

Tourism and wetland conservation: application of travel cost and willingness to pay an entry fee at Ghodaghodi Lake Complex, Nepal

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Abstract

This study investigated the need and applicability of wetland tourism for resource conservation, using the case of Ghodaghodi Lake Complex, a Ramsar Site in western Nepal. The travel cost method (TCM) was used to determine the recreation potential of the lake complex, while the contingent valuation method (CVM) was used to calculate willingness of visitors to pay an entry fee as a payment vehicle for conservation. The per capita travel cost was found to be NPR 540 (US \$7.71), while the mean willingness to pay an entry fee was NPR 34 (US \$0.48) per visitor per entry. In addition, factors affecting wetland visitation rates and maximum willingness to pay were identified. Policy implications include the establishment of an entry fee system to offset conservation budgetary constraints, government investment in social benefits equating to at least per capita travel cost identified, and public-private partnerships, with community participation in tourism promotion and wetland conservation.

Keywords: Travel cost; willingness to pay; tourism; entry fee; wetland conservation; Ghodaghodi Lake Complex.

1. Introduction

Wetlands, on a global scale, have offered significant opportunities for tourism and recreation, providing economic benefits to the governments, the tourism industry, and the local communities, and the income has been used as a basis for their conservation (Ramsar and UNWTO, 2012). Wetland-based tourism is an under-studied topic in Nepal, where such natural areas are often taken for granted. However, wetlands bear recreational values and, if conserved and managed properly, they motivate visitors and generate resources needed for the development of local communities. The integration of tourism in wetland conservation can be found globally: Camargue wetland in France (Beltrame *et al.*, 2013); Nabugabo wetland in Uganda (Bikangaga *et al.*, 2007); Junam and Upo wetland in South Korea (Do *et al.*, 2015); Ondiri and Manguo wetlands

in Kenya (Macharia *et al.*, 2010); and Nariva Swamp in Trinidad (Pemberton and Mader-Charles, 2005). Tourism activities are sources of economic thrust for conservation of different types of natural areas, such as nature reserves and wetlands, since they always attract visitors (Brandl *et al.*, 2011). Different terms have been prescribed for tourism activities undertaken in natural areas, such as nature tourism and green tourism; however, ecotourism is probably the most popular term among these, and is mostly used to denote tourism that is based in natural areas. Bjork (2000) argued that there are four central actors in ecotourism: the authorities, the tourism business, visitors, and local people, with every actor having a role to play in the attraction of visitors, whether it be to travel to an area to admire it or to study it, while enjoying nature and culture in a way that does not damage the resource, and contributes to its sustainable development.

Anand *et al.* (2012) reported a successful study of green tourism in the Ramsar-listed Tsomoriri wetland of Ladakh, India, where households earned US \$700–1200 during the summer season. Do *et al.* (2015) reported a significant rise in wetland-related tourism activities, with more than 21 million visitors visiting four wetlands in South Korea between 2007 and 2012, with inland wetlands Junam and Upo sharing 32% of the total visitors, a sign of wetland

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tourism development. Nature-based tourism is an emerging industry in India and based on a survey of 11 protected areas, Karanth and DeFries (2011) reported their average growth rate stood at nearly 15%, of which 80% were domestic visitors. Similarly, the impact of ecotourism on the livelihood of local communities has been reported globally in different natural areas: Ogutu (2002) at Amboseli Biosphere Reserve, Kenya; Satyanarayana *et al.* (2012) at Tanbi Wetland National Park, Gambia; and Stronza (2007) at Bahuaja-Sonene National Park, Peru. The incorporation of the pro-poor tourism concept (Ashley *et al.*, 2000) in nature tourism intervention could enhance livelihood benefits for disadvantaged groups, which could play a vital role in the conservation of biodiversity and local ecosystems in developing countries. Tourism does not lead to positive outcomes all the time. Brandl *et al.* (2011) stated that tourism intervention in an area could have a host of impacts, such as by being a positive force and benefiting destinations and their communities, or a device for the degradation of ecosystems. Meleddu (2014) summarized three broad categories of tourism externalities, namely economic, environmental and socio-cultural, which could have both positive and negative impacts on the local people at the destination. Benefit sharing, if unfair, creates conflict in implementing tourism. Scheyvens (1999) argued that ecotourism is successful only if local communities have some control over it, and receive equitable benefit shares from such activities, as ecotourism aims to promote both conservation and development at the local level.

Nepal has been hailed as an attractive global ecotourism destination, where community-based tourism activities in their natural reserves are the sources of livelihood for a majority of local communities (Nepal, 2007). Tourism in Nepal still accounts as the second most important source of foreign revenue and in 2004, and almost 60% of the international tourists who arrived to the country visited different protected areas (Bhujra *et al.*, 2007). In this context, the Government of Nepal identified ecotourism as an important inbuilt nature industry for the country, due to its potential to the contribution of environmental conservation, local employment and community development (Acharya and Halpenny, 2013). K.C. *et al.* (2015) demonstrated a host of positive impacts resulting from ecotourism in Annapurna Conservation Area in central Nepal for the conservation of floral and faunal biodiversity, preservation of local tradition and culture, and increased livelihood diversification through rural trade and employment opportunities.

