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Valuing Free-Flowing Rivers: The Influence of Social Value on Willingness to Pay for Ecosystem Services Protection

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Abstract: Free-flowing rivers (FFRs) provide valuable ecosystem services to society, but the construction of dams threatens to negatively impact many of these ecosystems worldwide by 2050. Economic valuation of FFRs can be an effective tool to make informed decisions about water resources management. Valuation of FFRs can be achieved through techniques such as contingent valuation in situations where markets do not exist. To better understand the influence of sociodemographic factors and social values on the willingness to pay (WTP) for the conservation of an FFR in western Mexico, we conducted a face-to-face survey with 179 residents from two localities—one upstream and the other downstream. We used a generalized linear model (GLM) to determine which of the independent variables were significantly correlated with WTP. Our results indicated that age, gender, education, and socioeconomic level have a slight impact on WTP, but we found differences in river valuation between the two localities. We observed that perceived values including future value, life-sustaining, recreation, and economic value exerted a stronger influence on WTP. These findings emphasize the need to integrate local residents' holistic valuation of FFR into decision-making processes to protect these ecosystems for future generations.

Keywords: contingent valuation; ecosystem services; economic valuation; local residents; stated preferences; social value; water flow alteration



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1. Introduction

Free-flowing rivers (FFRs) bring multiple advantages to society: they regulate terrestrial and aquatic ecosystems and improve forest health. The floodplains and deltas that drive FFRs are key ecosystems for freshwater fisheries. Such flood and inundation plains are essential for agriculture [1]. In addition, the nutrients discharged by FFRs are crucial for estuarine species diversity and the enhancement of fishery production. FFRs also optimize ecosystem health by allowing free transit of migratory aquatic and riparian species [2–6]. Finally, FFRs have the potential for hydroelectric energy production and for enabling the recharge of underground aquifers [7,8]. FFRs are rivers or river segments where fluvial connectivity has not been interrupted or diverted by dam construction [2]. Overall, FFRs are a vital source of social, economic, and environmental benefits to society [9].

The construction of hydroelectric dams poses a threat to the various benefits that FFRs provide to society. Currently, hydropower accounts for 16% of global electricity generation; however, it is projected that by 2030, water-generated electricity production will increase by 60% worldwide [10]. In addition to causing environmental harm, hydroelectric projects can be a detriment to the psychological and social well-being of local communities [11]. These developments impact residents who live both upstream and downstream by altering their livelihoods, food security, and physical and mental health [12].

However, since 1968, a range of methods has been developed to manage hydrological watersheds containing free-flowing rivers (FFRs). These include environmental policies to

preserve and enhance the values of FFRs for present and future generations, such as the Wild and Scenic Rivers Act in the USA [13]. Many more programs have been implemented, such as water management programs and the creation of water reserves in Mexico [14]; recognizing rivers as subjects of rights in Colombia, Ecuador, India, and New Zealand [15]; economic assessment programs to value the benefits provided by FFRs in Kenya [16]; and finally, payment for hydrological services programs in Costa Rica [17].

Two decades ago, the economic valuation of nature was based on the argument that nature conservation is best for human self-interest [18]. Later, Daily et al. [19] and Costanza [20] opened the discussion about the monetary value of the benefits of nature to society. Currently, the field of economic valuation of nature encompasses a range of methods that aim to assign values in situations where markets do not exist, and several classifications of the benefits that nature provides to society, such as ecosystem services, have been developed [21,22]. Contingent valuation is a method of declared preferences in which people express their willingness to pay (WTP) for the use or non-use of goods (such as water) [23]. The value that people assign to different environmental goods is found through the simulation of hypothetical markets [24].

The contingent valuation method is used for the valuation of environmental goods, [25] in which the total economic value of an environmental asset is calculated by estimating its use and non-use values [24]. Contingent valuation is widely used in the field of environmental economics because it captures both types of values [26]. The concept of WTP is used to determine the amount of money that people have spent or are hypothetically willing to pay to use, improve, or restore ecosystem services or natural resources [27]. According to Johnston et al. [28], WTP is the amount that people are willing to pay to obtain a measure of well-being.

