



## Assessment of Levels of Community Awareness to Effects of Forest Degradation and their Environmental Management Practices in Jimma Zone, South western Ethiopia

Kaso Teha Nura<sup>1</sup>; Fentaw Said Endris<sup>2</sup>

<sup>1</sup>Department of Civics and Ethics Studies, Jimma University, Ethiopia

<sup>2</sup> Assistant Professor, Department of Political Science and International Relations, Woldiya University, Ethiopia

Email: kaso2002@gmail.com<sup>1</sup>; fentawjimma@gmail.com<sup>2</sup>

Corresponding author: Kaso Teha Nura

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### **Abstract**

This study aimed to assess the levels of community awareness to the environmental effects of growing use of forest product for peoples' livelihood and their management practices in Jimma Zone. Thus, local farming communities, Development Agents (DA), Agriculture and Natural resource, Forest and Environmental Protection Officials & Experts are the participant of this study. The study employed descriptive survey research design and both qualitative and quantitative methods of data collections were employed. To assess community environmental awareness survey questionnaire questions (both open and close ended) were distributed for 240 sample respondents. An interview with 10 Key informant interviews were also conducted with the head of natural resource management offices of selected woredas and six development agents (DA) in sample selected kebeles and four focus group discussions (FDG) consisted of 10 members were also employed to collect qualitative data. The findings show that all the respondents aware of forest and natural resource degradation about (87%) and (75.4%) were aware of clearing of forest to expand farmland for growing population and cutting trees for fuel wood, charcoal and other forest products respectively. Only very few of the respondents were indicate that lack of community awareness to sustainable use and management of forest resource (44.5%) and lack of clear understanding of forest laws and regulation among the community (40.4%) as a cause of deforestation. Therefore, the assessment of community awareness to forest resource degradation survey result shows that all of the farmers in the study area have been aware of natural resource and environmental degradation. Based on the findings of this study, it is recommended that there is a need of modifying educational/training programs for local communities considering the existing knowledge and practices in a particular area.

**Keywords:** *Community Awareness; Forest Degradation; Environmental Management; Jimma Zone*

## **I. Introduction**

### **1.1. Background**

Ethiopia has reach and diverse natural resource endowment, though, the natural resource base of the country has been increasingly deteriorating over the last decades. However, even though natural resources in Ethiopia have great contribution to development, most of natural resources are highly exposed to degradation, due to the recurrent population growth and natural resource mismanagement (Bishaw, 2001). Currently, over-exploitation of natural vegetation cover by a rapidly growing population has been threatening the ecological stability and the economic development of the country (Amsalu, 2006). To this end, natural resource degradation has become the most serious environmental problems and hence, natural resource management concerns are crucial for Ethiopia.

With the understanding of the impacts of resource degradation of the country, different measures have been taken. Nonetheless, the measures taken could not guarantee long lasting protection and preservation of the country's resources as they were ignored the local people whose livelihood entirely depend on the resources (Rahmato, 2001; Hurni and Ludi, 2000). In addition to this, lack of environmental awareness concerning the linkage between environment and development in general, weak participation of the people and community based organization in environmental management activities are some of the environmental challenges of Ethiopia (Moges, etal, 2010). Therefore, in order to overcome the environmental challenges and sustainable use of natural resource, understanding and taking in to consideration of the local community's environmental awareness, attitude and perception play their own substantial roles (Tsegaye, 2010).

Many studies indicate that deforestation is one of the main factors for the recurrent environmental degradation in Ethiopia (Wakwaya, 2013). As a result of deforestation, a considerable area of what was once a closed forest had been converted to a heavily disturbed forest (Tesfaye, B. & Bezabih, B., 2017). At present, with increased demand for more land for crop production and fuel wood consumption because of rapidly growing population are the main causes of deforestation (Gebremariam, 2010). Similarly, Cheng et al. (1998) indicates that population pressure, lack of awareness and weak management are major causes for the deforestation and degradation of natural resources in Ethiopia (Gurmessa, 2015). The depletion and degradation of the forest are a threat to ecosystem diversity and a fundamental influence on the declining standard of living of many households (Hundera & Bishaw, 2008). Therefore, unless a strong measure is taken to develop the already dwindled forest resources, no question, the country will turn out to be a barren land in the near future, unable to support life (Erpassa, 2010).

