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RESEARCH ARTICLE

WILLINGNESS TO PAY FOR FOREST ECOSYSTEM SERVICES: MEASUREMENT AND DRIVERS IN THE BABAZAOURÉ COMMUNITY FOREST, BENIN

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ABSTRACT

Forest resources provide important and multiple services to local populations. However, despite their undeniable importance, they are increasingly threatened by deforestation and a range of anthropogenic activities. Understanding local communities' attitudes and willingness to pay for forest conservation is essential to securing the long-term provision of ecosystem services, both in their quantity and quality.This study aims to assess the willingness to pay of local communities for the conservation of ecosystem services in the Babazaouré community forest. The contingent valuation method was applied to measure the willingness to pay for the forest protection. A questionnaire survey was conducted among local communities in the Babazaouré community forest in Benin republic. A Tobit model was used to analyze the influencing factors of the willingness to pay. The results showed that the local residents are willing to pay an average of 3,450 XOF (6.15 $ USD) to safeguard the community forest. The main ecosystem services motivating willingness to pay are provisioning services and cultural services. Respondents' WTP was driven by socio-demographic and socio-economic characteristics. The study provides policy-makers with tools to guide forest management and conservation policies in a way that meets the needs of local populations while ensuring the preservation of the forest ecosystem.

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INTRODUCTION

At the global level, natural resources, particularly forests, play a pivotal role in regulating ecological balances and sustaining human well-being (Zanh*et al.*, 2016). Forests, as complex and multifunctional ecosystems, provide a wide range of essential ecosystem services, including carbon sequestration, soil protection, regulation of the hydrological cycle, as well as the supply of both timber and non-timber forest products (Ahononga *et al*., 2020; Nilsson *et al.*, 2019, Alohou *et al*., 2025). Beyond ecological functions, forests support livelihoods particularly in rural areas in West Africa, through the provision of non-timber forest products, fuel wood, and medicinal plants, which remain vital(Angelsen *et al*., 2014; Beckline*et al*., 2022).

However, despite their undeniable importance, forest resources face increasing pressure from deforestation and a range of human activities, including unsustainable logging, agricultural expansion, urbanization, and wildfires (Ouedraogo *et al.*, 2010). These pressures mainly stem from fuelwood and timber extraction, the harvesting of medicinal plants (bark, roots, leaves), bushfires, and the advancing agricultural frontier (Diatta *et al.,* 2016). In addition to these challenges are the low natural regeneration and slow growth rates of the high-value agroforestry species (Diop *et al.*, 2011). These pressures on forests have disastrous consequences for the environment, biodiversity, and the well-being of local populations who permanently depend on the services provided by these forest ecosystems (Haddad *et al.*, 2021).

Indeed, deforestation and forest degradation are leading to an alarming loss of biodiversity, with the gradual disappearance of natural habitats and the decline of plant and animal species that are essential to maintaining ecological balance (Massiéra, 2016). According to Diaz *et al.*(2019), nearly one million species are currently threatened with extinction due to human activities, including the overexploitation of forest resources. Beyond ecological impacts, forest destruction also has significant socio-economic repercussions, particularly for rural communities that rely on non-timber forest products for food, health, and income-generating activities(Angelsen*et al.*, 2014). Ecosystem services (ESs) are direct and indirect benefits that the nature provides to the society, fundamental to human welfare, and which people value (Eregae *et al*., 2021). The Total Economic Valuation (TEV) framework has broadly grouped them as "use" and "nonuse/passive" values. This framework enable to account for the benefit acquired from the nature but also express and report in monetary terms the impact and cost of ecosystems and biodiversity degradation(MEA, 2005). Finally, in a context of inefficient policy and decision-making processes, it allows for the establishment of a market-based mechanism such as payment of ecosystem services to reward conservation efforts and promote the enhanced flow of ESs. The conservation of forest has emerged as a critical challenge for contemporary societies(Diaz *et al.*, 2019; Sourokou *et al.,* 2024). The literature provide an evidence about the role and the place of local residents at the core of the conservation actions to be taken (see Bamwesigye and al., 2020), which making them aware of the need for sustainable exploitation. In addition, it highlight the role and implication level of policy into the conservation process (Dawson, 2008). Therefore, the economic valuation of forest resource is a logical mechanism available to support rational decision making on the conservation of nature (TEEB, 2008; Sourokou *et al*., 2024). The valuation concept provide not only information on the economic status about forest resources and provide the cost of its degradation. It also aimed at accounting and reporting the monetary impact of ecosystem and biodiversity changes. Valuing forests through the lens of ecosystem services provides a crucial foundation for their long-term conservation. By quantifying and recognizing the economic, ecological, and cultural benefits that forests generate, valuation frameworks help to internalize externalities (TEEB, 2008;) thereby strengthening the rationale by policymakers, land managers, and local communities for sustainable forest management and conservation strategies (Costanza *et al*., 2014; Pascual *et al*., 2017). Therefore, it valuation not only highlights forest irreplaceable role in maintaining socio-ecological balance but also provides practical tools to it conservation and ensure the persistence of their functions for future generations.

