



Valuing Nature-based Solutions for Climate Resilience: Local Residents' Willingness to Pay for Wetland Restoration and Conservation of the Ghodaghodi Lake in Nepal

 Govinda Raj Upadhyay^{1*}  Ashutosh Priya²

¹PhD Scholar, Mahatma Jyotiba Phule Rohilkhand University, Bareilly, UP, India.

²Professor, Department of Regional and Applied Economics, Mahatma Jyotiba Phule Rohilkhand University, Bareilly, India.

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*Corresponding Author: megovinda@gmail.com

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Abstract

The deterioration of Wetlands Ecosystems is occurring as well as the loss of many Ecological & Socio-Economic Services; primarily due to lack of market valuation based on policies. This research will provide an estimation of the economic values of Ecosystem Services being delivered by Ghodaghodi Lake, a Ramsar designated Wetland in Nepal through assessing the Willingness to Pay (WTP) of Local Residents for Conservation of Wetlands. Primary Data was collected from 401 Households to analyze the WTP for Wetlands Conservation through Contingent Valuation Method in combination with Tobit and Probit Econometric Models. As a result of this analysis, it has been determined that 70.1% of Respondents are willing to economically contribute to Wetland Conservation, with a mean annual contribution of NRs. 257. Household income, level of education, occupation, and level of awareness of environment were identified as significant positive determinants of WTP at p-value of 0.01. Conversely, age and distance to the Wetland were identified as negative determinants of support for Wetland Conservation at p-value of 0.05. In comparison to previous studies estimating WTP from Asia and Africa, the results indicate a very high degree of local dependency on the Wetlands Ecosystem Services, regardless of financial constraints. Overall, these findings provide empirical evidence of the potential to support Community-Based Financing Mechanisms for Wetlands Conservation and demonstrate the need for incorporating Economic Valuations into Wetlands Governance Frameworks in Developing Countries. Therefore, this study contributes to the existing body of literature regarding Global Wetland Valuation, providing site specific policy implications from South Asia.

Keywords: *Nature-based Solutions (NbS), Climate Resilience, Contingent Valuation Method, WTP, Ghodaghodi Lake.*



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1. Introduction

The preservation of wetlands is essential for the sustainability of natural systems, support of biodiversity, and provision of valuable ecosystem services that directly affect quality of life for humans (Aryal et al., 2021; Sharma et al., 2015). Ecosystem services delivered by wetlands include water filtration, flood protection, nutrient cycling, carbon sequestration, support of livelihoods, and cultural values (Šebo et al., 2019; Sharma et al., 2015; Gyawali et al., 2024). Unfortunately, wetlands throughout Nepal are facing rapid decline from unsustainable land use changes, urbanization, invasive species, sedimentation and over-extraction of resources (Kalfas et al., 2020; Pathak et al., 2021; Pokharel & Thakuri, 2024). Furthermore, the devaluation of wetland ecosystem services in traditional economic and policy frameworks accelerates wetland degradation because the majority of the services provided are un-priced and therefore not recognized during decision making processes (Baral et al., 2016).

There are numerous wetlands in Nepal, including some designated by Ramsar International Wetland Convention, as well as others such as Ghodaghodi Lake, KoshiTappu and Jagadishpur Reservoirs. These wetlands are habitats to many different types of plants and animals. In addition to being valuable for biodiversity, they are often an important source of livelihood for nearby rural communities (Aryal et al., 2021; Paudel, 2016). These wetland ecosystems have, however, been impacted by changes in climate and anthropogenic stressors, leading to a reduction in the amount of ecosystem services they provide (Lamsal et al., 2016, 2019; Gyawali et al., 2024; Dhungana, 2016). Previous studies have indicated that employing public preference information to economic value the ecosystem services provided by wetlands would allow for the development of better conservation strategies. Monetary valuation of ecosystem services through the use of the Contingent Valuation Method (CVM) provides advantages over other valuation methods, as it provides an economic metric of the non-market values of the ecosystem services provided by natural resources (Paudel, 2016), thereby providing data to support policy formulation, resource allocation and sustainable management decisions (Upadhyay and Priya, 2024).

However, researchers conducting research in Nepal have utilized economic valuation methodologies to determine the value of ecosystem services and local residents' willingness-to-pay (WTP) for wetland conservation (Upadhyay and Priya, 2024). Results from previous research indicate that socio-economic variables such as income, education and knowledge play important roles in determining WTP, and indicate the need to develop conservation policies that consider the social-ecological context in which local residents live (Lamsal et al., 2019). Although there has been an increase in research regarding the assessment of ecosystem services and WTP for conservation, there remains much unvalued wetland complexes and limited empirical evidence to support local conservation planning. Therefore, the objective of this research is to estimate the economic value of the ecosystem services provided by wetlands and to identify the factors that influence local residents' WTP for wetland conservation at the Ghodaghodi Lake Complex in Nepal. This research has been utilized the CVM in combination with social-economic and environmental variables to further understand how local residents view the benefits they receive from wetlands and how the results of this research may be used to inform sustainable wetland management and policy interventions.

2. Background of Wetland Ecosystems

Wetlands have some of the greatest levels of biological production on Earth. Because of this they can generate many different types of products and services which are used by humans and other living things to keep the environment in balance. Wetlands produce different products and services due to their ability to be both land and water at the same time; they also are home to a variety of plant and animal species that are able to survive with changes in the level of water and the amount of nutrients in the water (Thapa et al., 2020; Kafle et al., 2007; Lamsal et al., 2019). Wetlands also have the capacity to manage the water cycle and create clean water by absorbing excess water from the surface to prevent flooding (Sharma et al., 2015). Additionally, wetlands have a very diverse range of life that includes birds, fish, frogs, turtles, and plants. In Nepal there are wetland regions such as Ghodaghodi, Jagadishpur, and KoshiTappu that provide homes

for thousands of migratory birds and several endangered species (Pokharel&Thakuri, 2024).

Because of the high diversity of species in wetlands they are important to creating a healthy environment and maintaining the health of the surrounding ecosystems of the wetlands. Also, wetlands can capture Oxygen, impact weather patterns, and recharge groundwater, so it is vital to protect them because of the climate issues we are currently experiencing (Pathak et al., 2021).