In Ethiopia the large majority of people's lives are closely linked to natural resource, particularly forests. Recently, with increased needs of a growing population & the growth and spread of national markets that resulting increasing demand for traded commodities there is a growing use of forest product for people's livelihoods (Woldemariam, 2003). As a result of this, the consumption of forest and forest products has been shown to be higher than the incremental yield of forests leading to deforestation and forest degradation in the country (Khan & Yared, 2015). Therefore, the country has been bitterly experiencing the consequences of severe deforestation followed by recurrent drought, loss of top soil, reduction in soil productivity, shortage of water, loss of wild life, etc. (Birhanu, 2014).

In southwestern Ethiopia in general and peoples in the study area in particular local communities are dependent upon forest resources for their livelihoods (Disasa, 2010). However, study found that deforestation and forest degradation in this area threaten not only ecological functions of forests but also affects the living conditions of local people residing in and/or near forests (Wuletso, 2008). Overcoming these problems needs the understanding of the local community's environmental knowledge, attitude and awareness level as well as perception to environmental degradation and resources management in natural

resources dependent communities (Seid, 2017). Therefore, raising the awareness of the entire society towards combating deforestation would also play an indispensable role in promoting environmental protection and developing sense of belongings toward their environment (Eshetu, 2015).

Understanding the local people's level of awareness towards the growing use of forest product effects on environmental sustainability is, thus a prerequisite in making successful & sustainable resource management strategies (Regassa, 2008). In this regards, different research works have been conducted in different parts of Ethiopia and elsewhere in the world. To identify people's awareness of changes in forest cover and attitudes towards tree planting and ownership, an investigation was carried out in Jimma Zone southwestern Ethiopia (Urgessa, 1995). The results revealed that the forest cover in these areas as rapidly declining, mainly as a result of the shifting cultivation widely practiced. Thus, owing to the decline in the forest resources of the Jimma Zone and the rise in demand for forest products and services, a large gap has emerged between existing resources and demand for forest products. Hence, the underlying social and economic factors contributing to deforestation or the push and pull factors for growing local people dependence on forest resources needs further investigation.

### ***1.2. Objectives of the Study***

The study area is found in one of the area known for its richest in forest resource but forest degradation is the major issue in the local area. Thus therefore, the main purpose of this study was to assess the levels of community awareness to environmental effects of surrounding natural resources and their response to environmental management for sustainable development in Jimma Zone. The specific objectives of this study are:

- ✓ To investigate perceptions of the local community on the actual and potential benefits of the surrounding forests
- ✓ To examine the environmental effects of increased use of forest products by the communities in the study area
- ✓ To investigate the local peoples' knowledge & awareness about sustainable use & management of natural resources in the study area
- ✓ To identify the push & pull factors for local community dependence on forest resources
- ✓ To analyze the effectiveness of practiced environmental policy measures in the study area

