

## Factors determining participatory forest management practices in Dawro Zone Essera District, Ethiopia

B.T. Amenu<sup>1\*</sup>, G.S. Mamo<sup>2</sup>, B.A. Amamo<sup>3</sup>

Wolaita Sodo University, Dawuro-Tarcha Campus P.O.Box, 01, Tarcha, Ethiopia

\*Corresponding author E-mail: bekelet20007@gmail.com, bekele.tona@yahoo.com, bekele.tona@wsu.edu.et

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The livelihood of most rural people of developing countries is strongly linked to natural resources like forest. Currently problems related to environment and climate changes like land degradation, deforestation, over extraction of both renewable and nonrenewable natural resources are a controversial issue throughout the globe particularly in least developed countries (LDCs) since the lives of the people directly and indirectly depend on the existence of these resources. The current study was conducted in Essera district of Dawro whose objective was to scrutinize the factors that determine participatory forest management practices. In order to furnish this research, the researcher employed both qualitative and quantitative data types. Forest user's participation in community forest management in the study area was determined by demographic, economic and bio-physical factors. Participatory forest management strategy will be a feasible measure that could restructure the problem of forest destruction and it is believed to be successful if it is based on the interest, willingness and context of the forest users.

**Keywords:** Forest, Participatory forest management, Deforestation.

### Introduction

According to FAO (2010), the livelihood of most rural people of developing countries is strongly linked to natural resources like forest. Currently problems related to environment and climate changes like land degradation, deforestation, over extraction of both renewable and nonrenewable natural resources are a controversial issue throughout the globe particularly in LDCs since the lives of the people directly and indirectly depend on the existence of these resources (Bedru, 2007 and FAO, 2010). Terefe (2003) pointed out that the major factor to exacerbate such severe problems are high rate of population pressure with low rate of economic growth and low level of technological improvement, increased consumption of nonrenewable natural resources. Moreover, the rural poor who have not accumulated wealth are unable to build reserve asset from the utilization of these resources in order to tackle problems in hard times (Tola, 2005).

In Ethiopia renewable natural resource degradation has become the most serious and acute problem. During the second half of the 20th century, the country has experienced severe deforestations and degradation (UNDP, 2012). According to Winberg (2010), between 1955 and 1979, over 77% of the country's forested area disappeared and it continues to lose 8% of its remaining forests annually. Her study clearly stated that natural forests and woodlands covered in Ethiopia were around 15.1 million ha in 1990 however, due to different factors the forest area declined to 13.7 million ha after ten years in 2000. Another study revealed that in 2005, the forest cover had further declined and was estimated to cover 13.0 million ha (FAO, 2010 cited in Million, 2011).

Since the mid-1970s the management of forest resources in Ethiopia was mainly carried out as state and community forestry programmes. These non-participatory approaches failed to reduce tree felling and clearing, especially in Protected National Forest Priority Areas (FARM Africa, 2000). Further this problem was beyond the control of the state therefore, the ultimate solution for this severe problem will be encouraging of local people to manage and conserve their resources since they live with forests and they are primary users of forest products (FAO, 2010). According to Yemiru (2011), in Ethiopia there is a growing understanding that deforestation and land degradation will further exacerbate poverty, which brings natural resource conservation to the forefront of rural development initiatives. Terefe (2003) on his side stated that community participation is very crucial, to overcome the rate of deforestation. Participatory Forest Management (PFM) is a new paradigm system of forest management which is adopted and implemented in order to fulfill the interest, respecting of traditional users, and bottom-up approach which encourage a sense of belongingness to the rural people in general and landless rural youth in particular (winberg, 2010). She further explained that this new paradigm shift was mainly introduced as a complementary mechanism which safeguards forests. According to FARM Africa (2000) and UNDP (2012), the government also created spaces for NGOs' engagement in sustainable forest management, through participatory forest management (PFM) practices and a number of NGOs and bilateral programs launched PFM in the mid-1990s. PFM was first introduced to Ethiopia few years ago but the approach is expanding to cover more and more hectares of forest across the country (UNDP, 2012). PFM in Ethiopia is well adopted recently including regional governments and at every woreda offices (winberg, 2010).

## **Statement of the problem**

So far, no study has been conducted on factors affecting community based forest management in North Essera district. Hence, empirically, it is intended to study the factors influencing participatory forest management and depict the magnitude of their impacts. Moreover, this study contributes to the current literature providing a better insight into context specific factors affecting community participation in community forest management in the study area.

