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IMPORTANCE, DETERMINANTS AND GENDER DIMENSIONS OF FORESTS FOR COMMUNITIES

DAWURO ZONE, SOUTH-WEST ETHIOPIA

A CASE STUDY OF ESSERA WOREDA

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ABSTRACT

Rural households across developing countries rely on diversified sources of income and forest resource play important role in this regard. This study is designed with the objectives of assessing the contribution of forests to annual income of rural households and identifying its determinants with the case of Essera woreda forest in western Ethiopia. It also examined the gender dimensions of forest income and how this income varies with the wealth status of households key informants interview focus group discussion and household based questionnaire survey were used to collect data. On average income from crop production accounted for (40.7%) of the total annual household income. Forest income is second in importance contributing (32.6%), income from livestock off and non-farm activities and woodlots accounted for (13.6%), (11.4%) and (1.7%) of the total household income respectively. Firewood is the most used forest product and constituted the largest proportion (79%) of the total forest income. Forest income is more important for poor households (47.3%) than for medium (30.5%) or rich (20.2%) households. It is also more important for female headed households (58.2%) than for male headed households (29%). The gender dimension of forest income is also important within the household. Female members generated about four times more forest income (77% of the household forest income) than male members (23%). Policy to promote new forest management arrangement such as participatory forest management (PFM) needs to take in to account the

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major forest users and the types of products they depend on and be accompanied with other poverty reduction measures so that improved forest conservation outcome will not have negative consequences on local livelihoods particularly on poor and women who depend most on the forest.

Key words: Firewood, Forest dependence, Gender, Household income, Livelihoods, Wealth status

1. INTRODUCTION

1.1 Background of the study

Gender integration is considered to be progresses which ensure both men and women to have equal rights on access and control over resources. They must be equal to both the benefits division and capacity of making decisions of all stages of development processes. The practical experiences showed that objects would be more effective if there are participation of men and women. However, it also means that there will have more new conflicts on benefits, which was considered to be differences between men and women. It is the gender integration problem in the determinants of forests and gender dimension study that is to aim at the objective of strengthening women's and men's participation on all components of the project which can be done by satisfying gender needs and strategic gender interests for women and men more comfortably. As aresult gender issues that involve in determinants of forests and gender dimension study activities and field sites should also be pointed out. The research will provide determinants of forests and gender dimension study with more gender basic data at the determinants of forests and gender dimension study field sites. The objective is to promote understanding on gender issues, which involve in the conservation and the development of determinants of forests and gender dimension study. Moreover, the result of gender analysis will be important basis in order to setup gender action plans in the future projects. More especially, the research has concentrated in the detail objectives as follows (Babulo et al., 2009).

Analyze the organization structure to study the gender desegregated in activities of the center.

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Analyze the characteristics and structures of different communities at the two pilot sites of the study in order to highlight gender desegregated in two ethnic groups. Point out and analyze the important contents in the basis of considering about gender issues, which involve in the conservation and determinants of forests and gender dimensions (Cavendish, 2002).

Establish gender action plans via considering about social issues, especially gender roles which involve in the management and development of determinants. The research was implemented by the gender analysis group of the sustainable utilization of determinants of forests and gender dimension study. The basic information were collected and analyzed by using participating rural appraisal and rural rapid appraisal. The collected data were also cross-checked by different group interviews, individual interviews and penetration in the study documents (including previous investigations, research and assessment of other experts about the study activity.

All results of the research group are presented in this study which is divided in to two separate parts, the first explain about determinants of forests and gender dimensions, analysis and the last includes appendices.

In the first part, a range of gender issues, which relate to determinants of forests and gender dimensions activities, has been analyzed in order to compare with the existing gender issues and results in practice. Besides, all discoveries and conclusions which were drawn from field research and stated in the first part were important basis, helping to build-up and design gender action plans in each study sites. It is the part of appendices that is the whole data collected the gender analysis process.

In general, all results presented in the research were exchanged with all of the partners and key informants in order to create analysis participation and asses on important gender issues that were discovered at all study field sites. However, combining exchange views and bringing the final option out will be the responsibility of the researcher.

1.2 Statement of the problem

In accordance with the objective and research questions, the statement or assumptions of the study are:-

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- Forest products make important contributions to the annual income of communities living around the forest but its economic values is less known in study area;
- Socio-economic parameters; including gender influence the relative importance of forest income.
- To elaborate the importance of forests on the determination of gender dimensions.