## ***II. Material and Methods***

### ***2.1. Study Area Description***

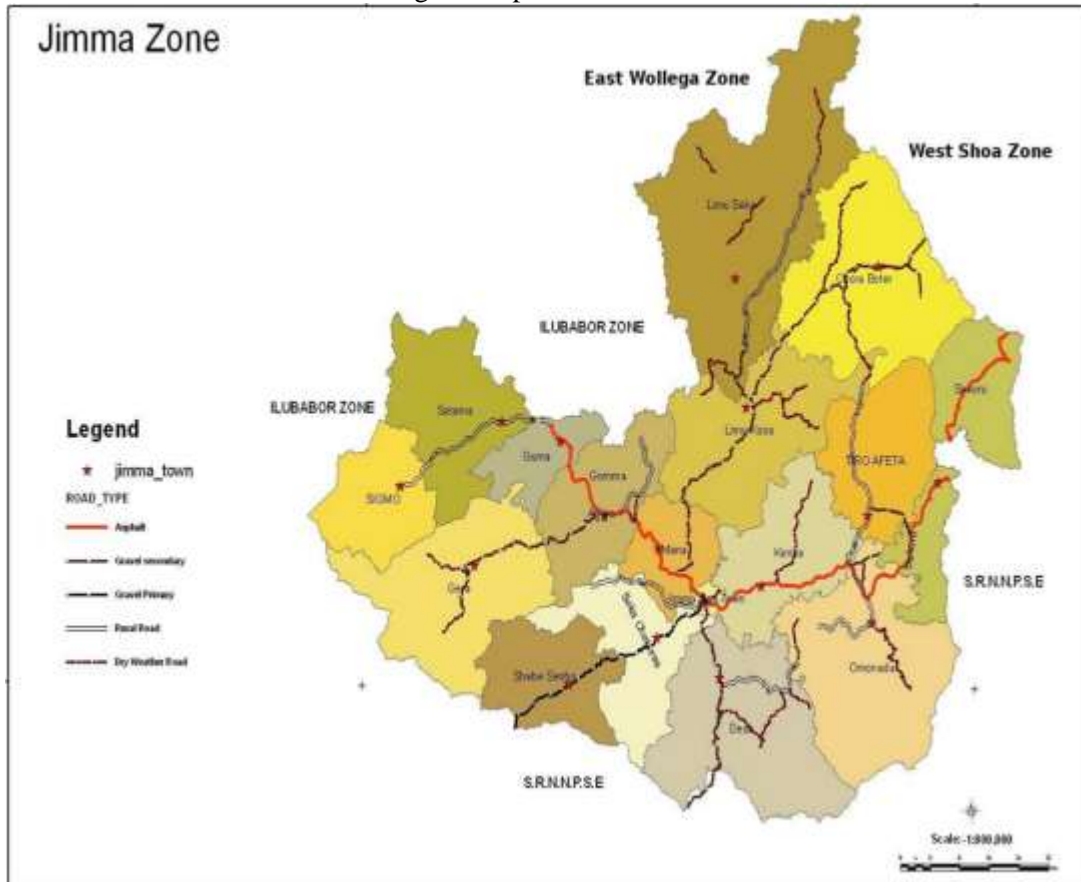
This study was conducted in Limmu Seka, Omo Nadda, Sokoru and Shabe Sombo purposively selected woredas<sup>1</sup> in Jimma Zone (Fig.1). Jimma zone is located about 350 km away from Addis Ababa in southwest Ethiopia. This zone is located at longitudes between 36015' E and 36045' E and latitude 7030' N and 7045' N and altitude between 1,300 and 3,000 masl. Currently the Zone covers an estimated area of 445 km<sup>2</sup> and divided into 19 woredas and 2 urban (Jimma & Agaro) city administration. It is bordered with East Wollega zone in the North, with East shewa zone and Southwest Shewa zone in North East, with SNNP regional state in the South East and South part, and with Illubabor zone in the West.

The total population of Jimma zone was 2,622,847 of which 1307123 (49.8%) were males and 1315724 (50.2%) were females (CSA, 2007). Out of this, 2354782 (89.1%) of the Populations are living in the rural areas while the remaining 287332 (10.9%) are living in the urban areas. The Natural vegetation

<sup>1</sup>Woreda is one of the lowest administrative units to mean "District."

is highly endangered through human intervention for different purposes. Jimma Zone is one of the zones of Oromia Regional state which have large regional Forest priority areas. The zone is one of the areas with few remaining forests in the country and the size of natural forest in the zone is about 3083.96 hectares (15.766%) of total surface of the zone.

Fig. 1. Map of Jimma Zone



Source; Jimma Zone Profile

## 2.2. Respondents and Sampling Techniques

The participants of this study were local Farmers', Agricultural Development, Environmental protection and natural resource management office workers in selected woredas. To investigate people's attitudes, values and opinions towards their environments, descriptive survey research design was employed. To select sample respondents, multi-stage sampling procedure was used to limit the sample size. First, out of the 17 woredas of Jimma Zone four woredas namely; *Limmu Saqqa, Shabe Sombo, Omoo Naadda and Sokkoru* were selected purposively based on the severity of the problems of natural resource degradation. Then, to select survey respondent farmers, two sample kebeles were selected randomly from each woredas and 30 sample respondent farmers were selected from each kebele. Hence, data were collected from sample selected kebeles namely; *Jaato abee, Caffee Naga, Koma, Atinagoo, Makanisa, Doobii, Ballaxaa Caakaa and Halloo* of selected woredas. To determine and limit the study sample size 10% of total Household (HH) in each woredas were selected using Probability Proportionate to Size (PPS). Thus, the study total sample size for questionnaire respondents were **240** Household head farmers.