## **Research objective**

- To identify the determinant factors (demographic, bio-physical and economic) that affect participation in participatory forest management.

## **Significance of the Study**

The findings of this study will have great role in contributing with critical assessment of the topic under discussion which is called exploring factors forest user's Participation in community forest management. In this regard, this research study is expected to be indispensable for all stakeholders that have their own stakes and being engaged in the enhancement of the PFM and provide basic information to all stakeholders like private, governmental and nongovernmental organization which, operate their duties in community centered forest conservation with community in the central focus. Furthermore the study examines what activities are undertaken in the study area to tackle the biodiversity losses as well as serves as a good basis for forthcoming researchers who have a strong desire to carry out a research on this or related topics in this area or elsewhere.

## **Materials and Methods**

### **Study area description**

This study was carried out in Essera Woreda of Dawro zone, which is located between 6.7-7.020 latitude and 36-37.10 longitudes. Essera Woreda with its capital at Bale town is situated 575 km south of the capital Addis Ababa. The district has a total area of 1043 km<sup>2</sup> and is divided in to 29 kebeles. The altitude of the district ranges from 501-2500 meters above the deal level.

The area receives an average a new rainfall of about 1600.5 mm and has an average annual temperature ranging from 17.6 to 27.50 c mixed farming system is main economic action practiced in Essera Woreda Agricultural and Rural Development office (EWARDO, 2020). The cattle population of Woreda is 54,800.

### **Data type and source**

#### **Data type**

In order to furnish this research, the researcher employed both qualitative and quantitative data types. The researcher used qualitative data type in order to achieve objectives set in number one and two. Likewise, quantitative data a type was used to achieve objectives set in number three and four. Moreover, in order to make the study more accurate and reliable through triangulation, the researcher used both qualitative and quantitative types.

#### **Data source**

For the accomplishment of this research, the study used the following both primary and secondary sources of data.

**Primary Sources:** Since primary sources are more closely related with the problem under study, they are more reliable and accurate. Therefore, the study used primary data from households selected *location*, Wereda and local administrators, experts of forest management more particularly from local administration of Essera district, (elders, knowledgeable peoples, and local administrators), development agents (DAs) and technical forestry supervisors.

**Secondary Sources:** Secondary data that supported primary sources was collected from published and unpublished documents obtained from different sources. These included manuals on participatory forest management, journals (annual, monthly and even weekly publications), reports, internet (web-sites), policy statements, proclamations and regulations (from the government).

## **Research strategy and design**

### **Research strategy**

The research study adopted a case study that used both quantitative and qualitative approaches. Qualitative data was used for the purpose triangulation. Moreover, the study was a developmental case study descriptive survey and logistic model was used for the study as a result of this it was imperative to use both qualitative and quantitative approaches. Cross-sectional data was used for this study.

## Results and Discussion

### Factors encouraging forest user's participation in forest conservation

#### Local institutional rules

Institutions are a set of complex norms regulating the action of persons in the process of social interaction. They represent established local systems of authority and other phenomena, derived from the socio cultural and historical processes of a given society (Agrawal and Gibson, 1999). They constrain some activities and facilitate others; based on information from local leaders during interview, in study forest the rules of the local institution are not allowed users cutting non dry trees for any purpose. The only access the users were allowed collection of dry fuel wood and harvesting grass. Because the community is being aware about the significance of avoid cutting the forests for natural regeneration. But still it requires very strong work to tackle problem on forest as observation and discussion with key informants indicated. They were allowed to get benefit from some naturally grown fruits like cactus; oxen grazing from regenerating grass then allowed to other livestock during dry season and are allowed to get access from non dry woods in addition to dry wood and grazing. However, the users should ask first to the local leaders and they should also explain for what purpose they need the wood. Asking wood for house construction and fencing is forbidden in study forest but there is still cutting of trees in as newly cut wood, stump and bark.

Majority of the study have almost similar findings regarding the important factor, institutions, for the success and achievement of collective action in managing a common resource (Alemtsehay, 2012). The same is true in this study forest user community have their own local institutions to manage their communal forest (Table 1).