The Total Economic Value (TEV) of forests captures both use values, which are easier to monetize due to existing market prices, and non-use values, which are harder to quantify because of their public goods nature(Diafas *et al*., 2014). Furthermore, other in-depth classification of the TEV of a forest resource, according to Turner (1999) includes direct use value (consumption of wood, fruit), indirect use value (regulatory services), option value (future use), existence value (preservation for its own sake) and bequest value (transfer to future generations). Conventional non-market valuation techniques are used to allocate value among passive use values including including revealed preference approaches (travel costs, hedonic pricing method), stated preference approaches, such as contingent valuation or choice experiments(Freeman Iii *et al*., 2014). Contingent valuation (CV) is commonly used to assess respondents' willingness to pay (WTP) for non-market goods and services by constructing a hypothetical market scenario through a stated-preference survey(Schulz *et al*., 2013; Kpadé *et al*., 2017). It has been extensively applied in studies on natural forest management, with findings varying across contexts depending on respondents' socio-economic characteristics and the type of ecosystem services assessed. Previous studies have showed that respondents in developing countries are willing to pay for forest resources conservation (Tadesse *et al*., 2022; Sourokou *et al*., 2024).

For instance, Sourokou*et al.* (2024) report that rural households in Benin are willing to contribute financially to reforestation, whileAtinkut*et al.*(2020) highlight gender, education, and access to information as key determinants of WTP in forest-dependent communities. In this study, we used the contingent valuation method to analyze the extent to which local communities are willing to pay for the preservation of the Babazaouré community forest in northern Benin. Based on hypothetical scenarios, we determined local communities WTP and socioeconomic drivers as a way to enhance sustainable forest management, participatory governance, sustainable financing mechanisms and provide useful information to public policy

MATERIAL AND METHODS

Study area: The study was conducted in the Babazaouré community forest in the district of Copargo. It is located in northwestern Benin, between 9°50'15'' N latitude and 1°32'15'' E longitude (Figure 1). Annual rainfall averages 1,048.9 mm, with a rainy season of about six months (mid-April to mid-October) and a dry season of similar length (mid-October to mid-April), and a mean annual temperature of 26.9 °C (Alassane*et al.,* 2024). Vegetation along watercourses consists of gallery forests, while wooded and shrubby savannas are dominated by *Vitellariaparadoxa* (shea) and *Parkiabiglobosa* (African locust bean). Other species such as mango (*Mangiferaindica*), caïlcédrat (*Khayasenegalensis*), eucalyptus (*Eucalyptus globulus*), teak (*Tectonagrandis*), cashew (*Anacardiumoccidentale*), and *Afzeliaafricana* are also present. Copargo hosts a classified forest of 1,091 ha as well as several sacred forests preserved for traditional uses. Shea parks (community forests) have been established with the support of the Agricultural Program (ProAgri 4) of GIZ (Alassane *et al*., 2024). The study was conducted mainly in the periphery of the Community Forest (Figure 1). In this area, the local population is predominantly Yom, an ethnic group engaged in farming and beekeeping, and recognized for its rich cultural heritage and traditional knowledge.

Sampling: The observation unit consists of residents living near the Babazaouré community forest. The villages were selected based on a rational approach. An administrative village (Babazaouré) and three small villages (Fowa, Kataban, and Kikida) were chosen for their proximity to the community forest. After an exploratory phase to identify the residents who benefit from the forest, the selection of residents was random and weighted according to the number of residents per village. Finally, 262 residents, male and female were surveyed (Table 1).

