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Estimating willingness to pay for the conservation of wetland ecosystems, Lake Victoria as a case study

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Abstract – Wetlands are critical habitats for human health, well-being, ecological integrity, and national development. Freshwater ecosystems supply a variety of products and services, yet they are frequently underappreciated. Long-term economic viability necessitates an understanding of the role that finite natural resources play in economic activity and production, as well as the connection people have with, and the value they place on, those natural resources. The purpose of this study was to determine peoples' Willingness to Pay (WTP) for the maintenance of the Lake Victoria Ecosystem. The research was conducted in the Kenyan counties of Migori, Siaya, Busia, Kisumu, and Homa Bay. Using the Statistical Package for Social Sciences (SPSS), the gathered data were coded, cleaned, and analyzed. According to the findings, 40.9% of locals were prepared to spend roughly KES 500 for the conservation initiative. From the study, Lake Victoria ecosystem in Kenya had a total WTP of KES 616,279,069 each year. According to the findings, those who benefitted directly from the lake's resources were more inclined to pay for the program. This empirical research is a helpful input for identifying market segments among inhabitants, which may aid in generating more cash for biodiversity conservation in the Lake Victoria Basin.

Keywords: Willingness to pay / wetland ecosystem / contingent valuation method / resources valuation / Lake Victoria / Africa

1 Introduction

Wetlands are vital ecosystems that provide habitat for plants and animals while also sustaining the livelihoods of people who rely on their biological resources. Wetlands contribute to people's livelihoods by providing a variety of products and services (Brouwer *et al.*, 1999) and are seen as a source of commodities (*e.g.* food, fuelwood, freshwater, and construction materials) as well as services (*e.g.* pollution control, water treatment, nutrient deposition) (Fisher *et al.*, 2009). One of the most important purposes of wetlands is the conservation and sustenance of biodiversity. Biodiversity is critical to the sustainability of the Earth's ecosystems as it has significant use and non-use values (Schuyt and Brander, 2004). According to Costanza *et al.* (1997), the annual value of wetland ecosystem services was US$14.9 trillion, accounting for 45% of the global natural biomes. Costanza *et al.* (2014) revised these calculations to US$50.7 trillion each year, or 41% of the world total across all biomes, based on enhanced biome area data and more detailed estimates of unit (per hectare) monetary values. Most recent recalculations by Davidson *et al.* (2019) using posterior wetland class areas and incorporating wooded wetlands, find this amount as US$47.4 trillion per year at 2011 prices, accounting for 43.5% of the worldwide total value of ecosystem services provided by all natural biomes. As a result, its preservation is important for both the sustainability of biological resources and the maintenance of livelihoods. However, there has been a growing discussion in recent decades over the conservation of wetlands and other natural resources. The advancements in knowledge of people's behavior and perceptions toward water resource valuation may provide all necessary information on the value of water quality and the impact such values may have on successful public policies connected to the environment. Such economic value of water resources gives alternate applications that aid authorities in making decisions (Halkos and Matsiori, 2014). Community-based conservation (CBC) techniques that are launched locally might be a viable option. Local communities understand the value of wetlands protection, and if they profit from it, they will adjust their behavior to support conservation efforts (Sibanda and Omwega, 1996).

The kind of water resource may sometimes influence how people value it, and natural water ecosystems may have greater indirect than direct usage values (Yang *et al.*, 2008). This

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knowledge may aid in the development of successful environmental policies by providing an understanding of the benefits and costs of proposed measures as well as their alternatives. The protection and sustainable development of lakes and water ecosystems necessitate effective policies based on a shared understanding of their significance across all sections of society and users. As a result, it is critical to understand the link between people's level of environmental concern and the sorts of activities they are inclined to support, as well as how persons hold environmental values in water resources. Effective public environmental policy should be based on a knowledge of the people's values. Despite the critical ecological and economic values of wetlands, numerous stakeholders claim a stake in them but are seldom prepared to pay for this extractive usage, which is frequently overlooked by decision-makers (Pascual *et al.*, 2010). Land expansion and urban infrastructure encroaching on wetlands are putting pressure on the provision of such public services, emphasizing local ecosystems and environmental advantages (Douglas, 2018). Despite the fact that wetlands are recognized as critical resources for livelihood and biodiversity conservation, there have been few research on the valuation of wetland services in Kenya. Wetlands have long been recognized as an important resource in Kenya because of the ecological services they provide to the local people and the homes they provide for riparian and aquatic animals. Kenya is home to a number of wetland ecosystems that support a variety of different and distinct habitats. These wetlands supply important biological products and services, but they are under severe stress as a result of human and industrial intensification (Maithya *et al.*, 2020). As a result, diminishing water quality in wetlands is a source of worry for Kenya and East Africa as a whole.