The recreational potential and financial sustainability of natural areas is always of prime concern for making conservation investments and ensuring protection and management of biodiversity, landscapes and ecosystems. This requires the calculation of a proxy market for such environmental services through the use of available techniques. The travel cost method (TCM) and contingent valuation method (CVM) are the most widely used methods for

valuing environmental services of wetland ecosystems (Khan, 2006), and are used to derive the demand curve for outdoor recreation (Matthew *et al.*, 2013). The TCM is used to quantify recreational potential of natural areas, and according to Ortacesme *et al.* (2002), the cost incurred by an individual during travel to the recreational site mirrors an implicit price to enjoy the site. The benefit of using the TCM is an estimation of the consumer surplus, based on the Marshallian demand curve. An estimation of consumer surplus is a good approximation of welfare measure (Willig, 1976; Shrestha *et al.*, 2002), which is the difference between the price visitors are willing to pay and the actual price paid to visit recreational sites (Swaney and Ward, 1985; Lansdell and Gangadharan, 2003). Hence, the total consumer surplus of the given recreational site is the sum of individual consumer surpluses. The major constraints of the TCM, however, include allocation of costs for trips with multiple destinations, and the value of travel and on-site time (Beal, 1995). Similarly, Shultz *et al.* (1998) reported that the CVM is a useful tool in determining the entry fee for undertaking recreational activities in natural areas, but also warned of its limitations, including the need to sample complete populations of potential park visitors, the need for detailed information framing and contingent scenarios in park-related willingness to pay (WTP) questions, and the threat of cultural strategic biases. Both of these methods have been applied to several environmental valuation case studies around the world, and are gaining popularity in Asian countries as well. For instance, the TCM for valuing recreational potential was used by Khan (2006), Badola *et al.* (2010), Marawila and Thibbotuwawa (2010); the WTP for entry fee by Khan (2006), Samdin (2008), Han *et al.* (2011), Wang and Jia (2012), and Baral and Dhungana (2014).

Protected areas (PAs) are the attraction of both national and international visitors of Nepal for recreational activities. All the PAs are funded by the government for the conservation of biodiversity and ecosystems. However, the government-allocated budget is usually inadequate due to stiff competition for funds from other development sectors of the state. The story is different for natural areas that do not overlap with the boundaries of such PAs, such as the Ghodaghodi Lake Complex (GLC). Compared to PAs, a meagre state budget is provided for the conservation of wetland ecosystems and, in almost all cases, access is free. Recreational potential of such sites is hardly considered and integrated into policy formulation. Visitor entry fees have already become a policy option in many countries in order to make natural areas financially stable, and could be well-implemented in Nepal. This has been practiced only for visitors who visit natural areas located in existing PAs. The aim of this study is to explore the need and applicability of tourism concepts for wetlands, their recreational potential for conservation investment, and identify visitors' WTP for entry fee and its determinants, using the GLC of Nepal as the case study.

2. Materials and methods

2.1. Study area

The Ghodaghodi Lake Complex (GLC) is situated at an altitude of 205 m above mean sea level (with a latitude of 28°42'06.6"N and a longitude of 80°56'44"E) in the tropical lowlands of western Nepal, and is under the jurisdiction of the Government. The lake complex is connected to an extensive tropical mixed forest in the lower slopes of the Siwalik Hills to the north, and in between two protected areas: Bardia National Park and Suklaphanta Wildlife Reserve in the south. Therefore, the GLC functions as an important corridor for wildlife movement between these two protected areas (Sah and Heinen, 2001). Since 2003, the lake complex has been listed as a Ramsar Site of international importance due to its rich wetland biological diversity (IUCN, 1998; Kafle, 2005; Lamsal *et al.*, 2014). The major inhabitants of the area are the *Tharu*, an ethnic group that has been known to reside there for over two centuries. The GLC has 14 lakes, covering an area of 2,563 ha, with Ghodaghodi (138 ha) being the largest, followed by Nakharodi (70 ha), Bhainswa (10 ha) and other smaller lakes. Due to the presence of a nationally endangered and globally threatened bird species habitat, the GLC has also been declared as an important bird area (IBA) by the government (BCN and DNPWC, 2012). Recently, the GLC catchment has been extended to an area of 9,650 ha, and is under Division Block Number 5 under Basanta Protection Forest, which is one of the seven protected forests declared by the Government in 2010, and

established with the aim of holistic management of ecosystem and biodiversity conservation (DoF, 2012). Ghodaghodi Lake was named after the temple 'Ghodaghodi', situated at the southern bank of the lake complex. The site holds religious and cultural value, and people from nearby villages and towns travel to worship at the temple all year round (see Figure 1).

The governance and protection mechanisms for wetlands in Nepal differ from each other, and depend on geographical location with respect to nature reserves. Four types of nature reserves have been legally defined as PAs in Nepal: national parks, wildlife reserves, hunting reserves and conservation areas. At present there are 20 PAs, including 10 national parks, three wildlife reserves, one hunting reserve and six conservation areas. National parks, wildlife reserves and hunting reserves are under the jurisdiction of the Department of National Park and Wildlife Conservation (DNPWC), while conservation areas are jointly managed by the DNPWC and other conservation organizations. The National Parks and Wildlife Conservation Act of 1973 and its 10 associated regulations are the principal legal instruments that govern the management of PAs in Nepal (Bhujju *et al.*, 2007). Out of the nine wetlands declared as Ramsar Sites of international importance, Ghodaghodi and Jagadishpur in the lowland and Mai Pokhari in the midhill are located outside of the PAs, and the rest (Beeshazari and Koshi Tappu in lowland Terai; Rara, Phoksundo, Gosainkunda and Gokyo in high altitude regions) are within the PAs. Therefore, the GLC does not have strong legal protection measures compared to other wetlands situated within PAs.