**Table 1.** The role of local institutions in community forest management.

Variables	Cases	Frequency	Percent
They are initiators	Yes	143	87.9
	No	20	12.1
	Total	163	100.0
They are inhibitor	Yes	8	5.1
	No	155	94.9
	Total	163	100.0
No effect	Yes	11	7
	No	152	93
	Total	163	100.0

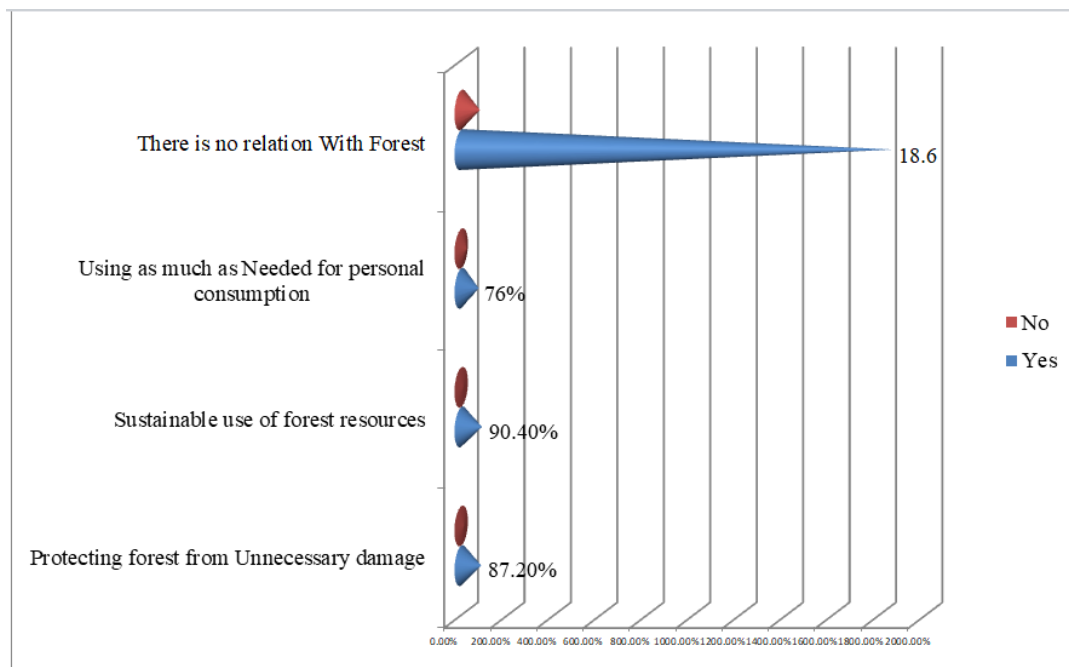
Source: Survey questionnaire, 2020.

Out of all respondents in the study area about 87.9% of the sample respondents indicated that, the effect of local institutions in participation of the community are seen as initiator/enhancing factors. Because all users respect the rule and regulations of the endogenous institution, since the rule is formulated by themselves based on their own living condition and contexts without external intervention. Practicing local institutions and managing local resources are the manifestation of decentralization. This encourages benefit sharing derived from forest and forest products are based on fair distribution, these all persuade the participation of the community and create confidence and feel sense of belongingness. According to the respondents in addition to the above significance local institutions, served as a prominent input in natural resources conflict resolution. Therefore, local institutions are significant enhancing factors of forest user's participation in study area.

#### Cultural and indigenous knowledge factors

Local knowledge and cultural activities had their own significance influence on forest user's participation. Community interests and knowledge in participatory process consists of a strong power and sustainability. Information collected through the questionnaire and interview proved that, the users have a good knowledge and skill of resource management practices and thus they want to use their knowledge for the better management of their available local resources based on their local culture, tradition, customs, norms and age-old values.

In the study area from the total sample respondents around 93.6% of them indicated that, the cultural value or belief of the community towards the forest was very high. Both protect forest from unnecessary damage and Sustainable use of forest resource transferring to the next generation. respondents and information from focus group discussants believed that forest towards the community is vital not only for supporting the livelihood of the community but also for socio-cultural values like, serve as shade in social meeting, shelter for their animals, sources traditional medicine and skip from enemies etc. This showed that cultural value is one prominent enhancing factor and motivating participatory behavior of the community. This is in line with the observation of Adhikari (2011), no doubt that there are certain cultural and social variables, which are influential in motivating participatory behavior of the forest users. From this point of view, community forest resources management would be effective and attractive when communities adopt using their own style and fashion (Fig. 1).