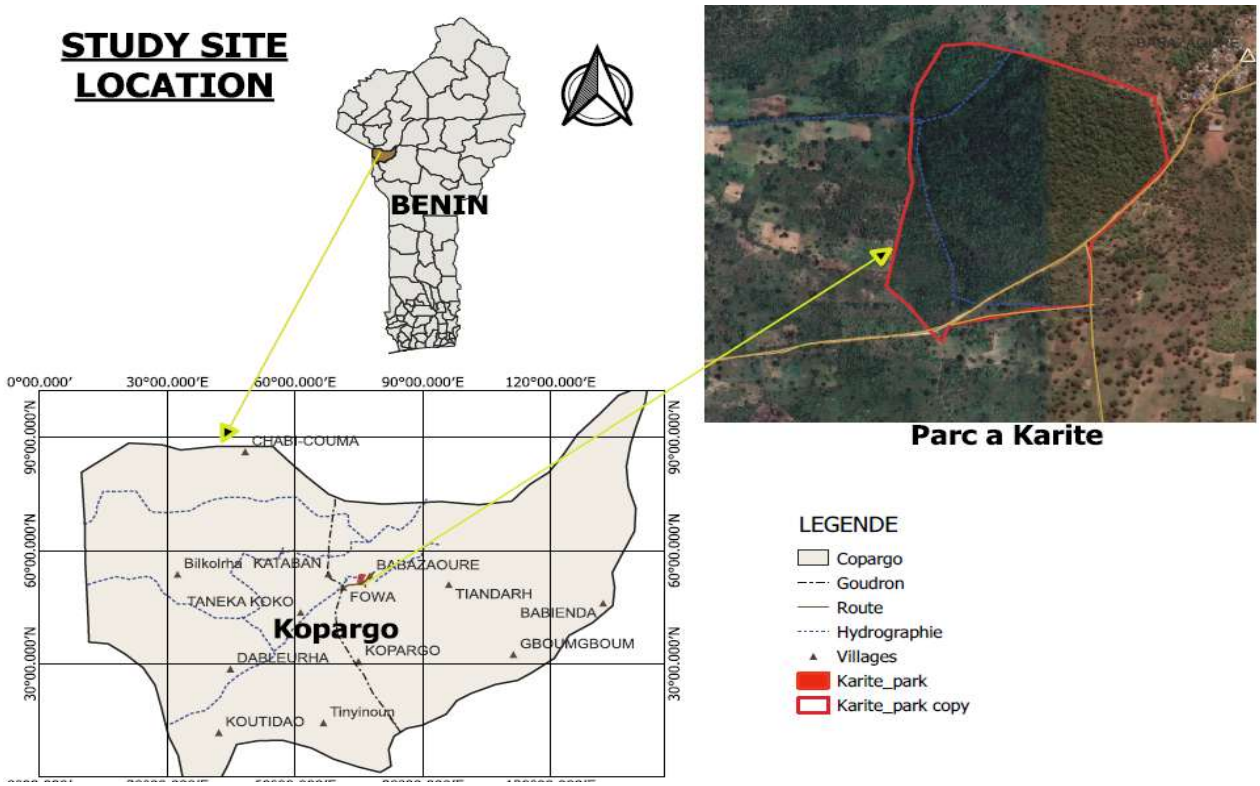

Figure 1. Location of the Babazaouré community forest, Copargo municipality

Table 1. Independent variables of the model

Variables	Description	Expected Signs	Sources
Age of respondent	Continuous variable	±	Akamani and Hall, (2015); Elisha *et al.* (2023)
Gender of respondent	Binary variable (1= man, 0 = woman	±	Mengistu and Hailu (2024); Musyoki*et al.* (2013)
Education	Dummy variable (1 = yes, 0 = no)	+	Kpadé et *al.* 2017 Adhikari*et al.* (2004); Chhetri et al. (2013)
Professional training	Dummy variable (1 = yes, 0 = no)	+	Matitaputty et al. (2023)
Status of respondents in the village	Variable binaire (1 = Autochtone, 2 = Allochtone)	+	Chhetri*et al.* (2013)
Membership of a farmers' association or group	Dummy variable (1 = yes, 0 = no)	+	Matitaputty*et al.* (2023)
Provision service	Dummy variable (1 = yes, 0 = no)	+	
Regulation service	Dummy variable (1 = yes, 0 = no)	+	
Cultural service	Dummy variable (1 = yes, 0 = no)	+	
Support service	Dummy variable (1 = yes, 0 = no)	+	Matitaputty*et al. (*2023)
Village forest management association	Dummy variable (1 = yes, 0 = no)	+	Matitaputty*et al* (2023) ; Musyoki*et al.*(2016)
Minimum income from forest services over the last 12 months	Continuous variable	+	Bowler *et al.,* (2010); Khanal and Devkota (2020)

Table 2. Users of key ecosystem services

Variables		Mean (Standard deviation)/Frequency
Use of services	Sale (Yes=1/ No=0)	58.78
	Average minimum income over the last 12 months in CFA francs	39203.7 (±21986.02)
	Own use (Yes=1/ No=0)	41.22
	Averageopportunity cost over the last 12 months in CFA francs	13184.13 (±12274.35)
Service purchaser	Individuals	31.73
	Companies	38.15
	Associations/cooperatives	30.12
Different uses of services by local resident	Domestic/energy/food	34.54
	Processed products	62.65
	Medicinal treatment	2.81

Source: Survey data, 2023

The sample size was determined based on Schwartz's formula (De Souza *et al*., 2012) as follows:

$$n = z^2 \times p\,(1 - p) / m^2 \quad (1)$$

where n represents the sample size; z represents the confidence level according to the reduced normal distribution with a confidence level of 95% (z = 1.96); p represents the estimated proportion of the population that exhibits the characteristic; and m represents the margin of error of the estimate, which is set at 5%. In order to ensure a good distribution of the number

of residents surveyed in each village in relation to the minimum number (n) determined for all villages, the weighted coefficients of the number of residents in each village are calculated. The formula used to determine the number of residents surveyed in each village is as follows:

$$n_C = N_C / N * n \quad (2)$$

where N_C represents the population of each village; n_C the number of residents to be surveyed in each selected village; N: the number of residents in all selected villages; n: the minimum number of individuals to be interviewed, determined using formula 1. Applying formula (2), the table below summarizes the distribution of respondents by village.