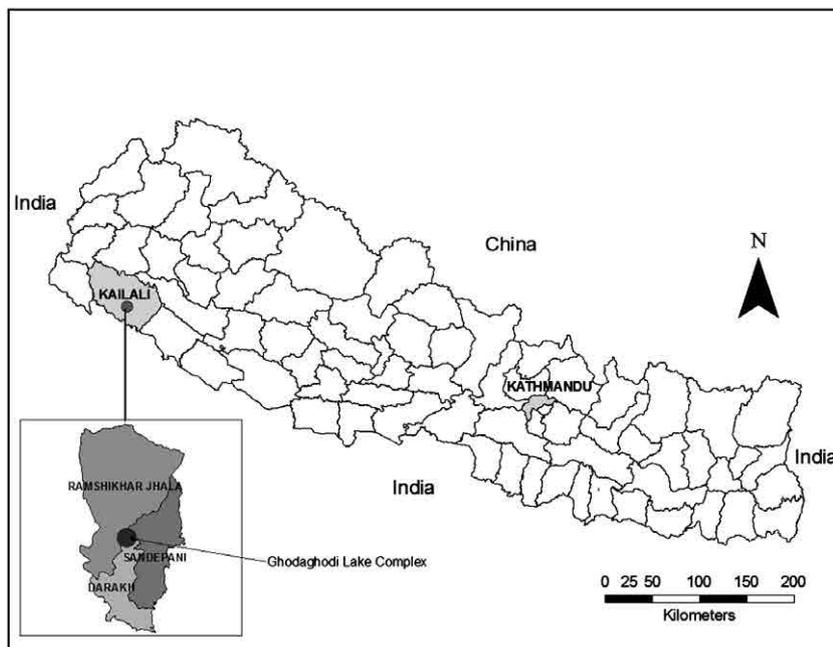


Figure 1. Study area.

2.2. Data collection

Two approaches are considered in the TCM: individual travel cost method (ITCM) and zonal travel cost method (ZTCM). For the ITCM, the dependent variable is the number of trips per season per year made by an individual to a particular recreational site, while for the ZTCM it is the number of trips to a particular site by the population of a particular zone. Since most of the visitors at the GLC were from nearby villages and towns, we chose the ITCM to calculate the recreational potential of the site. Furthermore, this approach has many advantages over the zonal approach; for example, a small number of observations are sufficient for econometric analysis, as well as more flexible and wider applicability (Garrod and Willis, 1999).

The survey was conducted over a period of 1 month, from 15 April to 14 May 2007, at the GLC. The study was based on primary data collected from visitors to the GLC during this time period, and who participated in the survey. Before conducting a visitor's survey, one focus group discussion (FGD) was held in the local primary school near the GLC, in order to gather information on overall tourism conditions, tourist infrastructure and visitors flow, and to finalize the visitor selection criteria and timing of the interview to carry out the questionnaire survey. From the FGD, it was learned that an average of 20 visitors visit the GLC each day, and most of them were from villages and towns near the complex, providing a rough estimate of 7,000 visitors per year. The best timing for administering the questionnaire survey was identified to be between noon and 3 pm. As the GLC has open access entry with no defined physical boundary, we used a simple random sampling technique to select samples among the visitors inside the complex who were involved in recreational activities within the selected time frame. Screening questions were asked before commencing formal survey sessions to eliminate respondents who lived in the periphery of the complex, and who visited on a daily basis for resource collection or other household purposes. All the visitors we approached for the survey gave their consent to participate in the study. For those visitors in groups, only one senior member of the group, either male or female, was interviewed. On average, four visitors were interviewed in the set time of four hours. This gave us a total of 128 visitors as our sample size.

Visitor survey questionnaires and WTP for entry fee scenarios were developed and pre-tested. The questionnaire was comprised of three parts. Part I asked for a visitor's profile, and information such as age, marital status, household size, education, income, place of residence and occupation. Part II measured a visitor's recreational behaviour, such as number of wetland visits, average time spent at the GLC, mode of travel, travel expenditure, time and distance to and from the lake, available recreational quality, satisfaction as a result of the GLC visit, and improvements needed. Part III measured a visitor's attitude towards likely

imposition of an entry fee and their willingness to pay such an entry fee for better conservation of the GLC's biological and physical resources in the future. In our case, the travel cost is the cost incurred by a visitor in order to receive recreational benefits or entertainment at the GLC, imputed as the benefit to the visitor from the lake, where cost includes travel expenditure (ticket or petrol cost, lodging and food), and opportunity cost of time spent on site and while traveling. As most of the visitors came directly to the GLC for recreation, the issue of multisite visitation, a common problem in the TCM, did not exist. The questionnaire was translated into the Nepali language to make it more readable for the local enumerators. Two local enumerators with a Year 12 education were selected, familiarized with the survey questionnaire and the WTP scenario, and trained for 3 days on how to capture and cross-triangulate relevant information from the respondents. The participants in the FGD suggested NPR 20 per person as an average amount that visitors to the GLC could easily afford. Interestingly, NPR 20 was the amount imposed by other public parks in the country for domestic visitors, including most of the national parks and wildlife reserves (DNPWC, 2008). Thus, we considered NPR 20 as the starting bid amount for estimating WTP an entry fee for the GLC.