In Khan et al.'s [9] study on attitudes, preferences, and willingness to pay (WTP) for riverine ecosystem services, the use of the contingent valuation method for evaluating ecosystem services and social values was highlighted. Getzner [16] also utilized this method and found that providing additional information about stakeholders had a significant positive effect on WTP for the conservation of the Mur River in Austria. In contrast, Mueller et al. [28] discovered that the spatial dimension had a significant influence on WTP for restoration in Flagstaff, AZ. This finding emphasizes the importance of considering the complex relationship between distance and visual watershed in WTP studies for water provision.

Willingness to pay (WTP) has been used across various countries and contexts to estimate the value that people place on environmental improvements. For instance, in Kenya, WTP was used to allocate funding for water and sanitation projects [29], while in Thailand, it was used to inform policies to reduce air pollution [30]. Australia also used WTP to guide policy decisions related to the conservation and management of the Great Barrier Reef [31]. In all of these cases, significant improvements were achieved in the intervened areas through these programs.

Assigning values to natural resources poses several challenges, including ethical considerations such as whose values to consider, for whom to value, and what the goals of the valuation are. [24,32]. Additionally, the biophysical characteristics of the natural resources can lead to undervaluation [33], and their intangible nature can make it difficult to value them [34]. Furthermore, property rights can be an issue, as many of these services are considered public goods and often lack a market [20,27,28]. As a result, there has been a shift in the valuation of ecosystem services from economic to heuristic approaches such as social [35] and relational values [36]. In this sense, social value is defined from the two following perspectives:

- (1) Economic social value is defined as the social benefits brought to an area by a project or process and the positive effects they have on the local economy by creating employment opportunities, tourism potential, and regeneration of ecosystems [37];

- (2) Non-financial intangible social value is defined as the values associated with quality of life, including food security, social inclusion, access to medical care, and a sense of place, environmental improvements, and individual identity [38].

People's willingness to pay (WTP) for conservation is directly impacted by the value they assign to ecosystem services. However, in certain situations, WTP can be influenced by a variety of factors such as the respondent's age, gender and education, home location, family income, place of residence, and perceived satisfaction [39–41]. Furthermore, Choi and Fielding's [42] research demonstrated that pro-environmental attitudes significantly impact WTP.

Understanding and identifying the value of ecosystem services provided by FFRs is crucial for protecting and conserving these resources as a strategy to secure funding for their conservation [9]. It is crucial to include the perspectives and participation of local residents in evaluating the value of FFRs, especially those near the Los Horcones River. This river is one of the few remaining FFRs on the Mexican Pacific coast.

The Los Horcones River is a crucial source of tourism and income for nearby rural localities, and it also provides essential ecosystem services to local residents. However, no studies have documented the social and economic value of the river for these residents. Our aim is to understand how the perception of social and environmental value affects the interest of local residents in the conservation of the river, as measured by their willingness to pay (WTP). Specifically, we conducted a socioeconomic valuation of the riverine ecosystem services of the Los Horcones River as perceived by local residents. Our primary objective was to evaluate the WTP of residents in two localities, namely one upstream and the other downstream, hypothesizing that their socioeconomic status would influence their WTP. Our second objective was to examine the influence of perceived social value on the WTP of the two localities within the watershed.

2. Materials and Methods

2.1. Contingent Valuation

Contingent valuation (CV) is an empirical method designed to address resource allocation [26]. It involves obtaining useful information on the economic importance of lost values resulting from passive use, which stakeholders may experience when natural resources are damaged [27]. CV determines willingness to pay (WTP) through the design of hypothetical scenarios that illustrate the change being assessed [25,26]. This method is more accurate when respondents have prior knowledge of the environmental good or service being valued. To conduct our contingent valuation survey, we selected respondents from two rural localities along the Los Horcones River. We refined our survey by conducting a pilot survey with five key informants to confirm the questions and payment amounts (WTP).

2.2. Questionnaire Development

In this FFR valuation, we created a hypothetical scenario to assess local residents' willingness to pay (WTP). For the question design, we used a mixed format to assess WTP [43,44]. Firstly, we asked a simple dichotomous question (Yes/No):

If a conservation fund for the Los Horcones River was established, would you be willing to contribute a specified amount per month towards this initiative, based on your current household monthly income?

