centres/ metropolitan cities are more susceptible to adverse impacts due to threats posed by urbanization. Some lake sides have become environmentally unsound with growing pressures of tourism related activities. Intense tourist activity within the limited space and fragile environment of lakes has several adverse effects. Some lake basins are geologically unstable regions. Large areas are subject to subsidence and ground creep. The rapid growth of tourists inflow in recent years has induced a haphazard growth of tourist infrastructure building activities. The indiscriminate building activity is sometimes not in harmony with the environment. The beauty of the landscape gets spoiled and the skyline undergoes abrupt and ugly changes. There are growing concerns over the impact of sewage discharges from local lodges and settlements. If there are no proper regulations, growing tourist activities, roads and other infrastructure lead to adverse impacts on fragile freshwater environments.

One of the characteristic of mountain tourism is high degree of seasonality. This enhances the adverse impact on environment. This is specially true for fragile high altitude ecosystem like lakes and wetlands. These ecosystems represent oasis of productivity in otherwise arid environment and have high conservation value. Over the mountains the tourists' access is restricted to summer months, which is the breeding season for the avifauna and peak period of biological activity. It coincides with the peak tourist season.

Sometimes to take good photographs, some tourists disturb the birds. They are seen camping very close to the breeding sites.

Religious tourism is also identified as a threat to lake tourism in high altitude regions. Almost all important wetlands in Ladakh have monasteries nearby. During summer months Monastic festivals are arranged when a large number of locals and pilgrims have been found camping indiscriminately, affecting the wildlife habitat.⁴

Other serious problem of environmental concern caused by increased tourism activity pertain to traffic congestion along the roads in lake towns. The roads are very narrow. The density of traffic is very high in peak tourist season. The leisurely walks which were supposed to be the characteristic feature of the hill stations and lake resorts are becoming rarer during months of tourist activity. Open spaces are turning into parking lots. This causes more congestion of the towns.

Negative impacts of tourism on biodiversity

Lake tourism industry depends on the biodiversity, i.e. variety and abundance of flora and fauna found in the surrounding region. A rapid increase of visitors tend to have a negative impact on the creatures. Pollution and sedimentation as well as the introduction of invasive species pose the greatest threat to the aquatic biodiversity of lakes. Siltation from overexploitation of wetland resources, like reeds and fish, pollution by fuels and pesticides, pose a significant threat to the surrounding flora and fauna. These problems largely arise from the cumulative impacts of human activities taking place within lake basins.

Activities such as boating and rafting, when carried out without any regulation, pose a threat to fragile lake environment. Water quality of lakes is adversely affected. The growing number of motorized boats increase fuel pollution of the lake waters – both from accidental leakages and deliberate dumping of waste oil into the lake. This can be fatal to many aquatic animals and plant species. Noise pollution and wave action of the motor boats can harm banks and over time can cause irreparable damage to their micro-ecology.

The souvenir or curio industry has been developed hand in hand with tourism industry. In Africa, the local people utilize the indigenous hard wood for making the souvenirs. The over harvesting of large and rare indigenous trees is depleting the local forest resources in many parts of Africa's lake basins where tourism is booming.

⁴ Singh, R.B. Annals, 2006.

The impacts of climate change are projected to accelerate aquatic plant and animal population losses, and the extinction of a wide range of species and ecosystems.

Urban lakes under threat

Powai lake, Bombay

Threats to urban lakes can well be illustrated with the example of Powai lake. Powai lake is a quiet stretch of water in the northern suburb of Mumbai and offers a much needed escape from the overcrowded city. It is an ideal spot for picnickers and attracts tourists in large numbers. It was built by the British in 1890s. Once supplying water to Mumbai, it is now declared unfit to drink. Earlier it was a rich ecosystem supporting a wide variety of flora and fauna and providing a habitat for a wide variety of aquatic animals. It was increasingly impacted by human waste, pollution, silt and excessive growth of weeds which choked the shoreline and deteriorated water quality. Due to over pumping of water from the lake, about 5000 fish each weighing about 20 kg. perished overnight in May 1993.⁵ Powai lake is now included in the National Lake Conservation Programme. As a result, the Central Govt has allocated Rs 26 crores for beautifying, preserving and developing Powai lake environment including sport fishing, i.e. angling. The conservation plan includes fish breeding farm, camping grounds and picnic sites, nature trek path, crocodile park, and boating in selected areas. Recently an increase in number of crocodile population in the lake is noted. It is a healthy sign for the lake's biodiversity. The adjoining residents are willing to pay for the improvement of water quality of the lake, to change the lake from the present state to a boatable, fishable and potable state. Educated people are willing to pay more.⁶

