Analysis of Eucalyptus Role in the Livelihoods of Ethiopian Rural Households

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Eucalyptus has become one of the most important livelihood sources for rural households. Eucalyptus production is rapidly expanding in every region of Ethiopia. Despite such alarming expansion, it has received little institutional support. This is mainly because of limited stock of knowledge and understanding on the importance and contribution of eucalyptus to livelihood of rural households. This case study was conducted at Anget Mewgia Peasant Association (North Shoa administrative zone of Amhara region) to assess the contribution of eucalyptus to the livelihood of rural households. Focus Group Discussion (FGD) was conducted with two groups consisting of 8 - 10 key informants to collect qualitative information. A structured questionnaire was also used to collect quantitative information from randomly selected 100 households. The study reveals that eucalyptus (Eucalyptus globulus) being grown by 100% of households in the community has become number one contributor to household income. The contribution of eucalyptus to household income is increasing during the last five years. Apart from eucalyptus role in providing construction material and fire wood to households, the proportion of its contribution to the total annual household income at the year 2014 is 7%. In addition, land allocated by farm household for the production of eucalyptus has increased by 30%. During the last 7 years the price of eucalyptus log has increased by 15 folds. The study also identifies and prioritizes major institutional, technical, and economic constraints that affect eucalyptus enterprise development. Women were also identified to play significant role in eucalyptus production and marketing. Therefore, any concerned body need to give technical, institutional and policy support to optimize the potentials of the plant.

Key words: Eucalyptus, Rural Households, Livelihood, Anget Mewgia, Ethiopia

INTRODUCTION

Eucalyptus, the most planted flowering tree in the world, which belongs to the family myrtaceae has been grown in East Africa for over a century. Through this time, people in the region have accumulated important local knowledge of its management. Expanded widely, today this tree dominates rural and urban landscapes. At the moment Ethiopia holds the largest eucalyptus plantation in East Africa with 15 widely planted species and is one of the pioneer countries that introduced the species. For smallholder growers, eucalyptus suits their limited resources and yields more money than other tree crops, i.e., the farmers use it as a buffer against financial crisis by planting it on land which is unsuitable agriculture (Zerihun 2010; Belay and Muluneh. 2016). On top of this, the increasing demand for fuel wood and construction material has created a dependable market for eucalyptus products. This certainly contributes to the steady expansion of eucalyptus in the region (FAO, 2009). The cultivation of eucalyptus has gradually spread throughout Ethiopia which is partly attributable to academic, research and development institutions including Alemaya College of Agriculture, Institute of Agricultural Research (IAR) and Chilalo Agricultural Development Unit (CADU) (Friis, 1995).

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In Ethiopia eucalyptus species played and will play a tremendous role in alleviating the fuel and construction material problems in the country (Teshome 2007; Henery 1973). In some areas, planting *Eucalyptus globulus* overrides the production in crop yield and it makes returns to land 1.3 - 1.7 times, and returns to labor 1.2 - 1.5 times greater than sole wheat cropping (Selamyihun 2004). The other greatest positive contribution of *Eucalyptus* is perhaps in replacing indigenous species for firewood, thereby, preventing further denudation of natural forests (Evans 1992). Some studies also indicated that *Eucalyptus* is one of the most important commercial plantation and pioneer tree species in successful ecological restoration of degraded lands (Yu 1994, 1995; Zhou et al. 2001). On the other hand, it can be used for lumber in direct substitute of indigenous species which are in danger to denudation if managed properly and utilized in a sustainable way (Getachew and Wubalem. 2010). That is why it has been planted as the main tree species at different places of Ethiopia (Veli and Timo.1989).

Since its introduction, eucalyptus in Ethiopia has been marred by controversies, surrounding its alleged negative environmental impacts and inability to provide the necessary productive and ecological services. The ongoing debate on the potential benefits versus negative impacts has remained unsolved which led to skepticism to provide support to the development of eucalyptus in Ethiopia. This case study was conducted by taking into account the arguments against eucalyptus at present have undermined the contribution of this tree to the livelihood of smallholder farmers and its general socio-economic significance. The study analyzed the contribution of eucalyptus to rural household livelihoods with an aim to provide a balanced view about the present role and its trend of contribution to rural households, for decision makers, development practitioners and concerned stakeholder who are in favor or against eucalyptus in Ethiopia.

The objectives of the present study are to analyze the overall contribution of eucalyptus to rural household income and livelihood; to identify gender roles in eucalyptus production-marketing continuum and to identify major constraints that affect eucalyptus enterprise development.