In addition to their importance to the ecosystem, wetlands provide economic and social benefits to people through providing fish, grazing lands, fuel wood, and medicinal plants for daily use of local residents, particularly those residing in rural communities in Nepal (Brouwer et al., 2018). Wetlands also provide recreational sites, spiritual sites, and tourist destinations to support the local economies. For instance, many wetland systems in Nepal draw tourists for bird watching, religious ceremonies, and ecotourism (Ghous& Siddiqui, 2022; Kadayat&Upadhyay, 2024). Despite all of the positive aspects of wetlands, however, wetlands are being destroyed at alarming rates both locally and globally. The main reasons for the destruction include overpopulation, agriculture development, urbanization, and non-native species (Pathak et al., 2021). Many of the ecosystem services provided by wetlands continue to go unaccounted for in policy frameworks, resulting in poor management and loss of wetland functions (Baral et al., 2016). Therefore, valuing wetland ecosystem services economically is becoming increasingly important to understand their full value, develop effective wetland conservation plans, and inform policy decisions that will promote sustainable use of wetlands (Sinclair et al., 2021). While many studies internationally and in Nepal show the large number of ecological, economic and social advantages of wetlands, including water quality, flood control, biodiversity, livelihoods and climate protection, they also show that where wetland ecosystems services are valued and perceived as useful, people will pay money to protect them. Examples include studies done in Asia, Africa and Europe (Turpie & Letley, 2021). Studies demonstrating that local communities are generally willing to contribute financially to protect their local wetlands when the value of those ecosystems services is understood and recognized. In Nepal, similar types of

valuation studies were completed at two Ramsar sites, KoshiTappu and Jagadishpur Reservoir, to determine which socio-economic factors specifically income, education and environmental knowledge will affect an individual's willingness to pay (WTP) for wetland conservation (Gyawali et al., 2024).

The majority of existing studies do not provide sufficient economic evidence about the value of conservation efforts for Ghodaghodi Lake, one of Nepal's most significant Ramsar wetlands. Although most existing studies of Nepal's wetlands either focus on different wetland systems or focus on tourism-based methods of valuing wetlands, little is known about how local households would be willing to finance conservation efforts based on their own preferences. This is likely due to few studies examining how socio-economic variables, awareness of the environment and proximity to the wetland are used together in a single econometric model to understand how all of these factors can impact conservation behavior (Sarkar & Kumar, 2021; Adekola et al., 2021). Therefore, while there has been some research completed on wetland conservation in Nepal, it is largely fragmented and does not provide enough information on how to develop conservation financing mechanisms for the Ghodaghodi Lake.

This lack of data is particularly concerning because successful wetland conservation requires evidence based on locally relevant economic data, including the values and limitations of the local community. The results of this study will provide a robust household-level valuation of the benefits provided by Ghodaghodi Lake, as well as identify which socio-economic factors are associated with a person's WTP for conservation efforts at the lake. Therefore, the results of this study will be able to help inform the development of equitable and sustainable conservation financing mechanisms for the lake. Additionally, by placing the results of the study into context of the larger body of wetland valuation literature globally, this study will enhance the international relevance of wetland-related research being completed in Nepal and contribute to a broader discussion regarding community-based conservation in developing countries.

3. Objectives of the Study

- i. To estimate the economic value of wetland ecosystem services provided by the Lakewetland using the Contingent Valuation Method (CVM).
- ii. To assess the willingness to pay (WTP) of local residents for the conservation and sustainable management of the wetland.
- iii. To identify the socio-economic, demographic, and environmental awareness factors influencing locals' WTP for wetland conservation.
- iv. To examine the relationship between perceived ecological benefits and community willingness to contribute to conservation initiatives.
- v. To generate policy-relevant insights that support evidence-based wetland conservation planning and resource management in Nepal.

4. Review of Literature

Wetlands are recognized as valuable ecosystems providing a wide variety of provisioning, regulating, supporting, and cultural services worldwide. However, many of these benefits do not enter conventional markets and are therefore poorly reflected in policy decision making. Therefore, economic valuation is becoming an important tool for wetland governance, since it converts non-market services to monetary units allowing for comparison with alternative land use options and creation of financing mechanisms for conservation (Jo et al., 2021). Recent systematic reviews have demonstrated that ecosystem service values are distributed systematically by biome and socioeconomic context, further emphasizing the need for site specific valuation data in addition to global benchmarks (Brander et al., 2024). Recent studies on valuation conducted in Asia demonstrate increasing integration of household preferences and changes to ecosystem services to guide conservation investment decisions. Studies conducted in China report positive public willingness to pay for wetland conservation and indicate that education, environmental awareness, and perceived ecological benefits consistently influence public willingness to pay for wetland conservation, regardless of whether or not the wetland system has been deemed culturally significant (Li et al., 2025). Wetland valuation

research has also shown that wetland ecosystem service value is influenced by land use and hydrological changes, thus indicating that there is a rationale for using valuation in conjunction with management planning.

Studies from Africa also show that stated preference valuation (including contingent valuation) can demonstrate large amounts of public support for wetland and aquatic ecosystem conservation despite financial constraints. For instance, studies related to major lake ecosystems have indicated that social and environmental factors (such as socioeconomic status and perception of the environment) affect both the likelihood of individuals paying and how much they would be willing to contribute for wetland and aquatic ecosystem conservation (Khadka et al., 2021). The overall implication of this body of literature is that conservation finance will be more feasible if the individuals whose lives are impacted by the conservation of wetlands perceive that their livelihoods will be protected and that the ecosystems will be healthy and that the funding will be managed in a transparent manner.

The literature demonstrates wetland valuation has been successfully integrated into contemporary European policy tools such as PES, restoration programs and broader biodiversity and climate-related strategies. Current European research suggests that there are clear and quantifiable cost-benefit rationales for wetland restoration, which is supported by valuation evidence and, therefore, can be used to promote alignment between local conservation efforts and larger-scale environmental objectives related to freshwater and marine ecosystem services (Koundouri et al., 2024). Overall, it appears that the literature around the world provides evidence for at least two consistent conclusions regarding wetlands: (i) Wetlands provide many non-market ecosystem service benefits, and (ii) the willingness to pay for the protection of these ecosystems is heavily influenced by an individual's knowledge, perceptions of the benefits provided by the wetland and their socio-economic conditions.

Nepalese-based research confirms the significant social and ecological importance of wetlands and the urgent need to protect those listed as Ramsar sites, many of which are being degraded. Evidence derived from valuation studies conducted in key wetlands, including Koshi Tappu and Begnas, have shown that there are significant

ecosystem-service values delivered by these wetlands, and indicate that there is some level of community support for conservation, although it is generally found that education, income, and awareness levels positively influence a community member's willingness to pay for wetland conservation (Thapa et al., 2020). Public support for funding the conservation of Jagdispur Reservoir was documented in previous studies, and they highlighted the importance of considering local socio-economic factors when designing policies for conservation (Gyawali et al., 2024). Additionally, the authors of more recent reviews and chapters related to Nepal emphasize the biodiversity value of its wetlands, the relationships between livelihoods and wetlands, and the many conservation efforts occurring throughout Nepal's wetland systems, while highlighting the major pressures that the country's wetlands face, including land use changes, invasive species, water pollution and poor governance (Shrestha et al., 2025).