After the survey, each questionnaire was scrutinized for its data consistency. The data was compiled in MS Excel and scrutinized for any omissions or outliers. SPSS 16.0 (IBM, Armonk, NY) software was used for data analysis. Apart from calculating general descriptive statistics, Ordinary least squares (OLS) regression was used to identify factors affecting the visitor's visitation rate (RATE) to the GLC if the present physical and environmental conditions improved, and maximum WTP (MAXWTP) of visitor for entry fee. The explanatory variables and the expected sign are listed in Tables 1 and 2, while the respective models were specified as follows:

$$RATE = \alpha + \beta_1 NLAKVLY + \beta_2 RESD + \beta_3 AGE + \beta_4 GENDER + \beta_5 DISTAKEN + \beta_6 SUMTTC + \epsilon, \quad (1)$$

Table 1. List of explanatory variables and their explanations and hypotheses used in the OLS regression for a visitor's visitation frequency at the GLC

| Variables | Explanations | Hypotheses |
|-----------|---|------------|
| NLAKVLY | Number of lakes visited in the previous year | - |
| RESD | Residence of visitor (if urban = 1, 0 otherwise) | + |
| AGE | Age of visitor (years) | - |
| GENDER | Sex of visitor (if male = 1, 0 otherwise) | + |
| DISTAKEN | Distance travelled to get to the GLC from place of residence (km) | - |
| SUMTTC | Sum of total travel cost to visit the lake (NPR in thousands) | - |

Table 2. List of explanatory variables and their explanations and hypotheses used in the OLS regression for a visitor’s maximum WTP for entry fee at the GLC

| Variables | Explanations | Hypotheses |
|-----------|---|------------|
| AGE | Age of visitor (years) | – |
| HHS | Number of family members of visitor | – |
| TIMESP | Time being spent today at the lake area (hours) | + |
| DISTAKEN | Distance travelled to get to the GLC from place of residence (km) | – |
| ALTTVK | Alternate lake that visitor knew of and wanted to visit (if yes = 1, 0 otherwise) | – |
| SUMTTC | Sum of total travel cost to visit the lake (NPR in thousands) | – |

$$MAXWTP = \alpha + \beta_1 AGE + \beta_2 HHS + \beta_3 TIMESP + \beta_4 DISTAKEN + \beta_5 ALTTVK + \beta_6 SUMTTC + \epsilon, \quad (2)$$

where ϵ is an error term and α and β are estimated parameters.

2.3. WTP scenario

Well-informed visitors are likely to reveal their desire for an entry fee and WTP positively (Vogt and Williams, 1999; Eagles *et al.*, 2002). Thus, a clear and well-designed market scenario is important, as the elicited WTP values are contingent upon hypothetical market scenarios, which we presented to respondents before asking their stated amount. The purpose was to influence the WTP values by putting forth the conditions of the markets and what is to be valued (Reynisdottir *et al.*, 2008). In our study, the starting WTP bid amount for the GLC entry was fixed to NPR 20 (US \$0.28), which was agreed upon during the FGD. If a respondent initially said “Yes” for NPR 20, then it was likely that she/he would have a higher willingness to pay, so we asked again by increasing the amount to NPR 50. If a respondent did not show willingness, then NPR 50 was decreased to NPR 35 to capture their preference. If a respondent said “No” on the initial bid of NPR 20, it was reduced to NPR 10. For respondents who answered “No” to either NPR 35 or NPR 10, they were asked to reveal the maximum amount they were willing to pay. The specific wording of a visitor’s WTP scenario read to the respondents is provided in Appendix A.

3. Results

3.1. Socio-demographic and economic characteristics

During the period of study, all of the visitors were from nearby villages and towns. Though the GLC lies between two protected areas - Bardia National Park and Suklaphanta National Park, a popular destination for international visitors—the lake complex remains mostly

unnoticed. All of the visitors who participated in our survey agreed on the imposition of an entry fee at the GLC, and were willing to pay if biodiversity was conserved and recreational potential increased. The average age of the visitors was 22 years old, and their average family size was seven. The majority of the visitors were involved in business activities (34%), followed by agriculture (17%), government services (15%), and school and college teaching (12%), while the rest were occupied as household and other private workers. Though the area is in a rural and agricultural setting, only 34% had food sufficiency for more than a year. More than half of the respondents earned a monthly income within the range of NPR 4,000–8,000, while 35% earned less than NPR 4,000. The rest were found to have an income range in excess of NPR 8,000. Similarly, 65% of the visitors had attended either secondary school or university, while the rest (35%) were educated only up to the secondary level. Of the total visitors, 55% were male and 45% were female, and among those 34% were married while the rest were unmarried. Similarly, 67% of the visitors were from the rural areas with limited access to transportation, while the remaining 33% were from urban and emerging cities near the study area.