Sukhna Lake, Chandigarh

Sukhna, a rain fed lake was artificially created by damming in 1958 primarily for recreation. Initially spread over 230 hectares (ha) this lake is now reduced to around 154 ha. The water level has come down from 5 metre in 1958 to around 2 m in 2004. Due to denudation of hills in the catchment, the lake is silting at an alarming rate. Commercialization of the surrounding area is also responsible for its encroachment. "The Edicts of Chandigarh" prepared by Le Carbusier reads: "There shall be no commercial exploitation of the lake and its environment and its tranquility shall be guaranteed by banning noises." The area around the lake now houses food kiosks, shops, motor boats, flood lights, a watch tower and a musical fountain. The lake was a heaven for migratory birds from Siberia, but these developments have affected their numbers.⁷ The Supreme Court has banned construction near the lake, which seems to be violated.

Oussudu lake, Pondicherry

Oussudu Lake near Pondichery is one among the important wetlands in India recognized by the International Union for Conservation of Nature. Due to encroachments and siltation, the water holding capacity of the lake has reduced. The rate of shrinkage has been increased in recent years. Due to the increase in the demographic pressure around the lake and urbanization of the lake catchment, the pollution level has worsened. A detailed land use/ land cover study of the lake and its catchments with the help of remote sensing images reveals that the north-eastern and south-eastern sides of the lake, which are not embanked and surrounded by open scrub are the most vulnerable areas.⁸ They are encroached by rice fields when the lake begins to dry in summer. This adds nutrient load of the lake leading to pollution. Industrial belt lying in the north-western portion with brewing, dairy, glass and coir industry and lime kiln are also adding to its pollution load. Though Oussudu lake has been declared a bird sanctuary, there is no suitable infrastructure to cater to the needs of tourists and bird watchers. With proper and careful planning, this lake can be developed as an ecotourist spot which can boost the local economy.

Hill station lakes

The picturesque lakes in the hill stations are getting polluted due to unrestricted tourism activities and dumping of garbage and untreated sewage. Construction activities in the name of creating infrastructure for

⁵ <http://members.tripod.com/MSAAPowai/savepowai.htm>

⁶ Gupta, Vijaya, Nov 2007.

⁷ Down to Earth, Nov 30, 2007

⁸ Narayanakumar, R. Deccan Geographer, June 2006.

tourism in order to attract more tourists, deforestation in catchment areas of the lakes is causing siltation of the lakes. Lakes at Ooty and Kodai canal, Nakki lake in Mt Abu, Wenna lake in Mahabaleshwar, Nainital and Bhimtal in Uttaranchal are some of the well-known lakes now threatened and need to be conserved. as they attract large number of tourists every year.

Lakes known for bird watching: threatened sites

Keoladeo National Park, once a thriving wetland in Bharatpur (Rajasthan) with more than 11 sq km of lake has turned into an arid wasteland. Scanty rainfall or drought over the past years is one reason. Water from this wetland was therefore diverted for agriculture and other authorized and unauthorized uses. Consequently the sedimentation has increased. The reduction of the lake has influenced its biodiversity and influenced its tourism. It was visited by more than 40,000 pelicans and other bird species. About 15 to 20 rare bird species were using the area as a breeding colony. Their number has significantly dwindled. With the reduction in number of migratory birds, substantial reduction in number of tourists is recorded. With the growing risk of forest fire, the park has been closed to visitors. As per newspaper reports, (Times of India, 31-01-08) UNESCO which recognized this park as World Heritage Site has issued a notice to withdraw its heritage status.