### **2.3. Data Collection Instruments and Procedures**

To obtain sufficient data, the researcher has used different data collection techniques. The major techniques used to gather data from primary sources were key informant interview, questionnaires, focus group discussion and personal observation. To assess community environmental awareness survey questionnaire questions (both open and close ended) were distributed for 240 sample respondents. Both close ended and open ended format questions has been prepared and distributed to gather information about people's environmental awareness and their natural resource management practices. Key informant interviews (KII) was conducted with the head of Jimma zone Agricultural Development and natural resource management offices of selected woredas and development agents (DA) in sample selected kebeles and interview was conducted with 12 key informant members. In addition to this, two focus group discussions (FDG) each consisted of 10 members was also conducted to collect qualitative data. While collecting the primary data from rural farming communities in the study area, physical characteristic of the land and practical conservation works done by the people like tree planting, terracing, diversion canal, area closures, etc. are observed.

### **2.4. Methods of Data Analysis**

Both quantitative and qualitative methods of data analysis were employed. Qualitative data which was generated through secondary sources, interview and field observation was analyzed qualitatively throughout the analysis. Quantitative data was also analyzed by using descriptive statistics. Hence, quantitative data was analyzed using descriptive statistics and Qualitative data analysis carried out through interpretation and description of meanings, views and perceptions of the community.

## **III. Results and Discussion**

### **3.1. Community awareness to Functions and Contribution of Forest for their livelihoods**

Farmers were asked to examine forest resource values for their livelihoods as local peoples' lives have been highly depended on their surrounding forest resource and products. Regarding use of forest resources and their roles for local people's livelihoods, all sample household respondents are using forest products such as firewood, charcoal and construction materials in their localities. Forest and forest resource values are well aware by local communities in the study area according to survey respondents and interview responses and there is a gap between demand and supply, even to meet minimum needs due to the recurrent deforestation process. Table 1 presents the Functions and Contribution of Forest for local peoples' livelihoods in the study area. The main function of forest resources or products in the study area is used to get fuel wood for their cooking (100%) followed by used to get construction materials (85%), honey production (13.75%) and sell timber and generate income (10%). In the study area, some low income families, are engaged in selling fuel-wood and other forest products so as to generate additional income. Communities demand for forest product is increasing from time to time however; the capacity of the existing forests unable to supply the required amount.

**Table 1. Main purpose of forest resource and their products**

Main purpose forest resource and their products	Frequency	Percentages (%)
To get fuel wood for cooking	240	100%
To get construction material	205	85.4%
To get honey production	33	13.75%
To sell timber and generate income	24	10%

Source: Field survey by the Researcher (2018)

### 3.2. Forest Products as Additional Source Income for Local peoples Livelihoods

In Ethiopia with a rapidly growing human population, there is a heavy pressure on the forest resources of demand for forests and forest products such as fuel wood and construction and demand for non-wood forest products. In the study area, peoples are making their livelihood from subsistence farming and non-farm activities and with increased needs and spread of national markets that resulting increasing demand for traded commodities there is a growing use of forest product for people's livelihood particularly, in Jimma Zone. As, a result of this, there is experience of charcoal burning, cutting live trees for fire wood, and extraction of timber and local people have been utilizing forest resources for subsistence domestic uses. In the study area some households who held on either mixed agriculture or crop production as their major occupations, practice activities like fuel wood selling, trading or running on small business like shops. As information collected form opinion survey indicates (Table 2) of households engaged in Coffee and other cash crop (88.7%), animal husbandry (70.4%), trade or small business (27.9%), fuel wood or charcoal selling (17%) to acquire their additional income.

**Table 2 Additional source of Income for local peoples Livelihoods**

Do you have supplementary income for your family?	Responses	Frequency	Percentages
	Yes	215	89.5%
	No	25	9.5%
<b>If yes, what is your main supplementary income?</b>			
a. Coffee and other cash crop		213	88.7%
b. Animal husbandry		169	70.4%
c. Trade or small business		67	27.9%
d. Fuel wood or charcoal selling		41	17%

Source: Field survey by the Researcher (2018)

With increased needs of rapidly growing population & the growth and spread of national markets that resulting increasing demand for traded commodities there is a growing use of forest product for people's livelihood in Ethiopia generally and study area in particular. As a result of this, communities demand for forest product is increasing from time to time however; the capacity of the existing forests unable to supply the required amount. In the study area, small land holding size and low productivity is a common phenomenon. Consequently, shortage of food crop production is common; however, as farmers are coffee growers and earn most of their income from coffee sale, they compensate the food production shortage by purchasing from the market. Thus, almost 80% of the interviewed household heads are fulfilling their food requirements mostly from purchase and few produce. Moreover, low income family

local community livelihoods are highly dependent on forest resources mainly used to get fuel wood for domestic consumption and timber production to generate income (Table 2).