Scholars forward that it is important to conduct studies on the factors that determine the successful of common resource management (Agrawal, 2001; Poteete and Ostrom, 2003). In line with this some researchers tried to assess factors affecting community participation in forest conservation and management in Ethiopia. Among the researchers, Alemtsehay (2010) had dealt with; Determinating Factors for a Successful Establishment of Participatory Forest Management: A Comparative Study of Goba and Dello Districts, Tewodros (2008) Factors Affecting the Knowledge, Attitude and Practice of Forest Dependent Community towards Forest Conservation in Bench Maji Zone, SNNPR. All studies concluded that nothing could be done without community participation and involvement. Hence, instigating and motivating the community should be taken as the backbone and indispensable asset or input of forest management and conservation. In this case, the society use their own indigenous ways of forest conservation and management backed by rules, regulations and sanctions as well as punishments over those who misuse forests. So far, no study has been conducted on factors affecting community based forest management in Essera woreda. Hence, empirically, it is intended to study the factors influencing their household participation level in community 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.

As listed in the above paragraphs, forests are the major sources of income in Esseraworeda especially for females. Due to this cutting trees/deforestation/ for the purpose of income i.e. for firewood, charcoal and construction…etc are day to day activity and their lifestyle for the local community. Therefore, the researcher (me) initiates to investigate the rate of deforestation and values/incomes obtained from forest resources and to find solutions for the problem.

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1.3 Objective of the study

1.3.1. General objective

The general objective of this study was to assess the importance, determinants and gender dimensions of forests for communities in Esseraworeda.

1.3.2. Specific objectives

- T assess major sources of income for the households in the study area
- To know the actual and relative contribution of forest income to the annual household income
- To identify factors affect households dependence on forest income and how does gender factor (composition of females and males within a household and gender of the household head) affect dependence on and level of forest income

2. LITERATURE REVIEW

The livelihoods of most rural households throughout the developing world depend on agriculture and forestry. As these livelihoods are inherently fragile and exposed to a range of shocks, and seasonal fluctuations, rural households maintain diversified livelihood strategies. One such strategy is collection and marketing of forest products. The availability and accessibility of forest products determine the prospects for forest-based livelihoods options. Dependence of people on forests and trees continues to be important both in the worldwide and in Ethiopia. The importance of forest income to total household income has been debated. Some stress its significance in terms of reducing depth of poverty in the poorest member of the community. While others argue the opposite Studies in Sub-Saharan Africa has shown that rural households regularly supplement their income from forest resources. In the case of Ethiopia data regarding the contribution of dry forests to rural households are still limited and information to influence policy making remains scarce. These are the largest forest type in many African countries. In Ethiopia, dry forests are the most important forest types both in terms of area coverage and their contribution to export earnings through gums and resins. They are home to economically important species of Acacia, Boswellia and Commiphora that are sources of gums and resins.

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Dry forests contain a wealth of unique biodiversity and directly support the livelihoods of approximately one billion people worldwide. About a quarter of a billion people live in or around the dry forests of Sub-Saharan Africa. These forests provide diverse goods and services such as fodder, fuel and commercial non-timber forest products. Knowledge on the dependence of communities on these forests and factors affecting this dependence is limited. Therefore, this study is conducted to quantify the contribution of dry forest to total income of households and to identify major factors that determine forest income levels in northwestern and southern lowlands of Ethiopia where dry forests are important but are facing land use changes (Busha, 2015).

2.1 Forestry and Rural Livelihood

Forestry contributes to the rural economy in a number of ways: directly as a user of land and resources to transform biological and other inputs into a range of outputs; indirectly through its linkages with upstream suppliers and downstream processing sectors; through the re-spending in rural areas of parts of income derived from forestry and its related industries; through the provision of non-market benefits; and in more opaque, though nonetheless important ways, in providing a desirable location for non-forestry-related business activity and a living environment which many people find attractive. The full range of these economic benefits can be more or less easily enumerated and are likely to vary very substantially from one region to another. In some areas, the forest production sector may be the greater contributor to rural economic well-being; in others the local forest-dependent spending associated with firms and households living in a tree-rich environment might contribute more to local economies than the benefits arising from production forestry (Mathematics Forestry, 2016).

