



Valuing Access to Mountain Protected Areas in Nepal: The case of Annapurna Conservation Area

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Received 25 June, 2023, Accepted 01 August, 2023, Published 15 Sept. 2023



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Abstract

Tourism is a profound source of foreign earnings all over the world and supports the sustainable management of protected areas as a market-driven solution catering to the increasing number of discriminating travellers seeking to explore and enjoy the natural environment. The financial sustainability of the protected areas is critical for improving their effectiveness in conserving biodiversity. Contingent valuation surveys were administered to 300 non-South Asian foreign visitors (NSAF), South Asian foreign visitors (SAF) and domestic visitors to the Annapurna Conservation Area, during October and November of 2019. The logit regression results suggested that bid amount, income, visitor satisfaction, membership of an environmental organization, education and the environmental concern score are the major determinants affecting the willingness to pay (WTP). The mean willingness to pay for the entrance fee at Annapurna Conservation Area was found to be US\$ 28.23 for NSAF, and US\$ 18.25 for SAF which aren't significantly more than the present entry charges for Annapurna Conservation Area (ACA). Through this research, it is suggested that the present entry costs remain the same, suggesting that other mountain-protected areas in Nepal should also continue to charge the same amount as the entry fee.

Keywords: *Annapurna Conservation Area, contingent valuation, protected area, willingness to pay*

Introduction

Tourism is one of the biggest and most rapidly expanding industries globally (Cooper & Hall, 2008) and plays a significant role in the global economy. Nepal's tourism industry has experienced rapid growth, becoming a crucial development sector and historically acting as the country's main and reliable source of foreign

exchange revenue (Wells, 1993). In the fiscal year 2017/18, Nepal's economy leaned significantly on tourism. Notably, tourism earnings contributed around 2.2 percent of Nepal's Gross Domestic Product (GDP) and constituted 5 percent of the total foreign exchange earnings (MOTCA, 2019).

In the medieval world, protected areas (PAs) are the foundation of global biodiversity conservation (Venter et al., 2014). They are a significant part of the worldwide tourism industry and have a significant impact on local and national economies (Nyaupane and Poudel, 2011). Despite that protected area management is generally underfunded, and their financial self-sufficiency and long-term viability are unknown (Whitelaw et al., 2014). Recognizing this problem, the Convention on Biological Diversity (CBD) aims to ensure the financial viability of protected areas in impoverished countries. Funding these areas can be complex, as it requires gathering resources from various sources, including government budgets, site-based revenue, international grants, and donor contributions (Emerton et al., 2006; Bovarnick et al., 2010).

Government-allocated expenditures for protected areas management may not be sufficient to cover all costs, similarly, money collected from donors and international organizations is frequently unsustainable and dependent on the donor's interests and goals (Mansourian and Dudley, 2008). As a result, site-based revenue-generating activities such as tourism fees seem more appropriate and long-term tools for funding protected areas in developing nations such as Nepal. The entrance fee that tourists pay to gain access to protected places can be a valuable source of cash for park management and community development (Dharmaratne et al., 2000). Furthermore, several empirical studies have found that tourists are ready to pay significantly higher admission prices to reach numerous protected places, indicating that park entry fees are well-liked by the public (Dharmaratne et al. 2000; Santhakumar, 2009; Baral et al., 2008; Baral and Dhungana, 2014; Pandit and Dhakal, 2015). Setting suitable entrance fees for nature-based tourism, such as visits to protected areas (PAs), is often overlooked in public policy discussions (Laarman and Gregersen, 1996). Interestingly, the economic benefits accrued by the host country tend to be smaller in proportion compared to what tourists themselves gain (Wells, 1993). In countries like Nepal, it is crucial to establish a reasonable entry fee for accessing protected areas (PAs). This serves two important purposes: first, to ensure that the economic benefits generated by PAs are distributed equitably; and second, to generate revenue that can be reinvested in park management and conservation efforts. Additionally, by supporting local development goals, such fees create incentives for conservation within the communities surrounding these natural treasures.

The entry fee paid by visitors to protected areas in developing countries is frequently less than what they are willing to pay (Whitelaw et al., 2014). Interestingly, determining fair entry charges for nature-based tourism, consisting of visits to protected areas (PAs), is frequently overlooked in public policy discussions (Laarman and Gregersen, 1996). Moreover, the economic benefits captured by the host country tend to be smaller than what visitors gain (Wells, 1993). If the demand for ecotourism is sensitive to price changes, setting fair entry fees can maximize income and provide much-needed funding for conservation efforts. Thus, setting fair entry fees for accessing protected areas is essential for developing countries like Nepal. This approach not only ensures equitable benefit sharing but also generates revenue for better park management and encourages conservation efforts within local communities.

