

*Full Length Research Paper*

# **Households willingness to pay for the development of community based tourism around Alelo Bad hot spring water: The Ethiopian case study**

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The aim of this paper is to estimate households' willingness to pay (WTP) for the development of community based tourism (CBT) around Alelo Bad hot spring water. To achieve the stated objective, relevant data was collected from a total of 157 sample respondents through questionnaires, interviews and field observation techniques. In this study, both descriptive and econometric models (Seemingly Unrelated Bivariate Probit and Probit models) were used to analyze the collected data. The descriptive statistics clearly shows that 66.24% of the respondents were willing to pay for the existence of the proposed project while 33.76% were not willing to pay. The seemingly unrelated bivariate probit model output revealed that the mean WTP of the sample household heads per year for the proposed project was birr 468.75 (\$16.401) as well as the total sample respondents has estimated to pay birr 73,593.75 (\$2,575.045) per year per household head. Gender, age, family size, off-farm income, education status, social responsibility and initial bid values were statistically significant variables which affect the WTP decision of household heads in the study area. The government should create a conducive environment for different stakeholders to actively engage in boosting the returns of the tourism sector and fulfillment of the proposed project in the study area. The tourism policy should be amended in the form of allocating higher proportion of the revenue obtained from the tourism sector to the local communities for the development of social infrastructure, improving the living standard of the local communities and sustaining resource conservation.

**Key words:** Alelo bad hot spring water, WTP, seemingly unrelated bivariate probit and probit models, Ethiopia.

## **INTRODUCTION**

Ethiopia is one of the ancient countries which have thousand years of rich history and culture. It has wonderful topography, suitable climate, land size and location. Nature based tourism offerings and

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opportunities are dispersed throughout the country. There are historical attractions, national parks with endemic wildlife, cultural and religious festivals, mountains for trekking, Rift Valleys, lakes suitable for water-based activities or birdwatching and deserts to explore in the East. Ethiopia is rich in biodiversity, with 14% of its landmass being under a Protected Area System including the Ethiopian Wolf, Walia Ibex, Gelada Baboon, Giant Lobelia and other different endemic bird species (WB and MCT, 2012).

Ethiopia is considered lagging in tourism in Africa, ranking 17th on the continent with regards to overseas tourists. Ethiopia has generated its largest foreign income earning by exporting coffee, but the tourism sector has the potential to overshadow this coffee export earnings (Jeffrey, 2014).

The total contribution of travel and tourism to Ethiopian GDP was 6.8%, to the total employment opportunity was 6.1%, to spending within the country by international tourists for both business and leisure trips was 35.2% and to the capital investment was 2.4% for the year 2017 (WTTC, 2018). This shows that tourism has a great contribution for the broad based economic growth of the country in large and the wellbeing of peoples live in the most tourist arrival areas (like Afar) in particular.

The Afar national regional state is known in the world as the home of the 3.2 million years old human ancestor, Lucy (*Australopithecus afarensis*). The ancient fossil was found in Hadar, Afar by Donald Johanson and his team in 1974 (Johanson, 1981). Afar also blessed by God with gifts from nature with Dalol or Danakil Depression (which is the hottest place year-round on the planet), high amount of salt, Awash River and many hot spring waters.

It is doubtless that Ethiopia has huge inherent tourism potential, yet the sector is at its infant level and plagued with numerous constraints. The question arises as to what the Ethiopian government, the communities, the tourism stakeholders and each and every citizen has done to address tourism proactively? When we observe the reality and review documents, the government of Ethiopia has given a strong attention for galvanizing the development of the sector (Birhanu and Negussie, 2015). There are so many indicators that persuade the government has play a lion share to accelerate the development of this smokeless industry from the past up to the present. For instance, the Tourism Transformation Council and The Ethiopian Tourism Organization were established with the aim to set a strategic direction, provide leadership and give instructions to the overall country level tourism development (MoT, 2016).

