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An Assessment of Urban and Per-Urban Household's Perception and Attitude to Participate for Urban Forest Conservation Practice in Assosa Woreda, Western Ethiopia

Teha Romanu Benti*
Natural Resource Economics and Management, Assosa Agricultural Technical and Vocational Education Training College, Assosa, Ethiopia
teharomano12@gmail.com

Shafe Zelalam Gasisa
Agricultural Economics, Assosa University, Assosa, Ethiopia
shafex2023@gmai.com

Abstract
Urban forest provides environmental, social, and economic benefits to urban resident. Despite all these importance to the livelihood of the urban communities, urban forests in Assosa Woreda are facing manmade and natural challenges. Therefore; this study was intended for the assessment of urban and per-urban households' attitude to participate for conservation of urban forest ecosystem; in Assosa woreda, Western Ethiopia with the specific objectives of analyzing urban and per-urban residents' attitudes toward urban trees and supporting urban tree conservation programs and assessing attitude of urban and per-urban households toward willingness to donate money for urban forest conservation program. Data for the study were gathered from both primary and secondary sources through semi structured questioner via face to face interview. Besides, data was collected using household survey, focus group discussion, and key informant interviews. Multistage random-sampling procedure were used in selecting 392 respondent followed by a probability proportional to size. The data was analyzed using descriptive statistics and econometric model. From the total sampled households 84% of the respondents recognized that urban trees provide positive values, including aesthetics, shade, and improved air quality to people and their communities. Many Assosa town residents have performed at least one type of tree care activity. It is surprising to note that 43% strongly believed that tree topping is a legitimate tree care option, with an additional 38% stating that they somewhat agreed with this practice. The result from ordered probit model indicated that household's residential location, education level, total annual income and access to credit had positive significant effects on willing to donate money for urban forest conservation and sex of the respondent had a negative and significant effect on willingness to donate money for urban forest conservation. The study shows that the urban and per-urban households has positive attitude with willingness of donating money toward urban forestry conservation programs and they have important attitudinal and behavioral information that can help local decision makers to increase the efficiency of urban forest supply, maintenance, and promotion. As policy implications, an effort would be needed to strengthen literacy which increase urban households awareness about the importance of conservation practice and credit facilities expansion is important.
Keywords: Urban Forest, Conservation, Cash, Ordered probit, Households, Willingness to donate.
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1. INTRODUCTION

1.1. Background of the study

Urbanization and development of cities are rapidly increasing across the world and urban forests constitute important tools that maintain the basic environmental and ecological functions of cities on which plant, animal and human existence depend [1]. Building a green economy and effectively implementing ongoing environmental laws are among the strategic goals to be pursued in the growth plan of both developed and developing countries [2]. The forestry sector is receiving strategic attention in GTP II as a key sector that can contribute to Ethiopia's industrialization goals, especially through expansion and the sustainable management of the forest resource base to feed the growing wood-based industries. Ethiopia's economic growth requires an increasing amount of forest resources, including wood products for construction, furniture, electrification, and the pulp and paper industry [3]. Further, forests also provide non-timber forest products that are important sources of livelihood for urban and local forest-dependent communities. Urban forest is the sum of all woody and associated vegetation in and around dense human settlements, ranging from small communities in rural settings to metropolitan regions [4]. Sustainable urban forest planning and management contributes to a pleasant and healthy environment. As a valuable natural resource, urban forest may provide a number of direct and indirect benefits, including climate regulation, noise reduction, watershed protection, recreational opportunities, outdoor education, wood and fruit production and habitat

resource for wildlife [5].

Improving the standard of urban green infrastructure in Ethiopian cities is a national priority [6]. Economic development will continue to bring with it urbanization, greater population density in urban settlements, and correspondingly, increased demand for green infrastructure. To maximize the need of urban society, the Ministry of Urban Development and Housing (MoUDH) prepared the Climate Change-Resilient Urban Green Development Strategy as a road map to fulfill the urban population need in the area of urban green infrastructure service provisions. The MoUDH has developed the Ethiopia National Urban Green infrastructure standard which aims at setting the basic minimum standard requirements for Urban Green Infrastructure (UGI) development and management. Therefore, this urban green infrastructure standard provides the basic minimum requirements to be achieved in the design, implementation and operation of urban green infrastructure.