Data collection: As the respondents were exclusively local residents who benefit from the forest, an information session was organized during the exploratory phase involving residents and local authorities in order to test the questionnaire. The local elders consulted ultimately supported in both guiding the research team and providing indigenous knowledge during that period. Therefore, the initial questionnaire was adjusted to incorporate additional information in order to ensure it reliability. Moreover, residents help the research team also to translate the terminology and concepts into the local language to ensure better understanding.

At the end of exploratory phase in each village, the contingent valuation scenario was carefully elaborated and pretested before the survey and data collection. Care was taken to ensure that respondents fully understood the scenario, thereby facilitating decision-making and minimizing bias in the elicitation of willingness to pay (WTP). This precaution is essential, as overly complex cognitive tasks during WTP surveys are known to result in lower stated values (Thompson and Harper, 2019). During the survey, face-to-face interviews were conducted using a structured questionnaire implemented via the Kobo Collect smartphone application. The questionnaire was dived in three part including firstly, respondents socio-economic characteristics, secondly, the assessment of the forest through hypothetical market, and finally the forest management strategies. Across the sample, the average age was estimated at around 38 (±11.13) years.

The literacy rate in the study area was 47.71%, with a higher proportion among men (58.20%). Most respondents, regardless of gender, were natives who had lived around the forest for more than 15 years. Agriculture was the primary activity for men (75.41%), while handicrafts (47.14%) and agro-processing (32.86%) were the main occupations for women. Both men and women generally engaged in a secondary activity. Specifically, the majority of men (77.05%) reported an annual income above 500,000 CFA francs (0,90 USD) from all activities combined, while most women (67.14%) earned less than 500,000 CFA francs (0,90 USD) annually. Agriculture contributed about 67.2% of men's total income compared with 49.5% for women. Less than half of the respondents had access to agricultural financing from microfinance institutions to support their activities. Similarly, only 27.86% of respondents were members of farmer organizations advocating for sustainable management of the community forest. Finally, 15.22% of respondents (21.93% of men and 4.29% of women) cultivated fields around the forest, with an average of four years of production in the forest area.