Even if the government has designed such institutions, they cannot fully operate at its full potential to address all of the tourist sites as well as to solve the major constraints of the sector within the available human resource, capital, time and information on hand. So in addition to the government role, the community also has their own irreversible role to conserve such resources, to

maximize the expected return from the sector and to promote the tourist sites to the rest of the world. The *Alelo bad* hot spring water is also one of the tourism potential areas located in the Dubti district of Afar region which lacks emphasis from the government. Therefore, this paper was focused on analyzing the household's willingness to pay on the development of community based tourism around *Alelo Bad* hot spring water (Appendix). When the proposed project come into existence, it gives a lot of advantages in terms of generating economic and social benefits for the community, improving living standard of the community, development of social infrastructures, conserving the natural resources, transforming technologies and promoting tourist sites to the world. In addition, in Ethiopia as a large and in Afar as a particular, there is no research conducted on WTP to develop CBT. In fact, some scholars study on only challenges and opportunities of developing CBT on different tourist destinations (Meseret, 2015; Amogne, 2014; Sewnet, 2017).

### Objective of the study

The general objective of the paper is to estimate households' willingness to pay for the development of Community Based Tourism on *Alelo bad* hot spring water and its environs. In addition, the specific objectives would also be to:

- (1) Estimate households' mean willingness to pay for CBT of *Alelo bad* hot spring water and
- (2) Analyze factors affecting households' WTP for CBT of *Alelo bad* hot spring water

### LITERATURE REVIEW

Economic valuation of natural resources entails assessing the preferences of society with regards to an environmental resource or public good. It is a method used for assigning monetary value to the non-marketed goods or natural resources (Bateman et al., 2002). There are quite a number of economic methods used in valuing public or environmental goods and they specifically belong to two categories. In the first category are those which depend on observed human behaviors and thus derive inferences about preferences and economic values from such behaviors. The second category is those which rely on stated or revealed preferences by individuals. The main valuation techniques between these categories are hedonic and travel cost methods for the first category and while the second category consist of choice modelling and contingent valuation methods (Haab and McConnell, 2002).

Contingent Valuation Method (CVM) also known as a stated preference approach, is a non-market valuation

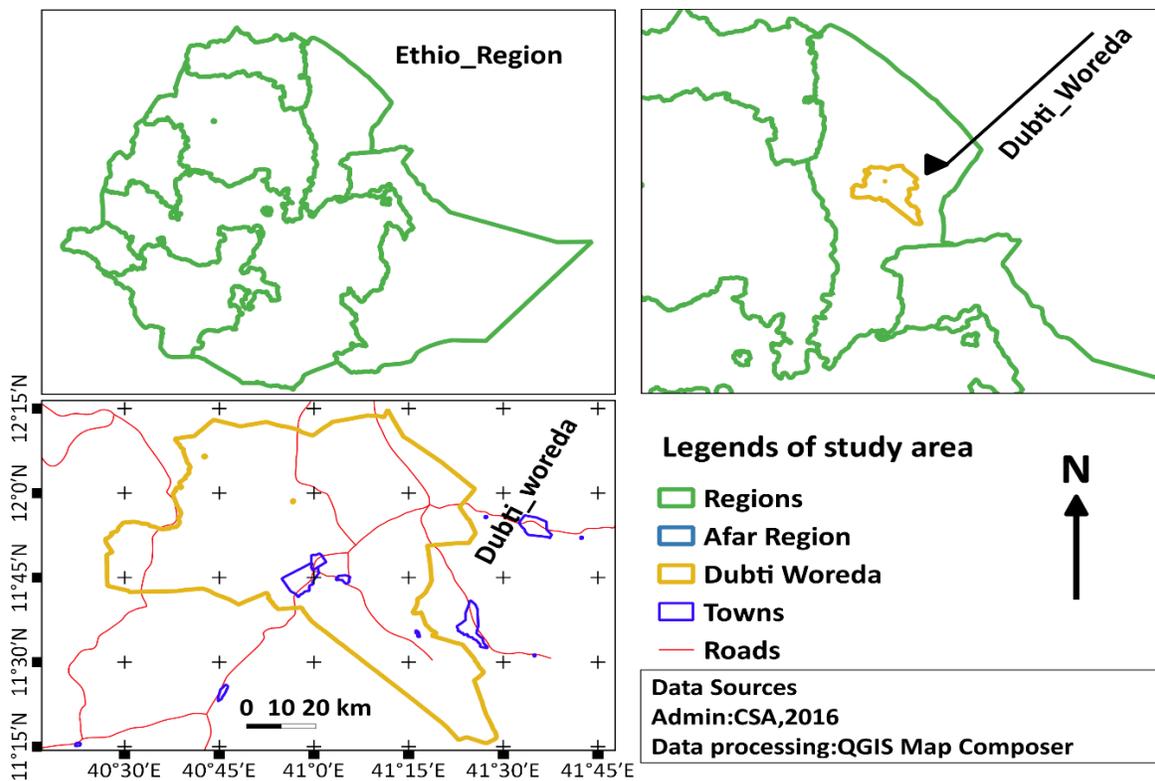


Figure 1. Map of the study area.

