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An Assessment of Determinant Factors of Forest Management Practices: The Case of Shashemene Woreda of West Arsi Zone, Oromia Regional State, Ethiopia

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Abstract: This study examined determinant factors of forest management practices along with its level of effect in six purposively selected rural kebeles by the forest area of Shashemene Worada, West Arsi Zone. The study followed a cross-sectional study design with qualitative and quantitative research approach used to investigate determinant factors of FMP at a point in time. 130 respondents was the parent population used, and the data which collected with use of purposive sampling techniques analyzed using descriptive statistics (percentages), Mean, analysis of variance, correlation help to identify factors related to the household's attitudes and intentions. With standard rule of significance level of $\alpha = 0.05$ at a value of $P<0.05$, significant relationship between agricultural land expansion as a result of land scarcity and forest management were statistically, obtained. Agricultural land expansion come out as a result of land scarcity was, thus, the major bleeding factor for forest degradation and depletion causes. According to analysis conducted in this study that income, gender, and land size as well as the management regimes found influencing awareness of forest benefits. Besides, distance travelled from residential place of the household to market as well as forest posed an influence over the use of forest products. Relying upon results obtained, this study concluded with recommendation of some possible solutions to the study area, pertinently.

Keywords: Determinant, Factors, FMP, Forest, Kebeles, Shashemene Woreda, West Arsi, Ethiopia

1. Introduction

Forests are important sources of livelihood for millions of people and contribute to the national economic development of many countries [12]. In Ethiopia, the diverse forest resources available provide goods and services of significant values to the society, environment and economy [31]. Still, a wide variety of wood used as a raw material as well as source of energy and non-wood products such as honey, incense, medicinal plants, bamboo, foodstuffs, etc [34], signifying that forests both socially and commercially play a momentous role to the livelihoods of rural as well as urban households in Ethiopia [7].

Some studies showed, forests provide up to 40% of the total household income [1] while many studies showed, households consume about 92% of all biomass energy, with the remaining being consumed by small-scale industry and food enterprises [17]. These can clearly have indicated that the urban population is highly dependent on fuel wood and other biomass energy sources such as charcoal, dung and residues for their cooking activities second to the rural population of the country where more than 85% of the total of the population's livelihood forest dependents.

Despite their crucial importance in livelihood of the people and climate regulation, forest resources all over the globe are subjected to enormous pressure resulting in deforestation and degradation due to the increase in human and cattle population and wide spread rural poverty. For instance, since 1990, it has estimated that about 129 million hectares of forests have been lost [18]. The depletion of

forests has many ecological, social and economic consequences, including the extinction of biotic communities which has led to reduction in biodiversity, soil erosion, global warming as well as loss of income to forest dwellers [25].

Harvesting fuel wood and logging, clearing for agricultural land and grazing, expansion of rural areas and villages into forest regions and lack of clear forest and land tenure policies are also contributing factors to forest degradation and deforestation in Ethiopia [3]. Investigating of factors affecting forest management practices is considered as the first art of quality in order to ensuring the goods and services derived from the forest for gathering the present day needs of the community without compromising the ability of its future generations. This at hand effort, in this regard, intended to contribute in identifying the factors contributing to the success or failure of the current evaluative exertion, which took up on the "Assessment of Determinant Factors of Forest Management Practice."

2. Statements of the Problem

Forests play many important roles in the ecosystem as it provides direct benefits to communities around them and act as habitat or home for various plant and animal species. Despite its significance, Forest currently faces serious threats owing to a number of factors [7], which closely related to population dynamics and over-exploitation of wood products, conversion into agricultural land and other land uses.

The greatest threat to the environment (forests and woodlands included) is however posed by poverty whereby people's basic needs for adequate food, shelter and health are not met. Efforts to obtain basic needs under such circumstances generally lead to destruction of forests and woodlands [24]. The rising and high growth rate of the population, by the country, creates an opportunity for high demand for forest, woodland products, creation of land use conflicts and rate of forest degradation and fast depletion of natural resources as well as environmental degradation exposed the vulnerable rural communities to desertification [7].

For example, 1250 hectares of forest in Dello district were destroyed by fire in 2008 alone [14]. *In 1995 alone 32,000 hectares of forest land was converted to agricultural land in the Oromia region. The current loss (between 2000 and 2010) is estimated to be more than 8.7%. As it was, further, stated as [28] in between 1990 and 2020, the region could lose 27% of its high forest resources from agricultural expansion.*

Transforming these degraded forests into productive forests that meet the needs and demands of the community, launching research based and concurrent activities aimed at careful planning of forest management practice for establishing a sustained forest management is required. Sustained forest management, in this manner, entails the balancing of the economic, environmental and social functions and values of forest for the benefit of present and future generations [13].

Until recently, forest management based research addressed mainly social, legal and institutional aspects [29]. Even though most researchers have made investigations, scholars still argue as to the most important factors determining successful forest resource management practice [2] in consequence of the poor research and extension linkage that the existing scant research findings rarely reach the users [10].

As it was stated as [12], no significant role so far played in forest management in Ethiopia despite of many more embarked research of the researchers. A finding of similar study, conducted in Ameya Woreda, South West Shewa Zone, Oromia Regional Governmental state, showed that agricultural land expansion, increased demand for fuel wood, free reaming livestock and willing participation of the community are considered as many as among problems affecting the effectiveness of the forests despite of the opinions of the farmer's privatized plot is increasing, currently [34].

Countless rural development projects have failed to make a long-term impact because of inadequate involvement of local people. Attempts to integrate inter-Sectoral considerations in to policy design for greater efficiency and effectiveness is still comparatively weak. Policy reforms in other sectors generally still give little importance to spillover effects on the management and sustainability of forests, correspondingly [37].

Lack of skilled personal and material needed to manage the forest, lack of political commitment and Poor integration among different sectors in general have a direct relation with forest resource development. Discussion made by different studies indicate that about 20-40% of the energy will be used in the traditional stove, mentioning as the second most important cause of deforestation by the region of the country [10].

Consequently, under the current extension program little information about forest management is made available to the forest experts and farmers, with the exception of building up simple and practical forest management techniques and practices that enable the natural forests to better meet the communities' many needs for different forest products and services.

Greater attention must be given in order to creating incentives for local participation that ensures a meaningful involvement of the communities in project planning and implementations help to improve the forest resource management and conservation. This learn, in light of this, suggested to contribute to the current literature providing a better insight into context specific exterminating factors for the successful FMP program establishment in the study area.

3. Research Objectives

This study was to generally assess determinant factors of forest management practices in six selected rural kebeles of Shashemene district, in West Arsi Zone of Oromia Regional State, Ethiopia.