Most people have been utilizing forest resources for subsistence domestic uses and there is experience of charcoal burning, cutting live trees for fire wood, and extraction of timber. In the study area, low income families, are engaged in selling fuel-wood and other forest products so as to generate additional income. Since the demand for fuel wood have been increasing in the area, selling charcoal and fuel wood became a good source of revenue during seasonal income insecurity. As indicated by interview respondents most of the members of the community highly dependent on the surrounding forest resource. They also states that those who engaged in selling fuel wood and charcoal as a source of income brought the wood not from community forests in the open access forest.

### 3.3. Pull and Push factors for peoples growing dependence on forest resources for livelihoods

In Ethiopia, people mainly depend on forests for fuel wood, construction wood, timber, honey production and grazing. However, the level of dependency and mode of management varies from place to place, depending on the type of product taken from the forest. Jimma Zone is zone have been endowed with abundant natural resources (forest) in Ethiopia. In rural areas, gathering and transporting fuel wood increasingly dominates the daily lives of local people. Similarly, urban demand for fuel wood and charcoal is expanding, the economic distance for clearing and having wood, leading to ever widening circles of devastation around cities and towns. This indicates that local peoples are highly dependent on forest and other natural resources in both rural and urban areas for different purposes.

**Table 3. Push and pull factors for Household dependence on selling of Fuel wood and Charcoal as a sources of income**

Is there a tradition of selling fuel wood and charcoal a source of income in your localities?	Responses	Frequency	Percentages
	A. Yes always	190	79.1%
	B. Yes sometimes	39	16.25%
	C. Not at all	11	4.5%
If your answer is 'A' or 'B' why do you think local people selling fuel wood a charcoal to get money?			
It is question of survival on which their livelihoods depends		211	87.9%
Because there is open access forest, where fuel wood, wood for construction, wood for s is obtained		174	72.5%
Laws and regulations do not strictly enforced by officials to protect the existing for resources		133	55.4%
Due to lack of awareness about the long term environmental effects		99	41.25%
There is no clear understanding of forest laws and regulation among the community		66	27.5%

**Source: Field survey by the Researcher (2018)**

In Jimma zone local people have been utilizing forest resources for subsistence domestic uses and there is experience of charcoal burning, cutting live trees for fire wood, and extraction of timber. Regarding this the majority of sample household respondents (80%) responded that there is a tradition of selling fuel wood and charcoal as a source of income (table 3). As information obtained from key informant interview indicates those who engaged in selling fuel wood and charcoal as the main sources of livelihoods and as supplementary income brought the wood products from the open access forest. Due to the economic value of charcoal and the relative ease with which it can be produced, it is an extremely attractive source of income for poor community members in rural areas. Yet, because it depends upon fire for its production and because large amounts of wood must be burned to generate a relatively small amount of charcoal. Thus therefore, educating the community about the effects of forest resource over

utilization on their sustainable livelihoods in particular and environmental sustainability in general is crucial.

### 3.4. Levels of Community Awareness to Deforestation and Forest degradation

Community's environmental knowledge, awareness, attitude and generally environmental behavior are very necessity for the development of community based and bottom-up natural resource management systems and strategies, especially in rural areas of the country. Environmental awareness, is information about environmental problems, causes of the problems and consequences that have been accumulated by individual or group of community through personal observation, study and life experiences. Peoples may have different awareness and attitude about forest resource degradation and conservation practices. Access to information, education, and erosion severity, and experience, resource endowment, farming practices, productivity, and household attributes.