**METHODOLOGY**

**The study area and sampling techniques**

This study was carried out by using a case study approach to examine the contribution of eucalyptus to the livelihoods of rural households. The study was designed to be carried out in highlands of Ethiopia. For this case study, representative sample areas were included in a peasant association1 (PA) named Anget Mewgia. The PA is found in Basona Worana Woreda, North Shoa administrative zone of Amhara region. It is located 30 km east from Debre Berhan town the way to Ankober.

**Sampling procedure**

One hundred eucalyptus growing households were randomly selected from the PA. The households were purposely selected to generate information on the proportion of contribution of eucalyptus to household income and to collect data on land allocation trend to eucalyptus farming.

**Data collection techniques**

Both primary and secondary data sources were used for the study. Primary sources include household survey and Focus Group discussion (FGD). Structured questionnaire was used to collect the data on the contribution of eucalyptus to rural households, price trends and land allocation trends by households for eucalyptus production. Two FGDs were conducted with men and women groups, each consisting of 8-10 individuals in order to generate information on non-income related benefits of eucalyptus as well as constraints and challenges affecting eucalyptus farming in the study area. The FGD members were selected on the basis of their knowledge about the community. The structured questionnaire was designed to collect income related information from the purposively selected households.

**Data analysis**

Land allocation and household income proportion of eucalyptus and price related data were analyzed using SPSS program assisted by descriptive techniques. Gender related information and constraining factors of eucalyptus production were analyzed using qualitative analysis techniques.

**RESULTS AND DISCUSSIONS**

**Eucalyptus and Livelihood**

Eucalyptus planting started in 1979 by Lutheran Federation through its food for work program, followed by Farm Africa which promoted eucalyptus plantation in the Anget Mewgiya PA. At the time, community members were participating in the eucalyptus planting program run by Lutheran, and the underlying interest for community participation was just to receive wheat and edible oil offered for participant households in the program. The community members had little interest in eucalyptus.

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1 Peasant association is the lowest administrative unit in the Ethiopian government system.
planting because of land tenure insecurity (fear of frequent land redistribution), lack of awareness on its importance and limited market.

At present, every households in the community have planted eucalyptus. The underlying reason for having eucalyptus by every household is that eucalyptus is the only resource that any household in the community use for construction of houses and making farm implements. Eucalyptus is playing irreplaceable role to provide construction and farm implement resource for every farm household. Households harvest eucalyptus on average at the fourth year after planting; then every three years. Farmers usually plant 10,000 seedlings per hectare. The community members have the knowledge that eucalyptus can drain river and spring water. They have practice of planting eucalyptus away from farm lands and water sources.

**Eucalyptus Market**

Households sell their eucalyptus at farm, and farmers are price takers. Traders that regularly come at least twice a week set the price for the eucalyptus. Few farmers have started to transport and sell their eucalyptus in the nearby town market. Farm gate price of eucalyptus is Birr 4.00/log and if farmers transport themselves and sell it at Debre Berhan (the nearby town) market, the price goes up to Birr 9.00/log. Farmers who sell their eucalyptus at the nearby town market earn more than 100% price advantage over those who sell at farm gate at with additional 15-20% marketing cost (transport and labour cost). The problem associated with the prevailing eucalyptus market is that there is no standard being used for eucalyptus product (log). That means, there is no agreed market standard for log size and quality. On retail basis, buyers and sellers agree on the price arbitrarily.

**Price trend of Eucalyptus**

The price of a commodity reflects nature of its demand (Gittinger, 1985). Due to increasing population and demand for fire wood and wood for constructions, the demand for eucalyptus has increased both in the within and surrounding communities. Increasing importance of eucalyptus in the study area is manifested through its increasing price trend (see fig. 1). During the last 7 years, the price of eucalyptus log has increased by 1500% and during the last four years by 400%.

![Price trend of eucalyptus log](Fig 1: Price trend of eucalyptus log)

**Land Allocation for Eucalyptus Production**

Enterprise choice by farm households has direct link and decision over resource allocation (Gittinger, 1985). Increased allocation of resources to the production of eucalyptus is one of the indicators for increased importance of eucalyptus for livelihood. The average hectare of land allocated for eucalyptus production is summarized in table 1. The study also reveals an increasing trend of hectare of land allocated by farm households in Anget Mewgiya community for the production of eucalyptus during the last 5 years (see fig. 2). Between the year 1997 and 2002, land allocated by farm household for the production of eucalyptus has increased by 30%.