Nal Sarovar

Nal Sarovar, a natural lake, located just 60 km from Ahmedabad was declared a national bird sanctuary in 1969. Nal Sarovar covers an area of 120 sq km in the dry season and up to 180 sq km after a good monsoon. It is dotted with a large number of islands. Migratory flocks of cranes, storks, flamingos, pelicans, geese, herons, egrets, mallards, grebes, coots and other species of fishing birds and waterfowl are found at Nal Sarovar. A film city, an 18-hole golf course, and realty development with country homes are all coming up around the bird sanctuary of Nal Sarovar. Nearer you go to this natural resource, higher the price. In addition to the real estate boom, global warming and climate change are also responsible to bring the fragile ecosystem under stress. Check –dams upstream are another man-made disaster for this water body (Times of India, 18-02-08). The very survival of the lake would be in danger if this large water body dries up or stops attracting migratory birds during winters. The Forest Department has framed eight routes to eight different islands, ranging from one hour to six hour, in this lake where the boatman would take the visitors. The tourist will choose the route and pay accordingly. (Times of India, 22-02-08). A bird poaching racket is thriving at this popular sanctuary. For four months from October 2007 to January 2008, six persons have been arrested and 96 birds recovered. Poachers from nearby tribal communities spread the net like a curtain across two poles. As per newspaper report (The Times of India, 28 Feb 2008) around 350 nets were seized and destroyed by the forest department. Intensive patrolling is carried out to check illegal poaching. If conservation efforts are not initiated on time, with climatic changes, global warming, shrinking of seasons, shortening of winters and drying up of rivers in the years to come, the lake may not be able to attract the migratory birds in the future. Sustainable maintenance and development of Nal Sarovar is essential to boost up the tourism revenue.

Lakes in Udaipur

The lake city of Udaipur was once famous for its lake habitats. Two lakes of world fame – Jaisamand and Rajsamand - are situated within its vicinity. Pichola and Fatehsagar are twin lakes of Udaipur. Recent studies have revealed that the number of aquatic bird species has declined within the past five years. Many migratory bird species are not visiting the lakes now. The sighting of some residential bird species has also become difficult. The low avian diversity can be attributed to less than average rainfall for about 10 years and anthropogenic activities. During the last 15 years many hotels and buildings have been constructed around the lake. The lake has become a major site of waste disposal. Other activities like bathing, washing, religious ceremonies and rituals, recreational activities like rowing of boats, blooming of water hyacinth are responsible for degradation of water quality. The pollution load of the lake has been increased. With the habitat loss due to siltation and reclamation for construction, the nesting and breeding sites of many birds are affected. Noise pollution on the shores of the lake due to vehicles and tourist activities is also

responsible for decline in number of bird species. Recreational activities, tourism and water sports on large scale are also disturbing the birds.⁹

Bird watching at lakes: well maintained sites

Several picturesque lakes around the world are favourite bird watching destinations. Experienced tour operators organize wildlife holidays, bird watching and mammal-viewing tours of 8 to 10 days duration to such sites. Wetlands in south-eastern Nepal and Koshi Tappu Wildlife Reserve is one such area. Koshi Camp with its own private wetland and woodland is a paradise for birdwatchers and wildlife enthusiasts. It covers 175 square kilometres to the north of Kosi barrage. A kilometre-long barrage across the Koshi river was built in the early 1960s to control and prevent flooding. The vast expanse of open water created by the barrage, and the grasslands, marshes, lagoons, sandbanks, mudflats and arable land that lie around it, offer an outstanding wetland habitat and one of the finest bird watching sites in Asia.

Damdama lake and nearby Sultanpur bird sanctuary in Haryana are about two hours drive from Gurgaon. It has a cluster of hillocks and calm green lakes where about 150 varieties of birds are found. These sites are well maintained and popular among tourists.