As well as a general look at wetland conservation in Nepal, studies on climate have shown that Ramsar Sites in Nepal will become even more vulnerable to climate-related impacts in the future, so that adaptation-based approaches should be applied to their conservation (Acharya & Basu, 2025). Research has been conducted to show that Ghodaghodi Lake has ecological value, and it has been found that Ghodaghodi Lake has both recognized ecosystem service value, and site pressures. It has been determined from previous research that local residents value the wetland system around Ghodaghodi Lake for the provision of ecosystem services, and that there are several ecological threats associated with the conversion of land cover, and climate variability affecting the Ramsar listed lake complex (Lamsal et al., 2019). Additionally, it has been determined through research related to tourism and ecotourism that nature-based tourism provides significant income to local economies; and therefore that maintaining the area's natural environment could help to maintain or improve the economic sustainability of local livelihoods (Khadka et al., 2021; Kadayat & Upadhyay, 2024). Also, it has been determined through research that managing wetland resources sustainably can create opportunities for local economic development, while adding to cultural services, including biodiversity (Siwakoti et al., 2025).

Taken together, the global and Nepal-based literature demonstrates the theoretical and empirical basis for using wetland valuation as a conservation tool, and that willingness to pay for wetland conservation is typically determined by socioeconomic status, education, awareness, and proximity. While the literature provides evidence supporting the use of wetland valuation as a conservation tool, it is clear that continued research is needed to develop site-specific, policy-relevant valuation of household willingness to pay for the protection of Ramsar wetlands using appropriate econometric methods, and linking valuation results to financing mechanisms and governance strategies for Ramsar wetlands in response to increasing pressures from climate and land-use changes. This research will address the need for continued research on the valuation of wetland ecosystems in Nepal by providing new, site-specific, and policy-ready valuation evidence and determinants for Ghodaghodi Lake, and thereby contributing to the ongoing discussion about wetland conservation policy in Nepal and creating a body of evidence for valuation in Nepal that is comparable with the international wetland valuation literature. Several studies have evaluated the ecological importance and social-economic value of wetlands in Nepal. However, an important gap remains in current literature. Firstly, a majority of empirical studies have limited their geographic scope to wetlands which have already received significant attention through designation as Ramsar Wetlands (Ghodaghodi Lake, Koshi Tappu, Jagadishpur Reservoir (Aryal et al. 2021)). Therefore, a lesser known yet ecologically significant wetland system such as the Ghodaghodi Lake Complex receives relatively little research. Consequently, the ability to generalize results found in previous studies and to equitably distribute research funding to assess the valuation of wetlands is restricted. Secondly, while numerous studies have used monetary valuation methods including the Contingent Valuation Method (CVM) and Travel Cost Method (TCM) to assess the value of tourism activities and to estimate entry fees, few studies have included a broad range of socio-economic, demographic and environmental awareness factors into a single analytic model to understand what drives a local community's willingness to pay (Lamsal et al. 2016; Thapa et al. 2020).

Thirdly, while land use changes, ecological degradation and invasive species impact have been reported in numerous wetland systems (Pathak et al. 2021; Lamsal et al. 2019), very little empirical evidence exists linking these ecological stresses with the perceptions of local communities regarding conservation financing. A large number of studies evaluate the level of ecological degradation and the level of economic valuation independently, resulting in a void in integrated socio-ecological analysis. Fourthly, national level wetland management strategies typically do not have locally specific, economically relevant data which accurately reflects the value of wetland ecosystem services. While the findings of previous studies can be useful for providing insight into the economic values of wetlands, they are insufficient to support the development of site specific policy to address the conservation needs of less studied wetland systems (Pokharel & Thakuri, 2024). The lack of local level economic data makes it difficult for policymakers to develop financial mechanisms to support the sustainable management of wetlands.

Lastly, there is limited research evaluating whether the key factors that influence the willingness to pay (WTP) of different socio-economic groups vary significantly when evaluated at the same wetland landscape. It is critical to understand the variations in communities to effectively design equitable and efficient conservation strategies. Collectively, these gaps highlight the necessity for an economic valuation study to identify the factors influencing local residents' WTP for conservation in the Ghodaghodi Lake Complex. The closure of these gaps will also help provide the scientific basis for conservation planning in Nepal.

5. Theoretical and Conceptual Framework

This article is based upon economic valuation of wetlands, which are grounded in environmental economic theory which explains how people receive utility from environmental goods and how they make choices between environmental goods when there is scarcity or when those goods may be lost. The theory that supports the willingness-to-pay (WTP) concept is based on welfare economics, which states that people will pay a specific dollar amount to achieve environmental improvement and/or to avoid environmental degradation (Sharma et al., 2015).

Because many of the wetland ecosystem services provided (i.e., water filtration, habitat for biodiversity, regulation of flooding, and cultural values), these services cannot be economically quantified using traditional markets (Aryal et al., 2021). Therefore, nonmarket valuation methods such as contingent valuation method (CVM) are commonly used to measure the economic value placed on environmental good by people.

Welfare economics is the theoretical foundation used to evaluate the most effective method of using available resources to achieve the greatest possible social welfare. Wetlands provide both use and non-use values to consumers. Use values include both direct and indirect uses of the wetlands (i.e., income generated through fishing, recreational use); while non-use values include the wetlands' existence value and ecosystem integrity and stability (Baral et al., 2016). Consumer Surplus Theory provides empirical support to the validity of CVM to measure a consumer's willingness to pay for hypothetical markets. In the context of CVM, the WTP of an individual is defined as the maximum amount of money an individual is willing to pay to either conserve/protect an environmental resource or to mitigate ecological loss. A variety of factors have been identified to support WTP, including income, education level, proximity to the wetland, and awareness of environmental issues (which can also be associated with theories of consumer behavior and achieving utility maximization (Halkos & Matsiori, 2016). We draw on the Total Economic Value (TEV) framework, which captures the complete range of benefits people derive from ecosystems. These include:

1. Direct use values: fishing, fodder, fuelwood, water resources.
2. Indirect use values: flood control, water purification, nutrient cycling.
3. Option value: future use of wetland resources.
4. Non-use values: existence and bequest value.

Previous studies conducted in Nepal show that using Total Economic Value (TEV) to manage wetlands is important in developing effective policies due to the fact that many indirect and nonuse values of wetlands are not considered in policy discussions (MEA, 2005; Ghous & Siddiqui, 2022). TEV can be incorporated into

valuation models to give decision-makers an overall view of how the people within communities perceive the ecosystem services that each of the wetland sites provide. The Contingent Valuation Method (CVM) is used to determine the public's values for environmental good when there is no existing market for such goods (Lamsal et al., 2015). The CVM is used to create a hypothetical market for conservation/restoration of wetlands by asking respondents what they would be willing to pay (WTP) to conserve/restore a particular wetland site. Prior studies have been conducted on wetlands in Nepal using the CVM to determine if entrance fees to wetlands are adequate (Lamsal et al., 2016); to find out if there is enough support from the community for community-based conservation efforts (Lamsal et al., 2015) and to find out which socio-economic factors affect WTP for wetland conservation (Gyawali et al., 2024; Upadhyay, 2022). Therefore, the CVM will be used in this study to estimate the WTP of local residents to conserve the Ghodaghodi Lake Complex.