method used to value public and environmental goods. It involves asking a sample or population of interest for willingness to pay or willingness to accept (Perman et al., 2003). Historically, the CVM dates back to 1963, when it was published for the first time by Davis (1963) in the study of hunters and tourists. From then, the CVM has grown in importance and has been utilized to measure various environmental goods like wetlands, recreational parks, wild life reserves, air and water quality, game parks, etc. The earlier use of the CVM however by most researchers was mainly based on use values, but as the theory of non-use was introduced, the CVM was extended to estimate both (Hoehn and Randall, 1987). Therefore, the CVM attempts to elicit non market valuation of eco-systems by questioning respondents directly for their maximum WTP or WTA for a change in environment quality (Wilson and Carpenter, 1999).

## METHODOLOGY

### Description of the study area

*Alelo bad* hot spring water is a natural water located in a small rural kebele of Dubti district known as Debeliena Halibayri kebele. It is located near to Samara city (the capital city of Afar national regional state) with a distance of approximately 30 and 20 km far away from Dubti town (the capital city of the district). *Alelo bad* hot spring is boarder on the west by Grmudalie gaydru kebele, on the east by

Korliena bebedeta kebele, on the north by Debelnaa haylibeyri kebele and on the south by Mile district. Since, the Dubti district has a lot of interesting and amazing cultural and natural tourism sites. Among them, *Alelo bad* hot spring is one of the potential areas which were not extensively utilized by the community or by other concerned body. But in traditional way, it can be used as a medicine in the form of spa and it helps to boil their day to day consumptions like meat and maize (Dubti District Administrative Office, 2019).

### Sampling technique

In this paper, two stage sampling technique was applied. In the first stage, four sample kebeles were selected purposively based on their nearness to the study area (Figure 1). Then in the second stage, a total of 157 sample households were selected from those four kebeles based on probability proportion to size using systematic sampling technique by using Yamane's Sample size determination formula of 1967.

$$n = \frac{N}{1 + (e^2)N}$$

where  $n$  = the sample size which could be estimated based on the equation,  $N$  = total number of household heads of the four kebeles which is 680, and  $e$  = level of precision is (0.07) due to the available limited resources of time and budget.

### WTP scenario

In many countries of the world, tourism is the basement of their

development and their main source of employment opportunity, way of reducing poverty, sustain their living standard and also one of their national brand. But, in Ethiopia the tourism sector does not contribute similar with its potential and Alelo bad hot spring water is one of the potential tourist areas which is not intensively utilized. Unfortunately, the government cannot address all of the potential tourist areas at its full capacity with the available resources on hand like information, time and finance. Besides, the benefits obtained from the tourist areas were not directly returned for the local communities around that tourist area to develop social infrastructures, improve living standards and sustaining resource conservation. So, in order to secure the benefits obtained from the tourist areas as well as to preserve and conserve the tourist areas, development of community based tourism is necessary.

The main source of finance for the proposed project is those local communities residing around the tourist area like you. By having this, are you willing to pay for the betterment of the proposed project? Yes or No. If your answer is either Yes or No why? In addition if your answer is Yes, how much you are willing to pay in Ethiopian birr (ETB)? 100, 200, 300, 400 and 500 ETB which are equivalent with \$3.499, \$6.998, \$10.497, \$13.996 and \$17.495, respectively<sup>1</sup>.