Lake Kerkini, Greece

Lake Kerkini in northern Greece is renowned as one of the finest wetland sites in Europe. This is a Ramsar-acknowledged wetland known for bird watching. It is bounded by mountains to the north and south. The wild marshlands along the floodplain of the Strymon river were considered not suitable for human habitation and were lying unutilized. In the early twentieth century, a huge irrigation reservoir was constructed to control flow of water in the region. The marshland was thereafter converted into arable land. In 1982 a new high dam was constructed which resulted in the present lake. Bird watching holidays to this lake are organized by tour operators in summer. Little Bitterns, Purple Herons, Squacco Herons, egrets and many other water birds are found in the sanctuary. A variety of avian fauna can be viewed at close range from boats and their chirping can be heard. This lake is the breeding ground of the endangered Dalmatian Pelican and Pygmy Cormorant (bird species). Due to abundant supply of fish in the lake, they thrive well and attract particular attention, while flying high over the lake. In addition, a variety of flora - herds of water buffaloes, beech marten and wildcat, reptiles enjoying the sunshine, tortoise, green and balkan green lizards, over a hundred butterfly species have been recorded around the lake.

Lake Tisza the largest artificial lake in Hungary and the adjoining Hortobagy National Park enjoy World Heritage status. It was created in 1973 by damming the River Tesza in a flood control project. It has a 70 km long shoreline. It is a new 'water world'. Here several species that had previously died in the area were resurrected. It is now known as Europe's largest area of water lilies. Various parts of the lake exhibit nature conservation by man and water sports facilities. Smaller lakes in the area are also significant for domestic tourism.

Managing religious tourism and fairs at lakes

Mansarovar Lake

Kailash - Mansarovar has been a popular pilgrim spot for the people of India, Tibet and the neighboring countries for centuries. Mansarovar is the highest fresh-water lake in the world (elevation 4,556 m (13,120 ft) above sea level). The circumference of Mansarovar is 88 to 90 km, depth is 90 m and it occupies a total area of 320 km². The lake freezes in winter and melts in the spring. The Sutlej, Brahmaputra, the Indus and the Karnali River all trace their sources to its close vicinity.(Wikipedia). It is a place for divine ablution. Pilgrims come to take ceremonial baths in the lake. A dip in this lake and drinking its water is said to purify the pilgrims from the sins of many births. The word Mansarovar is derived from the Sanskrit word 'Manas' which means mind and Sarovar (lake). Legend has it that Lord Brahma created this lake from his mind. The lake is also supposed to be the summer abode of swans, who are considered as very wise and sacred birds. There are mighty snow clad peaks, temples and monasteries

⁹ Bhatnagar, The Indian Forester, Oct 2007.

on its shore. The most notable among them is the ancient Chiu Gompa Monastery. Parashuram's ashram is said to be situated on a hill on the banks of the Mansarovar. The spot is equally revered by the Jains and the Bonpas of Tibet. Rakshas Taal the twin lake along with Mansarovar, where Bhasmasur burnt himself is also a huge lake with a circumference of 122 km. A 6-km long natural channel - "Gangachhu" - connects Manas with Rakshas Tal.

A journey to Kailsh is considered the ultimate yatra due to both the difficulty of reaching it and the level of sanctity attached to it. The Kailash Mansarovar Yatra- pilgrimage tours are organized every year from India and China by leading tour operators. Since 1981, under the auspices of the Indian Ministry of External Affairs and with the cooperation of the Chinese government, Kumaon Mandal Vikas Nigam has been conducting trips to Kailash - Mansarovar through the Lipulekh pass. The number of people allowed visiting Kailash - Mansarovar is limited. In view of the large number of applicants, this number is likely to increase soon. With the improvement in infrastructure around the lake by the Chinese govt, it is possible to travel around the lake in jeeps. It takes approximately three hours to cover the Parikrama by 4 WD Jeeps. Helicopter tours are also organised.¹⁰

Lakes in Nepal are personified as deities and are therefore considered sacred pilgrimage sites for Hindus and Buddhists Gosaikund near Kathmandu (a mountainous lake) is a famous pilgrimage site.