Secondly, if a respondent agreed to pay, we used a payment card to obtain their maximum WTP [43]. Each respondent was presented with a range of answers in descending order (1000 to 0 Mexican pesos) and asked to choose their maximum WTP. The payment card method was chosen because it minimizes starting point bias, which can reduce the non-response rate [23,45–47]. This contrasts with the referendum method, where respondents tend to anchor to the initial offer amount. The payment card tool is widely used in the

field [44,48–50]. To motivate respondents to offer accurate values, they were reminded to consider their budget limitations [51].

Before starting the questionnaire, each respondent signed a free and informed consent, which explained the aims of the survey and the type of academic work being conducted. The survey was conducted face-to-face. The full text of the applied survey is presented in Table S1 in the Supplementary Materials.

2.3. Perceived Social Values

Regarding the assessment of social values of the Los Horcones River watershed, respondents were asked to prioritize among twelve possible social values using a preference system. They were given one hundred “preference points” for distribution among the twelve possibilities (Table S2, Supplementary Materials). We used an adapted version of the social value typology proposed by Brown and Reed [52–54].

2.4. Sampling Method

To conduct the survey, we selected the two most representative localities within the Los Horcones River watershed: Boca de Tomatlán (with a population of 585) and Las Juntas y Los Veranos (with a population of 537). These rural localities make up 95.24% of the total population in the watershed and were the primary focus of our study.

We determined a sample of 180 home surveys from a sampling frame of 338 households using the finite population equation with 95% confidence and a 5% margin of error). [55,56]. To ensure a balanced sample, we used three criteria: proportional representation of each rural locality based on population size, equal distribution of males and females based on population size, and equal distribution of males and females among the interviewees and age groups.

$$n = \frac{N * Z_{\alpha}^2 * p * q}{e^2(N - 1) * Z_{\alpha}^2 * p * q}$$

n = sample size sought;

N = population or universe size;

Z = statistical parameter that depends on the confidence level;

e = maximum acceptable estimation error;

p = probability of the studied event happening;

q = $(1 - p)$ probability of the studied event not happening.

2.5. Study Site

The Los Horcones River is in western Mexico (as shown in Figure 1), flowing into the Pacific Ocean and spanning three municipal jurisdictions: Cabo Corrientes, Puerto Vallarta, and Talpa de Allende. Land tenure in the watershed is predominantly managed under the social regime known as “ejidos”. Under this system, land is collectively owned and managed by members of a village or rural community [57]. The Los Horcones River watershed has a drainage area of 254.59 km², a maximum elevation of 2000 m, and a minimum elevation of 2 m. It is 39.27 km in length, has an average slope of 5%, and a concentration time of 210.26 min. Its runoff coefficient ranges from 10% to 20%, and its freshwater availability volume is 179.37 mm³ [58].

The Los Horcones River is a crucial factor in attracting tourists to Puerto Vallarta, one of the most important tourist destinations in Mexico. In 2022, the destination received 6.2 million visitors and generated significant economic benefits for urban and rural towns in the region [59]. The river offers additional tourist activities beyond those provided by resorts, creating economic opportunities for the surrounding region. In Las Juntas y Los Veranos, tourist activities are centered on nature and adventure tourism, while the primary economic activity in Boca de Tomatlán is providing public transportation to remote beaches via water taxis for tourists and locals.