And, to purposely assessing and investigating for factors that affecting forest management practices, in such a way that probing forest management practices level of determinant factors included.

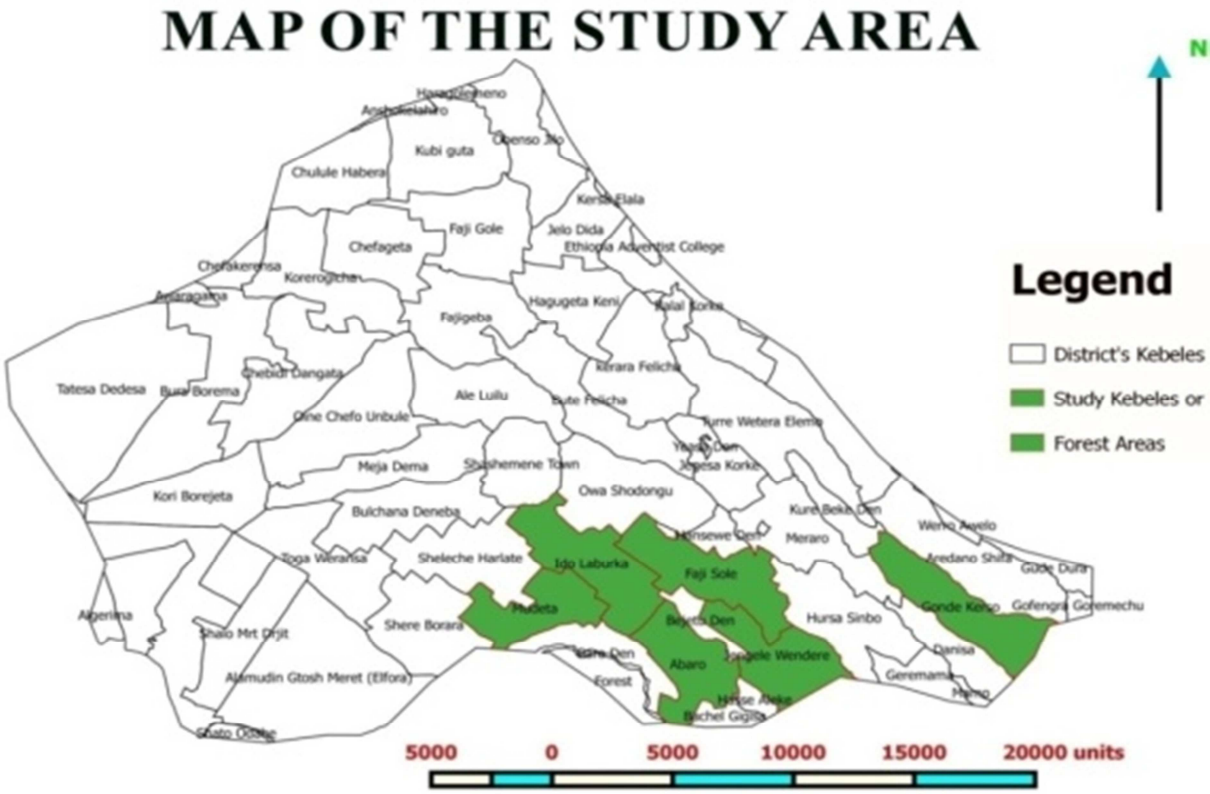

Figure 1. *Map of Shashemene District, West Arsi Zone, Oromia Regional State, Ethiopia.*

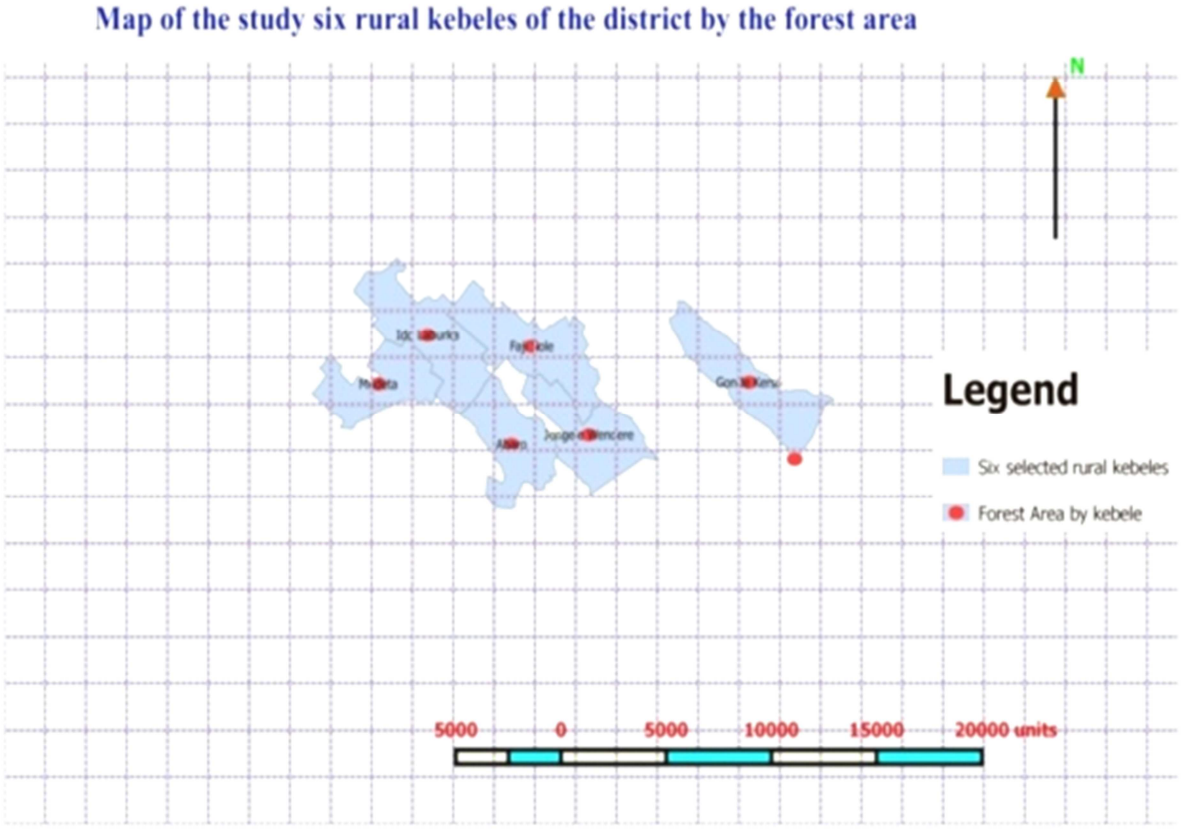

Figure 2. *The Forest areas where this meticulous research has deliberately been carried out [30].*

4. Study Area

Shashemene is found in Oromia Regional State, West Arsi Zone, and located 250 km south of the capital Addis Ababa, and 25 km north of Hawassa, the regional capital of SNNPRS. The area lies within the Rift Valley, with altitudes ranging from 1700 to 2600 meters above sea level (masl). It receives an annual rainfall of 700–950 mm, and has an annual temperature range of 12–27°C [33].