3.2. Travel characteristics

Public vehicles were the most frequent means of transportation to visit the GLC. Almost 54% of the visitors used public buses, while 38% took two wheelers (motorcycles) and the rest, who lived near the complex, used bicycles. The average time for visitors to reach the GLC from their houses was 1.7 hours, and they spent around 4.5 hours in the lake premises for recreation. The average distance they travelled was 44.5 km, with the longest being 215 km. We also tried to discover if visitors had visited any other wetlands in the last 12 months. Half of them had not visited any, while 37% made a single visit and 13% visited two or more times. Similarly, 34% of them had visited the GLC twice during the past 12 months, whereas 29% had visited once and for 12%, this was the first time. The rest (25%) had come to the GLC three times or more, mainly because it was the nearest natural area with global significance. Around 28% of the visitors revealed that if they had not travelled to the GLC that day, they would have been doing household work, while 20% said they would have taken a day to rest. Eighteen per cent would have gone to work, followed by meeting friends and relatives (14%), social work (12%), and agricultural farming (8%).

The respondents provided several suggestions for the improvement of the GLC, so as to make it more attractive to more domestic and international visitors. Of them, the ten most preferred suggestions in random order were as follows:

- demarcation of a core area of the GLC;
- establishment of a buffer zone to protect the core area and habitat of endangered wildlife and plant species;

- development of an eco-path for short hikes and nature walks inside the complex;
- establishment of a visitor information centre for awareness and availability of local nature guides;
- eco-lodges and home stay facilities in nearby villages for overnight stay for long distance visitors;
- transportation facilities to and from two nearby protected areas, Bardia National Park and Suklaphanta Wildlife Reserve;
- promotion of small scale enterprises based on local resources for tourism trade and business development;
- investment in social development activities targeting local schools and alternative skill development of lake resource-dependent people;
- promotion of wildlife tourism, focusing on endangered reptiles (marsh mugger, tortoise) and globally important bird species through mass media; and
- regular funding to local community based organizations (CBOs) to conduct conservation activities such as lake clean up and patrolling against hunting, poaching and excessive resource extraction.

3.3. Travel cost and willingness to pay for entry fee

The average travel cost¹ (including food and other miscellaneous expenses on travel and opportunity cost of travel time) was calculated at NPR 540 (US \$7.71) per visitor per visit (SD 376; Range 92–2112), showing the recreational potential of the GLC at NPR 3.78 million (US \$0.054 million) per year. Similarly, the WTP of 73% of the respondents exceeded the starting bid amount (NPR 20; US \$0.28). The mean WTP for entry fee was calculated at NPR 34 (US \$0.48) per visitor per entry (SD 17; Range 5–50). The government's average annual budget allocation for conservation activities of the GLC stands at less than NPR 1 million per year (Forest Department, 2014, Pers. Comm.).

3.4. Descriptive statistics and determinants

In addition to the travel cost and visitors' maximum WTP for entry fee, we identified socio-economic and recreational determinants that could affect the GLC's visitation rate if environmental conditions improved in the future, and their maximum WTP for entry as a conservation payment vehicle. The variables affecting a visitor's visitation frequency if the GLC's environmental conditions improved are described in Table 3.

The regression analysis showed that gender (GENDER) was significant at the 10% level, while the total sum of travel cost (SUMTTC) was significant at the 5% level. Age (AGE) and distance taken (DISTAKEN) were negative but significant at the 1% level for Equation 1. Similarly,

numbers of lakes visited last year (NLAKVLY) and residency (RESID) status of the visitors were not found to be significant in predicting the visitation. The variables affecting visitors' maximum WTP for entry in the GLC, a conservation payment vehicle, are described in Table 4.

Age (AGE) and distance taken (DISTAKEN) affected the WTP negatively, and the estimates were significant at the 5% level, while time spent (TIMESP) and total sum of travel cost (SUMTTC) affected the WTP positively, and were significant at the 1% level for Equation 2. The variable knowledge and desire on alternate lake visits (ALTTVK) affected the WTP negatively, and was significant at the 1% level. Household size (HHS) did not significantly affect visitors' maximum WTP.

4. Discussion

The average travel cost calculated was NPR 540 (US \$7.71) per visitor per visit. From an environmental economics perspective, this visitor travel cost value represents the recreational potential of the GLC, and equates to NPR 3.78 million (US \$0.054 million) per year, and is close to the findings of Khan (2006) and Badola *et al.* (2010). The mean WTP of a visitor for entry fee was calculated as NPR 34 (US \$0.48) per entry. Based on this analysis, we recommend an imposition of an entry fee of

Table 3. Determinants of possible visitation frequency by visitors if the GLC's conditions improved

| Variables | Coefficient | Min | Max | Mean | St. Dev. |
|-----------|-------------|------|-------|-------|----------|
| NLAKVLY | 0.052 | 0 | 3 | 0.69 | 0.81 |
| RESID | -0.052 | 0 | 1 | 0.33 | 0.47 |
| AGE | -0.065*** | 15 | 40 | 22.27 | 4.64 |
| GENDER | 0.362* | 0 | 1 | 0.55 | 0.50 |
| DISTAKEN | -0.008*** | 0 | 215 | 44.52 | 36.17 |
| SUMTTC | 0.070** | 0.92 | 21.12 | 5.40 | 3.58 |
| Constant | 4.634*** | — | — | — | — |

Note: $R^2 = 0.140$; adjusted $R^2 = 0.097$; standard error of estimates = 0.987; $p < 0.000$; No. of observation = 128. *, ** and *** indicate significance at $\alpha = 0.1, 0.05$ and 0.01 , respectively.