**Table 4. Community Awareness to Forest to coverage and rates of degradation**

Is Forest resources in your localities are exposed high rate of deforestation?	Responses	Frequency	Percentages
	Strongly agree	176	73.3%
	Agree	59	24.5%
	Disagree	0	0
	No opinion	5	2.08%
If you agree with the above question 'why do you think the reason for for resource degradation in your localities'?			
Clearing of forest to expand farmland for growing population		209	87%
Cutting trees for fuel wood, charcoal and other forest products		181	75.4%
Lack of community awareness to sustainable use and management of forest resource		107	44.5%
Lack of clear understanding of forest laws and regulation among the community		97	40.4%

**Source: Field survey by the Researcher (2018)**

To address the recurrent forest and other natural resource degradation, understanding and taking into consideration the local community's environmental awareness, attitude and perception play their own substantial roles. However, communities in the study area have limited understanding about the country's forest policy, rules and regulations issued by the regional government. This is due to mainly, absence of environmental education and awareness creation campaign. With regard to Forest and forest resource stock and the status of resource degradation, local communities in the study area have well awareness to the importance of forest resource for their current and future lives. Table 4, indicates that the majority 176 (73.3%) of the respondents strongly agreed and realized that the forest resource of the study area is exposed to high rate of degradation while only 5 (2%) of them have no opinion about the degradation of the existing forest resources. Similarly, information obtained from key informants interview indicates that forest resource of the study area have been exposed to different pressures for a long period of time.

Regarding the causes of forest degradation, the largest proportion (87%) of respondents agreed that forest degradation is cause of major problems in the local area. Of the total sample respondents, (87%) (75.4%) (44.5%) (40.4%) of respondents indicated that; Clearing of forest to expand farmland for growing population, Cutting trees for fuel wood, charcoal and other forest products, Lack of community awareness to sustainable use and management of forest resource, Lack of clear understanding of forest laws and regulation among the community respectively as reason for forest resource degradation in local area. In the study area forest cover has suffered severe deforestation and degradation through heavy exploitation and local communities have well awareness to cause and effects of forest resource degradation and conservation methods.



### 3.5. *Community Awareness to Natural Resource and Environmental Management Practices*

Environmental awareness is explained as familiarity with an environmental subject with real understanding of its deeper cause and implications. It plays an indispensable role in promoting environmental protection and developing sense of belongings toward their environment. Hence, awareness creation for the protection of the environment and the sustainable use of finite resources are matters that directly concern each citizen. In this regards, media has a big role to play in making people aware of environment issues and taking actions to protect the environment. In the study area, despite big role of media to play both urban and rural people were not well informed about the mode of destruction and protection of the environment.

**Table 5. Community response to their sources of information to environmental management practices**

Sources of Information	Frequencies	Percentage
Friends and relatives	63	40.6
Extension agents	37	23.9
Radio	22	14.2
Trainings	15	9.7
Schools	10	6.4
Have no information	8	5.2
Total	155	100.0

Source: Field survey by the Researcher (2018)

Table 5. Shows the information sources of the respondents on environmental problems and their management practices. The result shows that friends and relatives were indicated by majority (40.6%) of the respondents' as the most significant source of information. About 23.9% of the respondents used extension agents (DAs) as a sources of information for their environmental management practices. Relatively small numbers of the respondents indicate radio, training, and schools as a source of information which account for 14.2%, 9.7%, 6.4% respectively and the remaining 5.2% of the respondents replied that they have no any information about environmental management practices. As shown in table 4, the highest percentage of the respondents viewed that relatives and friend were their most significant sources of information for land management. This indicates that farmer's access to training is very limited in the area and they have no access to training and good contact with extension agents and have gained experience from their neighbors and traditionally from their elders. Access to extension services is assumed to improve farmers' land management practices, however; in the study area, many respondents argued that extension services are less practical and soil fertility management and conservation measures were less effective and need special attention.

### 3.6. *Community Participation on Natural Resource and Environmental Management Practices*

Community awareness to natural resource use and recognition of its contribution is essential to their effective participation in integrated natural resource management. To conserve the natural resource afforestation and reforestation of new areas and already deforested up lands strategies have been employed to protect and conserve the existing natural forest. In this regards, socio-economic factors like, level of education, and income influences/determines the degree of community participation towards natural resource management practices. On the other hand, analysis of individual incentives to involve and contribute to the management of common resources is the most important explanation of the effectiveness of common resource management.