Wood energy is critical for many communities in sub-Saharan Africa as away to cook food, clean water, produce and sell charcoal as source of income. On the other hand, the utilization of wood energy is responsible for 50% of forest degradation and 10-20% of forest destruction in the region. For development practitioners working in sub-Saharan Africa, the conflict between the need to utilize the resource and the need to protect the health of the ecosystems is obvious. One question may weigh heavy on their minds in particular is; Is there a way to transform the wood energy sector in a sustainable way to halt deforestation and land degradation? Can communities in sub-Saharan Africa have their trees and burn them too? At the global landscapes forum, held

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in Paris in Dec, 2015 a long side UNFCCC/ United Nations Framework Convention on Climate Change/ Copenhagen, 21 climate talks panel of experts discussed innovative plans to utilize sustainable wood energy as option for restoration. When talking about the utilization of wood energy or fuel wood and charcoal, rural and urban perspectives along the entire supply chain need to be taken in to consideration. Why? Because according to Njenga; a post-Doctoral fellow with the World Agro-forestry Center (ICRAF), "the way we convert wood in to charcoal matters".

According to Christina Seeberg; Elverfeldt policy advisor with the German Federal Ministry for Economic Cooperation and Development (BMZ), 50% of forest degradation and deforestation is a result of wood being extracted as an energy source in sub-Saharan Africa. For ecosystems, it is a devastating development that needs to be challenged. For communities, it is a necessary part of daily life. Fortunately, there are alternatives, practical examples from Madagascar and Kenya were discussed by the panel as opportunities to provide communities with the wood energy they need without further degrading forests. In the Northern areas of Madagascar a specific approach based on individual allocation of wood energy afforestation plots to local households on degraded land in order to combat further degradation in nearby forested areas. In Kenya an agro-forestry project to grow trees on farm is contributing to sustainable fuel wood supply for cooking easing pressure on forest resources. In both settings, wood energy consumption has been transformed in to an opportunity to restore landscapes while also contributing to job creation and slowing deforestation.

The key to success seems to be a cross sectorial approach along the entire value chain; Njenga speaking from her years of practical experience listed the following steps to transform current unsustainable fuel wood practices.

- Sustainable management of wood production.
- Efficient wood to charcoal conversion technologies.
- Effective transportation.
- Improving marketing and partnership development.
- Efficient consumption technologies, for example planting trees on degraded land can restore landscapes while providing wood for charcoal production and therefore halting illegal logging and increasing deforestation and fuel efficient stoves use approximately

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40% less fuel while yielding 20% of charcoal and reducing emission as well as requiring less biomass.

But, Can the wood energy sector be transformed by a cook stove? Absolutely, as one part of the multifaceted solution. There is a lot of potential to create a sustainable and efficient fuel wood supply chain but enabling such a transformation does not only includes farmers. It also requires involvement from investors, governmental law enforcement and regulations, innovative policy solutions as well as monitoring and evaluation frameworks. Ensuring long term food security and domestic energy in sub-Saharan Africa requires," Environmental safeguards for production landscapes '', as Mark Vanderwal; senior ecologist with the International Union for the Conservation of Nature (IUCN) summarized. We cannot burn our wood and keep it too. We need to work with communities and transform our sources of wood energy together if we are to ease pressure on forests in a sustainable way for a sustainable future and from holistic perspectives.

Taken from; Center for International Forestry (CIFOR), Global landscapes forum 5-6,Dec/2015 Paris. Author; Mr Franziska Senfter (Fire wood:- 18922-1280)

2.2 Forests and Gender

Gender is also an important factor to consider when studying forest dependence. Gender roles can be seen at two different levels: between female and male members within a household and between male headed and female headed households. Within households, men and women often do have differing roles and responsibilities with respect to the collection, processing and marketing of forest products. In most developing countries meeting household food and fuel needs, including generating the income needed to provide these necessities, has generally been seen as the responsibility of women and . Men, on the other hand, are the primary harvesters of high value products such as timber that are procured deep in the forest or require hard physical labor. Moreover, women in general have less access to credit (e.g. to buy farm inputs such as fertilizers and improved seeds), extension services and improved technologies). This forces them to depend heavily on natural resources notably forests. In sub-Saharan Africa in particular women from the poorest households obtain major source of their subsistence from a diverse set of forest products (Adanech A.,2013)

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Human dependence upon forests is a multifaceted phenomenon due to the Fact that forests provide a diverse stream of benefits to humans. Humans depend upon forests directly for timber, non-timber products, and recreational experience and indirectly for things such as air and water quality, water regime regulation, protection of soil erosion, biodiversity, carbon sequestration, and other ecological services. Conservation of biodiversity in protected forest areas of developing countries has become complex and challenging because of higher dependency of population on natural resources for agricultural, energy, nutritional, medicinal, and income needs (Yahia Omar, 2014).