**Ways and method of data collection**

First of all, general orientation was given for the sample respondents about the aim of the study and benefits that they can get from the CBT project. Then, the interviewer asked them how much they would be willing to pay to develop community based tourism around *Alelo bad* hot spring water. To fix the bid level, a pilot survey was conducted on 30 respondents prior to the actual data collection takes place. The pretest was aimed at verifying whether the questionnaire was logical and unambiguous or not. The pretest also used to fix the amount of bid value that the sample respondents has to be pay based on their willingness. If the respondents are willing to pay for the first bid, they are also asked their response for the next higher bid and the process goes until their willingness is NO. But, if the response of the respondent is NO from the beginning, they are asked the bid rate which is less than the first bid and the process goes until their response will be YES. Such type of method is called dichotomous double bound methods. This method of eliciting the bid value is used in the paper because of its less sensitivity for starting point, reduce the demand for large sample size, asymptotically more efficient and it is more intensive in information (Hanemann et al., 1991; Abay et al., 2008).

Then after pretesting, the actual survey was carried out on collection of primary data from 157 sample respondents using face to face interview based questionnaire on a schedule from April 1, 2019 to June 30, 2019. This data collection method was more relevant than other method of data collection like mail, telephone or.

**Econometric model specification**

In a CVM, the value of CBT to a user is taken as the maximum amount that the user would be willing to pay for the development of the proposed project. Accordingly, a household head was asked how much he/she is willing to pay (WTP) for the development of CBT. In this study, Seemingly Unrelated Bivariate Probit model was

<sup>1</sup> NB: The local currency of the respondent was Ethiopian birr (ETB) and it could be converted in to United States of American dollar (USD) by taking the average exchange rate of ETB in to USD during the data collection period of the month April, May and June, 2019 which was 1 ETB= \$0.03499. postal service to get the necessary information and accurate data from our target groups at the right time

employed in order to quantify the household’s willingness to pay. It is an alternative approach to control for unobservable heterogeneity, as it provides a way of dealing with two separate binary dependent variables (Greene, 2008). Following Haab and Mc Connell (2002), the econometric modeling for the formulation of double-bounded data is given as:

$$WTP_{ij} = \mu_i + \epsilon_{ij}$$

where  $WTP_{ij}$  is the  $j^{th}$  respondent's WTP and  $i=1, 2$  represents first and second answers;  $\mu_1, \mu_2$  is the mean value for first and second response, and  $\epsilon_{ij}$  = Unobservable random component.

To construct the likelihood function, the probability of observing each of the possible two-bid response sequences (yes-yes, yes-no, no-yes, no-no) are given as follows. The probability that the respondent  $i$  answers to the first bid and to the second bid is given by:

$$\begin{aligned} Pr(\text{yes, no}) &= (WTP_{1i} \geq T^1, WTP_{2i} < T^2) = Pr(\mu_1 + \epsilon_{1j} \geq T^1, \mu_1 + \epsilon_{1j} < T^2) \\ Pr(\text{yes, yes}) &= (WTP_{1i} > T^1, WTP_{2i} \geq T^2) = Pr(\mu_1 + \epsilon_{1j} > T^1, \mu_1 + \epsilon_{1j} \geq T^2) \\ Pr(\text{no, yes}) &= (WTP_{1i} < T^1, WTP_{2i} \geq T^2) = Pr(\mu_1 + \epsilon_{1j} < T^1, \mu_1 + \epsilon_{1j} \geq T^2) \\ Pr(\text{no, no}) &= (WTP_{1i} < T^1, WTP_{2i} < T^2) = Pr(\mu_1 + \epsilon_{1j} < T^1, \mu_1 + \epsilon_{1j} < T^2) \end{aligned}$$

The  $i^{th}$  contribution to likelihood function becomes:

$$Li\left(\frac{\mu}{\tau}\right) = Pr(\mu_1 + \epsilon_{1j} \geq T^1, \mu_1 + \epsilon_{1j} < T^2)^{YN} Pr(\mu_1 + \epsilon_{1j} > T^1, \mu_1 + \epsilon_{1j} \geq T^2)^{YY*} Pr(\mu_1 + \epsilon_{1j} < T^1, \mu_1 + \epsilon_{1j} \geq T^2)^{NY*} Pr(\mu_1 + \epsilon_{1j} < T^1, \mu_1 + \epsilon_{1j} < T^2)^{NN}$$

where  $T1$  = First bid price,  $T2$ =Second bid price,  $YN= 1$  for yes-no answer, 0 otherwise;  $YY= 1$  for yes-yes answer, 0 otherwise;  $NN= 1$  for no-no answer, 0 otherwise;  $NY= 1$  for no-yes answer, 0 otherwise.