Conceptual framework

WTP elicitation methods: The open-ended contingent valuation method was used for this survey, whereby local residents were asked a sequence of questions that progressively narrowed down the WTP. Open-ended contingent valuation formats are particularly advantageous in forest conservation valuation, as they allow respondents to express their true willingness to pay (WTP) without anchoring bias from preset amounts. While open-ended questions can introduce greater variability and require careful interpretation, they yield rich continuous data that facilitate nuanced econometric analysis (Mitchell and Carson, 1989). By capturing a full range of WTP responses across socio-economic profiles, such approaches support a more comprehensive assessment of total economic value, including non-use values essential for informed conservation policy. In order to assess a more accurate WTP closer to the actual situation for each service, particular attention was paid to the structure of the questionnaire. The hypothetical market was divided into three stages. Firstly, voluntary identification of perceived ecosystem services in which respondents selected the services they currently benefit from and would like to continue to benefit from. Secondly, the ranking of services according of their priority. This stage determines which services are considered most useful or vital. Finally, the presentation of a realistic and localized hypothetical scenario. The scenario describes the actions planned to safeguard the community forest (reforestation, local monitoring, community management actions), the expected benefits for the population (maintenance of resources, improvement of environmental resilience), as well as the terms of financial participation through a voluntary contribution. In this context, respondents were offered different contribution options, introducing a 50% variation in the suggested amount. This technique makes it possible to measure the sensitivity of responses to different contribution levels and to better capture the heterogeneity of households' economic preferences. It thus helps to reduce reporting bias and estimate a willingness to pay that is more robust and representative of the local socioeconomic reality.

Econometric method: Data from open-ended contingent valuation surveys can be analyzed using censored Tobit model in order to assess the factors driving the WTP (Takada and Kato, 2023). The censored Tobit model is used when the dependent variable is continuous and the extreme values reported cannot be observed directly but are recorded as a threshold value. In the context of our study, the censored Tobit regression model was chosen based on previous work(Aguida *et al*., 2024; Renaud *et al*., 2020). Let $Y = f(X, \varepsilon)$ where Y is the dependent variable, the amount that the local resident is willing to pay for, X represents the set of explanatory variables, and ε is the standard error. The Tobit model is written as:

$$Yi = Xi\beta + \nu i$$

With $Y = Y^*$, if $Y^* \geq 0$ and $Y = 0$, otherwise. Xi: the vector of explanatory variables, β: the vector of parameters to be estimated; Y^*: a latent variable of Y. The estimate was made using the maximum likelihood method. The factors likely to influence farmers' willingness to pay for index-based agricultural insurance are presented in Table 2.

RESULTS

Perception and use of forest ecosystem services among local residents: Respondents acknowledged both the perception and utilization of a diverse set of ecosystem services derived from the forest (see Table A1 in Appendix for details).The results (Figure 2) indicate that provisioning services are the most frequently used ecosystem services by local residents, representing 72.14% of reported use for daily needs. These services collected are either marketed or directly consumed by households. More than half of respondents (58.78%) sold services over the past 12 months, generating a minimum average income of 39,203.7 FCFA (70.47 USD) (±21,986.02) (Table 3). For self-consumption, fewer than half of respondents reported direct use of forest services, with an estimated opportunity cost of about 13,000 FCFA (USD 23.37) annually. In terms of service purchasers, services are mainly sold to companies (38.15%), followed by individuals (31.73%) and associations/cooperatives (30.12%). With regard to local use of services, 62.65% of the services collected are intended for processing, while 34.54% are used for domestic, energy, or food purposes.