Table 4. Determinants of maximum WTP of visitors for entry fee

| Variables | Coefficient | Min | Max | Mean | St. Dev. |
|-----------|-------------|------|-------|--------|----------|
| AGE | -0.567** | 15 | 40 | 22.27 | 4.64 |
| HHS | 0.712 | 3 | 18 | 7.29 | 2.44 |
| TIMESP | 1.048*** | 1 | 16 | 4.76 | 3.17 |
| DISTAKEN | -0.095** | 0 | 215 | 44.52 | 36.17 |
| ALTTVK | -7.564*** | 0 | 1 | 0.72 | 0.45 |
| SUMTTC | 1.177*** | 0.92 | 21.12 | 5.3965 | 3.58 |
| Constant | 39.401*** | — | — | — | — |

Note: $R^2 = 0.169$; adjusted $R^2 = 0.128$; standard error of estimates = 15.756; $p < 0.000$; No. of observation = 128. ** and *** indicate significance at $\alpha = 0.05$ and 0.01 , respectively.

¹ (US \$1 = NPR 70 during the survey in 2007; time spent cost 1 hour = NPR 15.62; travel time cost 1 hour = NPR 31.25).

NPR 34 per visitor to the GLC. This figure is consistent with that of Khan (2006) for Margara Hills National Park of Pakistan and Marawila and Thibbotuwawa (2010) for Diyawanna Oya Wetland in Sri Lanka. If we extrapolate it with the 7,000 projected visitors per year, then the likely revenue would be NPR 0.21 million (US \$3,000). Though this revenue is minimal, at least it could contribute to offset some of the conservation costs and complement the regular state allocated budget.

Visitors will revisit a natural area if the natural environment is conserved and basic infrastructure improved to meet their expectations. In our study, age was a significant factor that negatively affected the visitation rate of the visitors, and thus supports our hypothesis. Aged people, due to their physical inabilities, tend to visit less for recreational purposes. Males have higher rates of visitation than females in the context of improved environmental quality and physical infrastructure, in line with our hypothesis. Male visitors were more likely than females to visit frequently, as they are more likely to spend time outdoors and in nature, consistent with gender norms of Nepalese society. As per the general travel cost hypothesis, the demand for visits normally decreases with a rise in travel cost. Distance required to travel to the GLC negatively predicts the visitation frequency and supports the work of Khan and Vasilescu (2008), as well as our own hypothesis. The further the distance, the higher the cost, and more than 50% of the surveyed visitors had medium income. Most of their expendable income goes to basic necessities, and not recreation. The total cost a visitor incurred to travel and enjoy recreational value at the GLC was found to be positive and significant, and is supported by the findings of Khan and Vasilescu (2008); however, this went against our hypothesis. The reason might be the individual's economic status. The higher the cost they invest in travelling, the more economically well-off they are. This means they also could afford multiple visits to the GLC if the environment were conserved and the physical conditions improved.

Whittington (2010) viewed that WTP for goods and services offered in stated preference scenarios in developing countries are often low. This is because they have other more pressing needs, such as investment in education and infrastructure, which will help them to increase their income rather than that of hypothetical goods and services. Time spent at the GLC and total travel cost positively affected a visitor's WTP for entry fee, while age, distance, and knowledge and desire to visit other lakes negatively affected their WTP. The greater the time spent at the GLC, the greater the satisfaction and consequently the more WTP for entry fee, and this is supported by the findings of Khan (2006) and Baral *et al.* (2008). Similarly, the higher the travel cost incurred by a visitor, the more WTP for entry fee. It was found that people who were economically well-off did not hesitate in paying an entry fee and this was consistent with Khan (2006) and Khan and Vasilescu (2008). Elder visitors were found to be reluctant with WTP

for entry fee. It seems that older people seldom go for recreational purposes to such sites compared to younger people, and they might have their own spending priorities, like for nutritious food, medicine and pilgrimage. However, this was contradictory to the findings of Chaudhry and Tewari (2006), Han *et al.* (2011) and Kohansal *et al.* (2013), who reported that greater the age the more WTP for such attractions. Distance also negatively affected a visitor's WTP entry fee, as was as expected. Visitors who came from far away had already spent a large chunk on travel, and were reluctant to spend an additional amount on an entry fee, a finding supported by Khan and Vasilescu (2008). Moreover, most of the people in developing countries still regard wetlands and other such natural attractions as free goods, and take them for granted. Similarly, the visitors who had a good knowledge of the existence of other such wetlands and a desire to visit them revealed a low interest in an entry fee at the GLC. This indicates that such visitors have compared the satisfaction of different lakes, and would prefer to allocate money to visit other destinations rather than on the entry fee.