Major crops grown around Shashemene area are cereals such as teff, barley, wheat, maize, sorghum, and root crops like potato and sweet potato and vegetables such as cabbage, spinach and onion as cash crops. Annual crops are predominant and rain-fed agriculture is mainly practiced using draught power. Total human population of this area is 285,176. The kebeles in the woreda are categorized as Kolla (50%), Woina-dega (29%) and Dega (21%). Out of the total area of 76,888 ha, crop land accounts for 48,975 ha, and the rest 7440, 5160, and 1320 ha are forest land, grazing land and land for other purposes, respectively. The urban settlement accounts for 1733 ha [33]. The cattle population in the woreda is 184,549.

5. Research Design

According to [27], a research design is defined as the scheme, outline or plan that is used to generate answers to the research problems. This study was conducted using cross-sectional designs, the type of research design where data can be collected from different respondents at a single point in time. The researcher preferred cross-sectional research design is for the reason that it is cheap in terms of time and resources as the data is collected simultaneously from respondents at single point in time.

It also enables the researcher to triangulate information from study questionnaires and interviews. Under the descriptive design, both qualitative and quantitative approaches were used to adequately establish the contribution of the procurement department to organizational effectiveness, and recommend the use of both qualitative and quantitative techniques as an important form of triangulation especially in studies that involve large numbers of people and this subsequently made it easy to have a clear and scientific view on the opinions by having them on questionnaires [5].

6. Research Approach

The study employed the qualitative and quantitative research approach which is concerned with subjective attitudes, behaviors and opinions of the respondents. It allowed the researcher to use the respondent's personal word in order to gain deeper and clear understanding of their knowledge, feelings and experiences [9]. The study was also prefer qualitative research approach to acquire in-depth understanding of the key informants view since each of them might has a different outlook about the phenomenon being studied.

7. Data Type and Source

Both qualitative and quantitative data types were employed in order to furnish this research through achieving its already constructed objectives. For the accomplishment of this research, the study used both primary and secondary sources of data. In that*, as primary data sources are more closely related with the problem under study as well as for it being reliable and accurate, the study uses primary data from households of the selected rural kebeles by Worada and local administrators, experts of forest management more particularly from local administration of the Worada as exemplified as elders, knowledgeable peoples, and local administrators), development agents (DAs) and technical forestry supervisors.*

Secondary data that could support primary sources were collected from published and unpublished documents obtained from different sources that includes manuals on participatory forest management, journals (annual, monthly and even weekly publications), reports, internet (web-sites), policy statements, proclamations and regulations (from the government).

793, 684 and 705 households of Abaro, Ebicha, Jangala Wandare, Edola Burka, Fadji Solie and Gondie Kerso rural kebele, in that order. *The respondents were chosen because they were believed to be representative of the entire target population of the study and were directly influenced by the practiced of forest management, and thus they would provide relevant information for the study.*

8. Sample Size

Appropriate sample size depends on various factors relating to the subject under investigation such as the time, cost and desired degree of accuracy. The sample size and the selection development course of action should guarantee the representative of the population. The ever increasing demand for research has created a need for an efficient method of determining the sample size needed to be representative of a given population.

And, the six rural Kebeles of the Shashemene district selected as a sampling frame of this study were Abaro (632 HH's), Ebicha (552 HH's), Jangala Wandare (769 HH's), Edola Burka (793 HH's), Fadji Sole (684 HH's) and Gondie Kerso (705 HH's), giving a total of 4,135 households, as a whole. The sample size of the study was determined based on Vowell's formula of [36] shown below despite of the several methods availability used for determining the sample size of respondents from the finite population.

$$\mathrm{n} = \frac{X^2 \mathrm{N} P(1-P)}{\mathrm{d}^2(\mathrm{N}-1)+X^2 P(1-P)}$$

Where:

N = Population Size; X^2 = chi-square table value for 1

degree of freedom at the desired CI (3.84); n = Sample size; P = the population variability (≈ 0.10); d = degree of accuracy expressed as a proportion (0.05). And, the sample size, using above illustrated formula is calculated as follows:

$$n = \frac{(3.84)(4135)(0.10)(1-0.10)}{(0.05)^2(4135-1)+(0.05)^2 x 0.10\ (1-0.10)} \approx 130$$

Accordingly, a total of 130 representative households were determined as a sample size of this study, and determination of sample respondents for each selected kebeles computed as denoting as Abaro (n1), Ebicha (n2), Jangala Wandare (n3), Edola Burka (n4), Fadji Sole (n5) and Gondie Kerso (n6) as follow:

(1) For kebele Abaro: n1 = n (N1/N) = 130 (632/4,135) = 20;
(2) For kebele Ebicha: n2 = n (N2/N) = 130 (552/4,135) = 17;
(3) For kebele Jangala Wandare: n3= n (N3/N) = 130 (769/4,135) = 24;
(4) For kebele Edola Burka: n4= n (N4/N) = 130 (793/4,135) = 25;
(5) For kebele Fadji Sole: n5= n (N4/N) = 130 (684/4,135) = 22 and;
(6) For kebele Gondie Kerso: n6 = n (N4/N) = 130 (705/4,135) = 22.

9. Data Processing

Data processing is an important part of the whole research operation. The raw data were analyzed using descriptive statistics and summarized into frequency, percentages, mean, medians, variance, and standard deviation & Standard error tabular formats.

Correlation analysis also employed and the household's attitudes and intentions related factors by the area were identified besides to exploration of relationships existed between variables, done using Correlation coefficients statistical analysis method. The analysis was conducted by STATA version 12.

10. Result and Discussion

As indicated in table 2 below, the age of respondents is mostly between 32 - 45 years with average age of 38.5, ratifying about of 73 (56.15%) were followed by the age of 18-31 and 46-59 years were of 51 (39.3%) and 6 (4.62%), respectively. It was revealed from the household interviews that most of the respondents were in their middle ages of years of (32-45), who could actively participate in various livelihood activities.

This has proved that age of the respondents seemed to have a positive significant effect on respondents' perception towards FMP. This could be explained by the migration of the youth to the nearest towns to seek for employment opportunities so as to improve their financial situation leaving only older men and women in the villages. Hence, they have to bear all the burden of farming and planting of trees because of the fact that age can affects the type and amount of resources utilized besides to effects posed upon the household's labor supply that in turn brought about natural resource use and its control over labor and its products and access to natural resources influence.