Establishing suitable admission prices in protected areas, on the other hand, required knowledge of visitors' WTP and objectives, which are influenced by visitors' socioeconomic and demographic origins, as well as the PA's appeal (Adams et al., 2008). Earlier WTP studies looked at the preferences and perceptions of international visitors when it came to entry prices and other park features (Adams et al., 2008; Baral et al., 2008). Visitors' WTP has been studied twice before, between 2006 and 2012, although both studies only considered international visitors, and there is no difference between SAF and NSAF (Baral et al., 2008; Baral and Dhungana 2014), even though they must pay different entry charges.

The study aims to address a gap in the literature by conducting an empirical investigation. This research aims to assess the WTP among visitors—both international (NSAF and SAF) and domestic—for accessing Annapurna Conservation Area (ACA) (presumably a protected area) and to identify the factors influencing their willingness to pay. Based on the results of the contingent valuation (CV) technique, the size of the entry price that is acceptable for ACA for all groups of visitors will be addressed.

Study Area

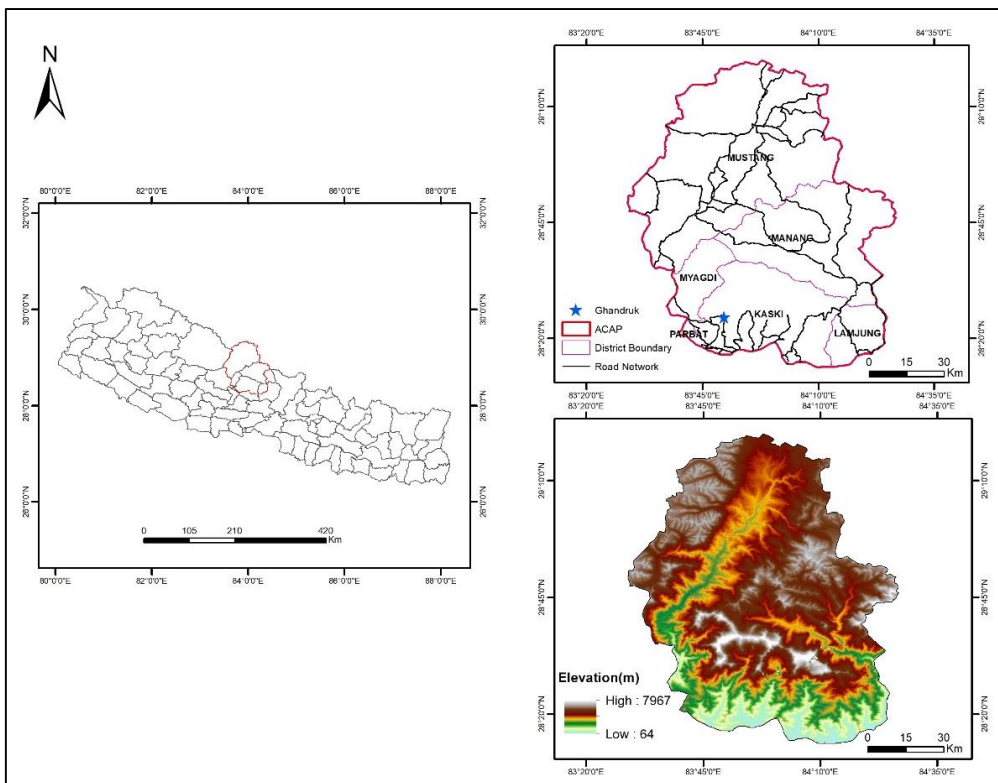
The Annapurna Conservation Area (ACA) spans 7,629 square kilometres across the Kaski, Myagdi, Lamjung, Mustang and Manang districts of the Gandaki Province, Nepal. It is the largest protected area in Nepal, managed by the National Trust for Nature Conservation (NTNC-ACAP). It stretches from the lowland subtropics of the middle hills to the permanent snow cover of the Himalayas, and beyond the alpine meadows of the Trans-Himalayan area to parts of the Tibetan plateau, and is extraordinarily rich in natural heritage and biodiversity. The height

rises from less than 1,000 meters to over 8,000 meters. In ACA, which is home to 1,226 plant species, 102 animals, 485 birds, 41 reptiles, and 23 amphibian species, the abrupt altitudinal change, along with a diverse temperature and geomorphological circumstances, has resulted in unique biological complexes and niches.

