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**LOCAL PEOPLES PARTICIPATION IN SOCIAL FORESTRY
ACTIVITY: THE CASE OF ENDERTA WOREDA IN TIGRAY
REGION.**

**BY
GEBRE HAILEZGI ATSCAHA**

A thesis submitted to the school of graduate studies of Addis Ababa University in partial fulfillment for the requirement of the degrees of masters' arts in regional and local development studies.

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ABBREVIATIONS AND ACRONYMS

ASC	Agricultural Service Cooperative
BOANRD	Bureau of Agriculture and Natural Resources development
BOARD	Bureau of Agriculture and Rural Development
BOPED	Bureau of Planning and Economic Development
CFSCDO	Community Forestry and Soil Conservation Development Department
EFAP	Ethiopian Forestry Action Program
FAO	food and Agricultural Organization
FFW	Food – For Work
GMTF	Guideline for Management of Tropical Forests
HH	Households
KIG	Key Informant Groups
MASL	Meter Above Sea Level
NCS	National Conservation Strategy
NGO	Non – Governmental Organization
PA	Peasant Association
REST	Relief Society of Tigray
SWC	Soil and Water Conservation
TBIC	Tigray Bureau of Information Center
TFAP	Tigray Forestry Action Program
TNRS	Tigray National Regional States
WOARD	Wereda Office of Agriculture and Rural Development

ABSTRACT

The study was undertaken in Enderta wereda, South Eastern, Tigray region. The general objective of this study was to obtain a better insight in the nature of participation in the social forestry management strategies. Therefore, the motive, the extent and mechanisms of participation in managing the private and the community forestry activities were assessed, and the constraints faced at different phases of the activity were identified. To attain the above mentioned objectives primary and secondary data were used. Exploratory survey was conducted to generate relevant information for the actual survey and primary data were collected from 100 randomly selected households from six representative villages of three sampled Tabias (PAs). Qualitative data was also gathered using Focus Group Discussion and Key Informants; and review of publications, documents and reports from concerned offices were the sources of secondary data. The survey data was analyzed using (SPSS, 1996) software program and it was reported using descriptive statistics such as averages, ratios, percentages, frequency and means with different supporting tables and charts. The frequency distribution of the respondents with their response to their reasons for participation and occurrence of constraints were also rated and ranked. The total area covered with community forest in the study area is estimated to constitute about 35.37%. In all Tabias people are participating in reforestation activities in one form or another. The involvement of the local people in different activities varies for the various stages of project planning and implementation. The degree of participation in some activities such as benefit sharing and evaluation participation is only partial or non existence. This had a negative impact in implementing the reforestation program. The intended approach of the program is partly participatory approach. Community management decisions are made at Tabia level. It was observed that, the Tabia community is not the most effective social unit for forestry development organization. This is particularly the case for the community forestry activity. Though, food for work is highly valued than other benefits. Communal plantations are perceived as government's property. Along with the low participation of the people the poor quality planting and lack of maintenance are contribute to the low survival rate of the planted seedlings. Overall, participation in private planting was higher than in communal plantations. The great motive being its assurance to offer individual benefits, where all activities were carried out by individual households. The fields are maintained well and survival of the planted seedlings is satisfactory. The high interest in commercial tree planting (eucalyptus) is observed in all the villages. The production role of trees has a high a high priority than the service role. Tree plantation is concentrated around the homestead because of land tenure insecurity in farmlands and stubble grazing. This study has also recognized field level constraints. Competition for farm land, ownership of land, passive participation in site selection, long period return of trees shortage of labor during planting, drought, tenure insecurity, incentive problems and free grazing were the major constraints pointed out.

1. INTRODUCTION

1.1 Background

Forest is a community of plants either grown naturally or developed by planting and consisting of several species of trees and other woody vegetation (proclamation No. 94/1994). Forests and their products have a significant economic, social and environmental contributions to a region and at large to households. For rural and urban communities, a forest is the source of energy, construction wood, fodder and income. Furthermore forests also plays a vital role in sustaining natural and human environments by protecting watersheds, conserving the soil and helping in stabilizing fragile ecosystems (Kahsay, 2001).

With the increasing human and livestock population, the demand for forest products and forest land for the expansion of farm and grazing land has increased. This coupled with the unwise forest management efforts has resulted in over exploitation of forest resource.

From the available evidence, there is no doubt that deforestation in the country has been severe in recent years due to rural households' limited access to alternative source of energy, ineffectiveness in forest management and increasing demand for forest products (TFAP, 1996).