**Fig. 1.** The cultural value or belief of the community towards the forest.

### Awareness and training on forest management and conservation

Among the expected factors that community living adjacent to the forest to participate in PFM practice are, awareness creation and training. Awareness creation influences the level of participation in forest conservation activities and depending on the type of training provided (Table 2).

**Table 2.** The impact of training and awareness on forest users participation.

Question	Yes		No		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Have you ever been trained about forest use?	74	45.6	89	54.4	163	100

Source: Survey questionnaire, 2020.

According to table 4.5 from total sample respondents over 45.6% of respondents are trained though government alone engaged in this activity; to enhances participation of users, awareness and training was mainly focused on activities, such as, tree planting and tree nursery establishment and protecting the regenerating trees.

It is known having a better Knowledge and understanding about the social and economic impact of deforestation encourages people to take part in forest management. Training does not only help the community members manage the forest appropriately and hence increase forest cover but also provides the appropriate environment for farmers to exchange views on better agricultural production technologies and issues related to other income generating activities (Musyoki et al., 2012).

### Restrain factors of forest users' participation

#### Related to forest use rights and expansion of agricultural land

The lack of secure land tenure or forest user rights is a key reason why local people do not commit themselves to participate actively in forest conservation.

Observation from Isager et al., (2004) pointed out that "People without such secure land tenure rights face an uncertain future and are less willing to invest their labour in conserving forests. Experience in many developing countries has shown that there are numerous constraints in fostering and motivating community participation in 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 Table 3 forest users majority of the forest users around 74.6% from community forest had fears their participation related agricultural land expansion. Most community forest of the woreda especially that are geographically located in the plain are in continuous changing to farmland following large intention of investors and youth emerged for farming since few years. For example investment bureau of Zone and woreda agriculture the woreda indicated that, large acres of land had changed to farmland that is from 2015-2017 around 400 hectare of land was distributed to three investors for coffee farming and other purpose. This shifting of community forest to farmland was the main restrain factor of participation in this site. In addition to this the major

obstacle to participate in this area was, the left narrow area of community forest is going on distribute to some part of the community.

**Table 3.** The effect of expansion of agricultural land on active participation of the forest users

Question	Yes		No		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Does related to expansion of agricultural land affect your participation in forest management?	123	75.6	40	24.4	163	100

Source: Survey questionnaire, 2020.

Moreover, some new exotic species are becoming expanding rapidly in various areas of this woreda. *Eucalyptus* is new invasive plant it helps to protect gardens and fields against roaming animals. Since few years some members become beneficial from selling the seed of this plant. However due to its exclusiveness to the whole forest users and lack of multi functional unlike endogenous plant species that support the community to feed their animals, used for traditional medicine and sources of farmland equipments. Totally it is not acceptable by the forest users. While the researcher asked what were the major criteria to be a member and beneficial from this activity, response from the members was "we have not been a farm land". This all restrain the participation of the whole forest users in this site.

### Poor management and lack of incentive

In this study though information from the Table 4 revealed that about 65.4% respondents believed that in the study area there was very strong and strong local management to enforce and motivate participatory forest management, about 34.6% of the respondents believed that in the study area there is very weak and weak management related to forest conservation. The major reason for weak management was skills related to effective management of the program, day-to-day decision-making, resolve internal conflicts, and ensuring community benefit sharing are often lacked this mainly led to impede the participation of the community. In addition to this, as the sample respondents and information from interview of development agents and forestry supervisors of the study woreda revealed that not only poor local management impedes the participation of the people but also there are problems at the woreda level. According to the interviewee this short coming was emanated from disincentive, incentive must create to ensure that they will obtain proper benefits from participatory forest management and gives people more moral support in many forms. In addition to this, lack of upgrading technical staff and lack of experience sharing also results the staff members become demotivated and turnover of staff members for searching better job and problems related forestry programme to solve on time.

**Table 4.** Role of local management in community forest management.

Variables	Cases	Frequency	Percent
Role of local management in Enforcement of PFM	Very strong	50	30.4
	strong	57	35
	weak	31	19.1
	Very weak	25	15.5
	Total	163	100

Source: Survey questionnaire, 2020.

Moreover, shortages of modern technology that support the study are also other underline problems. In the study area except government there is no nongovernmental organization, no research and development which support in finding of new and resilience trees species which adoptable to the environment. In addition to this according to the DAs of each site there are common problems like lack of enough vehicles. Since most forestry areas of the woreda are located far from the town. DAs were use their foot to move the long distance, this results consuming time, they become tiresome and boring to the task. Finally this all resulted for the delay of solving problems on time, causes forest depletion and impede the participation of the staff and community as well.