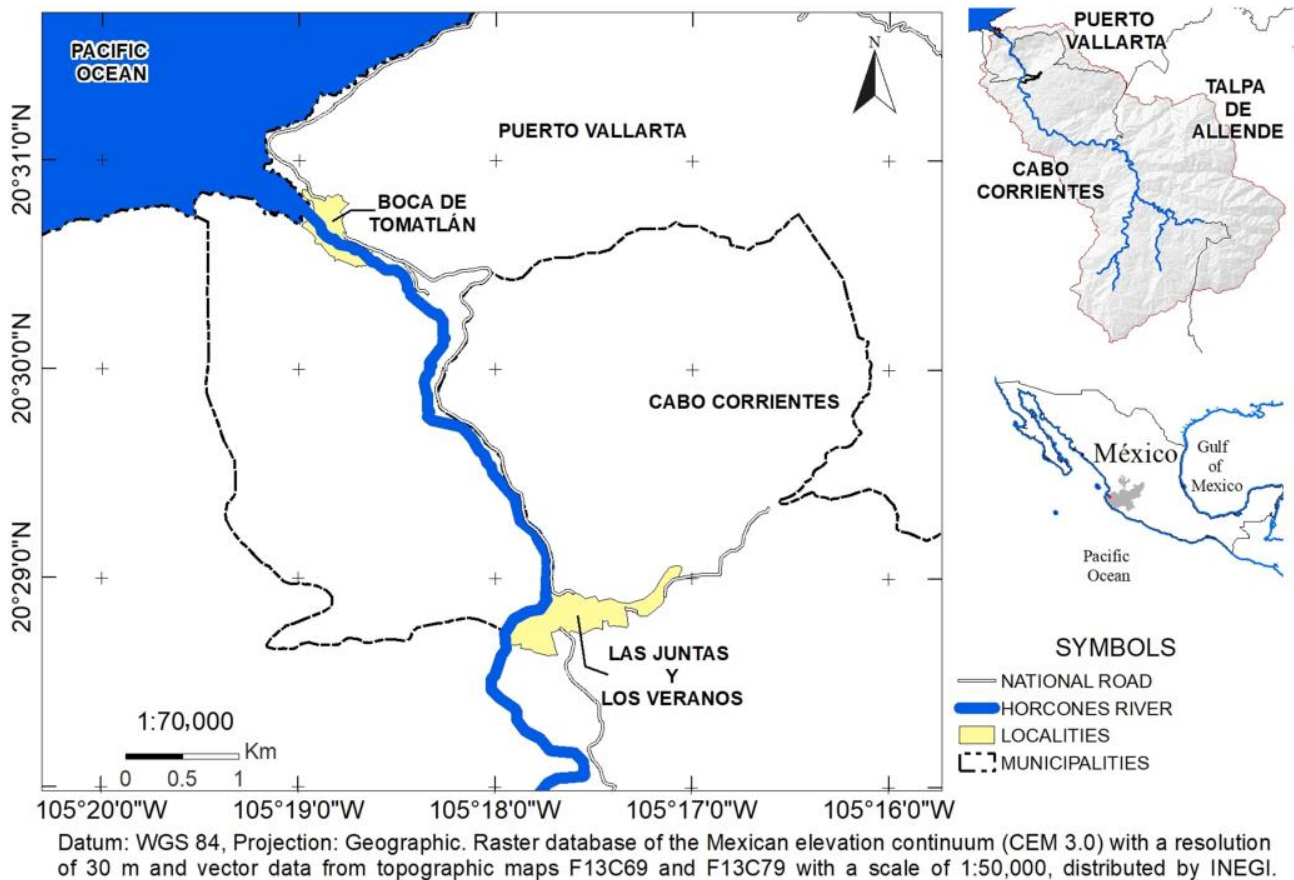


Figure 1. Location map of the Los Horcones River basin. The Los Horcones River watershed is located in western Mexico, flowing into the Pacific Ocean and spanning three municipalities, as indicated in the inset. The main human settlements within the watershed are Las Juntas y Los Veranos and Boca de Tomatlán.

Thus far, there are three ecosystem conservation strategies in the Los Horcones River watershed: the payments for ecosystem services program and the purchase of lands by a conservancy, and the third initiative is the creation of a protected area to preserve the headwaters of the Los Horcones River watershed. However, in 2019, an initiative to build a mini-hydroelectric plant on the Los Horcones River was launched. However, in the same year the project was stopped by federal environmental authority, which was followed by lawsuits to challenge this decision.

2.6. Model Specification

A generalized linear model (GLM) was employed to fit the dependent variable WTP_MAX, which refers to the maximum amount in Mexican pesos that the respondent would be willing to pay for conservation monthly and for one year. A Poisson distribution was used to model the errors associated with the values of the dependent variable WTP_MAX, and the log function was utilized as the link function. The variables included in the GLM model are described in Table 1. The data gathered through the contingent valuation survey were analyzed using IBM SPSS Statistics v25 software.