The natural and cultural features of the Annapurna Conservation Area (ACA) have established it as the most popular trekking destination in Nepal, drawing the majority of the country's trekkers. It is visited by 1,03,782 of the 9,43,041 tourists who visited Nepal in 2019, accounting for 11 percent of the total tourists visiting Nepal (MOCTCA, 2021). In fiscal year 2074/75, ACA had the greatest number of foreign tourists visiting the protected area, with 172720 out of 395791 out of a total of 1173072 tourists entering Nepal. In the following years, almost 40% of tourists visiting the protected areas entered the ACA (DNPWC, 2021).

Figure 1

Location Map of the Annapurna Conservation Area, Nepal



Tourism has solidified its position as one of the most significant sectors of the local economy throughout the years. Thousands of trekkers, pilgrims, and their

support workers are served by over 1,000 lodges, tea shops, and hundreds of additional amenities. Its relatively easy accessibility and well-developed tourism infrastructure have helped it remain one of the world's most popular hiking destinations. Ghandruk was chosen for this study because it is the most frequented location inside ACA and represents a decent cross-section of visitors to the area. The majority of visitors who travel through the region on various trekking routes spend some time here. As a result, conducting the polls in Ghandruk allows for a large cross-section of visiting visitors to be interviewed.

Methods

Data Collection

For this paper, an on-site survey questionnaire was used. Questionnaire administration for real data collection took place in October and November of 2019. During the study period, 300 visitors were interviewed using a semi-structured questionnaire. One questionnaire was created for foreign tourists, and the other was created for domestic.

Tourists who had agreed to participate in the study were given a questionnaire. This form of questionnaire offers the advantages of being cost-effective and easy to use. Furthermore, the self-administered questionnaire provides the respondent with 'anonymity.' As a result, the researcher has a better chance of getting more honest responses from them.

The questionnaire was structured into three parts: 1) socio-demographic data; 2) environmental and social attitudes assessment; and 3) WTP assessment. The questionnaire includes both open-ended and closed-ended questions, allowing for more in-depth responses. At the outset, the questionnaire asks for biographical information as well as questions about socioeconomic factors that influence individual preferences. It specifically asked about age, gender, country of residence, university studies, and income, followed by satisfaction and attitude questions.

Contingent Valuation Method (CVM)

The individual respondent's willingness to pay was calculated using the contingent value method. Open-ended questions, closed-ended questions, dichotomous choice, bidding games, and the payment card can all be utilized as elicitation techniques in a CVM survey (Alberini et al., 2003). Following the questionnaire, interviews were performed using the iterative bidding process to extract respondents' WTP for the conservation area entry price. Respondents were given a binary choice between paying to enter the conservation area and not paying to enter

the conservation area. In this procedure, bid amounts were assigned at random (i.e. 3000, 3500, 4000, 4500 and 5000) and respondents were questioned if they would like to pay a specified amount for the ACAP entry fee, with the sum dropped and raised like an auction based on their responses. If respondents answered “yes,” the bidding sequence increased until a “no” was obtained, determining the maximum willingness to pay (WTP). Conversely, if they answered “no,” the bidding sequence decreased until a “yes” was reached. The main benefit is that this method can extract actual willingness to pay through a guided series of questions reducing the need for a large sample size. After elicitation, follow-up questions are also utilized to improve the accuracy of the willingness to pay estimate (Hanemann, 1984).

Data Analysis

The expressed willingness to pay by all groups of visitors was calculated using descriptive statistics (mean, median, and standard deviation). Several independent variables were chosen to gather data on the overall elements that influence people's willingness to pay. We utilized a logit regression model to analyze the relationship between the dependent variable (willingness to pay, or WTP) and several independent variables. Our objective was to determine the factors that affect visitors' willingness to pay for a proposed entry fee. In our specific context, the logit regression model is more suitable than the standard least squares regression because the response variable (WTP) is binary. This choice accounts for the violation of the normality assumption. All statistical analyses were conducted using appropriate statistical software packages.