Wetland resource management has been a difficult challenge for most poor nations, including Kenya, because it is generally taken for granted. In this study, Lake Victoria was chosen, and iterative bidding elicitation procedures (Bateman *et al.*, 1995) from the Contingent Valuation Method (CVM) were used to capture local people's WTP for resource protection. First, Lake Victoria is one of the most significant freshwater ecosystems in the country's tropical climatic zone, with a high biological diversity. Second, the lake resources assist to secure the livelihoods of local people who live around the complex and have been extracting resources (Lamsal *et al.*, 2015). Third, the available resources are dwindling (Lamsal *et al.*, 2015). Fourth, a lack of meaningful data on people's WTP makes it difficult for planners and government officials to establish programs and approach stakeholders in conservation efforts. According to Pearce (2001), environmental valuation approaches enable to set a value on changes in the status of natural resources, especially wetlands, so that essential conservation policies, which would otherwise be dominated by financial advantages of land use conversion, may be taken into consideration. According to the literature, there is a paucity of knowledge on the economic values of practically all wetlands, including Lake Victoria. As a result, the goal of this study was to assess households' WTP for conservation-based activities and estimate the total WTP. The current study's findings will be valuable in improving society awareness about the economic benefit of wetlands to local people. East African policymakers and wetland managers can also benefit from developing applicable policies that aid in the design and allocation of additional resources to community-based wetland conservation programs.

2 Materials and methods

2.1 Study area

Lake Victoria is located in East Africa, bordering Kenya, Tanzania, and Uganda, and its basin extends into Rwanda and Burundi. Lake Victoria is part of the Great African Lakes, having a surface area of approximately 59,947 km^2 (Hamilton *et al.*, 2020). The lake is the second largest freshwater lake in the world by surface area, the biggest in Africa and by far the largest tropical lake in the world. The Kenyan side of the lake covers around 4100 km^2 (6%), the Ugandan side covers roughly 31,000 km^2 (45%), and the Tanzanian side covers approximately 33,700 km^2 (49%) in area (Hamilton *et al.*, 2020). This article aims to calculate the amount in Kenyan Shillings that inhabitants in Kenya's Lake Victoria Basin are ready to pay for a "Lake Victoria Conservation Program." Figure 1 depicts the research area. The western Kenyan counties of Busia, Siaya, Kisumu, Homa Bay, and Migori are included. This study predicts WTP for environmental preservation in the Lake Victoria Basin utilizing original data from a 2021 residents survey collected in the study region. The lake benefits a variety of industries, including tourism, trade, wildlife, nature, agriculture, and fishing, in addition to supplying internal maritime transit and energy. The lake's coastline stretches over 7142 km (Hamilton *et al.*, 2020), with islands accounting for 3.7% of its length.

2.2 Contingent valuation method (CVM)

CVM is a stated preferences approach that is used to calculate the economic worth of non-marketed products and services by calculating individuals' consumer surplus (Carson and Mitchell, 1993). The CVM is a frequently used monetary valuation approach for determining the worth of non-market environmental services (Hanemann, 1994). This is a commonly used approach for assessing the environmental effect of the non-use value of ecosystem services (Kumar *et al.*, 2013). The CVM contains a questionnaire in which respondents are asked what they are ready to pay for a hypothetical enhancement or avoidance of degradation of environmental services (Fogarassy *et al.*, 2018). This study employed both labor contribution and monetary payment to represent residents' WTP amount in CVM questionnaire while evaluating the maximum WTP of local people for watershed protection and determining the elements that influenced their preferences (Bhandari *et al.*, 2016).