Brahmasarovar- the holy lake at Kurukshetra

The holy town of Kurukshetra, which is known as the battlefield of the epic Mahabharat war, is marked by the presence of temples and lakes. The Brahma Sarover is a sacred lake that is revered as the cradle of civilization. The massive renovation plans have returned it to its former glory as a major center of pilgrimage. In the vicinity of the lake there are a number of small temples. On the day of solar eclipse, amavasya - the night of complete darkness - the lake assumes special significance. To bathe here on the day of an eclipse brings the blessings of having performed the Ashwa Medha Yajna and also brings salvation from all sins. It is believed that the Sannihit Sarover nearby is the meeting point of the seven sacred Saraswatis and to bathe here on the day of amavasya is considered auspicious.

Sohna(Haryana) is famous for its sulphur springs. The sulphur springs are approachable only on foot through small narrow lanes. Water from the sulphur spring is pumped two miles up to a specially constructed bath area at the tourist complex near the lake. At the bath complex visitors can have a sauna, a steam bath or massage. The hot water is believed to have curative effect on skin infections and diseases. Hindus consider the lake sacred and come for a dip in its water on solar/ lunar eclipses and Somavati amavasya.

Pushkar, the sacred lake

The pious Pushkar lake in Rajasthan, 11 km north-west of Ajmer, is known as the king of the "Trithas". It is believed to have been created by the falling of lotus from the hand of Lord Brahma and hence is associated with sacredness and divinity. Pushkar has the only temple of Lord Brahma in the country. As per the prevailing legend, a dip at the lake cleanses all the sins and is the surest way to achieve salvation from the cycles of life. There are about five hundred temples on its periphery. This semicircular lake is surrounded by hills on three sides and sand dunes on the fourth. The maximum depth of the lake is 10 mts. The lake has 52 ghats, which connect the temples to the water. The water around each ghat is supposed to have special powers. Gau Ghat is the place from which ashes of Mahatma Gandhi were sprinkled into the lake. Brahma Ghat is believed to be the spot where Brahma himself is said to have been worshipped. It is believed that Vishnu appeared in the form of Varaha (a boar) on the Varah Ghat.

Pushkar Camel Fair

Fairs or melas are huge annual congregations. Every year on the day of auspicious Kartik Purnima, the full-moon phase of October/November, Pushkar Lake attracts thousands of pilgrims from all over the country to take a holy dip when a five day mela is arranged. It is believed that a dip at the lake on this auspicious day is equal to the penances done for one hundred years. Several tour operators offer tour packages for travel to Pushkar Lake. Pushkar Fair is the world's largest camel fair and also considered as the world's largest cattle fair. It is held around Kartik Purnima. The festival hosts around 50,000 camels.

¹⁰ www.kailashmanas.com, www.kailashmansarovar-yatra.com

They are decorated and camel races are arranged. It is a rare combination of religious fervour and cultural vibrancy. It attracts thousands of tourists.

Fairs at lakes in Assam

In Assam lakes or ‘beels’ form the nucleus around which community life revolves. The famous historic ‘Jun beel Mela at Jun beel near Jagiroad district in Assam provides an evidence of people’s socio cultural and economic relations with Beels (lakes or wetlands) in Assam since 15th century. This mela (fair) is known for traditional barter (exchange) system of trade, get together of hill tribes and plain communities to reestablish and ensure commercial and cultural amity. Community fishing in the Jun beel and folk songs and dances are the significant activities and attractions of the mela. This mela is of ethnic and socio cultural importance. Even at other beels community fishing is practised especially during the festival of Bihu, Puja, Id, etc.

Managing lake tourism at world’s major lakes: Good practice examples Lake Baikal

Lake Baikal is known as the world’s largest, deepest, oldest and most voluminous freshwater lake. Baikal holds as much water as the five North American great lakes. Domestic tourism was important since historical times. A number of international efforts were initiated since 1990s to develop tourism, and ecotourism in particular to ensure sustainable economic development of the region. Lake Baikal was designated as World Heritage Site in 1996. Since then, the number of domestic and international tourists is gradually increasing. Infrastructure around Lake Baikal needs to be improved to cope up with the increase in number of tourists. Transportation to reach the lake and accommodation needs to be upgraded. The Russian law is making it easier for the Russians to purchase additional homes around the lake shores. This is likely to help in expanding the tourism sector in this region in the years to come. International efforts to increase ecotourism around the lake may also boost up lake tourism. In order to create environmental awareness, a Biodiversity project was completed in this region with international collaboration.¹¹ To promote low impact tourism at Baikal, Great Baikal Trail (GBT) is being developed. It will create a path around the lake which will help in attracting visitors from all over the world. For the past 15 years, lot of efforts have been made for managing the watershed at the lake Baikal. The lessons learned from these international efforts reveal long term research and monitoring programmes should be established to measures environmental impacts throughout the watershed. This would help in resource management decisions in order to preserve this famous fresh water lake.