There is empirical evidence of how social economic, demographic and attitude variables impact Willingness to Pay (WTP) for environmental protection (Thapa et al., 2020). All three of the social economic variables of income, education and occupation positively impact WTP since these variables enable individuals to contribute financially towards environmental causes (Thapa et al., 2020). Positive relationships exist between environmental awareness and perceived ecological benefits of the wetland and WTP (Aryal et al., 2021). Negative relationship exists between age and proximity to the wetland and WTP. Younger and those who live close to the wetland consume more of the wetland resource (Gyawali et al., 2024). These findings were based on the conceptual framework (Sethy & Senapati, 2023). By integrating the TEV framework with CVM and analyzing these key determinants, this study aims to provide a comprehensive, community-centered valuation of Ghodaghodi Lake, offering evidence that can bridge ecological importance with practical conservation financing.

6. Study Area

The Ghodaghodi Lake Complex is located in the Terai Region offar western low land in Nepal, which has been identified to contain many

wetland ecosystems with high levels of biodiversity. The Ghodaghodi Lake wetland supplies freshwater for the ecological and socio-economic needs of local communities similar to how Ghodaghodi lakes supply freshwater to communities in the Ghodaghodi municipality areas of Nepal (Upadhyay&Priya, 2024). Due to its location in a subtropical climate zone, the Ghodaghodi Lake area contains a higher level of biodiversity than most wetlands and thus serves as a critical habitat for numerous aquatic species, migratory birds, and vegetation dependent upon wetlands.

Wetlands in Nepal have received international attention for their ecological importance, and as stated above, other Ramsar listed wetlands in Nepal are also considered to be ecologically importance (Sharma et al., 2015). Ecosystem services supplied by the Ghodaghodi Lake include water filtration, recharge of groundwater, flood control, sedimentation, and habitat for numerous species. Similar to other wetland complexes in Nepal, the Ghodaghodi Lake Complex are essential to maintaining ecological equilibrium, providing habitat for species dependent upon shallower freshwater environments (Pokharel&Thakuri, 2024).

Documentation of biodiversity at the Ghodaghodi Lake Complex is very limited. However, wetland systems in Nepal similar to the Ghodaghodi Lake Complex support a wide array of species including fish, amphibians, reptiles, and both resident and migratory birds (Lamsal et al., 2019). Wetlands function as stepping stones for migratory birds traveling along the Central Asian Flyway. Aquatic grasses, reeds, and wetland shrubs contribute to nutrient cycling and shoreline stabilization. Several studies have illustrated that lakes in the Terai Region are biological "hot-spots", however, they are under significant risk from anthropogenic activities (Pokharel&Thakuri, 2024).

The Ghodaghodi Lake wetland is a source of both subsistence and income for the local people who surround it with regard to fish catching and selling, gathering of aquatic plants as food, livestock grazing, and collection of firewood and fodder (Baral et al., 2016). As do most wetlands, the Ghodaghodi Lake provides important and essential resources to the households living in closeness to it which they can use to satisfy their basic economic needs, and to support some of

their small scale economic activity. Beyond the many practical benefits that communities derive from wetlands, there is an array of potential benefits from the cultural, recreational and spiritual uses of wetlands that support community identity, and provide a basis for developing and promoting local tourism. Similarly, other Nepalese wetlands such as the Jagadishpur watershed, fewa Lake demonstrate how wetland ecosystems can contribute substantially to local economies by providing ecosystem services and supporting nature-based tourism (MEA, 2005).

As does almost every other wetland system in Nepal, the Ghodaghodi Lake Complex has been subjected to several external pressures including land use change, agricultural expansion, invasive species, pollution, and resource extraction. Significant wetland degradation has occurred in wetland complexes adjacent to the Ghodaghodi Lake due to invasive alien plant species, agricultural runoff, and unregulated urban growth (Lamsal et al., 2019). These pressures on the Ghodaghodi Lake Complex could potentially degrade its ecological health, reduce biodiversity within the wetland, and ultimately reduce its capacity to supply ecosystem services to the local communities.

Because of its ecological and socio-economic significance, the Ghodaghodi Lake Complex requires a range of conservation strategies that incorporate research, economic assessments, and empirical data. Empirical studies have shown that local involvement and investment in wetland conservation projects in Nepal can produce positive outcomes regarding wetland management. Therefore, only by combining, local perspectives, and economic assessments will sustainable wetland conservation be achieved, and long term social and environmental sustainability ensured.

7. Materials and Methods

Ghodaghodi Lake is located in the Kailali district of the Sudurpashchim Province of Nepal. It is recognized internationally as a Wetland of International Importance, under the Ramsar convention. It is among the largest of the natural lake systems in the Western Terai region and contains extremely high levels of biodiversity, ecological significance and an richness of socio-economic links with the communities living around the lake. The Ghodaghodi Lake wetland

provides several ecosystem functions such as support for both aquatic plant and animal life, supports the migratory patterns of birds, contributes to the fisheries production, provides groundwater recharge and supports cultural ecosystem services. However, there have been significant threats identified which pose a risk to the long term ecological sustainability of the Ghodaghodi Lake wetland complex. These include land use changes, the introduction of invasive species, increased frequency of extreme weather events due to climate change and increased levels of resource extraction. As a result of its designation as a Ramsar site and its socio-ecological importance, the Ghodaghodi Lake wetland represents a suitable and relevant location to quantify the economic values of the ecosystem services provided to the local residents and their willingness to pay for conservation of the wetland.

An environmental economics-based, cross-sectional study design was used to inform this study. Specifically, the Contingent Valuation Method (CVM) was utilized to estimate the non-market based economic value of the ecosystem services provided by the Ghodaghodi Lake wetland (Upadhyay, 2022; Upadhyay et al., 2025). The CVM method is frequently used when there are no market based prices for environmental goods or when the intent of the researcher is to evaluate a household's willingness to pay (WTP) for conservation efforts. The target population for this study consisted of all households located in the surrounding the Ghodaghodi Lake. Approximately 41140 households located within the settlements surrounding the Ghodaghodi Lake, a total of 401 were randomly sampled utilizing a stratified random sampling technique to ensure that the sample represented the different distance categories from the lake and socioeconomic categories. Primary data was collected for the purpose of this study through the administration of face-to-face surveys to the selected households via a structured questionnaire completed by trained enumerators.

8. Conceptual Framework and Analytical Flow

The conceptual framework assumes that social economic factors of the household; and their level of knowledge of the environment; as well as the distance to the wetlands, are all influential in

determining a household's willingness to pay for wetland conservation. The conceptual model integrates these three factors together, to ultimately determine what will influence how

households decide on conservation efforts; and how much they are willing to spend on those conservation efforts.