The utilization of payment vehicles is an important factor in CVM. According to Johnston *et al.* (2017), the "payment mechanism adopted should be reasonable, trustworthy, familiar, and binding for all responders." They went on to say that there is "no one objective criterion that indicates which payment vehicle is better for a specific application." A non-binding system is unavoidable in poor nations like Kenya. Thus, in the context of this study, labor contribution or direct cash (donations) is the only practical alternative for payment vehicle, as opposed to others (*e.g.* taxes, user fees). According to certain research, donation might result in lower bound

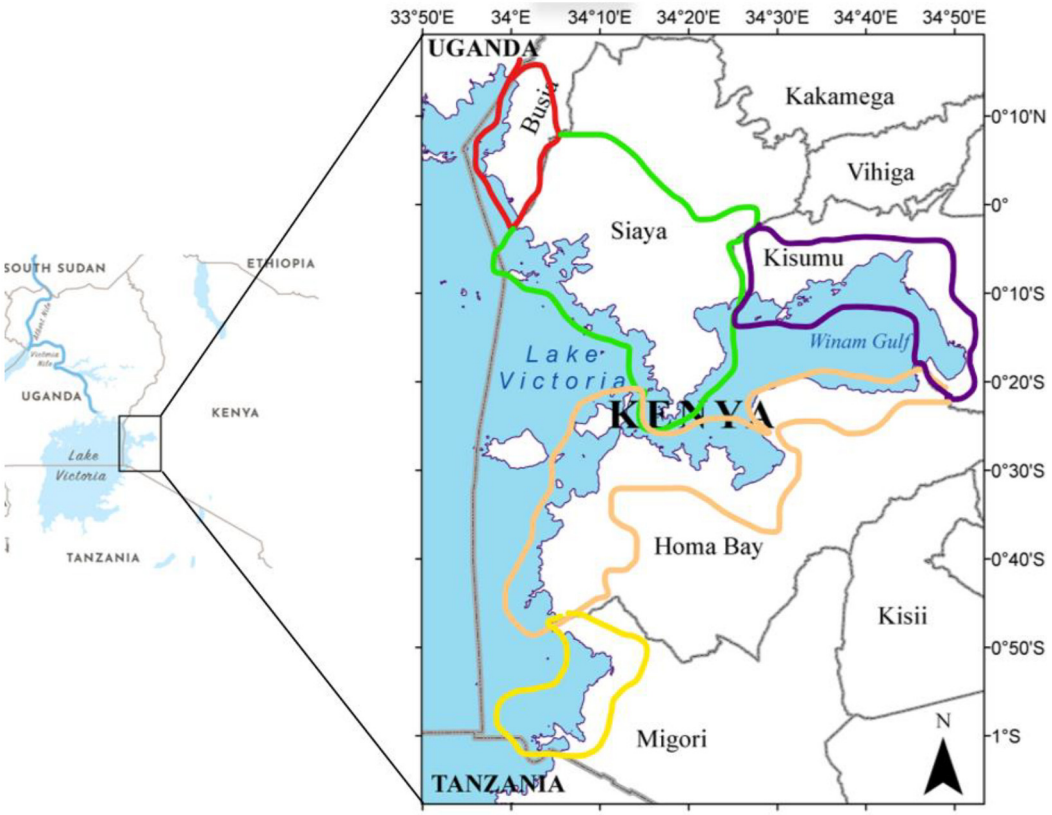

Fig. 1. Study area Map showing the counties sampled: Busia, Siaya, Kisumu, Homa Bay and Migori.

estimations on values owing to free-riding tendencies (Bateman *et al.*, 2006) this is especially true when an open-ended elicitation approach is used (List and Gallet, 2001). Even if there is less money available in Kenya, the incentive to donate to fix an issue with public goods is ingrained in people's culture and religion. As a result, this study used CVM in payment card format rather than other stated preference methods, such as Choice Experiment (CE), due to the experimental complexity involved in the latter, which could potentially lead to a greater hypothetical bias, especially for respondents who had never participated in such studies (Aguilar *et al.*, 2018). A number of studies have questioned the incentive compatibility of hypothetical choice experiments; hence, further study is needed to determine if meaningful and accurate welfare metrics can be retrieved from such investigations.