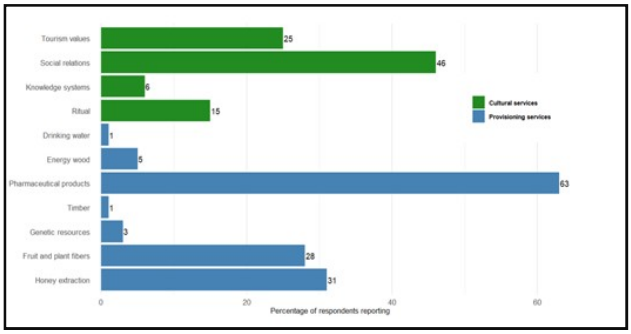

Figure 3. Ecosystem services that motivated the local resident WTP

Insert Figure 2. The main ecosystem services: These services collected are either marketed or directly consumed by households. More than half of respondents (58.78%) sold services over the past 12 months, generating a minimum average income of 39,203.7 FCFA (USD 70.47) (±21,986.02) (Table 3). For self-consumption, fewer than half of respondents reported direct use of forest services, with an estimated opportunity cost of about 13,000 FCFA (USD 23.37) annually. In terms of service purchasers, services are mainly sold to companies (38.15%), followed by individuals (31.73%) and associations/cooperatives (30.12%).

Willingness to pay for supportingthe forest conservation initiatives: Regarding the willingness to pay (WTP) for supporting the conservation of the Babazaouré community forest, the results (Table 4) reveal that out of the 262 respondents the 89.69% of them expressed their willing to contribute even if they were not asked. The majority of them (80.92%) who were favorable to contribute financially. The average stated monetary contribution per year was 3,450.47 XOF(6.15 $ USD). To ensure the effective monetary payment, out of those, which are favorable to pay, 78.69% confirmed their stated WTP, thereby strengthening the validity of the financial contribution. When the WTP increased by 50%, fewer than half of the respondents (48.85%) were still willing to contribute. In contrast, a 50% reduction in WTP encouraged greater participation, with 78.63% of respondents willing to provide financial support. The most common period for making financial contributions was reported to be at the end of the agricultural season (62.89%), a period characterized by higher income levels from agricultural sales and services. Moreover, most respondents (74.22%) indicated a willingness to contribute for up to five years.

The ecosystem services that drive the local resident motivation to elicit their WTP: Regarding the ecosystem services that motivated stated willingness to pay, the results (Figure 3) reveals that both provisioning (99.61%) and cultural services (17.97%) motivated local residents' willingness to pay for forest conservation, albeit with varying intensity. Among provisioning services, local communities placed higher importance on pharmaceutical products (63.53%), with additional interest in honey extraction (31.76%) and the collection of fruits and plant fibers (28.63%). With respect to cultural services, respondents valued social relations (45.65%), tourism values (21.74%), and rituals (15.22%)..

Factors affecting the willingness to pay for theforest conservation: Table 5 presents the results of the Tobit regression model, which is highly significant at the 1% level. Variable-specific analysis indicates that gender has a positive and significant effect ($p < 0.01$) on the willingness to support forest conservation initiatives, with men exhibiting a much higher likelihood of providing financial support compared to women. This outcome may reflect socio-economic and cultural role differences, as men are often more engaged in activities that directly benefit from forest preservation (e.g., agriculture, sustainable harvesting). Membership in farmer organizations also exerts a strong positive influence, with a coefficient of 1159.34. Among the ecosystem services accessed from the community forest, regulating and cultural services positively influence willingness to support at the 5% significance level, whereas supporting services have a negative, albeit marginally significant, effect. This suggests that individuals prioritizing supporting services are less inclined to contribute to conservation efforts, possibly reflecting limited recognition of their immediate utility. Finally, income derived from forest services is strongly significant, with a coefficient of 0.03, indicating that each additional unit of income increases the willingness to support conservation. This finding is consistent with expectations, as higher earnings from forest services strengthen the capacity and motivation to contribute financially to conservation actions.

DISCUSSION

Motivation and elicitation of willingness to pay for the preservation of the forest by local residents: Local communities rely on four main categories of ecosystem services: provisioning, regulating, cultural, and supporting. While provisioning and regulating services are most directly embedded in everyday livelihoods, the results further indicate that provisioning and cultural services motivated their favorable decision to elicit a payment for forest conservation. This suggest that residents' positive attitude is not limited to tangible subsistence benefits such as food, medicine, and materials, but also extends to intangible values related to social relations, identity, and cultural practices. Similar findings were reported by Sabi *et al.* (2017), who emphasized that provisioning and cultural services are the most tangible and have direct use values. Recognizing this dual importance is therefore essential for designing forest conservation strategies