Lake Mead National Recreation Area

Lake Mead, located on the Colorado River about 48 km south-east of Las Vegas, Nevada, was formed by water impounded by Hoover Dam. It is the largest reservoir in the USA, 185 km long, 1.6km to 12km wide and covers an area of 640 sq km. It has over 885 km of shoreline. The Lake Mead National Recreation Area is spread over the surrounding desert landscape, land bordering the Colorado River and Lake Mohave, south of Hoover Dam. Recreation facilities available to tourists are sightseeing, fishing, boating, swimming, camping, exploring the desert. Other activities include water skiing, relaxing in the sun, exploring the coves with rocky cliffs and sandy beaches, visiting the small to medium-size islands in the lake area depending on the water level. Boating is the most popular activity. Fishing boats, speedboats or houseboats are available at several locations on Lake Mead and on Lake Mohave. An old-time paddlewheel steamboat also offers tours of Hoover Dam and Lake Mead or dinner dance cruises on the lake.¹²

Thousand- Island Lake, China

“Thousand-island lake” includes a total of 1,078 islands of varying sizes, clustered together. This artificial lake with a storage capacity of 17.8 billion cubic meters covers an area of 575 square kilometers and has an average depth of water of about 34 meters. Built in 1959, it has China’s first hydroelectric

¹¹ Lake Baikal, Experience and Lessons learned brief

¹² <http://www.usatourist.com/English/places>

station. There is a luxuriant growth of vegetation - the mountains that skirt the lake are richly wooded. The National Forest Park around it is the biggest National Park in China. A variety of plant species, such as mulberries and bamboo are grown on the islands. The lake is also famous for its fruit and nuts - persimmon, sweet-spun golden jujubes, mountain walnuts and dried wild brake. The water is crystal clear. They claim that the lake water is so pure that it can be drunk directly. The cool water makes travelers forget the oppressive heat of the cities. This region has its own particular attraction for visitors. The lake is visited during summer for the pleasant weather. Ecotourism, natural tourism, leisure tourism and conference tourism are popular here and are attracting over 4 million tourists every year. There are above 60 star hotels, two 5-star resorts, and lots of leisure and recreational facilities. After large-scale reconstruction in recent years, the lake has six sections containing 14 scenic spots, including the Screen Peak, the Plum Peak, the Dragon Hill, the Animal-Series and the Stone Forest. The islands have various landforms of limestone and granite.

Angling for promoting lake tourism

Angling or sports fishing is a multi million dollar industry promoted all over the world for tourism. It is particularly popular in countries like UK, USA, Mauritius, Seychelles and Canada. In India the State governments like Karnataka, W. Bengal, J& K, Arunachal Pradesh and Assam either promote angling as a tourist attraction or support the local angling associations. They have brought out coloured brochures for the same and also included it in the websites. The Maharashtra State Anling Association, an NGO takes care of the environment of the Powai lake near Bombay. They have introduced and preserved major Indian Carp and Mahaseer game fish. They have brought out a book “Powai - The Anglers Paradise.” In France carp fishing holidays are offered by tour operators at Paradise lake. They provide a weeklong experience of fishing with Carps – Angling Alien species such as trout and bass, which are favoured by anglers, are introduced in some water bodies. This has an impact on local fish species. The impact of sport angling is a matter of concern in certain areas.