Assuming normally distributed error terms with mean 0 and respective variances  $\sigma_{12}$  and  $\sigma_{22}$ , then  $WTP_{1j}$  and  $WTP_{2j}$  have a bivariate normal distribution with means  $\mu_1$  and  $\mu_2$ , variances  $\sigma_{12}$  and  $\sigma_{22}$  and correlation coefficient  $\rho$ . Given the dichotomous responses to each question, the normally distributed model is represented as bivariate probit model. The  $i^{th}$  contribution to the bivariate probit likelihood function is given as:

$$L_i\left(\frac{\mu}{\tau}\right) = \phi \epsilon_1 \epsilon_2 \left( D_{1i} \frac{\tau^1 - \mu}{\delta_1} \right), \left( D_{2i} \frac{\tau^2 - \mu}{\delta_2} \right), D_{1i} D_{2i}$$

where  $\epsilon_1 \epsilon_2$ = The bivariate normal cumulative distribution function with zero means,  $D_{1i}=2Y_{1i}-1$  and  $D_{2i}=2Y_{2i}-1$ ,  $Y_{1i}=1$  if the response to the first question is yes and 0 otherwise,  $Y_{2i}=1$  if the response to the second question is yes, and 0 otherwise,  $\Phi$  = Correlation coefficient and  $\sigma$  = standard deviation of the error.

After running regression of dependent variable (yes/no indicator), on a constant and on independent variables consisting of the bid levels, the mean WTP value is determined following Jeanty (2007). Accordingly, the mean WTP and 95% confidence intervals are calculated using the approach developed by Krinsky and Robb (1986), sometimes known as the parametric bootstrapping approach. Therefore, the mean WTP value of developing CBT can be calculated as:

$$\text{Mean WTP} = \frac{X\beta}{\beta_0}$$

where  $X$ = Row vector of sample mean including 1 for the constant term,  $\beta(k - 1 \times 1)$ = Column vector of estimated coefficients,  $\beta_0$  = coefficient of the constant term.

Following Cameron and Quiggin (1994), the Probit model takes

**Table 1.** Chi square test for dummy variables.

Variable		Willingness to pay		Non willing to pay		Total		Chi <sup>2</sup>
		Frequency	%	Frequency	%	Frequency	%	
Gender	Male	88	84.62	18	33.96	106	67.52	7.14***
	Female	16	15.38	35	66.04	51	32.48	
Education status	Literate	79	75.96	20	37.74	99	63.06	3.22*
	Illiterate	25	24.04	33	62.26	58	36.94	
Access to credit	Has access	37	35.58	23	43.4	60	38.22	0.91
	Has no access	67	64.42	30	56.6	90	61.78	
Social responsibility	Has	55	52.88	20	37.74	75	47.77	0.34
	Has not	49	47.12	33	62.26	82	52.23	
Off-farm income	Has	53	50.96	19	35.85	72	45.86	3.23*
	Has not	51	49.04	34	64.15	85	54.14	
Total		104	66.24	53	33.76	157	100	

\*\*\* and \* indicate significance level of variables at 1 and 10%, respectively.  
Source: Survey Result (2019)

the following form:

$$Y_i^* = \beta X_i + \varepsilon_i Y_i = 1 \text{ if } Y_i^* > t_i \text{ and } Y_i = 0 \text{ if } Y_i^* < t_i$$

where  $\beta$  = vector of unknown parameters of the model,  $X_i$  = vector of explanatory variables (age, sex, education level, family size, off-farm income, access to credit, social position, livestock holding, crop production and initial bid),  $Y_i^*$  = Unobservable households' actual WTP for CBT.  $Y_i$  = Discrete response of the respondents for the WTP,  $t_i$  = the offered initial bids assigned arbitrarily to the  $i^{\text{th}}$  respondent random component and  $\varepsilon_i$  = error term  $N(0, \delta)$ .

## RESULTS AND DISCUSSION

### Demographic and socioeconomic related dummy variables

Table 1 depicts that, categorization of the sample respondents as willing to pay and not willing to pay based on their gender, education status, access to credit, social responsibilities and availability of off-farm income source. As a total, majority of the sample respondents (66.24%) were willing to pay for the existence of the proposed project while 33.76% were not willing to pay due to different reason.