Table 1. *Respondents Sex Distribution.*

		Freq	%	Cum.
Sex Distribution	Male	67	51.54	51.54
	Female	63	48.46	100.00
Total		130	100.00	

N = 130 Respondents Source: Survey Questionnaire, 2019.

Table 2. *Age Distribution of Respondents.*

		Frequency	%	Std. Err.	[95% Conf.	Interval]
Age Category	≥18 & ≤31 Years	51	39.23	.0429893	.3072523	.4773631
	≥32 & ≤45 Years	73	56.15	.0436878	.475101	.6479759
	≥46 & ≤59 Years	6	4.62	.0184735	.0096037	.082704
Total		130	100.00	.1051505	.791957	1.208043

N = 130 Respondents Source: Survey Questionnaire, 2019.

As the result revealed in table 1 above and table 3 underneath, Frequency of respondent's sex allotment represent for 67 (51.54%) and 63 (48.46%) were male and female, constituting of 130 (100%), correspondingly while about 48% of the households were women while 52% were men amongst total of 130 interviewed respondents, indicating the study sample comprised more men than women for the reason that most of the households were headed by men, in that order.

It is, as hypothesized, revealed that there was a difference in men and women in perception, knowledge of, access to, and control over natural resources, on socio-economic variables and different opportunities to participate in decisions regarding natural resources use. The results revealed that among the selected variables expected to affect participation, gender had a positive significant effect attributing to the fact that men play a central role in tree planting, and women are not fully involved in tree growing in

the surveyed village.

Due to their different roles and responsibilities, women and men have varying interests and motivations to conserve, protect or manage their resources. In most regions of the world, men play a greater role than women in the exploitation of natural resources for commercial purposes, i.e., logging, grazing livestock, fishing, hunting, mining and extracting various tree products.

Men are, therefore, more destructive than women but negatively affected when natural resources are depleted. Due more of the respondents being men that it, therefore, reviews that most of the decision are done by men, and the effect on exploitation could be higher than in the areas where most of the household are controlled by women, relatively.

Table 3. *Respondents' Marital Status by Age.*

Age of Respondents (by Years)						
		≥18 & ≤31	**≥32 & ≤45**	**≥46 & ≤59**	**Percent**	**Cum.**
Gender	Male	22	39	6	51.54	51.54
	Female	29	34	0	48.46	100.00
Total		51 (39.23%)	73 (56.15%)	6 (4.62%)	100.00	

N = 130 Respondents Source: Survey Questionnaire, 2019.

According to the result shown in table 4 beneath, approximately 114 (88%) of respondents were married and 13 (10%) were single while the rest 3 (2%) of the respondents were divorced designating that most of the households interviewed by the study area were headed and managed by married couples.

This implies that there could be high marriage rate leading to increase in birth rate by women, resulted population increment in the area.

Table 4. *Gender and Marital Status of the Respondents.*

Marital Status of Respondents						
		Single	**Married**	**Divorced**	**Percent**	**Cum.**
Gender	Male	6	59	2	51.54	51.54
	Female	7	55	1	48.46	100.00
Total		13 (10%)	114 (87.69%)	3 (2.31%)	100.00	

N = 130 Respondents Source: Survey Questionnaire, 2019.

As results presented in table 5 below, it is revealed that about 79 (60.8%) of households were with a family size in between 5-9, followed by respondents of 43 (33%) with family size between 2-5 categories. And, the rest of 8 (6.2%) were households with family size of category 10 and above.

The figure ascribed herein is, thus, indicated that response status made by the sample respondents seemed almost similar. This implies that the household size in the study area is above the expected average pointing that there is high number of people per household which increases the demand for forest product, and attributed to the fact that large family collect more fodder, fuel than small families.

The influence of household size on the level of participation in FM is, for that reason, positive, consistent and significant, be suggested by this study that household's family size considered as another determinant factor which can influence community participation. As family size increases, the probability of being high level participant increases, most likely indicating that large family members have a greater demand for forest products such as firewood, cutting grass and other activities due to their free labor compare to the small family size, that unable to participate actively due to work load specially during harvesting time.

This result is agreed with findings of [26] as stated as; households with large family size have labor time to devote to the activities of community forest management. Large households could, thus, raise adequate labor to undertake both activities whilst smaller households struggled to raise adequate farm labor.

Family size and respondents who had shortage of fuel wood had negative perceptions towards the concepts of FMP. And, this could be attributed to the fact that when family size increases, households want to expand their agricultural land and thus, they won't be interested to participate in FMP, which restricts getting access to the forest land for expanding agriculture. This can have showed that a higher dependence on forest resources is associated with large households, reasons for which they won't be interested to participate in FMP, and be restricted in getting them access to the forest land for expanding agriculture.

Moreover, those that had shortage of fuel wood assumed that they could easily get access to the forest if the FMP was not implemented. They were not interested in knowing about FMP since they believed that the cause of their problem was the establishment of FMP in the area. These perception problems could be due to the low levels of awareness about FMP.

Correspondingly, respondents that had large family size lived in the area for a long period of time and inherited their lands from their ancestor perceived various problems due to the existence of FMP. Hence, more awareness creation is required about FMP in order to avoid these negative perceptions.

Table 5. *Distribution of Household's Family Size by the Study Area.*

Categories		Frequency	Percentage	Cum.
	2-5	43	33.1	33.1
Family Size	5-9	79	60.7	60.7
	≥10	8	6.2	100.00
Total		130	100.00	

N = 130 Respondents Source: Survey Questionnaire, 2019.

The obtained result indicated, the respondents' level of education were seem varied (table 6), that is about 77 (59.23%) and 39 (30%) of the respondents were found attending primary and secondary level of education, respectively.

While the remaining of 11 (8.46) and 3 (2.31%) of the respondents had found be holder of formal diploma and degree education, in that order. However, as it was looked over in the table, respondents with illiteracy level seemed lower implying that presence respondents with high understanding level by the study area.

As it was indicated by this study, formal education can broaden the individual's understanding level of adopting useful skills and technologies implementation towards natural resource protection and conservation which might probably have emerged out from outside of the community.

Added, the results also revealed that the level of education had positive effect on the perception of the respondents towards the concept of FMP. This could be due to interest to know and participate in PFM increases with increase in the level of education.

Similarly, a finding done as [22], stated that an increase in education level can increase the level of awareness thereby creating positive attitudes, which is very crucial at all levels to enhance all stakeholders' participation despite of the counterpart argument made as [21], knowledgeable farmers are expected to adopt new techniques quicker compare to those unknowledgeable.