Forests in and around cities has been and being facing many threats, such as free-for-all urban development, lack of investment and management. Although it has been confirmed that coherent investment in the formation, protection and restoration of urban forests can support to create a healthy environment, forests are often valued more for their aesthetic value than for their ecosystem functions [7].

Large urban green areas are quickly being lost, leaving cities with rarer trees but fast becoming a tangible jungle [8]. For instance [9] on a study on management of agro forestry practices in Assosa district, Ethiopia reported a significant decrease in green areas in the district compared to is its coverage of previous year. The reason is that town designers, government and policy creators are not giving sufficient attention to trees and its attachment in infrastructure and other land allocation priorities. This is because more attention was given to the tangible market products, mostly timber and fuel wood, ignoring its non-market environmental service values [10]

Payment for environmental service is defined in terms of payments to undertake actions that increase the levels of desired environmental services, and defined within market-based approaches [11]. It provides some key opportunities to link up those involved in ‘supplying’ environmental services more closely to those benefiting from the same environmental services. In doing so, it provides cost-effective ways of developing new streams of financing by considerable innovation as for many environmental services, both ‘suppliers’ and ‘beneficiaries’ may not currently be aware of their roles.

Payment for environmental services is becoming increasingly popular as a way to manage ecosystems using economic incentives [12]. It is a flexible incentive-based mechanism that has the potential to deliver in both application of policies and incentives to promote the conservation and sustainable use of biodiversity and environmental services, and secondly, a more efficient use of available finances in existing biodiversity programs. The contribution of forest ecosystems to national income is seen as a necessary element of the case for forest conservation in Ethiopia [13]. Hence before establishing conservation strategies, urban authorities have to investigate house hold’s' willingness to pay (WTP/WTCL). The willingness to pay is the maximum amount a person would be willing to pay, sacrifice or exchange in order to receive a good or to avoid something undesired. This is answer from market or public to conservation and well management of natural resources and urban forests. It measures whether an individual is willing to forego their income in birr or their labor in man days in order to obtain more urban forest service and is typically used for non-market goods. The contingent valuation method (CVM) is an example of stated preference methods, which are most commonly used to gauge environmental value of urban forests. CVM relies on using a questionnaire that taps the willingness to pay (WTP) for non-market functions, which is based on a survey of respondents using hypothetical questions [14]

Monetary valuation of urban forestry and trees are broadly stated in the literature while the non-market ES benefits keep on mostly unexplored [15]. Failure to calculate non-market ES in suitable terms often results in an unspoken value of zero being placed on them [16]. It is essential to connect the functional values of trees in answer to the pressure of urbanization and development matters in cities. It is particularly crucial and important to study the sustainable growth and revolution plan to which entails to make cities and human settlements harmless, resilient and sustainable [17].

Urban extension intensifies the extent and significance of tree resource to provide serious ecosystem services to sustain societal comfort and environmental quality in and around cities [18]. Hence investing in management of urban forest in Assosa city and including them in future planning activities is energetic. This can be accomplished if reasonable and current information on the environmental services of the urban trees are correctly assessed.

Despite all this importance of urban forest, in recent years, urban forests in the Assosa towns are not given the required attention. As a result, the city’s urban forest has significantly deteriorated due to the high rate of deforestation, largely attributed to increasing population growth combined with rapid urbanization. Cognizant of this, the study aimed to analyzing urban and per-urban residents’ attitudes toward urban trees and supporting urban tree conservation programs and assessing attitude of urban and per-urban households toward willingness to donate money for urban forest conservation program

1.2. Statement of the Problem

Urban forest conservation has attracted considerable global interest in recent years. It is accepted as a veritable means of achieving poverty reduction goals because of its role in livelihood, food security and environmental objectives. In many parts of the world urban forests hold significant value to all of its inhabitants as well as the overall health of the planet. It serve as natural defenses against climate change, removing greenhouse gas (C02) generating oxygen, controlling erosion, recharging underground water, maintaining hydrological cycle [19].

Carbon capture and storage are proven, technically viable and environmentally safe means of reducing greenhouse gases [20]. Urban Forests have the Potential for $C0_2$ mitigation option and are critical greenhouse gas reduction strategy. Hence with rapid transformation of economy from agriculture to industry paying attention for urban forest achieve the perpetuation of ongoing development path in Ethiopian economic development [21]. With the development of civilization, large areas have been cleared to make ways for construction, investment, towns and roads [22]. People and forests are connected and have been since ancient times. "This relationship is based on survival. But humans have been and being disrupts this balance.