From the total 157 respondents, 21.66% were female headed and the majority of them (78.34%) are male headed and the table also clearly shows that Chi square test is significant at 1% level of significance which implies there is a willingness to pay variation among the sample respondents based on their gender characteristics. Related to this, male headed households were more

willing to pay (84.62%) for the initial bid rate than the female household head (15.38%).

The table also shows that, 63.06% of the household head respondents are literate (can read and write from both formal and informal education institutions) while the remaining 36.94% cannot read and write. The Chi square value is statistically significant at 10% level of significance which tells us that educational status of the respondents can cause variation on willingness to pay among them.

In addition, those literate sample households have higher (75.96%) willingness to pay for the initial bid value than their counterpart (24.04%). As we can understand from the table, 38.22% of the sample respondents get access to credit facility and the remaining 61.78% does not get any credit access through the survey period. On the same way the table also depicts that, 47.77% of the sample households have different social and political responsibility in their community including clan leader, kebele leader, religious leader, elder and other leader, while the remaining 52.23% have no position.

At the end, 45.86% of the sample respondents have different source of income other than agriculture and its related activities. The major source of income for the sample respondents includes hand crafting, trading, animal driven transportation facilities and employed as a guard of different institutions, while the remaining household heads has only one source of income which is agriculture and its allied activities. Those sample respondents having different source of income has higher willingness to pay for the lower bid value (50.96%) than their counter parts.

**Table 2.** T-test for continues variables.

Variable	Willing to pay		Not willing to pay		t-value	Combined	
	Mean	SD	Mean	SD		Mean	SD
Age	44.18	8.99	34.74	7.83	-6.5***	40.99	9.69
Family size	4.27	2.63	5.48	2.66	3.41*	4.76	2.63
Livestock holding in TLU	6.75	4.55	7.55	4.63	1.05	7.02	4.58
Amount of crops produced in quintals	4.82	2.63	3.68	3.03	-1.41	3.97	2.70

\*\*\* and \* indicate significance level of variables at 1 and 10%, respectively.  
Source: Survey Result (2019).

**Table 3.** Reasons of WTP.

Reason	Frequency	Percentage
I, or a member of my household might get economic benefit	35	33.65
To see the existence of the project	17	16.35
I can afford it	29	27.88
The project will promote our tourism throughout the world	23	22.12
Total	104	100

Source: Survey Result (2019)

### Demographic and socioeconomic related continues variables

Table 2 clearly explains that those sample respondents who are willing to pay for the initial bid have higher average age (44.18 years) than those not willing to pay (34.74 years old). It indicated that, as the person's age becomes older and older they are more willing to pay for the initial bid. It was supported by the t-value which is significant at 10% with negative sign. The average family size of the respondents was 4.76 households' live under one roof thatch with making a common decision. As we compared, those respondents having higher family size (5.48) are not willing to pay for the initial offered bid value. The sample respondent's primary agricultural activity is rearing of animals and has on average 7.02 livestock populations measured in TLU. The table also shows that, t value is insignificant which indicates that there is no significant difference between household heads on willingness to pay based on their livestock holding. In addition to rearing of livestock, the sample household heads practice crop production in a little bit during the survey time and has on average of 3.97 quintals of agricultural crops. Since t value is insignificant indicating that there is no variation between samples respondent on willingness to pay for the initial bid value focused on the amount of crops they produced.

### Reasons for WTP

Majority of the sample respondents (33.65%) reported

that the main reason to respond yes for the initial bid value was by assuming the future economic benefit of the proposed project in creation of employment opportunity for themselves and for their family members. Next to this, affordability of the amount (27.88%) could be put in the second rank and promoting the tourist area throughout the world (22.12%) as a third reason (Table 3).

### Reasons for not WTP

On the other hand, the sample respondents also put their reasons for not willingness to pay in rank as presented in Table 4. Majority of them (43.4%) says that they have no financial capacity to pay for the offered bid value as the first reason. Followed to this they reported that, developing such project is the primary task of the government (28.3%) as a second reason so the government takes this assignment. Thirdly, 16.98% of the sample respondents reported that, more than this project other projects like education, healthcare and sanitation should get priority and has more significance for the study area.

### Analysis of mean willingness to pay

Seemingly Unrelated Bivariate Probit Model which was developed by Haab and McConnel (2002) was used to estimate the mean willingness to pay off the sample households for the development of the proposed project and the results are presented in the following.