In support of the hypothesis set up in chapter one of this study, thus, that there was variation in attitudes of local people towards FMP which interconnected with their previous dependency and benefit-sharing experience (i.e., access to and control over the forest resource) and distance or independency from the edge point of the forest benefit.

The obtained results, accordingly, suggested here that attitudes of the local people were significantly affected by previous experience on benefit-sharing. Since the benefits obtained from the Forest won't equally be distributed amongst local communities, those who previously benefited from the forest would have positive attitudes towards FMP.

Table 6. *Distribution of Respondents' Level of Education by Gender.*

Educational Level of Respondents							
		Primary	Secondary	Diploma	≥ Degree	Percent	Cum.
Gender	Male	35	22	7	3	51.54	51.54
	Female	42	17	4	0	48.46	100.00
Total		77 (59.23%)	39 (30%)	11 (8.46)	3 (2.31%)	100.00	

N = 130 Respondents Source: Survey Questionnaire, 2019.

Obtained result has clearly showed, the distance from home of dwellers (respondents) or their living place to area of the forest and market was recorded in average as of 25, 30, 30, 30, 29 and 35 Minutes for Abaro, Ebicha, Jangala Wandarie, Edola Burka, Fadjie Solie and Gondie Kerso rural kebeles by the study area, in that order (table 7).

This implied that number of households those who did actively participating in FM and those who kept back were found varied. It was noted from the result that about the range of homestead distance from the forest had a very significant influence on the number of forest users' and FMP. As the distance of homestead from the forest increased, the number of community members participating in FMP highly decreased.

The study, thus, high-lighted here that distance home from forest and market were found the main explanatory factor in determining the level of community participation in FMP, which also followed and inter linked with household's related concurrent determinant factors such as location, family size, gender and level of economic benefit obtained from the forest.

Similarly, distance home to the forest and market area were also seem to have different radius of km in hours reduction amongst the households of the stud area indicating that the households who were found beyond a radius of 5 km to the forest area had fewer opportunities of economic benefits for streaming to households regularly & depicted low participation, consequently. The closer the location of the forest to the household, the more likely respondent would participate in FMP.

With regard to the changes of distance home from forest, a negative relation with the dependent variable is observed and revealed that a significant difference between the average high level and low level participant and home distances from the forests examined.

And, because of the reason as justified as those households whom were found remotely or far from the forest area might probably be exposed to time delay, information asymmetry and won't get an easy opportunity of accessing the benefit derived from the forest as compared as those households

found near to the forest area, relatively.

A similar report done by [26] agreed that households who joined community forest association to benefit from extraction of forest products, and those that are far from forests could have less participation to derive the benefits obtained from forests as justified reason as it would be more expensive for them to travel and to make extraction of forest products.

The study has, thus, found out that the likelihood of extracting forest products for sales might probably be less provided distances to such facilities were large. Because of the fact that households must have to travel far and cover long distances in order to get cooking gas, making the use of fire wood, etc benefits extracted from the forest.

Added, the results obtained by this study have further showed that main occupation of the household head influences the use of forest products. The households practicing farming as the main occupation were more likely to use the forest products than those whose main occupation was non-farm.

As it's suggested that the likelihood of dependence on forests declines as incomes increase. And, it was hypothesized by this study that an increase in income has positive influence on likelihood of forest product use, which might probably be because of alternatives lack for fuel wood. A similar finding done as [19], agreed that higher income groups utilize more forest resources than the lower income groups when no forest use restrictions are in place.

Table 7. *Study sites and distance traveled (from Market and Forest) in average.*

		Distance Traveled (in Minutes)		Sampled HH*	Mean Age
		Forest	Market		
Study Areas	Abaro	25	120	20	34
	Ebicha	30	60	17	31
	Jengela Wandarie	30	185	24	34
	Edola Burkia	30	75	25	33
	Fadjie Solie	29	60	22	32
	Gondie Kerseo	35	195	22	35
Total		179	695	130	199

HH*= household size N = 130 Respondents Source: Survey Questionnaire, 2019.

The study as well showed, respondents has recognized that degrading forest is considered as jeopardizing their life and living to risk as it is a shelter of life just not only for human but for all and everything whose is in get of the earth's share. The information obtained from the respondents indicated that they are aware of the deforestation is going on in their locality.

Though throughout the study sites there are many proximate and underline causes, those aware respondents' rank the most destructive agents of forests in terms of seriousness; illegal cutting of fuel wood, Over-grazing, agricultural expansion, natural drought and urbanization.

As indicated in table 8 below, illegal cutting of wood was common problem in kebeles where the study conducted. Accordingly, from the total respondents, 66.2% of them agree that the major cause of tree depletion was illegal cutting of wood, and this action kind was under taken by neighborhood that were found as non-users and some users, which had put much misery on environment.

According to [23], the misuse of the natural resources leads to irregularity or intermittency and reduction in rainfall and such conditions do not favor any form of productive cultivation. This misuse of resources also has its own negative impact on active participation of the community and results conflict among users and non-users.

Though people's involvement in various forest practices like illegal cutting of tree, fuel wood collection and harvesting other forest products etc. in the studied areas are significantly reduced compared to earlier time, but still the practice is going on due to weak legal action on illegal users and lac.

Table 8. *Households' Income Source.*

Variables	Cases	Obs.	Percent	Cum.
Respondent's Supplementary income source	Fuel wood selling	86	66.2	66.2
	Working Own business	33	25.4	25.4
	No additional income but Diversifying agriculture	11	8.4	100.00
	Trading	-	-	-
Total		130	100.00	

N = 130 Respondents Source: Survey Questionnaire, 2019.

The successful conservation of forests is dependent upon the attitudes of the local people who are inherently connected with the forests and through their active participation in forest management [7].

Forest user's respondents were asked to select their response saying as 'very high', 'high', 'moderate', or 'low' that whether or not they were motivated to participate in FMP, and obtained finding with regard to awareness and perception of the households by the study area presented in table 9 below, accordingly.

And, about 73 (56.2%) of the household respondents replied with 'very high' responses while 24 (18.5%), 17 (13%) and 16 (12.3%) of the respondents were with responses of 'high', 'moderate', & 'low', respectively. Appropriate to the household's responded response, more than half of the respondents by the study area were seem to have awareness and perception with regard to protecting, preserving and conserving of natural resources, believing FMP use is important to alleviate the destruction of forest, in general. This implied that majority of the forest users had positive attitude towards FMP use since it is very important of the first key need to be practiced in the area necessarily for forest conservation and protecting forest depletion.

Indeed, FMP use could give an authority to the community in order to manage the forest not be depleted there by feeling a sense of belongingness, and increment of forest regeneration, and encourage the right to use the forest product creation. In forest management, attitudes of people are either positive or negative outlook to particular forest management activities [10].