For nature tourism to be sustainable, financial sustainability should be the most essential priority that every natural reserve should consider. Though the goal of establishing conservation areas or nature reserves is to benefit society, in many cases the economic circumstances compel policy makers to consider financial gain of nature preservation (Becker, 2007). In the case of the GLC, it is even more crucial. As mentioned earlier, the annual government funding for the area is around NPR 0.6–1.0 million per year, which is too low for conservation spending in a Ramsar Site of global importance. This exploration of an untapped revenue source, such as an entry fee, could be a good option for the GLC. Our suggested level of entry fee is low compared to other studies in similar environments: Wang and Jia (2012), Han *et al.* (2011), Cook (2011), Baral and Dhungana (2014); however, all of the visitors in our study were domestic, with more than 85% earning an average income of US \$57–\$114 per month, and living an average distance of 45 km from the lake. Considering income and resident proximity, the entry fee we suggest is practical, and could be increased in the future as per spending needs, given improved conservation and recreational quality. Becker (2007) mentioned four pricing strategies suitable for nature reserves, i.e., free entrance, maximum revenue pricing, cost recovery pricing and differential pricing, which is appropriate in most cases, though dependent on site context. The attraction of other long distance domestic and international visitors, if possible, could help generate more revenue in the GLC in the future through the application of a differential pricing mechanism. In Lake Nakuru in Kenya, international visitors are charged US \$80 as entry fee, an amount that is then utilized for biodiversity conservation (Ramsar and UNWTO, 2012). Regular coordination with government agencies such as the Nepal Tourism Board (NTB)

and other private tourism organizations such as the national and district level Chamber of Commerce, the Hotel Association of Nepal (HAN), and the Nepal Association of Tour and Travel Agents (NATTA), as well as the District Forest Office, the District Development Committee (DDC), and the three Village Development Committees (VDCs), circumscribing the complex is vital in making the GLC more recognizable in the national and international arenas, through highlighting its rich indigenous culture, biodiversity and recreational potential.

Community involvement in ecosystem conservation and tourism activities is another important aspect in making tourism a successful venture in natural attraction sites. The GLC is bounded by three politico administrative units, and Lamsal *et al.* (2015a) reported that local people depend on wetland resources at the GLC, which contribute to 12.5% of their gross household annual income. This resource dependency means there is an opportunity to push locals towards tourism activities, which on one hand would assist in the conservation of existing endangered flora and fauna habitats, while on the other hand would provide more diversified livelihood opportunities through tourism employment and small trades and businesses. In the case of economic gain, local people will appreciate and adopt tourism, develop positive attitudes and make contributions to environmental conservation. In Sariska Tiger Reserve, India, Sekhar (2003) found that the majority of people who benefited from tourism activities had positive attitudes with regard to conservation, and suggested that this sort of perception would be considered to be an opportunity, and should be tapped immediately to facilitate community participation in tourism before their support for conservation vanished. Similarly, 90% of the population who lives near Ibera Marshes, a Ramsar Site in Argentina, is employed in the nature-based tourism sector, an alternative source of livelihood for the resource-poor of the region (Ramsar and UNWTO, 2012). Giampiccoli and Kalis (2012) argued that indigenous local culture found in such things as local food, arts and crafts are not an attraction, but a tourism resource that could attract potential visitors on one hand, while generating a number of community benefits through diversified livelihoods on the other. This could be the case for the GLC. The area is inhabited by a *Tharu* indigenous community with low economic means. However, they are rich in cultural heritage, with distinct food and other cultural facets to attract visitors. They are the major wetland resource users of the GLC and alternative livelihood strategies, such as tourism, could help to reduce their dependency on the lake resources, a major impetus for the GLC's conservation. Home stay in such indigenous *Tharu* villages is another good approach for local area conservation and development. For instance, the average annual home stay income for the year 2011 was US \$2,000, and US \$1,250 per household in the Bo Lu and Pac Ngoi villages, respectively, from Ba Be wetland tourism in Vietnam (Ramsar and UNWTO, 2012). In their study, Lamsal *et al.* (2015b) reported positive attitudes and willingness of local

people to participate in community-based conservation activities at the GLC. We anticipate that this positive attitude and willingness of local people should be taken as a good opportunity by concerned agencies to facilitate community participation in tourism and nature conservation programme at this Ramsar Site.

Reviewing the case of Xingkai Lake Nature Reserve, Su *et al.* (2014) argued that only full community participation in ecotourism planning and management ensures positive synergistic bonds between tourism, environment and community, and therefore a platform for community participation is a must if we want ecotourism to benefit local people. At the same time, this synergistic bond collapses when conflict arises over the equitable distribution of tourism benefits to local people. For example, Sekhar (2003) reported conflicts between local people and park management authorities in the Sariska Tiger Reserve, India over a sharing mechanism for tourism benefits. The GLC is a small lake complex with a Ramsar-defined area of only 2,500 ha, surrounded by indigenous *Tharu* villages. So the careful planning of carrying capacity for the GLC is needed before adopting tourism and other such activities. Even ecotourism that exceeds the carrying capacity could have negative impacts on wetland flora and fauna. For instance, Gu *et al.* (2013) observed conflict between natural attraction areas and local economic development in Jiuzhaigou, China, with the influx of visitors exceeding its carrying capacity, causing degradation of the wetland, vegetation and biodiversity. Similarly, in Florida, Klein *et al.* (1995) observed that migrant birds were highly sensitive to human disturbance, and suggested guided tours and the creation of low disturbance zones as an alternative management strategy. As the GLC is small in area and located very close to road networks, it could easily be disturbed by constant commercial and visitor vehicular movement. It also often experiences unmanaged visitors, and as such it is highly likely that the habitat of wetland birds could be seriously affected, and thus demands a viable management option. Therefore, pricing the use of natural resources is the best policy to offset the externalities of crowding and deterioration (Sibly, 2001), and to secure the administrative and conservation cost of natural reserves that are used for recreational activities. As such, this study's recommended entry fee is a good alternative in determining user fees for natural areas such as the GLC.