Climate change impacts on per-urban landscapes include impacts on the per-urban agriculture systems. Impacts of flooding, groundwater stalinization, sea level rise, heat stress, drought, and changes in resources availability are likely to intensify with climate change and especially in Africa and Asia [23]. Therefore, the existence of per-urban agriculture can be threatened by the convergence of urban development and climate change pressures. While climate change is certainly the biggest challenge that humanity currently faces, it however, brings opportunities as well. Reduced emission from deforestation and desertification (REDD) with its significance in capturing carbon will help us and other developing countries protect the remaining forests, encourage more reforestation and afforestation programs [24].

Ethiopian urban forest resources are vanishing at an alarming rate, (MHCO, 2019). The loss of urban forest and vegetation cover results in high rate of soil erosion, degradation of water resources, depletion of biodiversity and declining cities beauty. These factors, in turn, adversely affect per-urban agricultural production and productivity. The cumulative effect of this chain of events is reflected in the prevailing land degradation, poor economic performance and accelerated poverty.

Looking at the area of interest, namely Assosa District, there is natural and manmade forest around and within urban areas that were planted by different government and non-government organization. However, Forests in and around Assosa town has been and being facing by many threats. Such as free-for-all urban development, lack of investment and management, illegal settlement, frequent fire, agricultural expansion and illegal construction. Still the resource are rapidly diminishing at alarming rate due to, construction, medicinal use, human & drink ,ornamental, built fence, fuel wood shading and live fence. Although it has been established that coherent investment in the establishment, protection and restoration of urban forests can support to create a healthy environment, due care was not given to conserve the urban and per-urban forest resource. Beside this there is no source of fund for conservation and rehabilitation of urban and per-urban forest in and around the town. This will create a problem of climate change and increase vulnerability of the community to food insecurity. Hence, in order search source of fund from the community for urban forest conservation and rehabilitation practice attaching monitory value and setting its payment vehicle should be enhanced. To do so, urban forest conservation and rehabilitation is a prerequisite to reserve climate change which enables urban and per-urban resident to get conducive climate for their healthy and quality life [25].

Monetary valuation of environmental services could help to provide the motivation needed for its urban forest conservation in developing countries, mainly in major town of Ethiopia [26]. This is because the existing economic situation supports pressure on government budgets and on the funds allocated to maintain existing urban forest and tree resource. This system tells in economic terms the level of peoples' concern for their environment as supposed from their willingness-to-pay for ES [27]. If the values are adequately large enough, it offers supportive fight for the important roles trees play in sustaining environmental quality. This is obvious, since everyone involved in policy, including management and uses of tree resource are most likely familiar with gains and losses when stated in monetary terms [28]. Most importantly, economic value of ES can offer substantial evidence to assist the allocation of funds (environmental protection/ecological funds) for conservation of tree resource in Ethiopia.

Public attitudes have a significant influence on many aspects including the public budgetary process and subsequent fund allocation, public involvement and participation, the integration of tree programs into social infrastructure, and community identity [29]. Therefore, it is important to consult the public and better understand their attitudes in developing a diverse and adaptable strategy. Obtaining information regarding public attitudes to support urban tree programs is important for urban forest conservation program.

Some studies have estimated the monetary value of non-market benefits derived from urban forests. Economic valuation of ecosystem services helps in identifying and resolving the trade-offs among different stakeholders engaged in management of ecosystems, help decision-making process and incorporates consideration of equity and sustainability and services helps link conservation strategy with mainstreamed policies at national

and regional levels [30]. Each choice or option (that is, to leave a resource in its natural state, to allow it to degrade or convert it into another use) has implications in terms of values gained and lost [31]. Hence, all the values that are gained and lost under each resource use option are carefully considered. Highlight of a growing tendency, in young generations, towards a more sustainable awareness, should believe to nurture through adequate policy instruments, so to enhance the quality of urban life [32]. City managers who are interested in understanding the public value of urban greening programs and developing strategies or policies to expand urban forests as part of a climate change strategy. Urbanization coupled with increased reliance of urban communities on rural areas for ecosystem service provision is a challenge faced by many nation and ability of urban households to directly support restoration efforts in surrounding rural regions is underappreciated funding stream for ecological restoration [33]

Study done by [34] on assessment of farm house holds willingness to contribute labor for bamboo forest conservation also excludes urban households who may contribute for bamboo forest conservation practice. Hence to avoid such biasness in willingness to participate for forest conservation, this study was assessed urban and per-urban household's attitude to participate for the urban forest conservation.