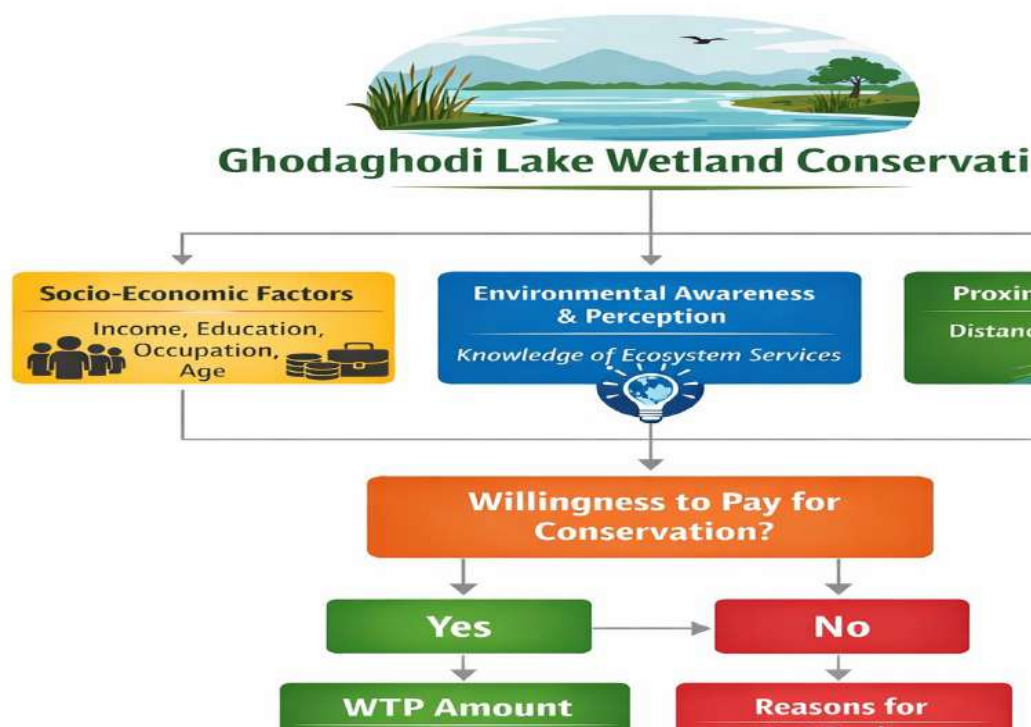


Fig-1: Conceptual Framework of Willingness to Pay for Wetland Conservation at Ghodaghodi Lake, Nepal

The figure illustrates the relationship between socio-economic characteristics, environmental awareness, proximity to the wetland, and household willingness to pay for conservation, forming the basis for policy recommendations.

Econometric Models

Three econometric models were applied to analyze the data:

Logistic regression: used as a robustness check for the binary WTP decision.

Tobit model: to analyse the determinants of the continuous WTP amount, accounting for the censored nature of zero responses.

Independent variables included income, education, occupation, age, distance from the lake, and environmental awareness. Statistical analyses were conducted using STATA, and model significance was assessed at 1%, 5%, and 10% levels.

9. Results and Discussion

This section reports the empirical findings on households' willingness to pay (WTP) for conservation of Ghodaghodi Lake, Nepal, based on survey data from 401 respondents.

9.1. Socio-Demographic Characteristics of Respondents

The socio-demographic profile of respondents provides the contextual basis for interpreting WTP behaviour (Table 1). The sample consists largely of economically active households, moderately educated, and closely linked to wetland-based livelihoods. Similar socio-economic structures have been reported in wetland valuation studies from Nepal, India, and Africa, where dependence on ecosystem services shapes conservation attitudes.

Table 1.*Socio-Demographic Characteristics of Respondents (n = 401)*

Variable	Category	Percentage (%)
Gender	Male	55.9
	Female	44.1
Age (years)	18–30	34.4
	31–45	42.1
	More than 45	23.4
Education	Secondary & above	58.6
Occupation	Agriculture	36.4
Monthly income	≤ NRs. 15,000	39.4
Distance from lake	Mean (km)	1.91

9.2. Willingness to Pay for Wetland Conservation

The total respondents, 70.1% expressed willingness to pay for conservation of Ghodaghodi Lake. The mean annual WTP across all households is NRs. 257.40, increasing to NRs. 367.85 among those willing to contribute (Table 2).

Table 2.*Descriptive Statistics of Willingness to Pay*

Group	Mean WTP (NRs./year)	SD
All respondents	257.40	112.3
WTP-positive respondents	367.85	86.1

These values are comparable with WTP estimates reported for wetlands in South Asia and Africa, where strong livelihood dependence offsets lower income levels (Thapa et al., 2020; Dar & Dar, 2025). The findings confirm that even in resource-constrained settings, communities assign tangible economic value to wetland ecosystem services.

9.3. Determinants of Willingness to Pay (Tobit Model)

A Tobit regression model was estimated to identify factors influencing the amount of WTP, accounting for censored zero responses (Table 3)

Table 3.*Tobit Regression Results for Determinants of WTP*

Results for Determinants of WTA			
Variable	Coefficient	Std. Error	p-value
Monthly income	0.0091	0.0020	0.000***
Education (years)	12.34	3.68	0.001***
Occupation (service/business)	33.85	13.21	0.011**
Age	-1.92	0.79	0.015**
Distance from lake (km)	-20.14	6.02	0.001***
Environmental awareness	24.76	6.37	0.000***
Model fit:			
Pseudo-R ² = 0.279		Log-likelihood = -1014.27	
Observations = 401			
***p < 0.01, *p < 0.05			

Income, education, occupation, and environmental awareness significantly increase WTP, while age and distance from the wetland reduce conservation contributions (Upadhyay et al, 2025). These patterns are consistent with findings from China and Europe, where education and awareness strongly predict conservation financing behaviour, and with Asian and African studies highlighting the importance of spatial proximity to wetlands.

9.4. Graphical Illustration of WTP

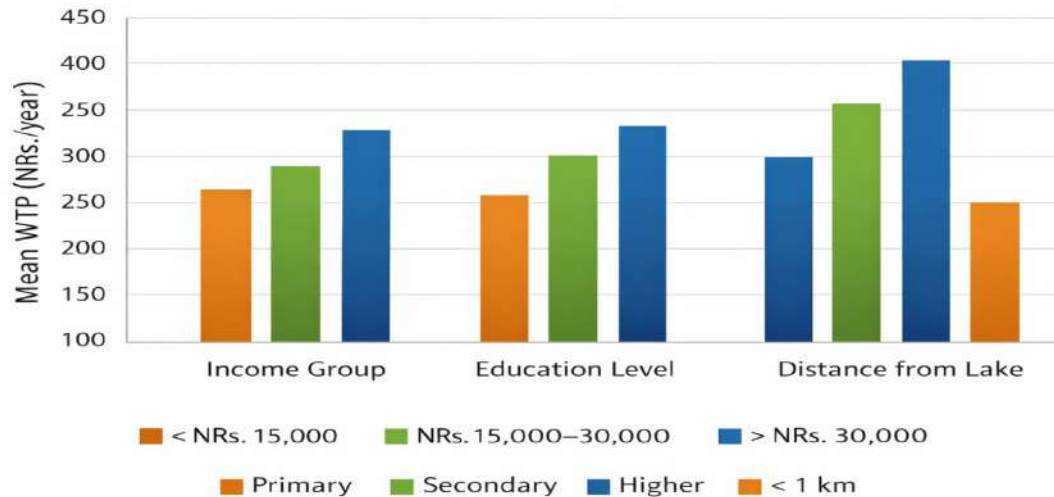


Fig-2: Mean Willingness to Pay for Wetland Conservation by Selected Household Characteristics

Figure 2 demonstrates that households with higher income and education levels, and those residing closer to Ghodaghodi Lake, report higher WTP. This trend mirrors international evidence from Asia and Africa, reinforcing the external validity of the results. Compared to European wetlands, where conservation financing is often institution-driven, the results from Ghodaghodi Lake reflect community-driven conservation support in a low-income rural context. Relative to African and South Asian wetlands, the magnitude of WTP is comparable, highlighting strong ecological dependence despite economic constraints.