Table 4. Willingness to pay for support for forest conservation initiatives

Variables		Yes (%)	No (%)
Favorable willingness to pay to support forest conservation initiatives	If nothing had been asked of you	89.69	10.31
	Whatever contribution	86.64	13.36
	Financial contribution	80.92	19.08
Average WTP per year		3450.472 (± 3466.31)	
Confirmation of the declared monetary value		78.69	21.31
Financial contribution	If WTP increases by 50%	48.85	51.15
	If WTP decreases by 50%	78.63	21.37
Period of the effective financial contribution	At the start of the agricultural season	9.38	90.62
	At the end of the agricultural season	62.89	37.11
Payment consent period	First year	4.69	95.31
	Over the first five (05) years	74.22	25.78
	Over the next ten (10) years	21.09	78.91

Source: Survey data, 2023

Table 5. Factors affecting respondents' WTP

Variables	Coefficient	Erreur standard	T	P>|t|
Age of respondent	26,196	18,283	1,43	0,153
Gender of respondent	1723,33***	396,304	4,35	0,000
Education	209,685	409,271	0,51	0,609
Professional training	405,023	1346,561	0,30	0,764
Status of respondents in the village	708,47	504,92	1,40	0,162
Membership of a farmers' association or group	1159,342***	388,683	2,98	0,003
Provision service	73,52125	1551,669	0,05	0,962
Regulation service	826,369**	366,47	2,25	0,025
Cultural service	1681,759***	360,21	4,67	0,000
Support service	-2753,675*	1586,22	-1,74	0,084
Village forest management association	458,997	413,65	1,11	0,268
Minimum income from forest services over the last 12 months	0,030***	0 ,003	8,27	0,000
_constant	-99,1795	1706,602	-0,06	0,954
var (e.CAP5)	6739143	612649,3		

Number of observations = 242; Uncensored observations = 500; Censored observations = 20,000;
Log likelihood = -2249.6656; LR chi2 (12) = 162.09; Prob> chi2 = 0.0000; Pseudo R2 = 0.0348

that simultaneously secure livelihood needs and reinforce cultural connections (Iniesta-Arandia *et al.,* 2014). Our results further reveal that respondents reported an average willingness to pay of 3450.47 XOF (6.15 $ USD) for forest conservation. This value falls within the range reported globally, although recent studies highlight wide variation depending on context and valuation methods. A systematic review of previous 36 forest CV studies conducted in the context of developing countries indicate the overall annual mean WTP ranges from $0.01–75.36 (Abdeta,2022a). The variation of the value is also highlighted within the country. For example, a meta-analysis across Ethiopia indicate the mean WTP ranging from 2.63 birr (0.41) to53.52$ USD (Abdeta, 2022b). Futher more compare to our findings, in Sub-Saharan Africa, for instance, lower estimates have been reported in Ethiopia 105 birr (0.7 $ USD) while higher values were observed in Uganda (US$15; Bamwesigye *et al*.,2020)From other context, Payal *et al.* (2024) estimated a much lower WTP of approximately USD 0.37 per month in India, while Son *et al.* (2024) reported higher values of USD 17.6–26.0 per year in South Korea. Such discrepancies are consistent with evidence, which highlight that WTP is shaped by household income levels, the perceived dependence on forest ecosystem services, and the socio-cultural significance attributed to forests (King *et al*., 2024). Finally, the most common period for financial contributions is at the end of the agricultural season, when households have greater liquidity following crop harvests and sales. Household liquidity and seasonal income flows strongly shape the timing of financial contributions to conservation. Empirical studies have shown that smallholders are more likely to accept or make cash contributions when they experience a post-harvest increase in liquidity, and that payment schedules that align with harvest income substantially increase take-up and stated WTP (Wassihun *et al*., 2021). Moreover, program design literature and choice-experiment studies indicate that respondents' time preferences and the framing of payment schedules influence apparent WTP, with many respondents preferring payment options concentrated immediately after harvest rather than during lean periods (Grammatikopoulou *et al*., 2020; Tien *et al*.,2024).