**Table 1: Summary of average hectare of land allocation by farm households for eucalyptus production**

<table>
<thead>
<tr>
<th>Year</th>
<th>Minimum (Hectare)</th>
<th>Maximum (Hectare)</th>
<th>Mean (Hectare)</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>0.06</td>
<td>1.50</td>
<td>0.3712</td>
<td>0.28017</td>
</tr>
<tr>
<td>2013</td>
<td>0.13</td>
<td>1.50</td>
<td>0.3727</td>
<td>0.27404</td>
</tr>
<tr>
<td>2012</td>
<td>0.13</td>
<td>1.00</td>
<td>0.3443</td>
<td>0.21230</td>
</tr>
<tr>
<td>2011</td>
<td>0.13</td>
<td>1.00</td>
<td>0.3277</td>
<td>0.19141</td>
</tr>
<tr>
<td>2010</td>
<td>0.13</td>
<td>0.63</td>
<td>0.2853</td>
<td>0.11405</td>
</tr>
<tr>
<td>2009</td>
<td>0.13</td>
<td>0.63</td>
<td>0.2837</td>
<td>0.11115</td>
</tr>
</tbody>
</table>
Contribution of Eucalyptus for Household income

Smallholder farmers in Ethiopia grow eucalyptus mainly for poles, fuel wood, construction wood, furniture making and farm implements (Davidson 1989). The cultivation of eucalyptus in the Anget Mewgia has also similar purposes. In the study area, dominated by poor household, eucalyptus trees are cultivated with a priority objective of construction of housing and for household fuel wood needs and for farm implements in that order.

Eucalyptus generates substantial income to rural households. In central Ethiopia, eucalyptus generated a quarter of annual cash incomes (Mekonnen et al 2007). The major income sources identified by the households in the Anget Mewgia PA includes crop production, livestock, eucalyptus, petty trading, remittances, non-agricultural wage, regular employment, temporary employment and other non-farm incomes. Of these major sources, income from eucalyptus sale constitutes the largest share. The contribution of eucalyptus to the total annual household financial income of the year 2014 is 20% (Figure 3). The contribution of eucalyptus to the household livelihood presented on figure 3 represented only its financial contribution, and its contribution in providing wood for construction and fuel were not calculated which would rise its overall contribution much higher than 20%.

Gender roles in eucalyptus production and marketing

Women play vital but unrecognized roles in crop production, household food security and household nutrition, income generation and natural resources management (World Bank, 2006). Digging holes, seedlings transporting, planting, hoeing, harvesting, transporting of logs, and marketing are the major task and activities involved in eucalyptus enterprise/business. In this regard the involvement of women in eucalyptus farming are enormous. The involvement of different men and women in eucalyptus enterprise is presented on fig. 4. According to fig. 4, female participate in different eucalyptus farming practices such as: digging holes, seedling transportation, planting, hoeing, harvesting and transporting of logs. Women do have great role in hoeing than the other farming activities. But, they do not participate in marketing. This may entail that women do not have a share in incurring the income.
Institutional arrangement for eucalyptus development

Institutional support is key factor for sustainable eucalyptus production and marketing. The community has received support from different institutions. At present, regarding eucalyptus development, the community has identified the woreda agricultural office, the central Ethiopia forestry and environmental research centre and private nursery owners as the only support giving actors operating in the study area. The role of these institutions was limited to distribution of seedlings, and lacks provision of technical support regarding eucalyptus production and post harvest management as well as marketing.

Major constraints

The focus group discussion reveals the following factors affecting eucalyptus enterprise development in the area:

- **Shortage of seedlings.** The supply of seedlings could not meet the ever-rising demand for eucalyptus seedlings. The increased demand is resulted from increasing demand for eucalyptus products due to increased populations and increasing demand for fire wood both from the local and surrounding low land communities;

- **Lack of access road to the eucalyptus farm.** Many of the eucalyptus farms are located very far away from the main road, which made it difficult to transport logs. It takes 1.5 to 2 hours walk and logs are transported to the main road by human shoulders.

- **Erratic rainfall induced moisture stress.** Eucalyptus production in the area is entirely dependent on rainfall. The area is experiencing erratic rainfall problems resulting in water stress in the area.

CONCLUSION AND RECOMMENDATION

The proposition that crop and livestock production is the only realistic driver for mass poverty reduction and rural development in most of the developing world including Ethiopia does not reflect the practical reality in Anget Mewgiya PA. The ever-growing contribution of eucalyptus to rural household income proves that eucalyptus holds both real and potential role to play even larger than crop and livestock do to improve livelihood and financial income of rural household.

Recognition must be given to the ever increasing role of eucalyptus to household income. And all technical, institutional and policy support has to be given so as to realize and optimize the potentials of eucalyptus to poverty reduction endeavors of the country.

In the study area, women participate in all of the eucalyptus farming activities actively but in marketing activities. They have great role in hoeing than the other activities.

Any intervention that target eucalyptus development must take into account the actual role women have in eucalyptus development. Gender analysis must be done when designing and implementing technical, institutional and policy related support programs.

REFERENCES


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