CVM is employed in this study since it is one of the most widely used and adaptable strategies for valuing non-marketable environmental resources (Hanemann, 1994). CVM was utilized in this study since it is the only approach that can quantify choice and existence values as well as offer a genuine estimate of overall economic value (De Groot *et al.*, 2010). CVM is a survey-based approach in which a fictitious market setting is established to elicit people's preferences by utilizing various payment vehicles. Despite its popularity, the approach has been frequently criticized (Hausman, 2012). Despite its drawbacks, the approach is one of the most successful methods for assigning a value to public goods, particularly in the case of passive use values (Carson, 2012). As a result, CVM was chosen as the superior strategy in this investigation. For eliciting respondents' maximum WTP, dichotomous choice questions were used followed by an open-ended inquiry (Amirnejad *et al.*, 2006). Prior to completing the CVS questionnaire design, focus group talks were held. According to Cooper (1993), a pilot study was also done for the pre-testing of the questionnaire and the creation of bid values. 394 respondents were chosen at random for a CV survey, and open-ended questions were used to determine their maximum willingness to spend for biodiversity preservation. This aided in the selection of a payment vehicle as well as the determination of beginning bid prices (as used in close-ended with an open ended follow up format). The CVS survey was conducted from November 2021 to January 2022. Residents of Busia, Siaya, Kisumu, Homa Bay, and Migori Counties along the Lake Victoria shoreline of Kenya in East Africa were the study's target demographics.

2.3 Sampling

The data for this study was acquired utilizing a survey research design. The study used researchers in the data collection process. The selected assistants were those with prior experience in economic data collection, already had knowledge of research area and could speak English, Swahili and Luhya/Kisii/Luo. Six researchers were identified and hired to collect data. The researchers were fully trained to make sure that they fully understood the questions that were in English. Preliminary testing of the questionnaire was conducted outside the field of study. Respondents for the study were obtained using stratified random sampling. A stratified random sample

was used since the composition of the population in the study area was heterogeneous, where a certain uniformity or similar subpopulations (strata) could be distinguished. The CVS questionnaire comprised three pieces (see supplementary data). The first segment comprised questions concerning the respondent's acquaintance with the environment, ecology, biodiversity, and knowledge of the Lake Victoria wetland. For example, "In 10 years ago, how long could the quality of water resources in Lake Victoria remain clear in a year?". The second segment addressed the issues of contingent value. In this part, a hypothetical market scenario was devised, and a "Lake Victoria Conservation Program" was presented as the institutional structure for the collecting and usage of donations. For example, "Suppose the Ministry of Agriculture, Livestock, Fisheries and Irrigation, Ministry of Water and Sanitation and Ministry of Environment and Forestry have started a program called – Lake Victoria Water Resources Conservation. Will you be Willing to Pay towards the proposed program"? This portion elicited respondents' WTP via an open-ended inquiry on the amount they were willing to spend. The questionnaire's last portion collected demographic, institutional, and socio-economic data from respondents. This section basically collected data for the analysis of factors that influence the willingness to pay in order to improve the status of water resources of Lake Victoria. This research technique is applicable for this study since it comprises administering a survey/questionnaire to a sample or the entire population of persons in order to describe the population's attitudes, beliefs, behaviors, or traits. The study was carried out along the Kenyan side of Lake Victoria. The study was conducted out in the counties of Busia, Siaya, Kisumu, Homabay, and Migori. The sample size for this investigation was calculated using equation (1).

$$n = \frac{z^2 p(1-p)}{e^2\left(1 + \frac{\left(z^2 p(1-p)\right)}{Ne^2}\right)} \quad (1)$$

where $z = 1.96$ for a confidence level (α) of 95%, p = proportion (expressed as a decimal), N = population size, e = margin of error.

$z = 1.96$, $p = 0.6$, $N = 5300000$, $e = 0.05$ using equation (1), the sample was given by equation (2) as

$$n = \frac{1.96^2 \times 0.6 \times 0.4}{0.05^2\left(1 + \frac{\left(1.96^2 \times 0.6 \times 0.4\right)}{5{,}300{,}000 \times 0.05^2}\right)} \approx 369. \quad (2)$$

The sample size (with finite population adjustment) was 369. However, the sample size was raised by 25 questionnaires (five for each county) to 394 to guarantee that the accuracy of the estimate matched the width of the cumulative average's confidence interval.

The data from the study was tested for validity and reliability in several areas. For example, some respondents were too old, so it would be difficult for them to recall some figures, especially in relation to crop production (resources and sales) and livestock production (livestock management costs). To solve this problem, the questionnaire was designed in such a way that it included fresh information from respondents, which was easy for them to remember. In addition, more recent information was received from their spouses and children. The researchers also explained the questions in Swahili or the local dialect (Luhya/Kisii/Luo) to those who did not understand the questions in English.