Ecotourism and lake conservation: practices and experiences

Ecotourism has increased environmental conservation as people struggle to maintain lakes in their natural state as a way to sustain local tourism activities. Many riparian states in Africa have enacted strict laws to protect plant life and wild life around their lakes. African lakes house about 500 different aquatic species creating a potential for sustainable fishing activities. Elephants which were about to face extinction have increased around Lake Tanganyika and Lake Kariba as tourists seek them out¹³ The establishment of Game Parks around lakes is a strategy that allows tourists to see many different kinds of animals in one location (IUCN 2004)

Lake Development Authorities

Tourism management and general management of a lake cannot be separated as only a well managed lake will be able to attract visitors. The Lake Development Authorities have been established under various state governments and municipal corporations to preserve and manage the lakes within their jurisdiction. They are implementing schemes for the development, beautification and maintenance of select lakes. Activities like catchment area treatment, desilting and dredging, bio-fencing, fisheries development, weed control, biodiversity conservation are undertaken. Hussain Sagar lake of Hyderabad was constructed initially as a drinking water source for Hyderabad city. In course of time it received domestic and industrial waste from the surrounding region rendering it unfit for recreation and emitted bad odour. The situation would be very bad during summer. Every year lot of fish died. Lakes in Hyderabad have been revived by the intensive efforts of the Hyderabad Urban Development Authority. They provide a success story of how urban lakes can be saved with an integrated drainage and sewage treatment plant, in addition to the active involvement of the government departments and local community. Chilka Development Authority is monitoring the water quality of the lagoon every month from 30 different stations for various physico- chemical parameters.

Bhoj wetlands or Bhopal lake is a wetland of international importance. It includes Upper lake and Lower lake. The Upper lake is a major source of potable water to Bhopal city. Consequent to environmental degradation of the lake, a comprehensive project on integrated water resource management was

¹³ People and Lakes: Human influence on Africa's Lakes, UNEP Aug 2006

implemented with financial assistance from Japan during 1995-2004 for the ecological restoration of the lake. An integrated lake conservation plan was prepared. As a result, the ecological condition of the lake has improved. Takia island, an island of religious importance in Bhopal lake was restored. Walls were constructed to prevent erosion and siltation of the lake. It became a centre of attraction for tourists and avifauna with the development of greenery. A Lake Conservation Authority (LCA) has been created at Bhopal to ensure post project management of the lakes based on the wise use concept. LCA is now promoting the environmental friendly agricultural practices in the entire catchment of the Upper lake consisting of 66 villages and encouraging farmers to adopt organic farming.¹⁴ Involvement of the public with the Bhoj wetlands project in part to solve the religious and social issues is worth emulating in other parts of the world. The Delhi government is looking at Bhopal's Bada and Chhota Taal as an alternative destination to hold water sports events (Snorkeling, canoeing and boating) of Commonwealth Games 2010. (The Economic Times, 20-03-08) This will help to upgrade the city's infrastructure to international level.

Conservation of Lakes through private participation

Some Lake Development Authorities are involving private participants under PPP policy. These private parties have been allowed to operate recreational facilities in return for maintaining the lake. They are responsible for desilting, dredging, landscaping and gardening, foreshore and island development, creation of tree parks, rock gardens, walkways, jogging paths, cycling tracks, fountains, children park area, electrification for illumination, boat jetty, sports fishing, bird watching, butterfly park, boating, eco friendly water sports, eco friendly restaurants. The civic bodies and NGOs have played a major role in restoring lakes. The PPP has also been impressive and will lead to positive output in coming days if used along with awareness and legal enforcement. The key to managing lake tourism is to have collaboration between regional and local bodies in both the public and private sector. Two examples given below reveal success stories of managing lakes through private partnership.

Kankaria lake (Ahmedabad), a polygonal lake with intricate sluice gates, was created by Sultan Qutub-din in 1451. The lake attracts birdlife. Kankaria lake is in danger of drying up. Though its actual depth is 16 to 17 feet, around six feet of the lake was filled with silt. As a consequence, the depth of the lake was reduced to around 10 to 12 feet. Ahmedabad Municipal Corporation took up the work of desilting of lake on a large scale. The island garden, called Nagina wadi was also developed. The whole area was redeveloped in partnership with a private sector company. With a large zoo and children's park by the lake, an aquarium and open air theatre, the entire lake complex is a major tourist destination in Ahmedabad, one of the best places to witness the sunset.