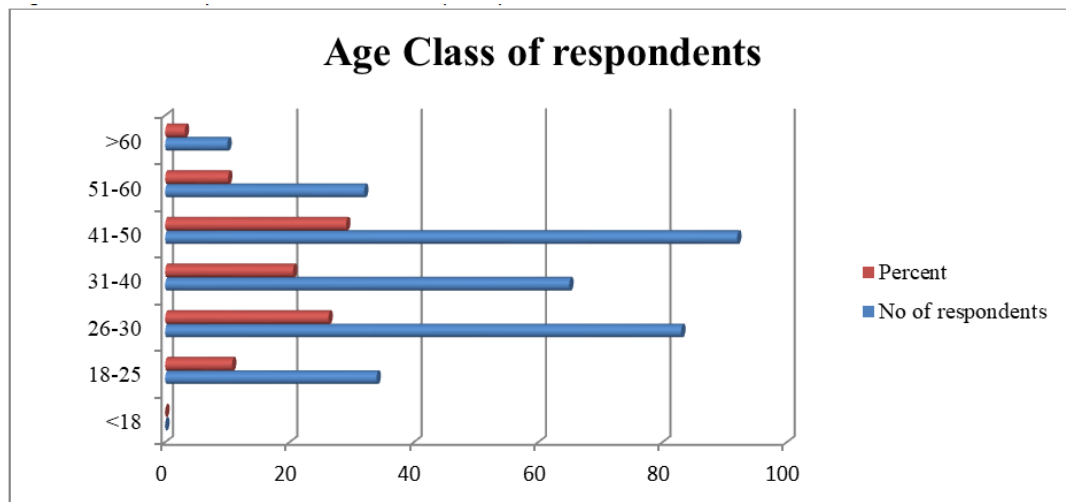
### Determinants of participatory forest management

The descriptive part uses statistical tools like percentages and summaries using data collected from 163 respondents the SPSS statistical package is used to present results. Age of a household head plays an important role in household decision on in PFM. The result revealed that about 10.76 percent of the households were in the age group of 18-25 years in which 26.26 percent were from the age group of 26-30 and 20.57 percent were from the age group of 31-40 years and 29.11 percent from the age group 41-50. The minimum age of the sample household was 20 years while the maximum was 71. The mean age was 45.5.

### Age of the house holds

In this study age was an important factor in household decision to participate in PFM. In the study area more aged people were better participant than the younger ones. According to information from the sample respondents, this could be young people had

mobile nature of searching other job. In the study area majority of literate and illiterate youngsters are landless, this mainly push them engaged in off farming activities like (laborer, waiter, carpenter and the like) and hiring in governmental and nongovernmental organizations this may lose relation with active participation in PFM (Fig. 2).



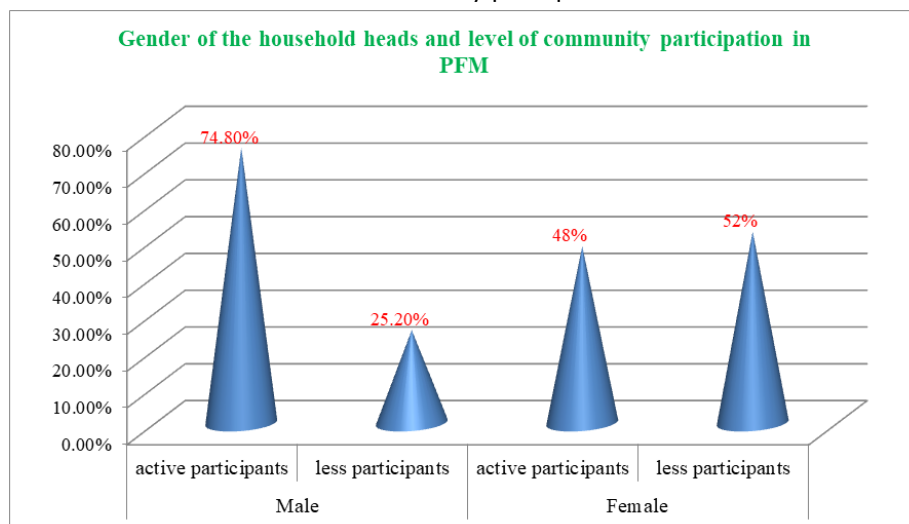
**Fig. 2.** Age of the household head level of participation in PFM.