10. Discussion

The results of this study provide important insights into the economic value of the Ghodaghodi Lake Complex and the socio-economic and perceptual factors that influence local residents' willingness to pay (WTP) for wetland conservation. The findings align with existing evidence from Nepal and other developing countries, while also addressing the research gaps identified in the literature.

Evidence from Nepal shows that people are willing to financially support wetland conservation efforts. [Thapa et al. \(2020\)](#) found that the average willingness to pay (WTP) for conserving Ghodaghodi Lake was NRs. 257.40, and this amount was notably higher (NRs. 367.85) among respondents who expressed a clear willingness to contribute. These results suggest that communities recognize the value of wetland ecosystems and are prepared to support their

protection. The study also demonstrates that the contingent valuation method (CVM) is a practical and policy-relevant approach for assessing wetland values and informing conservation financing in Nepal, as also highlighted by [Upadhyay et al. \(2025\)](#).

The high proportion (70.1%) of respondents willing to pay for conservation indicates positive community attitudes toward ecological protection. This is particularly noteworthy in rural settings, where income constraints often limit environmental contributions. The positive perception scores and strong awareness levels (mean awareness = 3.94) further highlight that communities understand the ecological significance of the wetland and perceive the urgency of environmental degradation. These findings correspond with studies that show awareness and perceived ecological benefits

significantly enhance conservation support (Upadhyay and Priya, 2024; Thapa et al., 2020).

The regression analysis also supported the hypothesis that socioeconomic-demographic factors affect WTP. In line with most theory-based models of consumer behavior and environmental economics, the regression analysis found that household income and education were significantly related to WTP. Household income was a significant and positively correlated factor for WTP and could be considered as indicative of the respondent's ability to pay for wetland conservation because of their higher financial capacity. Additionally, higher-income households may have a higher preference for environmental conservation than lower-income households. A similar relationship between household income and WTP has been observed in other CV studies conducted in South Asia (Nepal) (Baral et al., 2016).

Education was also a significant positive predictor of WTP, and likely reflected greater awareness and longer-term ecological knowledge among residents that are better educated. Type of occupation was also identified as a significant predictor of WTP, specifically service and business occupations tended to have a higher WTP, possibly because they have more stable income sources and are less dependent on the resource extraction of the wetland than agricultural laborers. Age was identified as a significant negative predictor of WTP, and thus, younger respondents may be more environmentally aware/conscious and/or more responsive to conservation messaging. The relationship between age and WTP is consistent with previous research across the globe demonstrating that younger generations have stronger environmental attitudes.

Occupation type, particularly employment in service or business sectors, was positively associated with WTP. This may stem from more stable income sources or lower dependence on daily extractive use of wetland resources compared to agricultural laborers. In contrast, age was negatively associated with WTP, indicating that younger respondents may be more environmentally conscious or more receptive to conservation messaging. This aligns with global findings that younger populations exhibit higher pro-environmental attitudes.

The negative relationship between WTP and distance to the lake also confirmed the

hypothesis that residents of homes located farther away from the wetland perceive fewer direct benefits from the wetland, and therefore are less motivated to contribute financially. Spatial effects such as those described in the current study have been documented in Nepal (Lamsal et al., 2016), and demonstrate the need for outreach to communities located farther away from the center of the wetland.

It should be noted that the most interesting finding from this study was the significant positive relationship found between respondents' level of environmental awareness and their willingness to pay (WTP). This indicates that the higher the respondents' awareness of the wetlands, the more likely they were to support it. These results are indicative of the need for environmental education and awareness campaigns to promote local participation and cooperation in wetland conservation efforts. Additionally, these results further affirm the Total Economic Value (TEV) model which states that an increase in ecological knowledge will result in an increased recognition of both non-use and indirect-use values.

In summary, the results of this study indicate that the degree of wetland conservation in Nepal is dependent on a combination of factors including; respondents' socio-economic capacity, their environmental awareness, how they perceive the ecological benefits of the wetland and their location relative to the wetland. The results of this study emphasize the need for conservation approaches that involve both economic assessments of the wetland and community participation. Lastly, the results of this study provide recommendations for establishing locally based funding mechanisms for wetland conservation such as; community conservation funds, tiered payment systems, and entrance fees that consider the socio-economic diversity of the area.

Finally, the results of this study directly support the objectives of the study through providing the economic value of the wetland ecosystem services, estimating WTP, identifying the determinants of WTP, and demonstrating the connections between ecological views and conservation contributions. The results of this study provide evidence that can be used to inform management practices for the Ghodaghodi Lake Complex and similar wetland ecosystems in Nepal.

11. Policy Implications and Recommendations

The study results give us great insights to inform evidence-based conservation and management policy making for Ghodaghodi Lake complex and other wetlands in Nepal. The study demonstrates the willingness of the local population to financially support wetland conservation and that socio-economic and awareness related variables have a major impact on the financial support given to wetland conservation. Thus, various policy actions are possible to support the sustainable management of wetlands.

A first action is to use the high WTP to create a community-based conservation fund to support activities such as wetland restoration, monitoring, and management. A fund can be created annually where each household contributes to the fund according to its income level. In this way the fund is both inclusive and sustainable. Similar funds have already been successful in supporting wetland conservation in other Ramsar sites in Nepal and will promote a sense of ownership among the local community and reduce their reliance on external funding.

A second action is to continue to develop environmental education and awareness raising campaigns. The educational status and level of environmental awareness were identified as important predictor variables of the willingness to pay and thus as factors that can be used to increase financial support for wetland conservation. To address this issue local schools, community organizations, and local government organizations can work together to educate people about the ecosystem services provided by wetlands, the causes of ecological degradation and the benefits of wetland conservation. Awareness campaigns can also be targeted at older age groups and at communities farther away from the wetland to reduce the spatial inequities in the support for conservation.

A third action is to design zone-based management and conservation policies, as the study found a negative relationship between distance from the lake and WTP. It is essential to prioritize conservation efforts and livelihood support programs for households living closer to the wetland because they rely heavily on the wetland and demonstrate a greater willingness to make contributions toward conservation. For households living farther away from the wetland,

it is essential to engage them using communication and benefit-sharing strategies to promote a long-term commitment to conservation.