Socio-economic factors determining willingness to pay for forest conservation: The results show that certain sociodemographic variables, such as gender, significantly influence willingness to support conservation actions. Gender has a positive and significant coefficient, indicating that men are more likely than women to agree to provide financial or practical support for the forest. This can be attributed to gender dynamics in economic activities and forest resource management, where men often play a decision-making role. This conclusion is consistent with the work of Mengistu and Hailu (2024), who also observed a greater willingness among men to engage in conservation actions due to their greater economic and social influence in certain rural communities in Africa. However, Musyoki *et al*. (2016) showed that women, who play a central role in the collection of non-timber forest products, expressed stronger consent to conservation, demonstrating the importance of socio-cultural contexts. The age of respondents had no significant influence on their consent to support forest conservation actions. This result contrasts with the work of Abdeta *et al.* (2023) and Chivheya (2016) which showed that younger people are more likely to

participate in conservation activities than older people. Membership in associations or farmer groups also positively influences consent to support community forests. This observation can be explained by the socialization and awareness-raising effect that groups and associations have on their members, strengthening their environmental awareness and community engagement. Previous studies, such as that by Mawa *et al.* (2021), have shown that membership in associations reinforces positive attitudes toward conservation by providing a framework for sharing information and sustainable management practices. In the context of Benin, this observation is particularly valid in communities where agricultural groups play a leading role in natural resource management. Nevertheless, some studies, such as that by Wambugu *et al.* (2017) in Kenya, have not found a significant impact of associations on willingness to pay for environmental services, attributing this difference to the weak organizational capacities of these groups in certain regions.

At the time of joining an association, schooling and vocational training have no statistically significant effect on willingness to support conservation actions. This result is surprising, as several studies have shown a link between education level and increased awareness of environmental issues. This result could be explained by the fact that, in the local context of Babazaoure, community values and norms have a stronger influence on willingness than education level. The Unicef (2010) report in Niger observed similar results, concluding that in rural areas, individuals often act according to community norms and traditional practices rather than on the basis of their formal education. However, studies such as those by Chivheya (2016), have found that people with higher levels of education tend to be more concerned about deforestation and are more likely to participate in conservation activities.

Importantly, respondents' income had a significant influence on willingness to pay, which aligns with economic theory suggesting that wealthier individuals are more inclined to invest in long-term actions, including environmental protection. Income directly determines the capacity of households to provide financial support for conservation initiatives. This finding is consistent with previous studies, such as Khanal and Devkota (2020), who demonstrated that income levels play a critical role in shaping willingness to pay for conservation, and Miwoto *et al.* (2017), who reported that households with higher income from forest-related activities exhibited greater declared WTP, reflecting their anticipation of higher future benefits from sustainable forest management.

CONCLUSION

This study assessed the willingness of the local community to support actions to protect the Babazaoure community forest. The study found that local residents benefit from four major ecosystem services: provisioning, regulating, cultural, and supporting services. The results showed that 80.92% of respondents were willing to pay for services to support actions to protect the community forest. The average monetary value reported was approximately 3,450 XOF (6.15 $ USD). The main ecosystem services that motivated willingness to pay were provisioning services (honey extraction, fruits and plant fibers, genetic resources, and the use of pharmaceutical products) and cultural services (rituals, knowledge systems, social relations, and tourism values). Factors such as gender, membership in a farmers' association or group, provisioning services, and minimum income from services are the main determinants of willingness to support community forest conservation initiatives.

This study helps guide forest management and conservation policies to integrate both livelihood needs and socio-cultural dimensions to meet the needs of local populations while ensuring the preservation of the forest ecosystem.

KEYS POINT

- An original estimate of the local economic value of ecosystem services in Benin;
- A precise exploration of the ecosystem services driving the Willing to pay ;
- An empirical demonstration of socio-economic determinants in a community context;
- A contribution to the design of sustainable financing policies for community forests.

Glossary of Abbreviations

CFA	Communauté Financière Africaine
CV	Contingent valuation
ESs	Ecosystem Services
GIZ	Deutsche Gesellschaftfür Internationale Zusammenarbeit
MEA	Millennium Ecosystem Assessment (MEA)
Pro Agri	Agricultural Program
TEEB	The Economics of Ecosystems and Biodiversity
TEV	Total Economic Valuation
UNICEF	United Nations Children's Fund
USD	United States Dollar
WTP	Willingness To Pay
XOF	West African CFA franc

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