To the knowledge of the researcher no research were carried out in the specific study area. Hence, this study was undertaken in Assosa Woreda of western Ethiopia to address the above-mentioned problems by addressing the following objectives

1.3. Objectives of the study

1.3.1. The General objective of the study

The general objective of the study was to assess urban and per-urban household's attitude to participate for the urban forest conservation in the Assosa Woreda, Western Ethiopia

1.3.2. The specific objectives of the study

- To examine attitudes of urban and per-urban households toward urban forest conservation program
- To assess attitude of urban and per-urban households toward willingness to donate money for urban forest conservation program

2. Research Methodology

2.1 Description of the Study Area

The study was conducted in Assosa district which is one of the 22 Woreda's in the Benishangul-Gumuz Region of Ethiopia. Assosa district is found around 678 km away from Addis Ababa and bordered by Kurmuk and Homesha in the north, by Menge in the northeast, by Oda Buldigilu in the east, by Bambasi in the southeast, by Mao-Komo special woreda in the south and by Sudan in the west. According to CSA (2020) report the woreda has total population of 104,147, of whom 52,968 were men and 51,179 were women. Geographically, it is located at 10^0 20′ latitude in the N and 34^0 58′ longitudes in the E. (ADARDO, 2019). Total of 20823 households were counted in this woreda.

Assosa Woreda has a less urban forest coverage compared to its areal coverage. According to Assosa Woreda agricultural office and Assosa town urban and house construction office report of 2019, about 92023 ha which is about 47.73% of the total area of the Woreda is covered by natural forests including the dense and privately planted forests. Out of this, the urban and peri urban forest forests take only about 23005.75 ha (ATUHC, 2019).

2.2. Data collection method

2.2. 1. Sample Size and Sampling Procedures

Multi-stage random sampling procedures were implemented to select sample from population. In the first stage, Assosa town purposively selected due to availability of street trees, green area, and urban parking. In the second stage, the selected town were stratified in to urban and peri urban based on their geographical and distance from the center of Assosa town. In the third stage four kebele from urban strata and 10 kebele from per-urban strata were purposively selected. Finally 392 sampled households were selected through systematic random sampling techniques through Yamane formula, at 95% confidence level, 0.5 degree of variability and 5 % level of Precision.

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

Where n is the sample size, N is the population size (Total household of the Assosa district), and e is the level of precision. *Equal to:* $n=\frac{20823}{1+20823(0.05)2}=392$

2.2.2. Types, Sources and Methods of Data Collection

Quantitative primary data were gathered by a face to face interview. Household surveys, focus group discussion and key informant interview were also made as part of data collection method for qualitative primary data. Moreover, secondary data were collected from journals, books and agriculture office of the Assosa Woreda. Similarly, quantitative data were collected by employing semi-structured questionnaire. The questionnaire was administered in two sections. The first section incorporates attitude of urban and per-urban households toward urban tree and supporting urban tree conservation programs. The second section contains attitude toward financing

urban and community forestry. The questionnaire was translated into the local language (Amharic Language) to ease the data collection process. Then, well-trained enumerators who have good experience in the survey were employed to gather the data required for this study.

2.3. Methods of Data Analysis

2.3.1. Descriptive analysis

Descriptive statistics (mean and frequency distributions) were used to have a clear understanding of the urban and per-urban residents' attitudes toward urban trees and supporting urban tree conservation programs and attitude toward financing urban and community forestry.

2.3.2. Econometric Analysis

2.3.2.1. Ordered probit model

Attitude of urban and per-urban households toward willingness to donate money for urban forest conservation program was assessed by ordered probit model. Likert scale system was an alternative model for assessing the attitude. The ordinal nature of individuals' responses use the ordered probit model as described below:

$Yi^* = \acute{\beta}'xi+\varepsilon i$…….. (1)

where *yi** is related to continuous latent variable, ranging from $-\infty$ to $+\infty$, indicating an individual's intensity of concern about the potential implications of attitudes toward urban forests; xi are the factors that influence the attitudes yi; εi are errors that are not accounted for by xi.