Table 1. The GLM incorporates a set of predictor variables to model the maximum amount in Mexican pesos (WTP_MAX) that local residents are willing to pay for the conservation of the Los Horcones River. These variables are considered as independent variables.

Variable Code	Description
WTP_MAX	Maximum amount in Mexican pesos that the respondent would be willing to pay for the conservation of Los Horcones River.
Place of residence	Location of the respondent: Boca de Tomatlán or Las Juntas y Los Veranos.
Years of residency	Years of residency in the locality.
Socioeconomic level	Level of satisfaction with the most important household needs
Domestic use	Water for domestic use.
Educational level	The highest educational level completed by the respondent at the time of the survey.
Age	Respondent's age at the time of the survey.
Gender	Male or female
Religion	Respondent's religious beliefs and worship.
Values of the Los Horcones River:	
Aesthetic	The river provides enjoyment through its scenery, sounds, and smells, which produce pleasure or happiness for residents.
Biodiversity	The river provides a habitat for a variety of fish, wildlife, and plant life.
Cultural	The river is a place where residents can continue to preserve and transmit the wisdom, knowledge, traditions, and way of life of their ancestors.
Economic	The river is economically important because it provides resources such as timber, fish, minerals, and opportunities for tourism, trade, and navigation.
Future	The river should be conserved to allow future generations to experience and appreciate nature and a wild, picturesque river as it is now.
Historical	The river is important due to its significance in natural and human history both to the respondent and the nation.
Intrinsic	The river is important regardless of the presence of people.
Learning	The river provides opportunities to learn about the natural state of the environment through scientific observation or experimentation.
Life-Sustaining	The river is valuable because it helps produce, preserve, clean, and renew the quality of air, soil, and water.
Recreation	The river provides a location for the respondent's favorite outdoor recreational activities.
Spiritual	The river is a sacred, religious, or spiritually special place for the respondent because they feel reverence and respect for nature there.
Therapeutic	The river has a positive impact on the respondent's physical and/or mental well-being.

Notes: WTP_MAX is the only dependent variable in this study, whereas the remaining variables presented here were tested as independent variables. The AMAI [60] socioeconomic households typology was used as a proxy for the socioeconomic levels in this study (refer to Table S3 in the Supplementary Materials).

2.7. Determining the Influence of Gender on WTP for Educated Local Residents

To assess the impact of gender on WTP (with binary data: 0 = not willing to pay; 1 = willing to pay), a comparison was made between genders. It should be noted that only respondents who reported a level of education of at least high school were included in the analysis. The fraction of individuals willing to pay was compared between genders using a Mann–Whitney test.

3. Results

3.1. Socioeconomic Profile of Respondents

We surveyed 179 stakeholders, with 47% from Las Juntas y Los Veranos and 53% from Boca de Tomatlán. Among the respondents, 73% showed a positive willingness to pay (WTP) and 27% a negative WTP. The data collection period was from November 2021 to December 2022. Respondents' gender was almost equally distributed, with 43% men and 57% women. We also classified them into three age groups: 39% were young (18–35 years), 49% were adults (36–64 years), and 12% were older (65 years or more) (Table 2).

Table 2. Sampling projections and respondents recruited distribution by age, sex, and rural locality within the Los Horcones River watershed.

Loc.	Age	Projected Sample	Male	Female	Total	Contacted	A.R. Rate
BDT	18–35	38	16 (42.1)	22 (57.9)	38	96	98.9
	36–64	47	23 (48.9)	24 (51.1)	47		
	>65	10	5 (50)	5 (50)	10		
		95			95		
LJLV	18–35	33	15 (46.9)	17 (53.1)	32	84	100
	36–65	41	20 (48.8)	21 (51.2)	41		
	>65	11	6 (54.6)	5 (45.5)	11		
		85			84		
Total		180	85 (47.5)	94 (52.5)	179	180	99.4

Notes: Loc, location; BDT, Boca de Tomatlán; LJLV, Las Juntas y Los Veranos; Average R. rate, average response rate between the two localities.