In contrast to this the older aged are interested to participate actively, because they have time to participate and most of them are land holders this fact mainly influence to participate actively. According to the result highest participation in forest conservation for all community members in the three study sites was noted for respondents within the age cluster of above 40 years when compare with other age category. This is agreeing with the observation of Thoai and Rañola (2010), Decision Making by Upland Farmers on Forest Management in the Northwest Mountainous Region of Vietnam. This study show that older farmers are more likely to participate in the forest management program, because their opportunities to be employed or engaged in other livelihood activities such as working in construction projects or as porters is more limited than younger people who tend to have more employment choices. This indicated that the youngsters have more options to engage in other activities, this influence on their active participation.

### Gender of the household's heads

In study area women's share of active participation was very low compare to their counterparts.

Fig. 3 below gender of the household heads and level of community participation in PFM.



**Fig. 3.** Gender of the household heads and level of community participation in PFM.

As Fig. 3 indicated clearly from total active participants of forest users the share of women was only 25.4% compare to their male counter parts. This was due to women's productive and reproductive tasks constrain their participation in all sites of the study forest. Information from less participant women respondents (52%) revealed that their major constraint for active participation was multiple burdens both productive and reproductive roles such as childcare, fetching water, cooking food and travel long distance market. In addition to this women were not much benefited from the forest products due to the above factors and lack of free time specially during harvesting season compare with male counter parts.

It is agree with the observation of Nuggehali and Prokopy (2009) the role of women as care givers and nurturers hinders them sparing time from domestic chores to participate in conservation activities or attend forest management meetings. Therefore women's work load is the most restraining factor of active participation in forest management in the study area.



## Level of education

The result showed that the educational status of farmers in the study area was considerably low. From the total sample respondents around 66.9% was illiterate while the rest 33.1% were elementary educated and up to diploma.

The survey result indicated that, there was significant association between the level of education and degree of participation in each of the forest sites. As Table 5 indicated as level of education increases the level of participation is decrease. The main reasons for this was, most educated in the study area are engaged in off farm activities like small business, trade, hiring governmental and nongovernmental organization. This goes down their participation. Some studies revealed that education level has a tendency to reduce forest dependency because those educated provides a wider range of job options hence making fuel wood collection unprofitable due to greater opportunity costs of collection (Adhikari et al., 2004). In contrast some study revealed that education is an input/support in awareness creation about forest conservation and increase the participation of the people (Chhetri, 2005).

**Table 5.** Educational status level of participation.

Variables Status of education	Level of participation in PFM				Total	
	Yes, very actively		Yes, but less actively		Frequency	Percent
	Frequency	Percent	Frequency	Percent		
Cannot read and write	80	71.9	26	52	106	65
Elementary school	22	19.6	9	17	31	19
High school	10	8.5	11	21	21	12.9
Diploma and above	-	-	5	10	5	3.1
Total	112	100	51	100	163	100

Source: Survey questionnaire, 2020.

## Household size

Another factor that influences community participation in this finding was household family size. As table below indicated, participation based on family size, as the number of family size increases the number of active participants also increases but as the number of family size reduce the undo is true. The major reason was, large family members have a greater demand for forest products such as firewood, cutting grass and other activities due to their larger household sizes hence the decision to participate in CFM in order to increase their chances of accessing forest products the counter part of small family size are unable to actively participate easily due to work load or lack of free labor specially during harvesting time. It is agrees with the observations of Misyoki et al., (2013), in their finding Household Decision to Join Community Forest Associations in Kenya that households with large family size are in better position to utilize the community forest resources and hence are likely to participate more in PFM to meet their needs for forest products. At the same time Ogada (2012), pointed out that larger households have labour time to devote to participate in PFM activities. Moreover, such households participating in PFM and benefiting from forest products could be viewed as a viable livelihood alternative for the larger households (Table 6).

**Table 6.** Family size level participation in PFM.

Variables Family size	Level of forest users participation in PFM				Total	
	Yes, very actively		Yes, but less actively		Frequency	Percent
	Frequency	Percent	Frequency	Percent		
<3	18	15.9	21	42	39	24
3-4	34	29.9	16	32	50	30.67
5-7	46	41.1	12	24	58	35.58
6-9	10	9.3	2	2	12	7.36
>10	4	3.8	-	-	4	2.45
Total	112	100	51	100	163	100

Source: Survey questionnaire, 2020.