Therefore, in support of the study's hypothesis, the results revealed that there is variation in attitudes of local people towards FMP, depending on their previous benefit-sharing experience (i.e., access to and control over the forest resource) from FMP, and distance from the edge of the forest and market.

Accordingly, the result has suggested that attitudes of the local people were significantly affected by previous experience on benefit-sharing. Since the benefits obtained from the forest were not equally distributed among the local communities, those who previously benefited from the forest had positive attitudes towards FMP. For example, the respondents claimed that authorized people and the relatives of guards to the forest were the major benefited groups.

However, after the implementation of the FMP, almost all the local communities obtained benefits from the forest fairly and participated in the forest management activities. Hence, those individuals who got the highest benefits from the forest before the implementation of PFM were less interested to accept the concept of PFM.

Similar observation obtained as [17], agreed that development is unthinkable without the awareness of the native people and People should be placed first in development projects in general and forestry program in particular. Forest users are, therefore, the major actor of sustainable forest management since they are the primary users and live adjacent to the forest.

The finding result also indicated that the positive attitudes of the local people towards FMP use might probably be connected with various perceived benefits (employment opportunities, infrastructure development, wood products, source of fodder for livestock through cut and carry system, traditional beehive keeping and source of honey, source of income from visiting eco-tourists by providing guiding service, and horse renting) and values (recreational, aesthetic, and medicinal) expect from the FMP.

As information gathered during period data collection time of this study with regard to community's relevant knowledge of FMP use, majority of them suggested pointing out deforestation, overgrazing, habitat destruction and fragmentation, and agricultural land expansion were the foremost causes played a paramount role for degradation of Forest attainment.

Table 9. *Community perception and awareness response status.*

Variables	Cases	Obs.	Percent	Cum
Awareness & Perception of the community in Natural Resource protection	Vey high	73	56.2	56.2
	High	24	18.5	18.5
	Moderate	17	13	13
	Very low	0	00	0
	Low	16	12.3	100.00
Total		130	100.00	

N = 130 Respondents Source: Survey Questionnaire, 2019.

The information and training is generally intended to give inciting knowledge with regard to about FMP activity use by their residential place.

As observed and understood during interview period time of this study that communities in the study area have had traditional experiences in forest management practice which almost are as similar as FMP adopted, scientifically.

And, respondents were asked that this whether contributes to the slow establishment of FMP in the area. Accordingly, table 10 below revealed that about 87 (69.9%) and 43 (33.1%) of them are responded saying 'Yes' and 'No', respectively. This implied that majority of the households by the study area attended training provided by respective governmental and non governmental body proving that they have an image on natural resource protection and FMP know how.

Table 10. *Response status of Training attended the respondents.*

Variables	Cases	Obs.	Percent	Cum
Training attended on FMP	Yes	87	66.9	66.9
	No	43	33.1	100.00
Total		130	100.00	

N = 130 Respondents Source: Survey Questionnaire, 2019.

The results in a table 11 below indicated that from the total sampled respondents of 130, about 64 (49.23%) and 34 (26.15%) of them were responded as rating the training they did attend as 'very useful' and 'useful', respectively. This indicated that training play a significant role as for initiating the communities and bear perception besides to awareness creation whereby diminishing influences might probably be brought upon the forest resources. Similarly, about 16 (12.31%) of the respondents were respond as rating the training as essential with regard to the issue of current FMP activities implemented by the study area.

And, they positively said that education or training given on FMP could increase the knowledge of the community, which may in turn increase participation of the community in FMP, indeed.

However, respondents of 3 (2.3%) of the respondents were respond in contrarily that the training only won't be as the only useful tools as for FMP implementation by the area, due to the fact of it lonely can rarely reduce forest deforestation, but rather another concurrent action must have to be taken against so that those who accustomed in unwise participation would kept back, with exception of respondents of accounted as 13 (10%) whom were remained neutral.

Table 11. *Respondent's response status with knowledge obtained via training attended.*

Study kebeles							
Variable	**Cases**	**Abaro**	**ebicha**	**Ed-burka**	**J-Wandare**	**F- Sole**	**G-Kerso**
	Av	4	2	1	2	4	3
How you evaluate the	Neu	1	1	3	1	3	4
training in terms of what	NUF	0	2	0	0	1	0
you learned	UF	5	4	9	6	4	6
	VUF	10	8	12	15	10	9
	Obs.	20	17	25	24	22	22
Total	Mean	4	3.4	5	4.8	4.4	4.8
	SD	3.937004	2.792848	5.244044	6.140033	3.361547	3.130495

N = 130 Respondents Source: Survey Questionnaire, 2019.
NB: VUF: Very useful, UF; Useful, Av: Average, NUF: Not useful, Neu: Neutral.

According to Scott (2000), forest management must have to be flexible and responsive to the inputs and participation of all the parties of the community. This study, similarly, identified that from the total sampled respondents, approximately 89 (68.5%) and 31 (23.8%) of them were responded as strongly agree and agree indicating that majority of the household were involved in decision making of FMP use in the community.

While 7 (5.4%) and 3 (2.3%) of the respondents were seem that they felt disagree and remained neutral other than providing an answer for questions of interview during study time period, respectively.

As indicated as [11] that Forest Management practices (FMP) is a mechanism to protect forests and enhance the livelihoods of communities who use and benefit from them in the process. It is thus, that encouragement of the participatory and common understanding among the communities must have to be developed for FMP use sustainability.

However, as the study result and/ or findings indicated in table 12 below, more than half of the respondents raised that unwillingness of participation in forest management practice activity use used to get rid of the fear of the future access of resources was the major pointed out reason.

Added, the study revealed that a wide range of different co-management arrangements with different levels of control from relatively seem conservative "benefit sharing" to genuine "community based natural resource management" where local communities have full control over management of the resource and the allocation of costs and benefits were another obstacle hindering for the successfulness of establishment of FMP by the area.

Table 12. *Community Participation in Improving Forest Resources Decision making.*

Variables	**Cases**	**Obs.**	**Percent**	**Cum**
	Strongly agree	89	68.5	68.5
Communities participation in supporting re-	Agree	31	23.8	23.8
forestation to improve forest resources	Disagree	7	5.4	5.4
	No opinion	3	2.3	100.00
Total		130	100.00	

N = 130 Respondents Source: Survey Questionnaire, 2019.

It was identified that suspecting future disadvantages like limitation of open access to resources, sources of income and subsistence need, knowledge gap to the resource and access and distance to the forest are the major determining factor for implementation and participation of FMP.