**Table 4.** Reasons for not willingness to pay.

Reason	Frequency	Percentage
I do not believe the money could be used for the project	6	11.32
I cannot afford it	23	43.40
It is a responsibility of the government	15	28.30
Other projects are important than this one	9	16.98
Total	53	100

Source: Survey Result (2019)

**Table 5.** Outputs of Seemingly Unrelated Bivariate Probit model.

Variable	Coefficient	Standard error	p-value
Lower bid	-0.005	0.001	0.000
Constant	1.815	0.281	0.000
Upper bid	-0.002	0.0004	0.000
Constant	1.149	0.204	0.000
Athrho	-0.25	0.193	0.196
Rho	-0.24	0.182	
Likelihood-ratio test of rho=0:		Chi <sup>2</sup> (1) = 1.669	Prob > Chi <sup>2</sup> = 0.196

Number of observation = 157, Wald Chi square (2) = 57.33, Log likelihood = -165.02541, Probability > Chi square = 0.0000.  
Source: Survey Result (2019).

Since the value of Rho is -0.24 which means there is a negative correlation between the error terms of the two models and it is statistically insignificant. The coefficient of the initial bid value and its follow up bid value is negative indicating that as the value of bid rates becomes larger and larger the willingness to pay off the respondents tends to have decrease. So, the Seemingly Unrelated Bivariate Probit model satisfies basic theories of willingness to pay analysis and thereafter the mean willingness to pay off the sample respondents was estimated.

From Table 5, the mean WTP for the initial bid value is 363 ETB (\$12.701) per year and their maximum WTP for the follow up or the upper bid value is birr 574.5 ETB (\$20.102) per year. Then on average, the mean WTP of the sample household heads in the study area for the better accomplishment of the proposed project titled with development of community based tourism around *Alelo bad* hot spring water was 468.75 ETB (\$16.401) per year per household head. The total WTP amount of the whole sample respondents was estimated at 73,593.75 ETB (\$2,575.045) per year with minimum 0 and maximum of 1000 ETB (\$34.99) and on aggregate more than 50 million ETB (\$1.75 million) obtained from the total population of the study area.

### Determinants of WTP

The factors that determine household's willingness to pay

for the development of community based tourism around *Alelo bad* hot spring water was analyzed by using Probit model by assigning responses for the initial bid as a dependent variable and include other ten independent socioeconomic and demographic variables. Here, probit model is one of the appropriate models for binary variables like the responses of sample households on the initial bid which takes a value of 1 for YES response and 0 for NO responses. The predicted value of the dependent variable (Y predicted) showed that the aggregate probability of households willing to pay for the initial bid value was 79.1%. Among the ten variables seven of them significantly affected the WTP of sample respondents at different level of significance (Table 6). Gender is a statistically significant variable which affects WTP at 10% level of significance. Ceteris Paribus, the probability of WTP for male headed is higher than female respondents by 20.9%. This was might be because of, in rural areas males were the main decision makers of the household members than females. The result was compatible with the findings of Alias et al. (2009) and Eshetu and Getamesay (2017).

Education status of the household head affects WTP positively at 1% level of significance. Holding the effect of other independent variables constant, the probability of accepting the mean WTP for literate household heads was higher by 28.9% as compared to their counterparts. The reason is that, educated household heads are more aware and elastic with the importance of developing community based tourism hence they are more willing to

**Table 6.** Probit regression output.

Variable	Coefficient	Standard error	Marginal effects
Gender	0.644	0.344	0.209*
Education status	0.894	0.373	0.289***
Age	0.080	0.02	0.023***
Family size	-0.128	0.061	-0.037**
Livestock holding	-0.027	0.034	-0.008
Crop output	0.012	0.055	0.004
Access to credit	-0.1985	0.363	-0.058
Off-farm income	0.850	0.419	0.233**
Position	0.544	0.31	0.152*
Lower bid value	-0.007	0.001	-0.002***
Constant	-1.310	0.879	

Number of observation= 157, LR Chi<sup>2</sup> (11) = 103.06, Probability > Chi<sup>2</sup>= 0.000, Pseudo R<sup>2</sup>= 0.5133. Log likelihood = -48.858, Y predicted=0.791. \*\*\*, \*\* and \* indicate significance level of variables at 1, 5 and 10%, respectively.

Source: Survey Result (2019).