According to the respondents' level of education, 30% did not complete basic education, 46% completed basic education, 4% finished a technical career, and only 20% completed university studies. Most of the respondents belonged to high- and middle-class households: A + B (13%), C+ (16%), C (21%), C− (19.23%), D+ (16%), D (14%), and E (1%) (Table S3, Supplementary Materials).

In terms of religiosity, 65% of the respondents were Catholic, 13% Christian, 6% were Jehovah's Witnesses, 4% were spiritual, 3% other, and 9% had no religious affiliation. Regarding river use, 34% of respondents conducted economic activities based on the river, while 66% mentioned having no river economic use. Regarding the initiative to build the mini-hydroelectric plant, 86% of the respondents did not agree with the construction, and 14% agreed.

3.2. Reasons Why Local Residents Are Willing to Pay for the Conservation of the Los Horcones River

The reason that most often co-occurred with the WTP of local residents was the "need to protect" (See Table 3). As for the feelings of contributing monetarily to the conservation of the river, 55% of the respondents mentioned feeling personal satisfaction, 19% felt mistrust in the administration of the monetary resources, 15% felt confident, and 11% mentioned feeling safe. Regarding the type of administrative organization for the WTP fund, 48% of those surveyed preferred local organizations, 19% favored conservation specialists (including universities), 20% favored the municipality, and only 13% did not know.

3.3. Influence of Socioeconomic Factors on the WTP_MAX Value Reported by Local Residents

Seven variables significantly impacted WTP_MAX: place of residence, socioeconomic level, domestic use, educational level, age, gender, and religion (see Table 1 for a description of these variables). Years of residence and agreement with mini-hydroelectric plant construction did not significantly impact WTP_MAX. The most representative value of WTP_MAX reported by local residents was 196.70 Mexican pesos (10.46 U.S. dollars), and their reported WTP_MAX values ranged from 0 to 1000 Mexican pesos (53.17 U.S. dollars).

The GLM model was based on the effects of local residents' sociodemographic factors on maximum WTP (WTP_MAX) and is presented in Table 4.

Table 3. Reasons why local residents are willing to pay for the conservation of Los Horcones River.

Variable	Co-Occurrence Coefficient
Water for domestic use	0.08
Support for the economy	0.08
Community benefit	0.13
Place dependency	0.13
Need to protect	0.24
Status quo	0.10
Life-sustaining	0.04
Future value	0.13
Inheritance value	0.07
Total	1.00

Notes: The variable "need to protect" showed the highest co-occurrence coefficient with WTP in the responses of local residents. The co-occurrence coefficient indicates the strength of the relationship between the variable code and the WTP given by the respondents. The coefficient ranges from 0 to 1, with 0 indicating that the codes do not co-occur and 1 indicating that the codes always co-occur whenever used.

Table 4. The magnitude of the influence that significant variables have on the local residents' maximum willingness to pay.

Variable	Significance	Reference Magnitude of WTP_MAX
Place of residence	0.00	
Boca de Tomatlán		1.121
Las Juntas y Los Veranos		Reference
Socioeconomic level	0.00	
A/B		−0.104
C		−0.556
C−		−2.366
D		8.711
D+		Reference
Educational level	0.00	
Incomplete primary school		−41.875
Complete primary school		−9.6012
Incomplete secondary school		0.666
Complete secondary school		1.324
Incomplete high school		−12.814
Complete high school		−9.512
Incomplete university		−25.016
Complete university		−22.771
Postgraduate		Reference
Age	0.00	0.234
Gender	0.03	
Male		−12.987
Female		Reference
Religion	0.00	
Catholic		−9.012
Christian		−9.124
Jehovah's Witnesses		−41.198
Spiritual		−3.678
Other		−10.025
None		Reference

Notes: For categorical variables such as place of residence, socioeconomic level, education, gender, and religion, the model uses one variable as a reference to determine the level of influence on other variables. The reference value is set to 0, and the value of the variable indicates how close or far it is from the reference. For instance, in the case of place of residence, Las Juntas and Los Veranos serve as the reference variable, while Boca de Tomatlán represents the value of the index. This implies that Boca de Tomatlán has a higher willingness to pay, with a standardized value of 1.121. In contrast, for continuous variables such as age, there is only one standardized value that measures the magnitude. Thus, the older the age, the higher the willingness to pay, with a standardized value of 0.234.