The fourth action to take is to create an environment that supports the growth of economic development through the creation of nature-based economic opportunities and sustainable tourism and green job initiatives that can help fund the protection of the wetlands. The goal of these economic development programs is to generate income at the household level while also decreasing pressure on the wetlands to protect them. Additionally, eco-tourism, when it is done responsibly, can provide a sustainable stream of revenue to the community and increase their appreciation for ecological values. At last, the community's reported ecological harm and their concern about the harm to the natural environment is an indication of a greater need for better legal protections to include land use changes, invasive species management and enforcement of laws to protect against invasion and pollution. The local government agencies must also enforce environmental laws strictly using science-based data as well as the community-based data collection methods to monitor if other government agencies are complying with environmental laws.

Ultimately, the study indicates that there is a need for institutional coordination and collaboration between all levels of agencies (local, regional and national) to support the conservation efforts of wetlands. All of the conservation policies developed must be aligned with Nepal's national wetland strategy, Ramsar commitments and climate adaptation plans. Collaboration among local government agencies, community forest user groups, NGOs and academic institutions will be required to ensure long term ecological sustainability of the wetlands.

In summary, the policy recommendations provided above demonstrate that wetlands can be conserved effectively only if the combination of economic valuation, community involvement, environmental education, regulatory enforcement, and livelihood development are utilized. By developing and implementing the findings of this study into policy, the ability to conserve and manage the Ghodaghodi Lake complex and other wetland ecosystems in Nepal will improve.

- Strengthen community-based conservation by establishing a sustainable local

- conservation fund supported by households.
- Implement targeted environmental awareness and education programs, especially for older residents and communities farther from the lake.
 - Develop zone-based wetland management strategies that prioritize high-dependence households near the wetland.
 - Promote sustainable livelihood opportunities such as ecotourism and nature-based enterprises to reduce pressure on wetland resources.
 - Enhance regulatory oversight by monitoring land-use changes, controlling invasive species, and enforcing environmental protection measures.
 - Improve coordination among local governments, conservation groups, and stakeholders to ensure integrated wetland management.

12. Conclusion

This study assessed the economic value of wetland ecosystem services provided by the Ghodaghodi Lake Complex and examined the socio-economic and perceptual factors influencing local residents' willingness to pay (WTP) for conservation. The findings clearly demonstrate that the wetland holds significant monetary value for surrounding communities, with a substantial proportion of households expressing willingness to contribute financially to its sustainable management. The estimated mean WTP reflects both the ecological importance of the lake and the community's recognition of the growing environmental threats it faces.

The econometric analysis revealed that income, education, occupation, and environmental awareness positively influence WTP, while age and distance from the wetland have negative effects. These results highlight the importance of socio-economic capacity and ecological understanding in shaping conservation behavior. Furthermore, the strong relationship between awareness and WTP underscores the need for targeted outreach and environmental education initiatives to enhance public engagement.

Overall, the study provides robust evidence that local residents value the ecosystem services of the Ghodaghodi Lake Complex and are willing to support conservation financially. The insights

generated offer a practical basis for designing community-based conservation programs, strengthening local governance, and developing sustainable wetland management strategies in Nepal. By integrating economic valuation into policy and planning, decision-makers can better protect wetland resources, promote ecological resilience, and enhance community well-being.

References

- Aryal, K., Ojha, B. R., & Maraseni, T. (2021). Perceived importance and economic valuation of ecosystem services in Ghodaghodi wetland of Nepal. *Land Use Policy*, 106(December 2019), 105450. <https://doi.org/10.1016/j.landusepol.2021.105450>
- Acharya, S., & Basu, S. (2025). Climate Change Vulnerability and Conservation Strategies for Nepal's Ramsar Sites: Safeguarding Freshwater Biodiversity and Ecosystem Services. *International Journal of Ecology and Environmental Sciences*, 51(1), 15-26.
- Aryal, K., Ojha, B. R., & Maraseni, T. (2021). Perceived importance and economic valuation of ecosystem services in Ghodaghodi wetland of Nepal. *Land Use Policy*, 106, 105450.
- Baral, S., Basnyat, B., Khanal, R., & Gauli, K. (2016). A total economic valuation of wetland ecosystem services: An evidence from Jagadishpur Ramsar site, Nepal. *The Scientific World Journal*, 2016, Article 2605609.
- Brouwer, R., Langford, I. H., Bateman, I. J., & Turner, R. K. (2018). A meta-analysis of Wetland Contingent valuation studies. *The Stated Preference Approach to Environmental Valuation: Volume III: Applications: Benefit-Cost Analysis and Natural Resource Damage Assessment*, 1(November), 301-311. <https://doi.org/10.1007/s101130050007>
- Dar, S. A., & Dar, J. A. (2025). Trade-offs in ecosystem services of a Ramsar wetland due to conversion into aquaculture ponds in the coastal region of Indian peninsula. *Ocean & Coastal Management*, 269, 107861.
- Dhungana, A. R. (2016). Factors Affecting Willingness to Pay for Improved Water Supply System in Rural Tanahu, Nepal. Ananta Raj Dhungana Lecturer of Statistics, Pokhara University. Email: anantastat@gmail.com and Basanta Baral