As the result depicted in the tables 13 and 14 below, a one sample t-test of regression model analysis displayed *Pearson's chi-square* (X^2) *value* that there is a significant statistical relationship with obtained *P-value* of less than 0.05 ($P<0.05$), this implied that agricultural land expansion and

land scarcity had an effect over forest management practice use activity by the study area. As indicated by this result that knowledge gap with regard to the FMP approach was the main concern as raised as the sample respondents.

Similar findings as [4], also agree that Forest are known by supporting the livelihoods of rural poor people either by their timer or non timber products, whereby for about 65% of the total respondents expressed as they worried about the future sources of income and the subsistence benefit that they have been getting from the forest area.

The lack of secure land tenure or forest user rights is a key reason why local people do not commit themselves to actively take part in forest management practice activity. Observation from [20] pointed out that "People without such secure land tenure rights face an uncertain future and are less willing to invest their labor in conserving forests.

Experience in many developing countries has shown that there are numerous constraints in fostering and motivating forest protection and management. The successful establishment of such forest management schemes depends upon the nature of resource tenure in existence. Trees are considered to be a long term investment and it is difficult to encourage farmers to plant trees unless security of tenure enables to certain of accessing economic benefits from the investment."

According to the obtained finding, it is unfortunately that the households by the area were seem living on an agricultural land which cannot accommodate the whole family size and as a result that the forest users by the study area found to have a significant relationship with regard to effects brought about on FMP through expansion of agricultural land.

As a result of the land scarcity visa-vis highly growing size population in the area, mostly the large area of forest land, particularly one geographically located as near as living home was in continuous changing to agricultural land, and this led the forest area's coverage and its potential gone in rate of decreasing, rapidly.

And, what might probably be catch here is that the major cause for forest degradation and depletion by the area were land scarcity and agricultural land expansions observed among the communities.

Table 13. *Effects of Agricultural Land Expansion on FMP.*

Variable	Cases	t-test	df	X^2	Mean	[95% Conf. Interval]	
						Lower	Upper
Land extension	Str. Agr	6.721	3	.007	19.500	10.27	28.73
	Agr	4.038	3	.027	6.250	1.32	11.18
	Str. dAgr	5.400	3	.012	6.750	2.77	10.73

N = 130 Respondents Source: Survey Questionnaire, 2019.
NB: Df = degree of freedom; Str = Strongly; Agr = Agree; dAgr = Dis-Agree.

Table 14. *Effects of Land Scarcity on FMP.*

Variable	Cases	t-test	df	X^2	Mean	[95% Conf. Interval]	
						Lower	Upper
Land shortage	Very high	7.766	5	.001	9.333	6.24	12.42
	high	7.000	5	.001	8.167	5.17	11.17
	low	6.371	5	.001	4.167	2.49	5.85

N = 130 Respondents Source: Survey Questionnaire, 2019.

According to the result displayed in table 15 below showed that respondents of 40 (30.77%) and 38 (29.23%) were responded as 'strongly agree' and 'agree', with regard to the questions that whether forest administration and related status, respectively. While respondents of about 23 (17.69%) and 13 (10%) were replied as 'strongly disagree' and 'disagree,' in that order. However, respondents of approximately 16 (12.31%) were remained neutral.

This implied, majority of the households were believed that to facilitate and practically put the FMP approaches in to action, existence of strong forest administration is mandatory. Because of the reason that in order to trim down those considered determinant factors, assumed as causes for the forest to be depleted and degraded, then followed by deforestation, won't be put in effect, successfully.

However, the current forest administration existed by the area seemed weak led to taking required action measurement upon those who regularly participated in illegal cutting and logging of forest and forest products, and this even results for FMP community participation impediment.

Similarly, [20] pointed out that government can help provide an enabling environment for participatory forest management through decentralization of political, fiscal and administrative power, provision of land possession (tenure) security and user rights for involved interest holders, education and other forms of capacity building.

Higher levels of community participation could lead to more effective forest protection, but without government support in the forms of law enforcement and cooperation between different government agencies such improvements in local forest management are unlikely to be sustained. Relying upon the obtained findings, this study has understood and suggested that attention must be given in order to make administrative institution to be effectively functional, and enhancement of the local community participation onto FMP of the area aimed at increasing forest coverage of the area through assessing & diminishing factors that hinder the FMP settlement.

Table 15. *Forest administration Responded Status.*

Study kebeles by the forest area							
Variable	**Cases**	**Abaro**	**ebicha**	**Ed-burka**	**J-Wandare**	**F- Sole**	**G-Kerso**
Forest administration & environmental education lack	Agree	4	7	6	8	7	6
	DA	6	1	2	1	1	2
	Neu	2	3	2	3	2	4
	STA	8	4	11	6	4	7
	STD	0	2	4	6	8	3
Total	Mean	4	3.4	5	4.8	4.4	4.4
	SD	3.162278	2.302173	3.741657	2.774887	3.04959	2.073644

N = 130 Respondents Source: Survey Questionnaire, 2019.
NB: STA: Strongly Agree' STD: Strongly Disagree; DA: Disagree; SD: Standard Deviation.

Responded status of the respondent's role towards increasing the coverage of natural resources and FMP enhancement through cultivation, protection & safe-guarding of the newly planted Seedling were displayed in table 16 below. And, about respondents of 65 (50%) and 39 (30%) were said as 'strongly agree' and 'agree'. This implied that role of community to cultivate, protect and safe guard the newly planted seedling or tree species by the area were found high, which was beyond the expectation of researcher.

The finding of this study, thus, observed that majority of the respondents by the study area was supporting previously depleted forest area (deforested) through FMP application particularly through increasing participation of the community in the forest management and ownership of local people on forest resources.

A similar findings done as [16], agreed that communities' involvement in these programs, sometimes also referred as participation, is understood to be a contribution of labor and] resources that often is arranged together with food for work payments. Particularly, the involvement of people in soil and water conservation and afforestation programs was a top-down and coercive process.

On the other hand, respondents of 130, 13 (10%) and 3 (2.31%) of the respondents were responded as 'strongly disagree' & 'disagree' while respondents of about 10 (7.69%) were stayed behind without being reacted to what they questioned, correspondingly. This might probably implied that involvement of government and non-governmental bodies towards FMP implementation must have to be accustomed by the area as accomplishment of FM and related activities such as cultivation, protection, and safeguarding, etc need all concerning bodies cooperation.

A similar report made as [14]. agreed for the successful accomplishment of FMP, a clear and recognized access rights to the resources as well as multi stakeholder's agreement on the objective of all round participation of the community should have to be there as this mandatory of all else before.