Given the relationship between yi and yi* and the distribution of error term εi, the probabilities of observing an individual who is unlikely (yi = 0), likely (yi = 1), or most likely (yi = 2) to donate money to urban forestry activities is written as:

Prob (yi = 0| xi) = 1- $\emptyset(\acute{\beta}'xi)$

Prob (yi = 1| xi) = $\emptyset$ (μ-$\acute{\beta}'xi$) - $\emptyset$ (-β'xi)…… (2)

Prob (yi = 2| xi) = 1- $\emptyset$ (μ-β'xi)

The μ is threshold level. Of the three threshold levels, only one threshold level could be estimated.

Finally the results were interpreted through its marginal effect

3. Results and Discussion

3.1. Urban and per-urban residents' attitudes toward urban trees and supporting urban tree conservation programs

For analyzing the attitude of urban and per-urban communities toward urban forest conservation practice, questions related to the perception of the added value by mature trees to personal property, perceived importance of urban trees on personal and community property, support for public funding of urban forests, perceived benefits and negative features of urban trees and forests, participation in urban forestry activities, acceptance of common urban forest practices and tree ordinances were asked and the descriptive statics of their response were listed in the table 1 below.

Table 1: Summary of general attitude of urban and per-urban households toward urban tree and supporting urban tree conservation programs (percentages are in parentheses; $N = 392$)

	Very Important (1)		Some what important (2)		Some what un important (3)		Not at all important(4)		I don't know (5)	
	N	%	N	%	N	%	N	%	N	%
Importance of trees on property when selecting a residence	269	69	102	26	8	2	12	3	1	0
Importance of trees in a community when selecting a residence	272	70	82	21	20	5	16	4	2	0
Utility companies should prune trees on private property to clear zone for utility wires	168	43	94	24	43	11	71	18	16	4
Support for tree ordinances applicable to builders and developers	261	67	86	22	5	1	16	4	24	6
Support for local ordinances to govern the planting, maintenance, and removal of urban trees on private property	63	16	78	20	78	20	153	39	20	5
Support for local ordinances to govern the planting, maintenance, and removal of urban trees on public property	169	43	130	33	31	8	27	7	35	9

Urban and per urban household know the direct and indirect benefit that would be generated from urban frost

conservation. From the total sampled households 84% of the respondents recognized that urban trees provide positive values, including aesthetics, shade, and improved air quality to people and their communities. From the table above the mean response of the house hold on the importance of trees on property when selecting a residence was 1.012. Thus based the hypnotized likert-scale interpretation the mean value was fall under very important category. These shows urban and per-urban households know well the importance of trees on property when selecting a residential location very importantly. The survey found that urban trees play an important role in people's decisions on where to locate their house. The mean response for the importance of trees in a community when selecting residence by five level likert scales was 1.086 which fall in the second likert scale categories. Hence both urban and per-urban community somewhat importantly knows as trees are important in selecting a residential home.

Among attitude related question utility companies should prune trees on private property to clear zone for utility wires were one question that was proposed for the respondents on the third stage. The mean respond was 1.12 from descriptive statics result. The mean value was within the range of the second likert scale which shows the urban and per-urban households somewhat importantly know as utility companies should prune trees on private property to clear zone for utility wires. Respondent also very importantly know the support for tree ordinances applicable to builders and developers. The last question proposed for the respondent was support for local ordinances to govern the planting, maintenance, and removal of urban trees on private property and on the public properties. The mean response for the question were 0.992 and 0.99 respectively which shows as both urban and per-urban community agreed that utility companies should be allowed to prune trees on private property when necessary. The survey also revealed that many Assosa town residents have performed at least one type of tree care activity. In the survey, several questions were asked regarding statewide urban forestry issues. It is surprising to note that 43% strongly believed that tree topping is a legitimate tree care option, with an additional 38% stating that they somewhat agreed with this practice.