Gathering and processing forest products may be a main source of income, or provide a supplementary income for people primarily involved in activities outside the forest, such as farming. The money earned in this way may be spent on food, or invested in agricultural assets such as livestock or seeds to secure future food supplies. Forest products often act as a buffer during periods of food shortage. Some people regularly gather products such as fuel wood and rattan canes to store and sell when cash is needed for food. Others turn to selling forest products only in emergencies, when food or cash are scarce. A number of income-generating activities are based on foods from the forest; the collection of forage, nuts, fruits, and fungi is common. Fishing is a profitable activity, and hunting for bush-meat can provide substantial financial rewards. The value of food products can be increased by processing, and the sale of palm wine and oils is widespread. Honey production is an important forest industry in many parts of the world; Indian villages are thought to produce more than 37 000 tonnes a year for sale (FAO 2004).

Around the world, men and women have different roles in managing forests, different access to forests, and different ways of using forest resources. Forestry tends to be perceived as male dominated but women are also foresters, often gathering food for their family and for income. In fact, women in forest communities can generate more than 50% of their income from forests, compared to about a third for men. Despite improvements in the policy environment, women often have less secure land rights and access to forests, and participate less in decision-making and forest management. Decisions made without considering women's forestry roles tend to have a ripple effect, negatively impacting women, their households and consequently the livelihoods of five to ten times as many people. On the other hand, forests and gender research

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has shown that involving women in decision-making at all levels has positive effects on many forest management issues including resource sustainability, forest regeneration and conflict management. By understanding the complexities of forests and gender, opportunities to create equity and improve forest management are often brought to light. Our research focuses on the roles of both men and women, and how to create equity in the access, use and management of forests (http://www.cifor.org/forests-and-gender/12/5/2016).

Both men and women are involved in forest-based processing activities. Women tend to dominate in the production of items relating to the home and to agriculture. The gathering and processing of raw materials available near the home can be easily combined with, or fitted into, women's daily work routines. Men, because they have fewer constraints on their time than women and better access to ray materials and markets, may produce a wider range of forest products including items that have a high market value. Though both men and women increase the household income through such activities, studies show that women are more likely to spend additional income on food for the family than are men. Returns on these activities vary: carpentry and other skills that are in demand on the general market have the highest returns; and those catering to domestic needs, such as basketry and mat-making (usually carried out by women), bring lower returns. However, the advantage of such activities over employment by larger firms is that more of the profits accrue directly to the household involved. The processing of forest products provides a significant percentage of the income of many millions of rural households, and contributes to the rural economy in many countries. However, it is the poorest sectors of society -the landless and small-scale farmers-that rely most heavily on income generated from forest products. For them, this income can be critical. In many parts of the world, forest lands are under threat from several sides, leaving the poor even more vulnerable. Because of increasing population levels, less agricultural land is available and an ever-growing number of people are turning to forest products to supplement their income. Trees and other products are being removed from forests faster than they can grow back, leading to a diminishing source of raw materials.At the same time, much forest land is being cleared for agriculture; access to remaining forests is increasingly restricted, and few gatherers can afford to pay to use private forest land. Thus, the poor are gradually losing both access to an important source of supplementary food and a major source of income. One solution is to organize the communal

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management of forest lands. This can result in the sustainable use of forest resources, and thus brings benefits to the whole community, but particularly to its poorest members (FAO 2004).

Forest policies and forest management practices, have, remained gender blind and ignored the intimate relation between women and forests and remained insensitive to gender issues. As a result, the women continued suffering and their drudgery increased as the forest degradation continued. Therefore the forest policy provided for creating a massive people's movement with the involvement of women to meet objectives of the policy. The policy provided that domestic requirements of fuel-wood, fodder, minor forest produce and construction timber of the tribal and poor living within or near the forests should be the first charge on forest produce (http://www.fao.org/docrep/ARTICLE/WFC/XII/0799-C1.HTM 3/5/2019).