## Livelihoods of local people

According to Bedru (2007), incomes from natural resources in general and forest resources in particular play indispensable role in rural livelihood of most developing countries. The local people in rural study area are engaged in diverse livelihood activities. About 55.71% of the sample households practice mainly agriculture crop production, 11.5% engaged in animal production, only 4.6% are engaged in fuel wood selling and the rest, 2.57% are engaged in other off farm activities like trade, own small business, daily labor or hired in governmental and nongovernmental organization (Table 7).

According to the response their source of wood for sale was from community forest, individual forest and government forest.

**Table 7.** Household and major occupation.

Major Sources of Income	Frequency	Percent
Agriculture	91	55.71
Agriculture and Coffee	7	4.6
Sale of fire wood	4	2.57

Charcoal	4	2.57
Pretty trade	8	4.86
Agriculture, coffee and honey	4	2.57
Bamboo tree workers	8	4.86
Animal production	8	4.6
Hired	25	15.14
Labor	4	2.57
<b>Total</b>	<b>163</b>	<b>100</b>

Source: Field survey, 2020.

### Distance home from the forest and the market in hours

It was noted that the result about the range of homestead distance from the forest had a very significant influence on the number of forest users' participation in forest conservation in all *tabias/kebelles* of the study area. As the distance of homestead from the forest increased, the number of community members participating actively in forest conservation decreased. Number of those actively participating in forest management from the total active participants around 69(65.305%) was taken (1-10 minutes), reduced to 27 (18.4%) (11-30minutes), and reduced further down to 4(2.72%) (31-60 minutes) as clearly indicated in the table below. This was due to a number of factors like those forest users far from the forest are exposed for transportation cost, time delay, information problems what happen in the forest as well as reduce their access benefit from the forest compare to users resident nearest to the forest (Table 8).

**Table 8.** Distance home from the forest in hours level of households participation in PFM.

Variables		Level of forest users participation in PFM				Total	
Distance home from the forest in hour		Yes, very actively		Yes, but less actively		f	%
	1-10 minutes	f	%	f	%		
	11-30 minutes	113	69.1	49	30	92	56.7
	31-60 minutes	44	27.1	75	46	54	33.1
	>60 minutes	6	3.8	33	20	14	8.9
		0	0	6	4	3	1.3
		163	100	163	100	163	100

Source: Survey questionnaire, 2020.

Similarly like distance home from the forest, it was expected that the closer the respondents home to the market, the more they were willing to participate. As distance market from home is increase the probability of participation of the community reduced. According to the respondents this was due to the difficulty of selling and bought the forest products. Therefore, the effect of roads and markets has its own impact on the participation of the forest users in this study. It is in line with the works of recent scholars of commons such as, Argawal (2006), found that forests located in rural areas experienced which are located near to the market has higher amount of net protection and gain more benefit than located remote areas This can also explain the unexpected inverse relationship between distance from market and participation.

### Conclusion

Forest user's participation in community forest management in the study area was determined by demographic, economic and bio-physical factors. Though age and level of education are statistically not significant the descriptive result indicated that, aged and illiterate people were better participant than the younger and educated ones. This was due to majority of youths both literate and illiterate are landless and engaged in off farm activities like small business, trade, hiring governmental and nongovernmental organization this was losing their active participation. The other determinant factor of participation in this study was gender. The econometric result indicated that women's share of active participation was very low compare to their counter parts. This was due to women's productive and reproductive tasks like childcare, fetching water, cooking food; travel long distance market and farming constrain their participation. household family size also influence on the Participation of forest users the result indicated that as family size increases the number of active participants also increases but as the number of family size reduce the undo is true. The major reason was, 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 labore 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. In addition to the demographic factors the biophysical factor influence on forest user's participation in the study area. For instance distance of homestead from the forest affect family decision whether to participate actively or less actively. The result revealed that as distance home from the forest increased, the number of community members participating actively in forest conservation decreased. As distance home from forest decrease the reverse is 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. The other major expected determinant factor was the place where the community forest is located geographically.

## **Recommendation**

In general, participatory forest management strategy will be a feasible measure that could restructure the problem of forest destruction and it is believed to be successful if it is based on the interest, willingness and context of the forest users.

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