2.4 The Model

Logit Model or Probit Models were used to analyze the data produced by the CVM (Fix and Loomis, 1998). Because the data obtained had just one dependent variable with a qualitative variable and a binary choice, a 'Binary Logistic Regression Model' was employed for the study of respondents' WTP due to its simplicity. According to Gujarati (1999), the binary logistic regression model, which characterizes the factors influencing households' WTP for water resource conservation, is described as follows:

$$P_i = F(\delta + \beta x_i) = \frac{1}{1 + \delta^{-(\delta+\beta x_i)}}$$

(3Characterizing the factors affecting the willingness of households to pay)

where the index i denotes the ith observation in the sample, P_i is the probability that a person will make a certain choice, given that X_i, are the basis of natural logarithms and are approximately equal to 2.718, X_i is the vector of exogenous variables, α and β are the model parameters, and (β_1, β_2, β_k) are the coefficients associated with each explanatory variable. A two-way (chi-square) analysis was used to determine how each explanatory component relates to a dependent variable. This was done to see whether the influence of each variable was significant. According to Guffey (2012), compliance quality allows one to examine how well a given probability distribution fits the data as well as how well the statistical regression model matches the data. As a result, the Hosmer and Lemeshow (1989) acceptance criteria was used to assess if the number of expected events from the logistic regression model matched the number of actual occurrences in the data. In this study the independent variable was willingness to pay which was coded as 1 for yes and 2 for no. The independent variables were county of origin, level of education, gender, household size, marital status and age. The independent variables were coded as well. Under the counties, Busia was coded as 1, Homabay was coded as 2, Kisumu was coded as 3, Migori was coded as 4 while Siaya as 5. Under education degree was coded as 1, diploma as 2, other levels as 3, primary as 4 while secondary as 5. Female was coded as 1 while male as 2. Household size above 4 was coded as 1 while below 4 was coded as 0. Under marital status, married was coded as 1 while single as 0. Finally, those aged above 40 was recorded as 1 and below 40 as 0. All the independent variables were entered at once. For all statistical tests, the significance level was set at $P < 0.05$. A questionnaire study was used to promote public knowledge of environmental compensation in Kenya's Lake Victoria Basin. The face-to-face questionnaire was suitable largely because the themes at hand are relatively professional. Using this method, a higher percentage of valid surveys were obtained. More importantly, a face-to-face questionnaire is a good strategy for increasing interaction with respondents and

Table 1. Demographic characteristics of participants.

Item		Frequency	Percentage
County of origin	Busia	33	8.4%
	Homa Bay	171	43.4%
	Kisumu	60	15.2%
	Migori	49	12.4%
	Siaya	81	20.6%
Gender	Male	242	61.4%
	Female	152	38.6%
Age	Below 40	115	29.2%
	Above 40	179	70.8%
Marital status	Single	69	17.5
	Married	325	82.5
Level of education	Primary	140	35.5%
	Secondary	173	43.9%
	Diploma	53	13.5%
	Degree	16	4.1%
	Other	12	3%
Household size	Above 4	152	38.58%
	Below 4	242	61.42%

Table 2. Willingness to pay.

Response	Frequency	Proportion
No	233	59.1%
Yes	161	40.9%
Total	394	100%

transmitting the messages necessary for the CVM (Sturges and Hanrahan, 2004). Each county's sample was equal to the length of the lake's shoreline inside the county and the population of the county, as established by Kenya's 2019 population census. In all, 394 people were interviewed for this study. The beaches were chosen through purposeful sampling depending on the type of the principal economic activity in the local area. This was done to ensure that the sample collected was a fair representation of the lake's economic activities.

3 Results

3.1 Socioeconomic attributes of the respondents

The demographic characteristics of the participants were summarised in Table 1.

According to the numbers in Table 1, men made up 61.4% of all respondents. This is due in large part to men's traditional role as head of the home. Seventy-eight percent of household heads were above the age of 40. Only 17.5% of household heads were unmarried. In this research, the majority of household heads (43.9%) had a secondary education. This highlights the region's high literacy rate as well as the city's associated higher education institutions. In 49.2% of cases, household heads are married, while the remaining 28.6% are single or unmarried. Households with less than four members outnumbered those with more than four members by 61.42%. This indicates that family planning has made great progress in the region.