Results

Sample Characteristics

In our survey, 150 non-South Asian foreign (NSAF) visitors participated. However, only 117 (78%) completed the questionnaires, and 113 provided complete responses for the model variables. We excluded two respondents who visited Ghandruk Village for research purposes and stayed for an extended period, reducing our sample size to 111. Notably, 95% of these NSAF visitors considered their Ghandruk visit part of their holiday travel. The scenic beauty of Ghandruk was a significant motivator for 70% of them. Approximately two-thirds of the visitors organized their trip through travel agencies, and 76% hired guides to explore the Annapurna Base Camp (ABC) via Ghandruk. On average, each visitor spent 1.64 days in Ghandruk, accounting for about 6.5% of their total time in Nepal. The sampled visitors hailed from 28 non-South Asian countries, with the top five being China (18%), France (16.7%), the UK (8.6%), Spain (8.1%), and Canada (6.3%).

Among the non-South Asian foreign (NSAF) visitors, 62% were female, 22.5% were affiliated with environmental organizations, and 98.2% were visiting Ghandruk for the first time. Notably, 16.7% had previously visited another mountain-protected area in Nepal. The average age of these visitors was 31 years, and the median education level was a Bachelor's degree. Overall, they reported highly positive Ghandruk experiences (average rating of 8.33 out of 10), but environmental concerns (related to solid waste pollution, water quality, and wildlife disturbance) scored 9.75 out of 15.

Turning to the South Asian foreign (SAF) visitors, we distributed 75 questionnaires, of which 28 were returned, but only 24 had substantial responses. SAF visitors exclusively treated their Ghandruk visit as a holiday trip, and 90% of them visited Ghandruk for the first time. Scenic beauty remained the primary motivator for 75% of these visitors. Interestingly, 12.5% had previously visited another mountain-protected area in Nepal. Approximately 88% of SAF visitors hired guides for their trek to Annapurna Base Camp, whereas only 16% arranged their trip through travel agencies. The majority of these visitors were from India (71%), followed by Sri Lanka (17%). On average, SAF visitors spent about 1.65 days in Ghandruk. Unlike NSAF visitors, SAF visitors had a lower percentage of females (35.5%), but a similar proportion (23%) were affiliated with environmental organizations. Unlike NSAF visitors, SAF visitors had fewer females (35.5%), but a similar proportion (23%) were affiliated with environmental organizations. Their average age was 37 years, and they expressed greater environmental concern (scoring 11) but had a slightly lower Ghandruk experience rating (7.31).

Lastly, among domestic visitors, 26 out of 75 returned questionnaires, with 20 containing relevant model variable responses. These visitors were primarily male (60%) and were on holiday (87.5%). Eighty percent of domestic visitors were drawn to Ghandruk by its unique scenic beauty, and 70% were visiting for the first time. Only 2.5% of these visitors hired guides. The average age of domestic visitors was around 32.8 years, and they spent an average of 2.82 days in Ghandruk. Their Ghandruk experience rating was 7.9, slightly higher than SAF visitors, and their environmental concern score was 12.7.

Visitors' view on the current entry fee

I asked visitors to evaluate their perception of the current entry fees for different visitor categories: NRs 3000 (approximately US\$ 26.03) for non-South Asian foreign (NSAF) visitors, NRs 1500 (approximately US\$ 13) for South Asian foreign (SAF) visitors, and no fee for domestic visitors. On a scale from 1 (very low)

to 5 (very high), about 30% of NSAF visitors viewed the current fee as low or very low, while around two-thirds deemed it appropriate. Only 5% considered it high or very high. Among SAF visitors, 41.7% perceived the fee as too low (10.4%) or low (31.3%), 50% thought it was just right, and 8.3% found it high. Interestingly, over two-thirds of domestic visitors (70%) perceived the current fee as very low, with none rating it as high or very high.

I then examined the correlation between visitors' perceptions of the current fee and their willingness to pay the proposed entry fee. Notably, this correlation was negative and highly significant across all visitor categories. Essentially, those who perceived the current fee as too low or low were more inclined to pay the proposed fee. The correlation was strongest among domestic visitors ($r = 0.582$, $p < 0.001$), followed by SAF visitors ($r = 0.523$, $p < 0.001$), and NSAF visitors ($r = 0.239$, $p < 0.001$).

Visitors' willingness to pay the proposed entry fee and the influencing factors

The data shows a strong negative correlation between the proposed entry fee and the likelihood of acceptance, with Pearson correlation coefficients of -0.950 for NSAF visitors, -0.967 for SAF visitors, and -0.951 for domestic visitors. Additionally, the bid value significantly and negatively affects the willingness to pay (WTP) across all visitor categories. On the other hand, the experience of visiting Ghandruk village positively influences WTP for all groups, indicating that visitors are more willing to pay when they have a more enjoyable experience.