3. Methodology of the study

3.1. Description of study area

The study was conducted in Southern Nations, Nationalities and Peoples Regional State (SNNPRS) of Ethiopia in the *Esera woreda* of Dawro zone, southwestern Ethiopia .The capital of *Esera* is Bale. It is situated in the omo basin located 323 km and 670 km far from Hawassa and Addis Ababa which are capital cities of the Southern Peoples Region and Ethiopia, respectively. The *woreda* shares boundary with *Mareka woreda* in the east, *Tocha* woreda in north, *Konta* special *woreda* in the west, *Loma woreda* south east and Gamu gofa zone in the south. According to 2007 population and housing census population of the district had an estimated population of 82,218 of which 41,762 male and 40,456 female. The district has 29 *kebeles*. The area is topographically rugged. The Woreda covers total area of 106021.26 hectares and lies between 6º38′00″-7º6′00″ degree north latitude and 36º38′00″ to 37º13′00″ degree east longitudes, with an elevation ranging 501-2500m. Regarding the Agro-Ecology, 47% was tropical, 32% was Subtropical and 21% was temperate. The annual mean temperature ranges between 15.1 to 27.5ºc. The rainfall was a bimodal type, the short rainy season was between (February to March) and the long between (May to September). The average annual rainfall ranges from 1201 to 1800mm. According to the land utilization data of the area, 38.4% is cultivated land, 13.39% grazing land, 16.81% forest bushes and shrub land, 17.09 % cultivable

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and 14.31 is covered by others. The livestock resource of the woreda was estimated to be 313,094 cattle, 113,554 sheep, 45,703 goats, 7,081 horses, 1,934 mules, 5,064 donkey, and 157,996 chicken and 28,557 traditional hives (CSA, 2006).

3.2 Method of data collection and sampling techniques

To come up with relevant data the researcher used stratified random sampling after choosing the study Zone and woreda purposively. Because the study population is not unique or not homogenous with characteristics understudy. Each randomizing units such as residents, villages, some government officials are selected to give information based on the household questionnaire or interview guide. The sampling instrumentation, data collection and analysis were some of the steps designed for the research.

3.3 Sources of data

Both primary and secondary data sources were used to collect data. To collect primary data, key informant interviews, focus group discussions and household based questionnaire survey were used to collect the required data.

Different documents like annual reports of forest sector were used to come up with secondary data.

3.4 Sampling size

Discussions with the experts of Dawuro zone branch office of South Regional State Forests] and Essera district office of Forest and Agriculture revealed that the total number of kebeles (the lowest administrative unit in Ethiopia) surrounding forest is seven. Out of seven kebeles potential kebeles, four kebeles were randomly selected for the study. From villages within each kebele; three were selected. Furthermore, with the help of government extension workers (known as development agents) and kebele administration officials; three key informants per village were identified and a total of (3x3x4=36) key informants were interviewed. Ten /10/focus group discussions (with three women and seven men) groups were also conducted to gather mainly qualitative information on major rural livelihood activities, forest dependence, households risk

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minimization strategies and existing forest management system. The key informant interviews and focus group discussions were led by the researcher. During the focus group discussions; participants were encouraged to talk freely and spontaneously but the discussions are guided and covered by specific topics such as income sources, how women and men within households are engaged in various income generating activities, main types of forest products collected and the time of the year when people depend most on the forest products. The information generated is used both to guide the focus of the formal survey and also to cross check the results from the formal survey.

3.5 Data analysis and interpretation

The specified procedures were used by labeling them accurately as per described in this material. The constant factors such as age, sex, educational status, living standard as well as the selected samples are clearly analyzed to make them quite neat and ease for interpretation. And the data collected was analyzed by qualitative way, tables and percent.

3.6 limitation of the study

Due to the geographical location, the holding size, width, diversity of various specious, rate of deforestation versus plantation, factors the study is bounded in Essera woreda particularly in Belo-Bira area.

As far as the delimitation of the study concerned, some of the constraints are:

- Potential informants responded misinformation.
- The sample couldn't be collected as per the required manner.
- The weather condition and lack of instruments make the analysis difficult.
- Lapse of schedule either beyond or after the expected time, cost, and material … etc.