Finally, a few limitations of this study should be noted. Our sample only included domestic visitors who lived near the study area. The inclusion of broad categories of visitors, such as long distance domestic and international visitors, academia, researchers, and governmental and non-governmental agencies, as well as tourism personnel, transporters, and hoteliers, could have been more helpful in determining the WTP for the entry fee to the GLC. This was a short and single season survey, with a small sample size. Multi-season surveys with large samples could provide more concrete outcomes regarding the need and applicability of wetland tourism for biodiversity conservation and livelihood diversification in the GLC.

5. Conclusion and policy implications

Visitors were willing to pay an entry fee for the GLC as a payment vehicle for the conservation of the lake complex. Moderate recreational potential was found for the GLC, with a vast potential to increase it in the future through good management. This study provides insight in that the GLC has the potential to become a future hotspot for eco-tourism in Nepal. Travel cost and contingent valuation application for the development of tourism in wetland-based recreation areas and identification of a visitor's socio-economic and recreational determinants for inclusion in planning and policy-making process is given less priority in Nepal. We believe this study succeeded in setting a good example for Nepal and other developing countries. Based on our findings, we are able to say that it is appropriate for the government to value all natural resource-based conservation and recreational areas from a visitor's perspective before formulating plans and policies for such areas. This would not only provide an opportunity to learn what the local community expects from sustainable tourism activities, but would also help us analyse and prioritise the visitors' desires, as both of these actors play a role in long-term wetland tourism growth and expansion. The development of conservation plans, aided by tourism, must be initiated at the GLC level with active participation and consultation of local community members, tourism entrepreneurs and concerned government authorities. All the significant socio-economic and recreational determinants of visitors identified in this study should be given due consideration in such plans. The policy implications resulting from this study include:

- An entry fee system should be introduced in the GLC to offset conservation budgetary constraints. A lake management committee, as a non-governmental agency, could be set up. A differential pricing mechanism for domestic and international visitors could be adopted.
- The government should be willing to invest in social benefits of at least per capita travel cost identified by this study for GLC-related conservation activities. The greater the improvement in the wetland ecosystem, the more domestic and international eco visitors could be lured to the GLC.
- Efforts should be made for strong and long term public-private partnerships, with participation of local communities for the purpose of developing eco-tourism and conserving wetland resources, with the aim of attracting more long-distance domestic and international visitors.

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Appendix A: Detail and specific wording of the visitor’s WTP for entry fee scenario read to the respondents

We all know that the GLC is an important freshwater ecosystem in the lowland Terai region of Nepal, and supports the habitat of many endangered plant and animal species. This ecosystem provides livelihood support to the local community through the provisioning of wood for fuel, fodder, fish, non-timber forest products and irrigating water. It is one of the most accessible natural recreational areas for the visitors of the far western region, and has been a Ramsar Site since 2003. It bears huge tourism potential for both domestic and international visitors. Therefore, its conservation is of prime importance. A few community-based organizations (CBOs) are working in this area for lake conservation, but are facing inadequate budgetary constraints. At present, the lake complex has open access; however, imposition of an entry fee for visitors to receive recreational benefits could be a new source of revenue to support the conservation of the ecosystem. Such additional revenue will supplement the budget deficit of the local CBOs, and assist with investment in environmental conservation and construction, as well as maintenance of essential visitor infrastructures such as toilets, shops, restaurants, motels, machans, boating and walking trails. In this scenario, we would like to know whether the introduction of a user or entry fee is a viable option and if so, is one willing to pay.

1. If the lake authority needs a source of funding to provide better services for visitors, such as more recreational sites, improved cleanliness, public safety and forest fire protection, how should these services be financed?
 - Impose entry fee
 - Ask for government budget

- Seek donation
 - Others (please specify)
2. Suppose there are no other options, with the exception of the imposition of an entry fee. Would you be willing to pay?
 - Yes
 - No
 3. If the fee is NPR 20 per entry, would you be willing to pay it to visit the Ghodaghodi Lake Complex?
 - Yes (go to Q.N. a)
 - No (go to Q.N. c)
 - a. If NPR 20 is found to be insufficient to cover the cost of services and has to be raised to NPR 50, would you be willing to pay?
 - Yes (finished, go to Q.N. 4)
 - No (go to Q.N. b)
 - b. Suppose that instead of NPR 50, the entry fee is NPR 35. In this case, would you be willing to pay?
 - Yes (finished, go to Q.N. 4)
 - No (go to Q.N. e)
 - c. Suppose that instead of NPR 20, the entry fee is NPR 15. In this case, would you be willing to pay?
 - Yes (finished, go to Q.N.4)
 - No (go to Q.N. d)
 - d. Suppose that instead of NPR 15, the entry fee is NPR 10. In this case, would you be willing to pay?
 - Yes (finished, go to Q.N. 4)
 - No (go to Q.N. e)
 - e. What is the maximum amount you would be willing to pay as user/entry fee for the GLC conservation? NPR
 4. If you are willing to pay for improved quality of recreational services in the near future, perhaps you may wish to come to the lake and spend more time for recreation. How many more times would you visit? visits/year.