**Table 6. Community participation to local natural resource and environmental management**

Are you participating in any forest conservation and other natural resource management effort in your localities?	Responses	Frequency	Percentages
	YES	194	80.8% %
	NO	46	19.1%
<b>If your answer for the above Question is Yes, which environmental management program you are participating on to protect forest and other natural resource?</b>			
a. Tree planting		165	68.75%
b. Soil and water conservation		127	52.9%
c. Participatory watershed development		118	49.1%
d. Afforestation and reforestation		77	32%

**Source: Field survey by the Researcher (2018)**

With regards to community participation on natural resource conservation the survey result indicate that out of the total interviewed households the highest percentage (80.8%) of the respondents indicated that they are participating on different activities of environmental conservation measures individually and collectively. The result indicates that most of the respondents' are aware of and using tree planting, Soil and water conservation, Participatory watershed development, afforestation and reforestation which accounts 68.75%, 52.9%, 49.1%, and 32% respectively. This shows that, the majority of respondents are using different methods of environmental conservation measures to protect forest and other natural resources in the study area. Therefore, farmers at individual level have been trying to solve environmental problem though the issue of natural resource degradation (forest) is still existing in the study area. According to the view of key informant interviews, biological treatment of soil and water conservation activities are being practiced in combination with the physical soil and water conservation structures.

#### **IV. Conclusion and Recommendations**

Assessment of community environmental knowledge and awareness is very crucial for sustainable use of natural resources; conservation of biodiversity and restoring of degraded lands in rural areas of Ethiopia. Environmental awareness is information about environmental problems, causes of the problems and consequences that have been accumulated by individual or group of community through personal observation, study and life experiences. In line these; this study was carried out to assess the levels of community awareness to the environmental effects of growing use of forest product for peoples' livelihood and their management practices in Jimma Zone. The study revealed that the forest resources of the study area is exposed to high rate of forest degradation mainly due to socio-economic and cultural factors.

Owing to the decline in the forest resources of the Jimma Zone and the rise in demand for forest products and services, a large gap has emerged between existing resources and demand for forest products. Jimma Zone is zone have been endowed with abundant natural resources (forest) in Ethiopia. Regarding Forest and forest resources stock and the status of resource degradation, local communities in the study area have well awareness to the importance of forest resource for their current and future lives. In addition to exposure of the forest resources to degradation processes and low conservation practices, the community who inhabit in jimma area is strongly dependent on forest resource.

Regarding use of forest resources and their roles for local people's livelihoods, all sample household respondents are using forest products such as firewood, charcoal and construction materials in their localities. The main function of forest resources or products in the study area is used to get fuel wood for their cooking (100%) followed by used to get construction materials (85%), honey production

(13.75%) and sell timber and generate income (10%). The strong dependence of population on the forest resource cause great damage to the surrounding forest and other natural resources and dependence of the community on forest resource is considered as the major causes of environmental problems. Forest and forest resource values are well aware by local communities in the study area according to survey sample respondents and interview responses.

With increased needs of rapidly growing population & the growth and spread of national markets that resulting increasing demand for traded commodities there is a growing use of forest product for people's livelihood in Ethiopia generally and study area in particular. The study indicates that demand of the community for forest product is increasing from time to time however; the capacity of the existing forests with its exploitation is unable to supply the required amount. This area is endowed with various natural resources particularly; forests and people in rural areas consider forests to be free, unoccupied areas and settle there to grow crops. In addition to this, absence of strong forest administration and lack of continues environmental education highly contributed to the current forest degradation in the study area. Thus, educating the community about the effects of forest resource over utilization on their sustainable livelihoods in particular and environmental sustainability in general is crucial. Therefore, based on the finding of the study the following recommendations are forwarded to promote community awareness to natural resource degradation and conservation practice in the study area.

- Environmental awareness information should be provided for farming communities regularly by Development Agents (DA) in all kebeles and woredas of Jimma Zone Administration.
- To effectively implement different environmental conservation policies, Woreda and Zonal Forest and environmental management offices should consider local peoples whose livelihoods are directly depended on their surrounding natural resources like forests.
- To minimize overutilization of natural resources by low income families, alternative sources of income like animal husbandry and honey production should be developed by the government and other concerned bodies in addition to clearing forest resources to lead their lives which cause forest degradation in particular and environmental degradation in general.
- Forest policy, rules and regulations issued by the regional government and absence of strong forest administration is highly contributed to the current forest degradation in the study area.