The enormous reduction in forest cover has led to a marked increase in bare land grass land and vegetation. The problem of wood shortage is already acute in the country. According to Tigray Region Bureau of Agriculture and Rural Development (BOARD, 2003), the total forest and woodlots cover in Tigray is estimated to be less than two percent. This has resulted in scarcity of forest products, recurrent drought and land degradation in the form of soil erosion, soil fertility decline and loss of biodiversity.

The rights and representation of people in managing forest resources are very limited. In order to make local populations self sufficient in their supply of wood including fuel wood, fodder, shelter and to reclaim degraded hillsides in the late 1980s, community woodlots and

catchments protection/plantations were initiated on a large scale by the CFSCDD of the Ministry of Agriculture as part of soil and water conservation program (Poschen, 1987).

In Tigray Region farmers have traditionally practiced agro forestry. Since the fall of the Derg regime numerous reforestation efforts have been carried out in the region in social forestry program. Forestation, reforestation, and tree planting are practiced by using seedlings raised in state, community, and individual nurseries. For instance, since the fall of the Derg regime about 49518 ha of land were reforested in Enderta wereda by the community (BoARD, 2003)

In Tigray region trees were either privately or communally owned. However, private forestry activities have not been adequately encouraged by concerned agencies. Issues like land tenure and free animal grazing have had an impact on farmers capacity and willingness (motives) to invest in private tree planting. Now the increase in rural as well as in urban populations has resulted in a rise in the demand for trees and tree products (EFAP, 1994; TFAP, 1996).

Based on Kahsay (2001), understanding the perception; addressing the needs and priorities of the local people is a crucial issue to the successful and sustainable management of communal resources. Success of forestry development is closely related to the issue of benefits and their equitable distribution among community members, which has helped to develop sense of ownership security.

Hence, this study assesses the participation of the local people in social forestry (both private and community) development activities in the study area.

1.2 Statement of the Problem

Experience showed that tremendous efforts have been made in the Tigray Region in general and in Enderta wereda in particular in social forestry development. However, social forestry development through mass mobilization has not been effective in terms of participation and other aspects of management (TFAP, 1996; BoARD, 2003).

One obvious indication of the failure as identified in this study was the resistance of the community during implementation and subsequent care for the planted trees. Rather the community members prefer to carry out their own communal forest and land management alternatives against the usual community forest management strategies. The community members expressed their discontent and dissatisfaction towards community forestry in various ways. Their reaction ranges from being involved in illegal acts such as thefts from community plantations, allowing cattle grazing in the plantation to the negligence of post-plantation tending operations. The local government on its part responded to community resistance negatively, by punishing those who violated the law, rather than convincing them about the objectives or finding solution with the community. The reasons behind ineffectiveness of social forestry development intervention in *Enderta wereda* and the conflicting interest between the community and the concerned agencies over forest management deserve research attention. However, there is no systematic study of the current status of social forestry management and the nature of local community participation therein. Hence the current research was initiated to fill the gap in knowledge for the study area.

1.3 Research objectives

The present study was undertaken in *Enderta Wereda* of South Eastern zone, *Tigray* Region, with various specific and general objectives.

1.3.1 General objective

The general objective of this study is to examine the degree community members engage in the forestation and reforestation program in general; and site selection, tree planting and maintenance and protection in particular.

1.3.2 Specific objectives

1. To assess the participation of the local people in social forestry program.
2. To identify the benefits the people get from social forestry program.
3. To examine the challenges being faced by farmers at all phases of the social forestry program.

1.4 Research questions

1. What are the strategies being persuaded in social forestry development in the study area?
2. What the local people motivates to participate in the social forestry program?
3. What are the mechanisms being used to ensure local farmers participates in social forestry management in the study area?
4. What is the extent and levels of participation of the community at different stages of the social forestry practices?
5. What are the constraints being faced by the community members at all phases of the social forestry practices in the study area?

1.5 Significance of the Study

In view of the continuous environmental degradation and associated energy crises, the efforts that are being taken by the government are less than the magnitude of the problem. Thus, there is a need to undertake a research relevant to the local people's participation in community and private forestry development program stressing more on the people's involvement at the grass root levels. It is anticipated that the outcome of this study will:

- Help policy makers and concerned organizations enrich their understanding on the existing situations of the local peoples participation in the community and private forestry activities.
- Give highlights for all stakeholders interested on the constraints that hinder forestry activity so as to tackle these effectively.
- Serve as a basis for researchers with regard to the local people's participation in community and private forestry activities in the region.

