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Assessment of Willingness to Pay for Sustainable Ecotourism Development in the Salt Range Wetlands, Punjab Pakistan

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Abstract: Wetlands are the source of vital ecosystems which provide human societies with essential and extremely valuable life-supporting functions. The rapid population growth and resultant exploitation of lands, water bodies, and forests have badly influenced wetland resources. Wetlands are non-market goods as they do not have market value. So, it is important to evaluate these resources economically to identify their significance. Therefore, this study aims to identify the visitors' willingness to pay for the economic valuation of Salt Range wetlands comprised of Kalar Kahar, Uchali, Jhalar, Khabeki, and Namal Lakes. A qualitative method was used to gather relevant information from the respondents by using a questionnaire. By applying the willingness to pay (WTP) technique it was found that about 85.34% of tourists were agreed to visit these lakes because of their naturalness. Similarly, the mean WTP in Kalar Kahar lake was PKR. 1808, in Uchali lakes was PKR.1820 while in Namal lake it was PKR. 1848. It is concluded that all the lakes are equally important and economically valuable for the tourists as there was a frictional difference in mean WTP. It is suggested that these lakes should be conserved for future generations to sustain the long-term economic benefits for the concerned stakeholders through the initiation of ecotourism.

Keywords: Willingness to pay, ecotourism, sustainable development, conservation.

Introduction

The rapid growth of population and the dependency on natural resources have influenced most of the Earth's ecosystems and shaped landscapes through activities that profoundly affect biodiversity and ecological processes. In the context of global change, the reconciliation of economic development and environmental conservation becomes increasingly challenging, particularly in wetland regions. Worldwide, in developing countries, particularly in rural areas, these pressures are heightened, where short-term economic needs may supersede long-term environmental concerns (Oyarzun, 2017). As the wetlands occupy only 6% area of the Earth's surface, nonetheless, they are said biological supermarkets (Gallaher, 2010; Keddy, 2010). Moreover, the wetlands have their vital role in an ecosystem such as regulation functions, flow regulation, carrier function, production function, and information function (Shine and De Klemm, 1999; Brander and Schuyt, 2010). It is estimated that almost 30 – 90 % of the world's wetlands have intensively modified in several countries with no significant abatement where approximately 50% of the world's wetlands have been lost in the past century alone (Powers et al., 2012: Junk et al., 2013).

The economic approach in valuing environmental changes is based on people's preferences for changes in the environmental state (Durán-Román et al., 2021; Barbier et al., 1997). In economics, "it is the price that an individual is willing to pay to acquire a good or service. (Barton et al., 2015; Böhringer and Jochem, 2007; Nuva et al., 2009). Lipton et al. (1995) noted that economic value measures the maximum amount an individual is willing to forego in other goods and services to obtain some good, service, or state of the world. This welfare measure is correctly stated in a concept known as willingness-to-pay (WTP).

Witt (2019) conducted a study to estimate WTP of 877 tourists at five different Mexican protected sites. The results showed that the tourists would be willing to pay greater entrance fees than the existence, with an average maximum WTP estimated of 2.8–9.8 times present fees, varying from US$15.70 to US$25.83. These results suggested that there is the possibility to increase revenues with a nominal increase in fees without an associated drop-off in visitation (Fanggidae and Seran, 2021; Witt, 2019). Nadeem, et al. (2019) conducted a study using WTP in different historical sites of Multan. Mean WTP was calculated PKR. 196 of six different tourists' sites (Hassin et al., 2020; Nadeem, et al., 2019).