Ranchi lake, once a major tourist destination of the state capital of Jharkhand was neglected for long. Tata group has now taken an initiative under its Corporate Social Responsibility project to prepare blueprint to improve the look of the once popular lake to attract morning walkers and children. Steps are being taken to purify the water of the lake, improve infrastructure around the lake, construct a road around it, develop the periphery of the area, to clean and improve sewage system, lighting arrangement, to beautify and clear the lake from water hyacinth and to start boating facility. (Tata Website)

Managing lakes through cooperatives

A study of restoration initiative through community participation for a small lake (Rupa) in Central Nepal proves that even small lakes possess a multitude of social, environmental and ecological benefits and their disappearance reduces opportunities for jobs and income. To restore this lake, a cooperative was formed by traditional fishermen and women. Since then, local biodiversity and fisheries have been improved, encroachment of lake margins halted. This proves that cooperatives could be a powerful mechanism to save small lakes in a sustainable manner.¹⁵ (Proceedings, 11th World lake Conf)

Sustainable protection of lakes to encourage lake tourism

Many of our valuable lakes and wetlands have been lost/reclaimed. Therefore, the remaining lakes/wetlands become even more valuable. This requires efforts to make people aware of the positive steps for sustainable protection of lakes to encourage lake tourism. An international conference on Lake Tourism organized in Hungary in 2007 and Kenya in 2005 highlighted the importance of sustainable lake tourism, i.e. conservation and management of lakes. The 12th World Lake Conference TAAL 2007 held in Jaipur in November 2007 called to adopt appropriate research methodology to facilitate execution of management

¹⁴ Mukerjee, 11th WLC, Nairobi, 2005.

¹⁵ Gurung, Tek Bahadur, 11th WLC, Nairobi, 2005

and action plan to preserve lakes and wetlands for promoting tourism. Through the active, well informed and responsible participation of the relevant stakeholders in the management of lakes, the local culture could be used as an engine for sustainable livelihood of local communities.¹⁶

Understanding important lake processes and comparative studies of lakes at grass root level are essential for better understanding and future planning of lakes. Sustainable development is a continuous challenge in which lake districts could strive for closer cooperation. In order to obtain local, regional and global understanding of the lake ecosystems, several limnologists, information technology experts and engineers around the world have joined together to create a new international network. It is known as Global Lake Ecological Observatory Network (GLEON, www.gleon.org) GLEON is a grass-root community effort to better understand lake dynamics at various scales. Scientists are trying to get access to data and undertake research on lakes. Regular field visits for maintenance are done on a regular basis at all GLEON sites.

Several lakes in our cities and countryside are still in a bad shape. The government bodies do fall short of financial as well as human resources from time to time. They are either understaffed or do not have the finances for maintaining lakes on an ongoing basis. The Ministry of Environment & Forests, Government of India is implementing the Centrally Sponsored Scheme of National Lake Conservation Plan (NLCP) since June, 2001 on 70:30 cost sharing basis between the Central Government and the respective State Government with its objective to restore and conserve the polluted and degraded lakes in urban and semi-urban areas in the country. The Ministry has identified 94 wetlands under NWCP. In order to identify polluted and degraded lakes across the country, a study was carried out at the instance of Planning Commission. A list of 62 lakes across the country requiring conservation was prepared under the study. The State Governments were asked to review this list and to prioritize the lakes in their States for submission of proposals under NLCP. New lakes under the Plan are sanctioned on the basis of their prioritization, admissibility and availability of funds under NLCP (PIB Press Release 20 March 2008) The need of the hour is to develop tourist activity in lake towns in a sustainable way and in such a manner that the towns remain attractive for the tourists, safe for its permanent population and tourists and taxpayers are provided adequate civic amenities. Tourism related planning and greater coordination is essential. The tour operators should take cognizance of the need for maintaining ecological balance while pursuing Eco, Adventure and Wildlife Tourism. It is a common challenge of all lake districts to preserve their tourism potential based on the distinctive features of the lake resources.

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