3.2 Willingness to pay

The primary goal of this study was to determine citizens' WTP for the planned Lake Victoria Conservation Program. Individuals' environmental awareness level and socioeconomic position, such as household size, education level, income, property size, and knowledge with ecosystem services, appeared to impact residents' WTP for watershed conservation. According to Table 2, 40.9% of the population are willing to pay for the program. Siaya County has the largest proportion of residents willing to pay (72.8%), while Kisumu County has the lowest (23.3). Logistic regression analysis shows that county, age and educational level of the respondents have significant influence on the willingness to pay. There were no significant differences in WTP proportions across gender and marital status. The likelihoods of a resident of Busia, Homa Bay, Kisumu and Migori willing to pay for the program are 0.179, 0.182, 0.097 and 0.138 (respectively) times that of Siaya County resident keeping other factors constants. A resident of Siaya county has the highest likelihood of paying for the program compared to the other counties. A resident aged above 40 was 1.829 times likely to pay compared to those below 40 keeping other factors constant. A diploma holder resident was most likely to pay (5.089) compared to other levels of education keeping others constant.

Among the 40.9% who were willing to pay, 66.5% of them were willing to do so, so as to improve the status of water

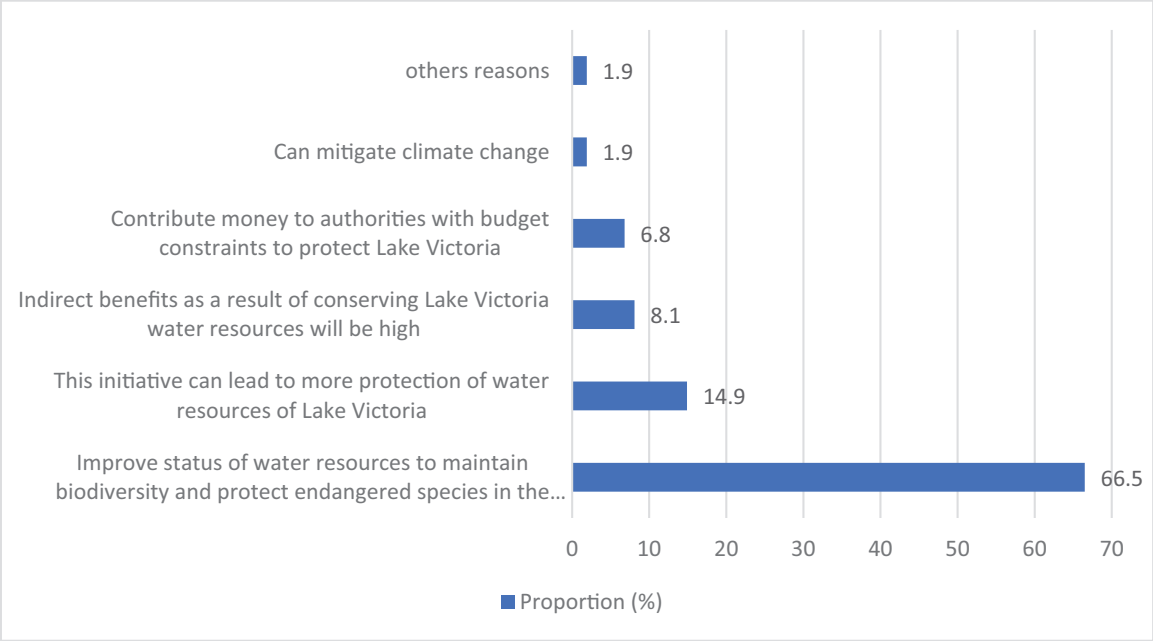

Fig. 2. Main reason for willingness to pay for the program.

Table 3. Descriptive statistics.

Descriptive statistics	Mean	Median	Mode	Standard deviation	Minimum	Maximum
Value (KES)	1087	500	500	1156	30	5000

resources to maintain biodiversity and protected endangered species in the Lake Victoria waters as shown in Figure 2.

The main reasons why the 59.1% of the residents who were sampled were not willing to pay was because they felt someone else should be responsible (36.9%) and they didn't have money (23.6%) as shown in Figure 3.