- Abstract. Janapriya Journal of Interdisciplinary Studies, 5(December), 1–13.
- Ghous, M., & Siddiqui, S. (2022). Assessment of Willingness to Pay for Sustainable Ecotourism Development in the Salt Range Wetlands, Punjab Pakistan. *International Journal of Economic and Environmental Geology*, 13(2), 47–51. <https://doi.org/10.46660/ijeeg.v13i2.30>
- Gyawali, R., Sharma, G. B., & Shrestha, J. (2024). Assessing the willingness to pay for conservation and management of wetlands at Jagdispur Reservoir in Kapilvastu District of Nepal. *Indonesian Journal of Forestry Research*, 11(1), 127–138.
- Halkos, G., & Matsiori, S. (2016). Determining public attitudes and willingness-to-pay for artificial lakes protection. *Water Resources and Economics*, 15, 15–27. <https://doi.org/10.1016/j.wre.2016.05.001>
- Jo, J. H., Lee, C. B., Cho, H. J., & Lee, J. (2021). Estimation of citizens' willingness to pay for the implementation of payment for local forest ecosystem services: The case of taxes and donations. *Sustainability (Switzerland)*, 13(11). <https://doi.org/10.3390/su13116186>
- Kafle, G., Balla, M. K., Baral, H. S., Thapa, I., Deciduou, M., & Forest, R. (2007). Joshi, A., Lohani, J. K., & Upadhyay, G. R. (2024). Exploring the Potential of Agritourism: A Gateway to Sustainable Development in Kumaun Region of Indian Central Himalayas. *International Journal of Scientific Research in Engineering and Management*, 8(11), 1-7.
- Kadayat, G. R., & Upadhyay, G. R. (2024). An Exploring Sustainable Tourism Development in Nepal. *AMC Journal (Dhangadhi)*, 5(1), 118-134.
- Khadka, D., Chaudhary, A., Karki, R., Sharma, B., & Bhatta, S. (2021). Ecotourism in Ghoda Ghodi Wetland Sukhad, Kailali, Nepal. *Journal of Tourism and Hospitality Education*, 11, 22–42.
- Ghodaghodi Lake Area : Resources , Opportunities and Conservation. *Area*, 16(3), 1–6.
- Kalfas, D. G., Zagkas, D. T., Dragozi, E. I., & Zagkas, T. D. (2020). Estimating value of the ecosystem services in the urban and peri-urban green of a town Florina-Greece, using the CVM. *International Journal of Sustainable Development and World Ecology*, 27(4), 310–321. <https://doi.org/10.1080/13504509.2020.1714786>
- Lamsal, P., Atreya, K., Ghosh, M. K., & Pant, K. P. (2019). Effects of population, land cover change, and climatic variability on wetland resource degradation in a Ramsar listed Ghodaghodi Lake Complex, Nepal. *Environmental Monitoring and Assessment*, 191(7). <https://doi.org/10.1007/s10661-019-7514-0>
- Lamsal, P., Atreya, K., Pant, K. P., & Kumar, L. (2015). An analysis of willingness to pay for community-based conservation activities at the Ghodaghodi Lake Complex, Nepal. *International Journal of Biodiversity Science, Ecosystem Services & Management*, 11(4), 341–348.
- Lamsal, P., Atreya, K., Pant, K. P., & Kumar, L. (2016). Tourism and wetland conservation: Application of travel cost and willingness to pay an entry fee at Ghodaghodi Lake Complex, Nepal. *Natural Resources Forum*, 40(1–2), 51–61.
- MEA (Millennium Ecosystem Assessment). (2005). *Ecosystems and human well-being: wetlands and water synthesis*. World Resources Institute, Washington, D.C., USA. [Online] UR: <http://www.unep.org/maweb/documents/document.358.aspx.pdf>
- Pathak, H. N., Bhuj, D. R., Shrestha, B. B., & Ranjitkar, S. (2021). Impacts of invasive alien plants on ecosystem services of Ramsar lake cluster in middle mountain Nepal. *Global Ecology and Conservation*, 27, e01597.
- Paudel, D. P. D. W. (2016). *Wetland and its valuation method* (Doctoral dissertation, Tribhuvan University). Tribhuvan University.
- Pokharel, G. P., & Thakuri, S. (2024). Ecosystem services, threats, and management practices of wetlands in Morang District of Nepal. *Our Nature*, 22(1), 47–57.
- Pullaiah, T. (Ed.). (2025). *Wetlands of Mountainous Regions: Biodiversity, Livelihoods and Conservation*. John Wiley & Sons.
- Šebo, J., Gróf, M., & Šebová, M. (2019). A contingent valuation study of a polluted urban lake in Košice, Slovakia: The case of the positive distance effect. *Journal of Environmental Management*, 243(May), 331–339. <https://doi.org/10.1016/j.jenvman.2019.05.051>
- Sethy, M. K., & Senapati, A. K. (2023). Perceptions towards ecotourism practice and the willingness to pay: Evidence from Chilika

- coastal wetland ecosystem, Odisha. *International Journal of Geoheritage and Parks*, 11(3), 497–513. <https://doi.org/10.1016/j.ijgeop.2023.08.001>
- Sinclair, M., Vishnu Sagar, M. K., Knudsen, C., Sabu, J., & Ghermandi, A. (2021). Economic appraisal of ecosystem services and restoration scenarios in a tropical coastal Ramsar wetland in India. *Ecosystem Services*, 47(November 2020), 101236. <https://doi.org/10.1016/j.ecoser.2020.101236>.
- Shahi, A. (2012). Wetland conservation through water quality assessment and willingness to pay: A case of Baral Danda Lake Complex, Kaski, Nepal (Doctoral dissertation, Tribhuvan University). Tribhuvan University.
- Sharma, B., Rasul, G., & Chettri, N. (2015). The economic value of wetland ecosystem services: Evidence from the Koshi Tappu Wildlife Reserve, Nepal. *Ecosystem Services*, 12, 84–93.
- Shrestha, K. K., Rai, S. K., Maharjan, R., & Dahal, P. (2025). Wetlands of Nepal: Biodiversity, Livelihoods, and Conservation Initiatives. *Wetlands of Mountainous Regions: Biodiversity, Livelihoods and Conservation*, 25-83.
- Siwakoti, E. A., Baniya, C. B., & Mandal, T. N. (2025). Macrophytes, ecosystem services and potentialities of ecotourism in some lakes of eastern Nepal. *Our Nature*, 23(2), 1-18.
- Thapa, S., Wang, L., Koirala, A., Shrestha, S., Bhattarai, S., & Aye, W. N. (2020). Valuation of Ecosystem Services from an Important Wetland of Nepal: A Study from Begnas Watershed System. *Wetlands*, 40(5), 1071–1083. <https://doi.org/10.1007/s13157-020-01303-7>.
- Timalsina, R., Maharjan, S., Kandel, S., Awasthi, M. P., Bishwakarma, K., Dhami, U., ... & Pant, R. R. (2025). A Ramsar wetlands in Nepal: Status, uses, challenges, and conservation strategies—a review. *Nepalese Journal of Zoology*, 9(1), 55-66.
- Turpie, J., & Letley, G. (2021). Would community conservation initiatives benefit from external financial oversight? A framed field experiment in Namibia's communal conservancies. *World Development*, 142, 105442. <https://doi.org/10.1016/j.worlddev.2021.105442>.
- Upadhyay, G. R., Priya, A., Khadka, U., & Jaishi, B. P. (2025). Household Willingness to Pay for Solid Waste Management in Dhangadhi Sub-Metropolitan City, Nepal. *Shiv Shakti International Journal in Multidisciplinary and Academic Research*, 13(6), 10–0. <https://doi.org/10.5281/zenodo.17589195>
- Upadhyay, G. R. (2022). Willingness to pay for conservation of Jokhor Taal Wetland in Nepal: A Contingent Valuation Method (CVM). *Journal of Aishwarya Multiple Campus*, 3(1), 55
- Upadhyay, G. R. & Priya, A., (2024). Assessing The Willingness To Pay For Conservation And Management Of Ghodaghodi Lake Wetland In Kailali District Of Nepal. *International Journal of Environmental Sciences*, 881-898. <https://doi.org/10.64252/5xj5nx90>.
- Upadhyay, G. R., Priya, A., Bhatta, D. D., Joshi, J. R., & Kadayat, G. R. (2025). Economic Valuation of Wetland Ecosystem Services: Determinants of Local Residents' Willingness to Pay for Conservation in the Jakhor Lake Complex, Nepal. *Protagonist International Journal in Management and Technology (PIJMT)*, 11(5), 27–41. <https://doi.org/10.5281/zenodo.17770249>

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