1.6 Scope of the Study

Forestry activities and Community participation are broad concepts. This paper focuses on:

- Contribution of community members in the forestry strategies
- Benefit from the community and private forestry activities
- The constraints face by farmers at all phases of the activities.
- In particular, the study focuses three purposefully selected sampled *Tabias* (six representative villages) from the seventeen administrative *Tabias of the wereda*.

1.7 Limitation of the Study

Since the research has taken in distance it was difficult to get appropriate advice on time by face to face from the previous instructors and my advisor. In addition there was a problem of availability of appropriate data in the study *wereda* and the study *Tabias*.

In addition shortage of finance was a critical problem. Much could have been done on the topic but due to such problems the scope is limited to the above mentioned areas. However, the study can contribute as a source for further assessments.

1.8 Organization of the Thesis

Including the first chapter, this study consists six chapters. Review of literature is included under chapter two. Chapter three includes the condition of the study area to assess the situational condition in the area. Consequently chapter four and five included the method of study and result and discussion respectively. Finally chapter six included. In addition the important references and available appendices have been included in the thesis.

2. LITERATURE REVIEW

This chapter deals with review of the theoretical and empirical literature pertinent to the main theme of the thesis. The chapter is divided into three major sections. The first section deals with concepts related to social forestry. It explains strategies objectives and indigenous knowledge of social forestry management. Section two dwells on the concept of participation. It tries to identify typology of participation, mechanisms usually used to ensure participation of stakeholders in rural development and extent of their participation. Finally, the chapter looks into country case studies in order to derive lessons that can inform the current study.

2.1 Social Forestry Concepts

Any strategy that is intended to stimulate tree and forest management by local people need to, and of necessary, to be based on a well-defined and consistent set of objectives. In the past, many tree rural growing schemes have been launched under the name of “Social Forestry for local community development” (FAO, 1985).

However, community forestry has suffered from considerable confusion and lack of clarity as to its nature and purpose. According to Arnold (1991), this confusion is partly compounded by the emergence of social forestry that is used interchangeably with community forestry.

Some authors use both terms interchangeably while others describe it differently. FAO (1985) defined social forestry as a term used for any type of industrial conservation or community forestry project/program that tries to maximize benefits for residents. According to Olawoye (1996), community forestry can be defined as a wide range of activities which link the rural people with forests and trees and the products and benefits to be derived from them. He further explained that social forestry embraces a spectrum of activities ranging from growing trees in all vacant lands to processing of forest produce at the household and

rural industry level to generate income. It embraces most of the ways by which forestry and the goods and services derived from forestry directly affect the lives of rural people.

Wiersum (1996) also defined social forestry as a development strategy of professional foresters and development institutions with the aim to increase active involvement of local people in forest management activity while community forestry is defined as any activity undertaken by rural people as part of their livelihood strategies under the umbrella of social forestry.

From these definitions, it is clear that social forestry is meaningfully achieved only under the framework of people and people's participation is a key for its implementation.

In this study, social forestry embraces all forestry activities carried out by people for their own benefit. The emphasis is on reforestation and management activities that originate with the beneficiaries of the activities. The activities may take place on community or private land and may involve a family, small group of people or entire local communities.

2.2 Concepts of common forest management and property rights

Fisher (1989), defined forest management by incorporating both the technical and the institutional aspects, as "a set of technical and social arrangements involved in the management of forests, the protection, harvesting and distribution of forest products".

The term "common property" has been largely misunderstood and falsely interpreted for the last two to three decades (Bromley and Cernea, 1989). Over the years, common property, has all too often been used to refer both to land and resource available to all and consequently not owned or managed by any one in a way that Garrett Hardin (1968) interpreted and understood as the "tragedy of the commons" and also to situations where access is limited to a specific group that holds rights in common. Though this is not explicit in his article, the situation that Hardin was describing was in practice, the one that is more accurately termed "unregulated open access" use applied to any situation involving use of resources in common

by several or many users, while “common property” is described as a regulated form of resource tenure and use managed by a group of users with exclusive rights to do so (Arnold, 1997).

Resources are fundamental aspects of property use and property rights (Bromley and Cernea, 1989 cited in FAO 1993), defined property and tenure with respect to common property needs specifically. According to them, neither property nor tenure is simply an act of ownership. They are “things” like land, trees or forests. Rather, Property and tenure both pertain to rights, relationships, responsibilities and duty. Hence, it is the use of land or some other resource in relation to others. Accordingly, they conclude, “property is a social contract that defines an individual and an object of value vis-à-vis to other individuals”.