Pakistan has 225 national wetlands, which occupy an area of 8,906,339.4 - 9,189,089.4 hectares, of about 9.7% of the total land area. Of them, 19 have been designated as Ramsar sites of world significance, covering 1,343,807 ha. (Dauda, et al., 2017). Worldwide, like many other ecosystems, wetlands in Pakistan are continuously under threat by anthropogenic activities (Hwang and Lee, 2018; Ting et al., 2021). It is very important to manage wetlands wisely ensuring the long-term maintenance of their important values. For the long-term economic planning, conservation, protection and management of the wetlands, different researchers applied various methodologies, tools, and frameworks. The wetland utilization and protection are more sustainable if it is viewed through the lens of ecotourism which is the responsible visitation to natural

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areas focusing on the conservation of the environment and socio-economic wellbeing of the local people (Cheung and Jim, 2014; Kalaitan et al., 2021; Ramírez and Fennell, 2014). This has been considered as a tool for contributing to the local economy and environmental management of sensitive ecosystems like wetlands. The literature indicated that many techniques had been implemented to conserve these wetlands ecosystems; among those, the initiation of ecotourism has been considered the most sustainable technique that ensures the environmental and cultural integrity of the sites where these wetlands are present.

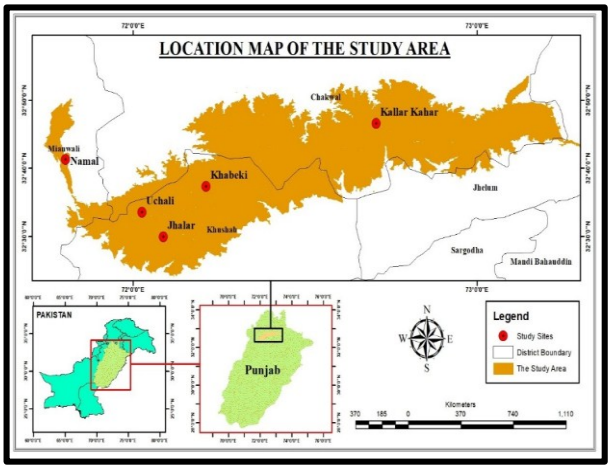

Fig. 1: Location of Study Area (Salt Range Wetlands)

The Salt Range Wetlands Complex (SRWC) has been selected to carry out the study, which comprises five independent wetlands: Kalar Kahar (district Chakwal), Uchali Wetland lakes i.e., Khabbeki, Uchali, Jahlar (district Khushab), and Namal lake (district Mianwali) (Fig. 1). The naturalness, physiographic diversity, climate and culture, and archaeology of these sites are the main attractions for the tourists. The entire SRWC has a total length of 175 km parallel to the Salt Range Escarpment that runs from Jhelum, in the east, to Kalabagh in the west. The Uchali Wetlands Complex has been designated as a wetland of international importance under the Ramsar Convention. Three lakes of the Uchali wetlands complex occur in a cup-shaped valley called the Soon valley, while Namal and Kalar Kahar are located on the periphery of this valley (Agnew, 2002).

This study has been planned to identify the visitors' willingness to pay (WTP) to evaluate selected wetlands' significance for the sustainable ecotourism development in the Salt Range wetlands, Punjab, Pakistan.

Materials and Methods

Different methods can be used to give market values to wetlands (non-market goods), such as Contingent Valuation Method (CVM), travel-cost models, and hedonic regressions of property values. In the present study, the CVM has been applied to identify the significance of wetland resources of the study sites. In this method, WTP techniques are used in which respondents (tourists) were asked directly about their willingness to pay for the conservation and ecotourism development in the selected wetlands of Salt Range. A total of 960 domestic visitors/tourists filled the questionnaires, but only 920 questionnaires were used for the purpose of this analysis due to some missing information. 312 responses were received from Kalar Kahar lake, 302 from Uchali Wetland lakes (Khabbeki, Uchali, Jahlar), and 306 from Namal lake area, respectively. Finally, they were offered a bid and asked whether they were willing to pay for the development of ecotourism in the wetlands where they are now, and those who were willing to pay offered a bid ranging from PKR. 1000 to PKR. 5000. The willingness to pay was determined by using the equation 1:

Mean WTP = N x WTP / N **(1)**

Where:
N = Number of respondents
WTP = Willingness to pay
The obtained data from the questionnaire was entered and edited in a Microsoft Excel workbook which was later analyzed using Graph Pad Prism 5 and SPSS Window version 16. In the first level, one-way ANOVA was applied to examine the statistical significance of the difference between the dependent and independent variables. At the second level, the correlation was used to determine if an individual independent variable had a positive or negative association with WTP. Finally, regression model was applied to identify the effects of independent and dependent variables at an individual level by using equations 2, 3, and 4.

$$a = \frac{(\Sigma y)(\Sigma_{x^2}) - (\Sigma x)(\Sigma xy)}{n(\Sigma_{x^2}) - (\Sigma_x)^2} \quad \textbf{(2)}$$

$$b = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{n(\Sigma_{x^2}) - (\Sigma_x)^2} \quad \textbf{(3)}$$

$$Y = a + bx + € \quad \textbf{(4)}$$

Where:

Y – Dependent variable**, X** – Independent (explanatory) variable**,**
b – Slope**, €** – Residual (error)

The impacts of respondents' demographic and socio-economic characteristics on WTP were also analyzed by using a linear regression model in SPSS.

Results and Discussion

The visitors belonged to various age groups ranging from 18-60 years old. Mostly the respondents were 18-30 years old, which accounted for 46.47% of the total respondents, and 20.20% belonged to 31-40 years old age group. The results indicate that 66.67% visitors belonged to the middle age group and were involved in various tourist activities such as camping, walking, hiking, fishing, and boating which require physical activity and strength. The education level of the respondents shows that mostly the respondents (40.91%) had graduation levels. This was followed by the post-graduation level (33.1 %), which indicates that ecotourism at the selected wetlands tends to be

dominated by highly educated people. This group of people values ecotourism activities more than any other educated group. In the questionnaire, the respondents' occupations were categorized into 7 groups. Almost 40.39% of respondents were private employees, followed by government employees (19.11%) and businessmen were 11.94%. These results indicate that these occupation groups need more recreation to lessen their boredom due to their routine activities. The respondents' income level is an important factor that affects their WTP. It is commonly believed that more income indicates that they would be willing to pay more for the conservation of natural resources. Zhongmin et al. (2002) have identified that income affects visitors' WTP. The results indicate that 29.75% respondents had an average household income of more than PKR. 100,000 per month, followed by 26.60% respondents with an average household income between PKR. 26,000- 50,000. Regarding the use value of the wetland lakes, the respondents were asked whether these lakes are fine places for recreational activities.

Out of the total respondents (n=920) 91.66% considered these lakes as highly suitable for ecotourism as mostly visitors have come there with their families. The nonuse value includes restoration and conservation of the wetland's lakes for future use. The respondents were asked whether these wetland lakes should be preserved for future generations or not, 98.15% of the total respondents (n=920) agreed, and only 1.85% were against it. In another question, they were asked whether the selected wetland lakes should be preserved for local and global communities to get benefits, and all respondents agreed on the question. Among all respondents, 93.52% agreed that these lakes should be preserved so that they can visit these destinations in the future. With reference to the visiting purpose, 85.34% (n=786) of the total respondents (n=920) had come to enjoy the naturalness of the wetland lakes of the study area. About 28.48% of the respondents argued that these lakes are threatened by human action and mismanagement by authorities. So, 54.89% believed that the joint venture of public-private partnership is the most suitable action that will take up the management of these lakes. The management, conservation, restoration, and ecotourism development in these lakes will ensure its sustainability for the future generation while ensuring long-term economic benefits for the locals.

The results indicate that both gender and marital status positively impact respondents' willingness to pay, whereas age, education, occupation, and income level have negative impacts (Table 1). Similarly, the impacts of socio-economic and demographic characteristics on the amount of offered bid have also been shown in Table 1, indicating that marital status and gender negatively impact the bid amount. In contrast, age, education, occupation, and income level have positive impact.