**Table 7.** Model fittest test.

Number of observations	157
Number of covariate patterns	157
Pearson Chi square (145)	124.65
Probability > Chi square	0.888

pay. The result was true with the findings of Kanayo et al. (2013) and Samuel et al. (2017).

Age of the household head also positively and statistically affects WTP at 10% level of significance. Ceteris paribus, as age of the household head increased by one year the probability of WTP will also increase by 2.3%. This clearly revealed that as the age of a person is increased, he/she has got more important lessons from his/her past experience. This finding is in line with the results obtained by Pramod et al. (2015).

WTP was negatively affected by family size at 5% level of significance. Holding other factors fixed, as family size increased by one person, the probability of saying yes for the initial bid was decreased by 3.7%. This is due to the reason that, as the family size becomes larger and larger the households will face more financial burden to satisfy his/her families basic need like education, food, cloth and shelter rather than giving emphasis on long term projects. The other reason might be majority of the family members may fall under productive age or below 14 years old. This result is consistent with Samuel et al. (2017).

Off-farm income affects WTP positively with 5% level of significance. It can be interpreted as the probability of households head saying yes for the initial bid rate is increased by 23.3% for those respondents having different source of income other than agriculture than their counterparts. Meaning that, households having different source of finance helps to strengthen his/her

financial capacity which leads to participate and contribute a little bit on such long term proposed projects. It is in line with the study output of Samuel et al. (2017).

Finally, for initial bid value, the bid value offered to the households had a negative sign and statistically significant at 1% level of significance. This implied that, holding other factors at their mean values, an increase in the bid offered to households decreases the probability of accepting it by 0.2%.

The result was consistent with the theory of demand, in that the higher the price of a good, the less the demand and vice versa and it was consistent with the findings of Samuel et al. (2017).

### Model fittest test

As indicated by the goodness-of-fit (gof) tests after Probit, the null that the model is fittest is accepted, suggesting that the errors in the Probit regression are normally distributed. The willingness to pay off households in this case is best explained by the Probit model because the assumption of normality of the errors is supported by the goodness-of-fit test (Table 7).

## CONCLUSION AND RECOMMENDATION

The main objective of the paper was to estimate the

mean WTP of sample households for the development of community based tourism around *Alelo bad* hot spring water. Having to achieve its objective the researcher followed different research methodologies to select representative sample from the whole population, to use the appropriate method of data collection technique and to analyze those collected data. Majority of the sample respondents (66.24%) were willing to pay for the existence of the proposed project while 33.76% were not willing to pay due to different reason. The main reason of willing to pay for the initial bid value was by assuming the future economic benefit of the proposed project in creation of employment opportunity for themselves and for their family members while, the others are not willing to pay because of less financial capacity to pay for the offered bid value. The mean WTP for the initial bid value is 363 ETB (\$12.701) per year and their maximum WTP for the follow up or the upper bid value is birr 574.5 ETB (\$20.102) per year. Then on average, the mean WTP of the sample household heads in the study area for the better accomplishment of the proposed project titled with development of community based tourism around *Alelo bad* hot spring water was 468.75 ETB (\$16.401) per year per household head. Besides, gender, educational status, age, family size, off-farm income and position were the significant variables which affect household's willingness to pay.

Based on the main findings of the paper, the following policies should be forwarded.

- (1) The government should take an assignment to strength youth education service and establish pastoral training centers to wide up their capacity building, entrepreneurship skill and awareness status.
- (2) Basically, there is a growing trend of world population and it has its own negative impact on the economic development of a country and the impact is severe especially in developing countries. So, the government should provide different family planning packages and increase the capacity of health extension workers in the study area.
- (3) The government should design different policy packages which help to generate additional income for the pastorals in a long run basis and as much as possible they must be free from seasonality nature.
- (4) It is also better to revise the tourism revenue allocation policies. That is, higher proportion of the income obtained from tourism should be allocated for that community where the resource or tourism is originated and the remaining amount is allocated for the regional and federal government by logical and justified proportions. For example, higher proportion of the revenue obtained from *Alelo bad* hot spring water is returned to the *Alelo bad* surrounding communities for the development of social infrastructure, improving the living standard of the local communities and sustaining resource conservation.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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**APPENDIX**

Some snap shoot pictures of Alelo Bad hot spring water.