Accordingly to them, the situation with property, as noted, is not like that of tenure. However, tenure deals mostly with rights and duties. Tenure as the attached “rights” to the property is defined in Encyclopedia Britannica as “a special advantage that some gains because of his/her particular status”.

Accordingly to Bromley and Cernea (1989), property generally recognizes four categories of property rights. Those are public, private, common property and open access. These categories are usually distinguished on the basis of:

- The ease with which users can be excluded from access to the good (excludability).
- Whether using a portion of the goods links the supply that remains (subtractibility)
- Public goods, which are non-excludable and non-subtractible (e.g. street lights, clean air) contrast with private goods, which are both excludable and subtractible.
- Common property goods lie somewhere in between the two, and share some of the characteristics of each, exclusion is difficult, and they are subtractable.

Private property and common property are not mutually exclusive but they are two types of property with good deal in common (Bruce, 1989 cited in Kahsay, 2001). As access to use of common property is confined to members of a defined user group, which excludes of other

potential beneficiaries, the common property, therefore, has some of the attributes of shared private property. Mc Lean (1995) put another way that common property is a way of privatizing the rights to use a resource without having to divide the resource into individual holdings.

2.3 Social Forestry Development Objectives and Strategies

An objective both for an individual and organization is defined as a state or condition which should be attained in a specified time or which can be maintained for a given period (Husch, 1987).

The difference in interpreting social forestry by different authors lies on the aspects of local participation of the community members and their objectives. Consequently, the objective of social forestry is to produce fuel wood, small timber, fodder, fruits and minor forest products in public and private lands in order to make people self-sufficient in forest produce needs, thereby making forestation peoples movement (Olawoye, 1994).

FAO (1985) also described social forestry management objectives intended to:

- Provide the means so rural families can supply, or have better access to, certain basic needs in the form of essential forest and tree products;
- Increase the participation of the rural people in managing forest and tree resources as a means of increasing their-reliance;
- Use human resources to better manage degraded and marginal lands thereby counteracting the process of deforestation and environmental degradation;
- Contributing to the general socio-economic development of rural people through employment generation, institutional building and promoting economic growth;
- Help to meet the need and aspirations of both women and men in specific under privileged groups within the rural population, such as subsistence farmers, the landless, etc; and
- Increase the overall production of wood or non-wood forest products other than tree products to counter growing deficits.

It should be realized that some of the aforementioned objectives could be met by planting individual trees in backyards while other objectives require established forested areas as competent and well-functioning ecosystems by the community. This suggests the need for developing social forestry management strategies for their execution.

Strategies are also defined as plans of action designed to achieve a long term or overall aim (Soanes and Stevenson, 2003). Hence, social forestry management objectives are aimed at attaining the respective plans and action of the subject through its strategies.

In social forestry, two aspects of decision-making are imperative to implement its strategies. (Wiersum, 1996): the degree of power over land (i.e. the degree of control, use of ownership of land and tree resources) and the degree of power on decision (degree of management responsibility for forest/tree resources). This power may be in the hands of the state, community, group or individual households. As a result, Wiersum (1996) indicated that the existence of three general social forestry management strategies namely, community forestry, private forestry and publicly managed forestry for local community development.

In social forestry, the control of tree and land resources belongs either to community, communal groups or to private groups such as households and individuals or to the public sector.

Community forestry refers to forestry management practices by the entire community including Peasant Associations (PAs), villages, and groups sectioned by the community such as cooperatives (FAO, 1985, 1993). The aim of community forestry is to provide tree products for all members of the community/institutions or rehabilitate degraded common and public lands (FAO, 1985; Arnold, 1987; Wiersum, 1996).

Communal forestry is also the second strategy in social forestry management. This strategy involves distinct groups that form only some or part of the community in programs in which rural communities or user-groups such as cooperatives; religious groups, etc. participate in project planning and implementation (FAO, 1985, 2003; Arnold, 1987). The degree of social

inclusion/exclusion practiced or implied distinguishes community from communal management behavior. In systems of communal forest management, access is more closed, reserved exclusively for members of the in-group and no others.

By contrast, where community forest management is practiced, access is more open, more inclusive of the whole, have rights of access following mutually agreed up on rules concerning times and types of use (FAO, 1985). However, community forestry is suffered from constraints related to tenure rights, lack of participation and agreement in benefit sharing (FAO, 1985; FAO, 1987; Arnold, 1987).