Beside the above attitude question certain question willingness to donate money for urban forest conservation and supporting urban forest program, attitude of respondents toward local state, and federal government and source of fund for sustainable urban forest conservation were assessed and listed in the table blow by three level likert scale result. Most of the time five likert scale were the most common form of attitude description. But three level likert scales provide sharp knowledge than five level likert scales. Most of the study on attitude used three level likert scales. In lines with those studies three level likert scales were coded and listed in the model and five likert scales were used for the descriptive statics of it feature of easy computation.

Table 2: Summary of attitude toward financing urban and community forestry (percentages are in parentheses; *N* = 392)

	Very Important (Very Likely=1)		Somewhat Important (Likely=2)		Somewhat Unimportant (Unlikely=3)		Not at All Important (Unlikely=4)		Don't Know(5)	
	N	%	N	%	N	%	N	%	N	%
How likely would you be to volunteer your time to support urban trees activities (y1)	78	20	145	37	74	19	71	18	24	6
How likely would you donate money to support urban trees activities (y2)	51	13	169	43	86	22	59	15	27	7
Importance of local government funding the planting and maintenance of trees on public property (y3)	270	69	94	24	8	2	8	2	12	3
Importance of Beneshangul Gumuz regional state government funding to help communities to plant and maintenance of trees (y4)	242	62	110	28	12	3	16	4	12	3
Importance of the Federal government funding to help individual communities to plant and maintenance of trees (y5)	204	52	117	30	24	6	35	9	12	3

An important aspect of the survey was to investigate attitudes toward supporting community forestry program activities from a variety of perspectives although personal attitudes toward supporting community forestry program activities were similar in terms of contributing time and money, respondents seemed slightly more likely to contribute time. A great majority of the respondents wished, but in decreasing order, local, state, and federal government would provide financial support for community forestry programs.

3.2. Attitude of urban and per-urban households toward willingness to donate money for urban forest conservation program

The most important objective of the study was assessing attitude of urban and per-urban households towards willingness to donate money for urban forest conservation program by ordered probit model. From the survey the ordered probit model was explained in table 3 blow.

Table 3: Ordered probity model.

Attitude toward supporting urban tree conservation program	Coef.	Std. Err.	Z	P>z	Marginal effect			
					Coef.	Std. Err.	z	P>z
Age	.0034407	.0089378	0.38	0.700	-.0006252	.00162	-0.39	0.700
Sex	.3136199	.1583234	1.98	0.048	-.0619645	.03457	-1.79	0.073
Experience in urban forest conservation	.6136615	.2370351	2.59	0.010	.1346774	.06465	2.08	0.037
Land size	.0024248	.0053181	0.46	0.648	-.0004406	.00097	-0.45	0.651
Distance from home to urban forest	-.003202	.0036798	-0.87	0.384	.0005819	.00067	0.87	0.384
Urban forest expert advice	-.3724965	.3623903	-1.03	0.304	.0606294	.05233	1.16	0.247
Income source	.0222328	.2377436	0.09	0.925	-.0040612	.04354	-0.09	0.926
Total annual income	5.07e-06	7.67e-07	6.61	0.000	9.22e-07	.00000	6.09	0.000
Level of education	.0802993	.0312087	2.57	0.010	.0145919	.00602	2.43	0.015
Credit utilization	1.241623	.4398467	2.82	0.005	.3062417	.13463	2.27	0.023
Residential location	1.235489	.2793177	4.42	0.000	.3052154	.09021	3.38	0.001

Number of obs =392
Wald chi2(11) =234.67
Prob > chi2 =0.0000
Pseudo R2 =0.5272
Log pseudo likelihood = -202.62657

From the above ordered probit-model result residential location, credit utilization, education level, total annual income, and sex of the respondent are significant variable that affect attitude of urban and per-urban households toward urban tree conservation program through donating money

Sex- From the marginal effect result this variable is significant at 10 % significant level. This shows being female increase the attitude of urban and per urban households toward urban forest conservation program from unlikely to likely by 31%. This is because women were the first human being who starts gardening activity. The marginal effect result shows keeping other variable constant being female increase the urban and per urban households' willingness to support urban forest conservation program by 3.4. The result agrees with the works of [35]