3.3 Average amount the respondents are willing to pay

Various descriptive data were computed to ascertain the amount of money the respondents are willing to pay. The amounts are expressed in Kenyan Shillings (KES), the official currency used in Kenya. The respondents were ready to spend a minimum of 30 Kenyan Shillings (KES) and a maximum of 5000KES. The mode and the median were found to be equivalent (500KES). The arithmetic mean was determined to be 1087KES, with a standard deviation of 1156KES as shown in Table 3. This standard deviation was quite high, indicating the existence of outliers (extreme values). One of the arithmetic mean's flaws is that it is sensitive to outliers and hence is not a viable metric when the data contains outliers. As a result, the median can be employed as a substitute metric. According to the findings of this study, locals are willing to spend an average of 500KES. Table 4 provides an overview of the descriptive statistics. Also, it should be mentioned that many residents were willing to contribute under the form of labor to the conservation program. At the time of data collection, it was not possible to transform this labor contribution into monetary form because the majority of these respondents lived in rural areas which didn't have the labor rates, particularly for unskilled workers.

Further investigation found that inhabitants of Homabay County are prepared to spend the most (2000KES), while residents of Kisumu County are willing to pay as little as 50KES on average. There was no difference in WTP based on gender or marital status, since both genders (status) are willing to spend an average of 500KES. Residents under the age of 40 are ready to pay double the average (500KES and 1000KES, respectively) of those over the age of 40. Graduates are ready to spend an average of 1000KES vs 500KES for primary and secondary certificate holders. Table 4 summarizes respondents' WTP by demographic category.

4 Discussion

In terms of WTP, respondents were ready to spend an average of 500KES per household per year for watershed preservation. The total WTP for ecosystem services produced in the Lake Victoria Basin each year was 616,279,069KES per year. The total WTP for the watershed was determined using the average WTP per household (500KES per year) and the total number of homes in the watershed (1,232,558 households). The cumulative volume of WTP in this study aids in quantifying the entire economic value of ecosystem services that are now invisible to decision-making regions. The entire

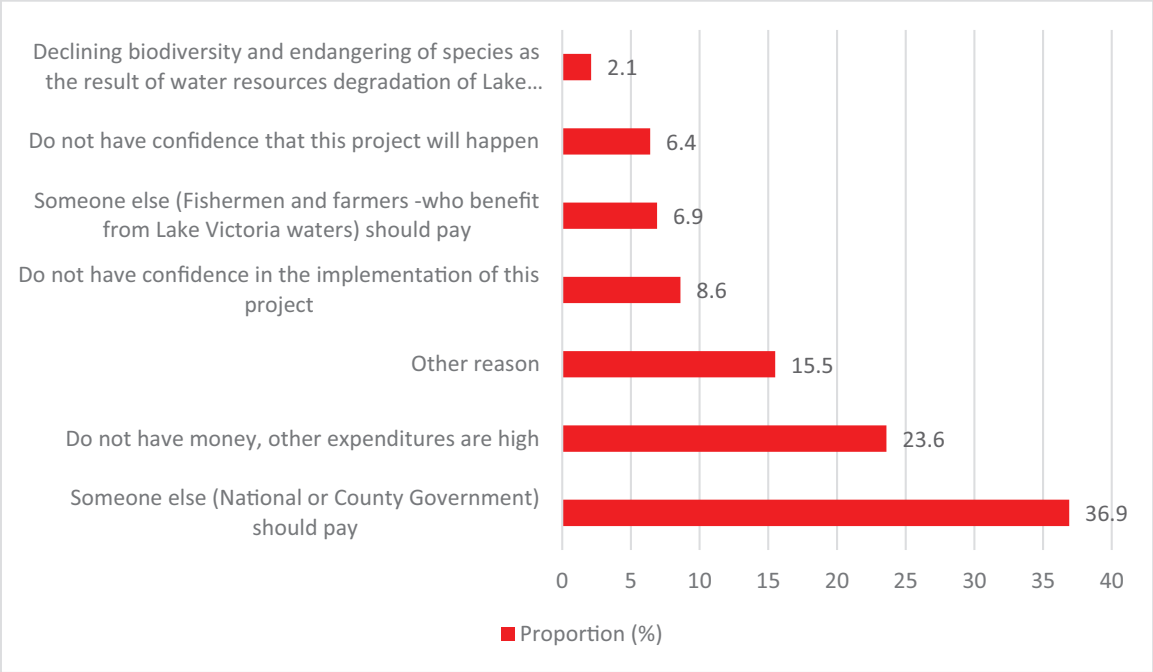

Fig. 3. Reason for Unwillingness to Pay for the program.