Three additional factors influence the willingness to pay (WTP) of NSAF visitors: membership in environmental organizations, education level, and environmental concern score, with income following closely behind. Visitors in this group who are part of environmental organizations or possess higher education tend to be more willing to pay increased entry fees. In contrast, those who are concerned about the environmental condition of Ghandruk are less inclined to pay higher fees. Higher-income individuals show a greater willingness to pay, while those with lower incomes express satisfaction with the fee structures for both SAF and NSAF countries. Visitors' income levels are directly correlated with their willingness to pay. Additionally, factors such as group size and the use of guides contribute to variations in WTP among visitors.

The findings indicate that gender and age do not significantly influence the willingness to pay (WTP) among NSAF visitors. However, for SAF visitors, gender plays a role, with males demonstrating a greater willingness to pay higher fees. In contrast, age affects the WTP of domestic visitors, as older individuals tend to prefer

the minimum fee. The size of the visitor groups, whether large or small, does not impact WTP since fees are based on headcount.

Each visitor category was presented with one candidate entry fee from a selection of six options to express their WTP. For instance, SAF visitors could have received entry fees of US\$ 16, US\$ 20, US\$ 22, US\$ 24.5, US\$ 27, US\$ 28.5, or US\$ 30. Subsequently, visitors were asked to explain their decision (whether they accepted or rejected the proposed fee) in a follow-up question. Only around 35% of NSAF visitors responded, with even lower response rates from other categories. Consequently, we concentrated our analysis exclusively on NSAF visitors. The reasons provided were nearly balanced, with 48 reasons supporting the fee and 49 against it. A common justification for accepting the fee was a desire to support conservation efforts and local development initiatives in the village, as well as a commitment to preserving the unique beauty of Ghandruk village and the entire Annapurna Conservation Area. Conversely, the most frequently cited reasons for rejecting the fee were financial constraints, dissatisfaction with village management, and inadequate amenities in the conservation area.

I have calculated the probabilities of willingness to pay (WTP), the number of visitors, and the revenue generated from the conservation area for each visitor category based on the proposed entry fees. Additionally, we determined the median and mean WTPs for each group. The median WTPs were found to be \$26.57 for NSAF visitors, \$18.25 for SAF visitors, and zero for domestic visitors. The mean WTPs matched the median for SAF and domestic visitors, while NSAF visitors had a slightly higher mean WTP of \$28.23.

Conclusion

The findings reveal that the average willingness to pay an admission charge to Annapurna Conservation Area is \$28.23 for NSAF and \$18.25 for SAF, which are not much higher than the present entry fees. The modification of the entry costs at the ACA is not desirable, given that they have stayed fixed for over two years and there has been no major growth in the desire of tourists to pay. The current admission fees should be maintained to collect a fair part of the economic benefits created by ACA and specifically by Ghandruk village.

The factors influencing visitors' willingness to pay (WTP) for entry to Ghandruk village include the candidate entry charge, visitors' income, and overall visit experience, which consistently affect all visitor groups. For NSAF visitors, additional influences on WTP include education, membership in environmental organizations, group size, and environmental concerns. In contrast, the WTP of SAF and domestic

visitors is affected by gender and age. Tourist income also plays a significant role in WTP for both SAF and NSAF countries. Therefore, it is recommended that the Department of Tourism and local entrepreneurs focus on enhancing visitor experiences.

To accomplish this, a portion of the revenue from entry fees should be dedicated to enhancing tourism infrastructure and environmental management in Ghandruk. Considering the importance of NSAF visitors to the village's revenue, establishing an optimal admission fee is essential for maximizing income and ensuring the financial sustainability of conservation and development projects in the area.

The finding that domestic tourists exhibit a negligible WTP suggests that future tourism studies in impoverished countries should broaden their focus beyond international visitors, especially considering the rise of domestic tourism in emerging economies and its potential to drive economic development.

This research provides concrete empirical evidence on visitors' WTP for access to mountain protected areas, indicating a need to maintain consistent entry fees across Nepal's other mountain conservation areas. A stable access charge can reduce the financial dependence of conservation areas on foreign donors for biodiversity efforts.

To balance entry fees, visitor numbers, and their impacts on conservation resources, the policy regarding protected area entry charges should be regularly reviewed, ideally in line with the Nepalese government's five-year development plans. Ultimately, this study's findings align with the government's strategy of promoting tourism for economic growth, emphasizing that higher admission fees could generate more resources for local communities' conservation and development initiatives, thus incentivizing conservation through income sharing.

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