Access to credit– Credit showed positive and significant effect with the attitude of households toward urban tree conservation program. HHs who had access to credit was more willing to donate money to urban forest conservation than those without access to credit. The result from ordered probit model showed that being access to credit increase the probability of donating money for urban forest conservation program from unlikely to likely by 124% and the marginal effect result showed keeping other variable constant access to credit increase urban and per-urban households willingness to pay by 13.4 birr. This may be due to those urban and per-urban households took credit have more hope full to get high urban forest benefit from their urban forest to pay credit and as well as family consumption by investing more birr for urban forest conservation. The finding was consistence to findings by [36]

Total annual income– Total income of the respondent was found to have positive and significant relationship with the households 'attitude towards supporting urban forest conservation program at 10 % level of significance. This positive effect indicated that respondents with higher annual income were more likely to support urban forest conservation program than households with lower income. This may be due to the fact that, individuals that were accustomed to higher income was more likely to invest on urban forest by expecting high income than others. Keeping all other factor remains constant, when total annual income increase by one unit, respondent willingness

to donate money increase from unlikely to likely by 9 units. This value is in line with the work of [37].

Education level of the respondents- Level of education was positively and significantly related to attitude of urban and per-urban households toward donating money and time to support urban forest conservation program at 10 % significant level. That is, respondents with more years of schooling likely to be donating money for urban forest conservation program. One possible reason could be literate individuals were more concerned about urban forest conservation practices. The result also revealed that holding other things constant, a unit increase in years of schooling of the respondents increases the probability of donating money from unlikely likely by 8%. The finding was similar to findings by [38]

Residential location- The result from the ordered probit model showed that residential location was found to positively affect the willingness of respondents to donate money for the conservation and rehabilitation of urban forests at 1% significance level. The reason for this is that households having home within the center of the city may have more desire to conserve the urban forest than those has no residential house in the city. This result is inconformity with the results of [39]. The marginal effect of this variable shows that a having residential house within the center of the city increase the attitude of donating money for urban forest conservation program from unlikely to likely by 123 % keeping other factors constant.

4. Conclusion and Recommendations

This study assessed urban and per-urban households' attitude for urban forest conservation of Assosa Woreda, Western Ethiopia.

The finding shows that from the total sampled households 84% of the respondents recognized that urban trees provide positive values, including aesthetics, shade, and improved air quality to people and their communities.

The important variables identified in this study to assess urban and per-urban households' attitudes for urban forest conservation was related to their level of education, sex, access to credit, residential location and total annual income. Our findings suggest that improving households' total annual income, educational level and credit service expansion improve urban household's attitudes for urban forest conservation program through donating money. Appropriate forest resource evaluation would make the community more aware of the economic, social and environmental contribution which lead them to conserve, rehabilitate and efficient management of the urban and per-urban forest ecosystem that makes them beneficiary and more profitable. The positive relationship between total annual income of the household and willingness to donate money indicates that increment of the total annual income of the respondents increases their willingness to donate money towards conservation practices of urban forest. So, the forest policy of Ethiopia, particularly Beneshangul Gumuz regional state should design strategies to diversify income sources of the households so as to realize the conservation of urban forests. The study indicates that urban forest resources are important to supplement of livelihoods of the people living around the urban forest, so that the local administration should take in to consideration this livelihood issue before changing the forested area in to other development tradeoffs. The significance of credit utilization indicates that in order to have an effective urban forest conservation pricing system motivation the households in utilization of credit is an important for urban and per-urban households of the study area. Thus, any urban forest conservation program should link urban and per-urban households with credit facilities to induce sufficient investment on their urban forest through expanding bank; establishment of micro-credit institutions where urban and per-urban can access and utilize credit at more affordable rates. Urban and per-urban households in the study area has positive attitude towards willing to donate money toward urban forestry programs and activities of the urban forest. Hence the regional government in collaboration with the federal government should use this opportunity to mobilize the community to combat the problem through implementing the draft strategy and revenue collection for urban and per-urban environment protection. The government should clearly demarcate the urban forest boundaries and monitor so as to control the encroachment for finding additional land for construction purpose. The investment and settlement programs of the government particularly Assosa city settlement program should be implemented by giving a due attention to the urban forest resource as these programs are considerably damaging urban forests. This study assessed the attitude of urban and per-urban households toward willingness to donate money for urban forest conservation program. Assessing the determinants of urban and per-urban household's willingness donate time and amount of time urban and pe-urban household's willingness to donate for urban forest conservation could be an interesting field of study for future studies to put an economic value on different attributes of urban forest

5. References

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