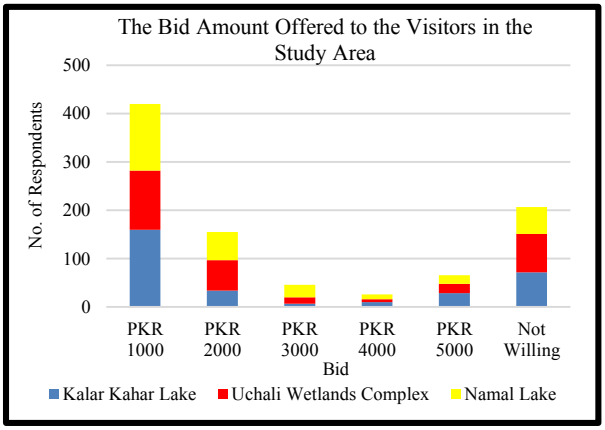

Fig. 2 Bid amount offered to visitors of the study area

Table 1 Respondents' statistical descriptive analysis

Sr. No	Variable	Constant	B	SD	R Square	F	P value
1	Age	1.422	-.098	.028	.067	66.411	.000
2	Gender	1.180	.034	.041	.001	1.283	.000
3	Marital Status	1.116	.073	.036	.011	10.127	.000
4	Education	1.631	-.112	.046	.086	86.256	.000
5	Occupation	1.367	-.042	.036	.019	17.711	.000
6	Income Level	1.330	-.035	.032	.014	13.304	.000

To identify the significance of wetlands as ecotourism destinations for the tourists, willingness to pay (WTP) was estimated. The visitors were offered a bid ranging from PKR. 1000 to 5000 (Fig. 2) and were first asked whether they were willing to pay for the ecotourism development in the wetlands where they were visiting. On saying 'Yes', they were offered a bid to calculate how much they were willing to pay. The mean WTP indicates that the selected wetlands are equally important for tourists. In Kalar Kahar, the mean WTP was calculated PKR. 1808, while in Uchali, it was calculated PKR. 1820, and in Namal PKR. 1848 (Fig. 3).

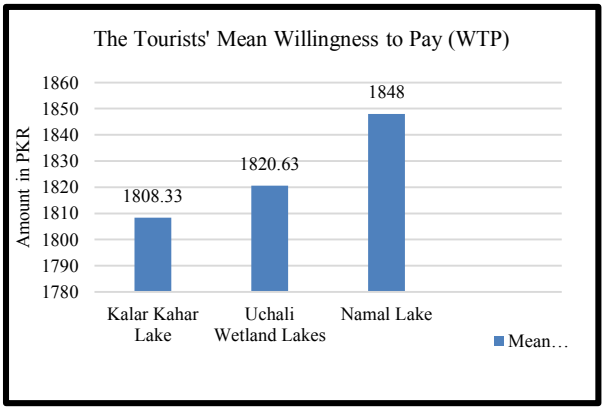

Fig.3 Visitors' mean willingness to pay for sustainable ecotourism in study area.

Conclusion

The calculated mean WTP indicates that all selected wetlands lakes (Kalar Kahar, Uchali, and Namal lake) of Salt Range are equally important for the tourists due to their naturalness as the calculated mean WTP was found almost the same with a frictional difference. The tourists' WTP indicates that these sites are important and if developed, these wetlands can contribute in generating national revenue as well the economy of locals. Unfortunately, these lakes are threatened due to human activities and mismanagement by the authorities. Therefore, it is good to improve the services and facilities and this move could attract more visitors in future. Although Pakistan Tourism Development Corporation (PTDC) has conducted a feasibility study in collaboration with Urban Unit regarding the development of ecotourism in Uchali Wetlands Complex, PTDC has not yet taken over this site for ecotourism development. The results of this study can be replicated in other tourists' sites of the country and later these sites may be prioritized for tourism development. This will not only conserve the natural resources but will also ensure sustainable development.

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