Table 16. *Role of community in newly planted seedling.*

Study kebeles by the forest area							
Variable	**Cases**	**Abaro**	**Ebicha**	**Ed-burka**	**J-Wandare**	**F- Sole**	**G-Kerso**
Cultivation, protection & safe-guarding of newly planted Seedling	Agree	7	6	8	6	4	8
	Dis	0	0	0	2	0	1
	Neu	2	2	2	2	1	1
	STA	9	7	14	11	14	10
	STD	2	2	1	3	3	2
Total	Mean	4	3.4	5	4.8	4.4	4.4
	SD	3.162278	2.302173	3.741657	2.774887	3.04959	2.073644

N = 130 Respondents Source: Survey Questionnaire, 2019.

11. Conclusions

Forest resource utilization poses a major challenge to the balance between fragile ecosystems and impoverished populations. Many developing economies have majority of their populations living in rural areas where they mainly depend on agriculture or on natural resources and ecosystem services for a living. With the increase in population, the demand for the forest resources and the resultant degradation are expected to increase. Many benefits can be derived from forest management practice initiatives including carbon offsets, seedlings sale and reduction in distances covered to access raw material for wooden handcrafts. Yet incidences of forest destruction by local communities are very common.

As a result, this research has sought to provide a holistic discussion on the determinant factors bleeding the forest management practice sustainability. In light of the negative consequences albeit socioeconomic benefits, factors cause deforestation have been highlighted as a necessary evil. And, in this finding all respondents felt that forest is degraded and recognized this as a problem due to the fact of different causes like illegal cutting of fuel wood, Over-grazing, agricultural land expansion, natural drought and urbanization. This misuse of resources is not only adversely affecting on resources depletion but also had negative impact on

participation of the community as well as resultant conflict among users and non-users.

In addition to the above factors, grazing is also common problem in the studied kebeles though the regional government of Oromia had proposed policies, strategies, rules and regulations for forest conservation. Reason for grazing was the existence of large livestock population, inadequacy of grazing land and awareness problem regarding to zero grazing, relatively. Though most households by the forest area appreciated FMP use but due to the above challenges and shortage of tree seedling and poor management etc, the degree of high level of participation is not as expected and adversely affects on the potential forest in the study area.

The results also showed that forest conservation will be effective and sustained if the community are actively participated on FMP use. However, local institutions were observed as initiator/ enhancing factors as all users found respecting the rule and regulations of the endogenous institution, which is formulated by them with its pivotal role in natural resources conflict resolution. Distribution of forest and forest product was also another considered factors as this can increase the level of participation in forest management practice use in the study area though there are factors which could impede the participation of the forest users in this study. Lack of skills related to effective management of the program, day-to-day decision-making and resolve internal conflicts were also another impeding factors for active FMP participation. Disincentive, lack of upgrading technical staff and lack of experience sharing also results the staff members become de-motivated and turnover for searching better job.

Forest management practice use in the study area was determined by demographic, economic and bio physical factors. It is indicated that women's share of active participation was very low compare to their counter parts, considered as another gender determinant factor, owing to the fact that women's productive and reproductive tasks like childcare, fetching water, cooking food; travel long distance market and farming constrain their participation.

As indicated by the result of this study, as family size increases the number of active participants also increases but as the number of family size reduce the undo is true, proving that household's family size were looked over as forest management practice activity use influencing factor for the major reason that large family members have a greater demand for forest products such as firewood, cutting grass and other activities due to their larger household sizes, free labor and time.

The counter parts of small family size are unable to actively participate easily due to work load or lack of free labor specially during harvesting time. As revealed by the result of this study, distance existed between markets or forest area to residential home has also a significant relationship with forest management practice.

Because, as a distance of home increased from the forest area, forest user participation in forest conservation decreased, and the reverse is also true. This was due to a number of factors like those forest users their resident far from the forest exposed to transportation cost, time delay, information problems what happen in the forest as well as reduce their access benefit from the forest compare to their counter parts users live near to the forest.

12. Recommendations

Based on the results of this study, the following recommendations are made:

1. The study findings indicated that majority of the respondents have low level of education, which this might probably have an implication in various aspects with regard to exploitation of the natural resource as well as perception, awareness and understanding information relating to FMP and its conservation. Increasing the knowledge and awareness level of the local communities about FMP, which is crucial to introduce and effectively implement community-based forest management practices. There is, thus, a need to invest in both formal and informal education of households in the study area as formal and informal education can raises awareness of benefits of conserving the environment and greatly change households' attitude towards forest conservation, correspondingly.
2. Integration of indigenous knowledge with modern conservation approaches in the planning and implementation process is crucial to improve and promote local participation in conservation and management of forests; local knowledge not only provides relevant information on the use of the forest but also contributes valuable information on how to maintain and conserve it.
3. Gender was found to have a significant influence on awareness of forest benefits. The majority of the respondents were found mainly male, contributing to the statistical significance in awareness. Women should be also involved in community programs as decision makers and implementers since fuel wood collection and consumption is their own responsibility, and they also remain in the villages all year round.
4. The majority of households relied on farming as the main occupation which was found to have a significant effect on utilization of forest products. To minimize the forest based dependence, boosting the household's income by commodity value chains investment, in sensitization and training approach. And, provision of accessible credit to households for crop intensification that can ensure households to have increased food supply as well as increased crop residue help as fuel wood instead of relying on the forests all-year-round'
5. Reducing expansion of agricultural land into forest demarcated areas. The government provision of youth and women development enterprise fund a positive approach toward development; however, the accessing of these funds is limited in most cases by lack of awareness by households and bureaucracies. The

challenge with access to these funds can be addressed to minimize complaints on credit inaccessibility.

6. Strong effort for the enforcement and realization of forest policy, rule and regulation that protect the forest from damage should have to be implemented by the area to protect agricultural expansion by means of depletion of the forest area.
7. Awareness creation training about ownership of forests and community role and participation in management practice need to be given to the local community in which this may initiate the community to involve and commit themselves to the FMP as well as conservation and increase gradually the coverage of local forest.
8. Developing the forest for nature-based tourism seems to be a promising business in the future since eco-tourism activities can also improve and diversify the incomes of the local people through creating job opportunities, such as tourist guiding services, souvenir selling, and horse renting all of which can help make eco-tourism economically viable in the forest; developing hiking trails and interpretive materials, including field guides to birds, wild mammals, and woody species would be valuable assets for practicing community-based eco-tourism in the forest.
9. *Since without the interest of local community* that *sustainable forest management practice is ridiculous other than continuation of forest depletion, instability and conflict, the assurance of property right must clearly answer the question of ownership right on forest and forest products.*
10. *In general, participatory forest management practices strategy should have to be a realistic measure that could restructure the problem of forest destruction as its effectiveness can be attained if and only if it is the interest, willingness and context of the local community.*

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