Table 4. Average amount the respondents are willing to pay (Currency conversion rate as of December 2021 1USD = 112KES).

Groupings		Mean (KES)	Median (KES)
County	Busia	337	325
	Homa Bay	2036	2000
	Kisumu	78	50
	Migori	485	500
	Siaya	501	500
Gender	Female	1141	500
	Male	1051	500
Age	Above 40	893	500
	Below 40	1258	1000
Marital status	Married	1045	500
	Single	1087	500
Education level	Primary	775	500
	Secondary	981	500
	Diploma	1342	750
	Degree	1888	1000
	Others	1428	500

economic worth of ecosystem services demonstrates the benefits of Lake Victoria Basin watershed protection initiative. As a result, the conservation costs of implementing a watershed management program that are less than the aggregated WTP amount do not outweigh the benefits and so do not justify its implementation economically.

Since it was assumed that younger (adult) and more educated inhabitants would be willing to pay more for watershed protection, the study's findings emerged as predicted later on. The findings of this study agreed with those of Wang *et al.* (2018) and Bhandari *et al.* (2016). Because educated young people are more concerned about ecosystem services than the elderly, their WTP was likewise higher. This result was similar with the findings of Kaffashi *et al.* (2013). WTP was more likely in families with a greater family size and more land, which is consistent with the findings of Bhandari *et al.* (2016). Understanding the monetary value of certain ecosystem services to local people can give a vision for decision-makers, ultimately aiding in the evaluation of present resource management techniques. Household income, an independent variable, was positively and significantly related to WTP. As a result, higher-income households were more likely than lower-income families to make contributions to Lake Victoria Basin conservation. This conclusion is similar

with the findings of Bhandari *et al.* (2016) and Paudyal *et al.* (2015). This study is consistent with the findings of Wang *et al.* (2018), who noticed that being aware of being in a protected area had a large beneficial influence on WTP because respondents who were willing to pay more for biodiversity protection had a good educational background on ecology and its value. Furthermore, residents in the lake's vicinity reaped benefits from the lake (revenue from fishing and boating), which influenced their WTP for the conservation effort.

Labor opportunity cost had a slight influence as well. The daily rates paid for labor gathering the lake's resources did not exist in this rural region since these commodities are gathered by women, children, and jobless men, and there is a big excess of unskilled labor. As a result, using the potential cost of labor in such cases was impractical (Shackleton and Shackleton, 2000). The majority of survey respondents agreed on a monetary obligation to protect watershed ecosystem services for their own benefit and the benefit of future generations. Thus, it is possible to establish an institutional structure for watershed conservation in Lake Victoria with the participation of ecosystem service providers, service users, and intermediaries (Kagombe *et al.*, 2018). The computation of a watershed's total monetary worth facilitates in the analysis of trade-offs between conservation and other development initiatives, and it also informs watershed management efforts and public expenditures to maintain and increase watershed benefits (Harris and Roach, 2017). According to this study, 5% of total local government budget may be invested in watershed conservation programs such as water management, reducing nonpoint source water pollution, enhancing animal habitats, and bioengineering.

5 Conclusion

This study's key contribution was the use of CVM to estimate the total economic value of conservation of the Lake Victoria watershed in Kenya. Lake Victoria has long provided a variety of goods and services, including fishing, boating, drinking water supply, irrigation, carbon pools, leisure, sediment retention, and other tourism activities. The significance of Lake Victoria should be highlighted at the local, national, and global levels through various promotional efforts. It should be noted, however, that the Lake Victoria is one of the world's most malaria-affected region. This specific issue creates a significant environmental disservice for the people, which may have influenced public view of the WTP strategy. However, to simplify the WTP procedure, this paper did not focus much on this factor. On average, a single household was willing to pay 500KES per year. The overall monetary value of ecosystem services generated in Kenya's Lake Victoria Basin was 616,279,069KES per year, with 40.9% of total respondents interested in contributing to Lake Victoria Basin conservation. The calculated WTP would act as a strong backstop to reinforce the conservation program in order to preserve available benefits and the lake's survival. Only locally approved management plans can ensure the long-term viability of watershed and ecosystem services. The findings of this study, which included a wide spectrum of interest groups, may be useful to policymakers in developing implementable policies.

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