3.7 Significance of the study

The significance of this study entails the importance of forests and their dimensional relationships with the people around them and the environment. Besides, the ultimate results of

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this study material may have its own effect for various kinds of researches, theories, practices and related tasks.

4. RESULT AND DISCUSSION

4.1Results

4.1. 1Demographic Data of the Respondents

Of the 36 study households, 20 (55.55%) were male headed and 16 (44.44%) were female headed. Only 8.9% of the respondents attended secondary school, 21.1% attended primary school, and 70% were illiterate. The age of the respondent household heads varied between 18 and 75 years, with the mean age of 38.5 years. Family size ranged between 2 and 16, with a mean of 6 persons. In terms of age composition, 52.1%, 45.7% and 2.2% of the family members were in the age ranges of 0 to 14 years, 15 to 64 years and 65 years and above respectively, indicating that substantial proportion of the population is young. And among ten members of focused group 7 (70%) male and 3(30%) female.

4.1.2 Land holding of respondents

The landholding size of the households ranged from 0 to 3.5 ha, with the mean of 0.72 ha. Female-headed and male-headed households varied in their mean landholding sizes, which was 0.4 ha and 0.76 ha, respectively. Livestock holding ranges from 0 to 7.9 TLU, and the average was 2.9 TLU. For households who cannot produce enough, food self-insufficiency is most pronounced during the months of June, July and August. Households employ different strategies to cope with food shortages. One such strategy is the collection and sale of forest products, notably firewood

4.1.3 Major sources of household income and their relative contributions

People in the study area are engaged in a variety of activities that comprise crop and livestock production, forest products collection, and off- and non-farm income generating activities. Income from crop production accounts for 40.7% of the total annual income of the respondent

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households. Forest income was the second most important and contributes to 32.6%. Income from livestock, off- and non-farm activities, and woodlots accounted for 13.6%, 11.4% and 1.7% of the total annual household income, respectively.

4.1.4 Income from various forest products and determinants of forest income levels

Almost all of the sample households were engaged in forest products collection. Forest income of sample households ranged from Birr1000 to Birr 5000 per month with a mean of Birr 3000. Firewood, grass, tree seeds, wood for construction and farm implements were the major forest products collected by the community. Medicinal plants and honey are also collected from the forest though to a limited extent. No household reported forest grazing, cutting forage trees or extracting timber. This is not unexpected as forest grazing and cutting trees are not allowed by local authorities. Focus group discussions also confirmed that forest grazing and cutting trees for timber were prohibited activities.

Firewood is the most important forest product used by 88.9% or 32 of respondent households. Income of a given household from firewood could reach as high as Birr 5000, with a mean value of Birr 3000. Firewood income constitutes the largest proportion (79%) of the forest income. Grass for livestock feed is the second most important product collected from the forest using cut and carry system. Focus group discussions and key informant interviews revealed that households without livestock also collect grass from the forest and sale it in nearby markets. The average contribution of grass to the forest income was 9%. Income from wood for construction and farm implements amounts to 6.9%. The collection and sale of seeds of some important indigenous tree species (e.g. *Olea africana*, *Podocarpus falcatus*, *Juniperus procera* and *Hygenia abbyssinica*) accounted for about 3.8% of the forest income. Income from honey and medicinal plants cover the remaining 1.1% and 0.2% of the forest income, respectively.

4.1.5. Gender dimension of forest income

The gender dimension of forest income was also apparent within the household. The forest income generated by female members (Birr 2341 or 77% of the total household forest income) varied significantly from the amount generated by male members. The income generated by female members was almost four times greater than the amount generated by male members,

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which was Birr 1066 or 23% of the total household forest income. Female members were involved mainly in firewood collection and to a certain extent in cutting and carrying grass for livestock feed. About 81.5% of firewood collection task was accomplished by female members of the household only, whereas males only and both male and female members undertook respectively, 2.5% and 16% of the firewood collection tasks conducted by a household. About 96.2% and 3.8% of the income from firewood and 5.3% and 94.7% of income from grass were generated by female and male household members, respectively. The contribution of male members was more pronounced for incomes from wood for construction and farm implements, forest seeds, medicinal plants and honey.