Boca de Tomatlán had a higher positive effect on WTP_MAX compared to Las Juntas y Los Veranos. Lower-income residents had a greater impact on WTP compared to those with higher socioeconomic levels. The use of river water for domestic purposes had a significant impact on local residents' WTP. Those with secondary education had a higher WTP compared to those with high school and university education. As for age, we found that the older the respondent, the higher their WTP. Women had a higher WTP than men. Finally, among the religious groups surveyed, Jehovah's Witnesses had the lowest WTP.

We calculated the significant impact that the magnitude of such variables on the WTP_MAX reported by the local residents (Table 4) and the magnitude of influence (either positive or negative) on the WTP_MAX. It was also shown that the male gender has a negative impact on WTP among the respondents. The WTP_MAX (maximum willingness to pay) decreases on average by a factor of -12.987 in men compared to women. However, when we filter the surveyed population and analyze the impact of gender on WTP among those who are educated, we do not find a significant difference (p -value = 0.761).

3.4. Influence of Perceived Social Values on the WTP_MAX Value

In terms of the impact of local residents' perception of certain social values of the Los Horcones River on the WTP_MAX, the value of the future has the greatest influence, followed by life-sustaining, recreation, and economic value. The social values perceived by the residents significantly affect the WTP_MAX, and the magnitude of this effect varies. According to local residents' perceptions, only four of the social values studied have a significant impact on the WTP_MAX (as shown in Table 5).

Table 5. Impact on the WTP_MAX by the local residents' perception of certain social values in Los Horcones River.

Social Value Code	Significance	The Magnitude of Influence on WTP_MAX
Aesthetic	0.08	-
Biodiversity	0.06	-
Cultural	0.07	-
Economic	0.00	1.966
Future	0.00	23.073
Historical	0.90	-
Intrinsic	0.07	-
Learning	0.15	-
Life-Sustaining	0.00	12.016
Recreation	0.03	8.193
Spiritual	0.87	-
Therapeutic	0.07	-

Notes: Bold text indicates social values that have a statistically significant impact on WTP_MAX ($p < 0.05$). The magnitude of influence of perception of social values is only presented for cases where there is a significant impact on WTP_MAX. For a description of each social value, please refer to Table 1.

4. Discussion

This study provides insight into the perception of the local population regarding the issues and mechanisms to improve the condition of a free-flowing river. Our research yielded significant evidence on how the demographics of the local residents affect their willingness to pay (WTP), with age, gender, education, and socioeconomic level being the most significant independent variables. Furthermore, local residents expressed their desire to sustain their lifestyles that are linked to the river, which is reflected in their perceived social values: future, life-sustaining, recreation, and economic value. These values heavily influence their WTP.

Our data indicate that the willingness to pay (WTP) of local residents is also strongly influenced by the perceived need to protect the Los Horcones River, particularly its perceived future value. Any potential damage to the river would lead to the loss of essential

ecosystem services. During informal conversations outside the survey, local residents shared anecdotes about their connection with the river, which reinforce our findings. They highlighted the river's future value: *"If the river dries up, we will die of hunger"* (E28:2) and *"It is important to preserve the river so that my children and grandchildren can enjoy it"* (E22:2); the river role as a center for recreation: *"The river is a place for recreation, it's a 'giant picnic area. Children play in the river and swim, while mothers wash clothes. The river is the center for family gatherings"* (E5:2); and also its importance for sustaining life: *"If there were no river, there would be no animals, the plants around it, and the trees directly depend on the river (E10:3)"*.

The novelty of our study lies in the differences found in WTP between the upstream and downstream localities despite their short distance of only 20 km. Residents living downstream in Boca de Tomatlán showed a greater willingness to pay compared to those living upstream in Las Juntas y Los Veranos (LJLV). Additionally, future value had a greater influence on their WTP in the downstream locality. Furthermore, sociodemographic and river use conditions differ between the two localities. LJLV is a forestry locality popular for nature and adventure tourism, while Boca de Tomatlán, located on the seaside, relies on sun and beach tourism, transportation to remote villages only accessible by sea, and housing for national and international visitors: *"For Boca de Tomatlán, the river represents everything because most of us here live off tourism, and all the boats are kept safe in the river"* (E23:2).