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4. What are the environmental problems encountered you as a result of recurrent forest and natural resource degradation in localities?
  - a. Rainfall variability
  - b. Decreasing agricultural production
  - c. Soil erosion
  - d. Drought
5. Do you have any knowledge about the effect of forest degradation?
  - A) Yes
  - b) No
6. If your answer for Q. No (5) is *yes* how do you know?
  - a) Learning in school
  - b) Training by government organs
  - c) Information from mass media
  - d) Others, (Specify).....
7. Do you think absence of strong forest administration and lack of continuous environmental education highly contributed to the current deforestation?
  - Yes
  - No
8. In order to improve the forest resource of the localities, the communities play a great role in supporting conservation effort in the area.
  - a. Strongly agree
  - b. Agree
  - c. Strongly disagree
  - d. Disagree
9. Is there any forest conservation and other natural resource management effort in your localities?
  - Yes
  - No
10. If your answer for Q. No (9) is Yes, which environmental management program you are participating on to protect forest and other natural resource
  - e. Tree planting
  - f. Afforestation and reforestation
  - g. Soil and water conservation
  - h. Participatory watershed development

### INTERVIEW QUESTIONS

1. How do you explain the current status of forest and forest resource development?
2. How do you explain the awareness level of community regarding forest policy, laws and regulations? How do evaluate the applicability of this rules and regulations in the woreda?
3. To what extent environmental education is given to farmers? For how long? Is there behavioral change?
4. What do say about community participation the conservation of forest resource of the area? To what extent the community involved in natural resource conservation in the woreda?
5. What are the main obstacles to forest& soil and water conservation effort in the wereda?



## V. Appendix

### List of Interviewees

Name of KII	Sex	Position and Responsibility	Place or Address	Date of Contacts
1. Siyum Itana	M	Head of Agricultural Development Bureau	Jimma	18-10-2018 G.C.
2. Nazif A/Cabsa	M	Head of Land and Environmental Protection Office	Jimma	16-10-2018 G.C.
3. Silash Delalegn	M	Agricultural Extension and Environmental Mgt Program	Jimma	14-10-2016 G.C.
4. Yezid A/Fogi	M	Soil and Water Conservation and Integrated watershed Dev't	Jimma	14 -10-2018 G.C.
5. Tesfaye Fikadu	M	Natural resource Management and Environmental Protection Office	Sh/Sombo Woreda,	27-9-2018 G.C.
6. Abdo Abdulkadir	M	Natural resource Management and Environmental Protection Office	Sokkoru Woreda,	20-9-2018 G.C.
7. Nadiya A/Temem	F	Natural resource Management and Environmental Protection Office	O/Nadda Woreda,	24-9-2018 G.C.
8. Gemmachu Kelbessa	M	Natural resource Management and Environmental Protection Office	L/Saqqa Woreda, Atinago	25-9-2018 G.C.
9. Shaafi Kedir	M	Development Agent (DA), Ballaxaa Caakaa kebele	B/Caakaa kebele	26-9-2018 G.C.
10. Ashenafi Girma		Development Agent (DA), Caffee Naga kebele	Caffee Naga kebele	23-9-2018 G.C.
11. Yasriba Heydaro	F	Development Agent (DA), Makanisakebele	Makanisa kebele	20-9-2018 G.C.
12. Temene Olana	M	Development Agent (DA), Doobii kebele	Doobii kebele	20-9-2018G.C.

### List of FGD Discussant Members

1. ABDO SHATI MOHAMMED
2. ABDURAZAK FEDILU NAGAWO
3. AHMED SHEKSHAREFU A/CHEBSA
4. AHMED A/JIHAD A/GOJAM
5. ALIMA A/FITA MHMUD
6. ALIMA SHAFI KEDIR
7. AMINA TEMAM AHMED
8. ESMAEL SHE/NURU SHE/ABDU
9. FADIL A/RESHAD A/KELBI
10. FADILSA AHMED A/WORE
11. FOZIA MOHAMMED SIRAJ
12. GALI SIRAJ ABDELLA
13. HAFIZ BEDRU HASSAN
14. MOHAMED A/NEGA A/SANBI
15. MUFTII NURADDIN
16. NEZIF ABAGERO ABASERDA
17. RIJALU RESHID SHE/ABDURAHIM
18. SALI A/ZINAB A/GISA
19. SEFU ABABOR ABANANO
20. TAHIRTEMAMA/BOR

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