4.2 Discussion

Mean forest income per household varied with wealth status. Poor households earned significantly more income. This may be due to the fact that poor households have fewer assets in terms of land, livestock, and cash to generate more income from agriculture. Thus they tend to depend more on forests. This high dependency of poor households on forests is in agreement with findings of other studies and. Poor households depend on firewood and construction materials to a large extent, and on medicinal plants and grass to a lesser extent. Most of these products are sold in the nearby markets. Rich households, on the other hand, depend mainly on grass for livestock feed, wood for farm implements, tree seeds and honey.

In terms of determinants of total forest income, the sex of the household head (being female) was positively and significantly related to household's total forest income. This implies that a female-headed household is more likely to be forest product collector than a male-headed household.

Regarding the gender dimension of forest income, marked differences between males and females were observed both across and within households. Forest income is more important for female-headed households than male-headed households. This has to do with limited asset level of female-headed households (e.g. their land size is half that of male-headed households).

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5. CONCLUSIONS AND RECOMMENDATIONS

The findings of the study illustrate that for communities residing around forest in Eastern Ethiopia forest income constituted a third of the total annual household income and was the second most important income source, next to crop. Gender and wealth status influenced the types of forest products used by the households as well as the income levels generated from these products. Male-headed households earned more in terms of absolute value of forest income but relative importance of forest income to total household income was much higher for female headed households. Even in male-headed households, female members generated significantly more forest income than male members showing the gender dimension of forest income and its particular importance to females in the community.

The study results are important in informing forest policy and management practices, including the new PFM scheme in Ethiopia, as the country has initiated a national project to scale up PFM on millions of hectares of state forests. The experience of PFM was made possible thanks to the policy provisions that encourage participation of communities in management and use of forests. And implementing participatory management strategy that can be utilized by the local communities in managing protected forests and as per the management plan, to be drawn by appropriate government bodies, the right to use non-timber forest products such as honey, species, wild coffee, fodder, and dried and fallen woods.

The particular dependence of the poor and women on forests needs to be emphasized and provisions need to be made in clearer terms to make sure that these segments of the community are included in the process of PFM planning and implementation in general and in defining the forest management plan in particular. Current practices focus on involving communities as an entity and do not specifically make efforts to empower and ensure the participation of the poor and women in defining the process and outcomes of PFM.

Unless this recognition is made and especially tailored support is provided to this segment of the community, elites within the community are likely to steer the process and take the lion's share

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of the benefits to be accrued through PFM. Limiting the use of forest products to NTFPs, as stipulated in the forest policy, is also the other policy related challenge that continues to undermine economic incentives for communities to be engaged in responsible management of forests.

6. REFERENCES

Adanech A.,2013. Forest Policy and Economics

Babulo et al., 2009.The economic contribution of forest resource use to rural livelihoods in Tigray, Northern Ethiopia

Belcher et al., 2005.Global patterns and trends in the use and management of commercial NTFPs: implications for livelihoods and conservation

BushaTeshome, HabtemariamKassa, Zerihun Mohammed and Christine Padoch 2015.Contribution of Dry Forest Products to Household Income and Determinants of Forest Income Levels in the Northwestern and Southern Lowlandsof Ethiopia

Byron and Arnold, 2005.What future for the peoples of the tropical forests

Cavendish, 2000.Empirical regularities in the poverty–environment relationship of rural households: evidence from Zimbabwe

Cavendish, 2002.Qualitative Methods for Estimating the Economic Value of Resource Use to Rural Households: Uncovering the hidden harvest

Clarke et al., 1996.Rural households management and miombo woodlands: use value and management

Djoundi and Brockhaus, 2011.Is adaptation to climate change gender neutral? Lessons from communities dependent on livestock and forests in northern Mali

Escobal and Aldana, 2003.Are non-timber forest products the antidote to rainforest degradation? Brazil nut extraction in Madre de Dios, Peru

International Forestry Review, 13 (2011), pp. 123–135

J. Carter, J. GronowRecent experience in collaborative forest management: a review paperCIFOR Occasional Paper No. 43, CIFOR, Bogor, Indonesia (2005)

Sayer, J. (Ed.), Forestry and DevelopmentEarthscan, London (2005), pp. 145–168

Science & MathematicsForestryVolume 77,Issue 5 Pp. 441-453.

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