The findings regarding the influence of place of residence on WTP are consistent with Lee et al. [41]. Similarly, Nielsen-Pincus et al. [61] found that respondents' connections to a place predicted their WTP for a water-quality protection program. Our results showed that the residents with lowest income had the highest WTP. This is mainly because residents with fewer resources are more dependent on the riverine ecosystem services provided by the Los Horcones River, which offers them opportunities for food, recreation, and employment. This is in line with Sousa et al. [11], who stated that the assignment of value to environmental goods is influenced by both their use and non-use values.

Our data revealed that women have a higher WTP than men for the conservation of the Los Horcones River. This is consistent with previous studies demonstrating that women are more willing to take actions to protect water resources, as they are the primary users of water for cooking, cleaning, and growing food. Moreover, women are often more attentive to the health of their children [62]. The most-educated local residents were the least willing to pay. On one hand, this finding is consistent with the results of Halkos and Matsiori [63] and Scarlett et al. [64], who discovered that as the level of education increases, the WTP decreases. On the other hand, this result contrasts with most of the literature, which shows the opposite. Spash et al. [65] Xiong et al. [40] found that the higher the levels of education and occupational achievement of the local residents, the higher the WTP. This finding is consistent with the fact that many of the local inhabitants are migrants who have settled on the Pacific coast in search of opportunities in the last 50 years. It could also be that less-educated residents may have a greater dependence on the riverine ecosystem services. WTP is also influenced by age, which is consistent with previous studies by Qiao and Randrup [66] and Vásquez et al. [67]. We found a negative overall effect of religiosity on WTP, with the largest negative impact found among Jehovah's Witnesses. This could be due to the fact that this religion is completely absent from civic and political activities [68]. This is contrary to what Vaidyanathan et al. [69] found, which is that religion can motivate or inhibit environmental actions.

Our study has some limitations, including the small sample size that was primarily drawn from sparsely populated rural areas. Like any quantitative research, there is a risk of bias and partiality starting from the construction of a representative sample and the use of a survey that may affect the responses and variable selection [43]. Another limitation is that our study focused solely on the WTP of local residents. Future research should also consider the perspectives of visitors, government officials, and civil society organizations. Although our study explored local residents' interest in river conservation through a willingness-to-pay model, it did not cover the installation of a mini-hydroelectric plant

in the river, which is a future plan. Therefore, we conducted complementary qualitative research to identify concerns about the construction of this hydraulic infrastructure given its potential significance.

Based on our results, we recommend the following actions: (i) We must take a holistic approach to valuing local residents' opinions and needs. This will ensure that decisions made regarding the conservation of the river are well-informed and considerate of the local community. (ii) We must communicate the value of the river to local residents who may not fully understand the importance of its ecosystem services; (iii) identify interest groups that may be more willing to contribute funds for river conservation, potentially increasing available resources; and (iv) develop institutional and financial arrangements for river protection that involve various social actors.

5. Conclusions

Our research highlights the significant social value of the Los Horcones River for its local residents, as demonstrated by their willingness to pay for its conservation. By understanding the demographic and value-based factors that influence willingness to pay, we can better recognize the crucial role of local residents in protecting the ecosystem services of free-flowing rivers. This empirically based social research serves as a basis for demonstrating to decision makers the willingness of local residents to cooperate in maintaining the river, giving social legitimacy to future conservation and watershed management initiatives. Recognizing the social values associated with free-flowing rivers can serve as a foundation for developing effective protection strategies. To ensure the sustainable development of freshwater resources, it is crucial to involve local residents in the planning process. This will require institutional and financial arrangements that prioritize social participation [70,71]. Ultimately, an awareness of the social values associated with free-flowing rivers can inform environmental policy decisions and guide development planning.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/w15071279/s1>, Table S1: WTP survey; Table S2: social value survey; Table S3: Socioeconomic classification of respondents' households.

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