The third social forestry management strategy is private forestry. Private forestry is tree growing by individuals or farmers on their own land, communal or public. It is also distinguished as farm forestry mainly for household use such as fuel wood, fodder, fruits, etc. it can also be aimed primarily for environmental protection (to control erosion, soil fertility, etc.).

Farm forestry includes the growing of trees for commercial purposes and all other forestry activities on private land especially on farms. It can also be implemented on public or common lands where usufruct rights have been allocated to farmers (FAO, 1985; Arnold, 1997). Agro-forestry forestry is also the other form of farm forestry. It is deliberate growing of woody perennials on the same unit of land as agricultural crops and/or animals either in some form of spatial mixture or sequence (Lugden and Raintree, 1983).

Different authors have interpreted social forestry differently but all agree with the necessity of participation as a central point in all the interpretations (Wiersum, 1996). This has made peoples participation as a core element in social forestry management.

2.4 Local Indigenous knowledge and forestry management

Indigenous knowledge has been defined as knowledge that is unique to a given culture or society. Indigenous knowledge is dynamic; it changes through indigenous creativity and innovations as well as through contacts with other knowledge systems (Warren, 1984).

According to Wood (1995), indigenous knowledge focuses on human needs. Traditionally, local communities world wide are extremely knowledgeable about local plant and other natural resources; each society has a variety of types of knowledge systems which deal with the natural and physical environment as well as with social environment which passes from generation to generation through trial and error experimentation (Koech, 1996; Chambers, 1992; Martin, 1995 and FAO, 1995). Farmers, pastoralists, forest dwellers and others living close to nature have a store of knowledge and practices refined through long years of innovations and invention which need to be mobilized and enhanced by integrating with modern service (Zemeda Asfaw, 1996).

Biodiversity conservation by government bodies has a shorter history in Ethiopia. But it is clear that a number of communities had traditional resource management practices including some elements of biodiversity (EFAP, 1994). There is local traditional forestry activities in Ethiopia that we need to take in to consideration; such as, forest garden, terracing, composting and hay making etc.

According to kessay (1998), one of the arguments is that although traditional management approaches could contribute substantially to designing current forest management approaches for the country, too little attention is given to indigenous knowledge management systems by existing forest departments, because polices are derived only from formal forestry approaches.

2.5 Concept of Participation

2.5.1 What is participation?

The concern with participation in social forestry is the most accepted and one can hardly be against the concept broadly conceived. As a result, multitude of definitions has been proposed by various authors to bring clarity to the concept. Many writers in many ways have clarified the meaning of participation as a concept, but like other social sciences concepts, there are many variations. (Kahsay, 2001)

In literature, participation is examined from the point of view of government intervention in development and different terms like mobilization and coercion (Oakley and Marsden, 1984) have been used to characterize the nature of participation.

In Uphoff et. al., (1997), Participation is defined as people's involvement in decision making process about what would be done and how, their involvement in implementing the program by contributing various resources or cooperating in specific organizations or activities, their involvement in sharing the benefits, and finally evaluate such program. Moreover, these authors assumed that participation is not a thing that exists in certain quantities, and that can be measured in specific unit. FAO (1982) defined participation as process by which rural people are able to identify their needs, shares in decision making, implementation and evaluation of the participatory action. In general, participation is an over arching concept which is best approached by looking its dimensions (types and level, extent and mechanisms) with in the context which it appears.

2.5.2 Objective of participation

The objective of participation today is seen not only as a basic need and human right but also it is economically justifiable because experience shows that project/program success and long term sustainable results required people centered approaches through active community participation (Cristovao, 1990; Swanson. et. al.,1997)

Hence, the objective of participation is to involve the stakeholders at all levels of the activities thereby leading to success and sustainable management of development programs. By participation in this context, we mean, energy and efforts people devote towards the planning and implementation of development activities in which they are presumed to be beneficiaries.

As to Donald (1995), participatory activities are:

- A learning process for the communities and institutions;

- Open discussions in focus groups provide credible and relevant information;
- Participatory method yield more information in a share time;
- The process adds ownership to findings and commitment to action.

2.5.3 Types of participation

According to Tekle Gebre (1990), there are three types of participation;

1. Participation traditionally:- identified with political behaviors, voting, campaigning and lobbying.
2. Participation where clients and administrators develop a particular relationship for the purpose of receiving certain benefits.
3. Participation in administrative process:
 - Participation in decision making,
 - Participation in implementation,
 - Participation in benefiting,
 - Participation in evaluation.

Participation should be from planning through evaluation. Participation in planning is a process in which all groups, sometimes individuals with knowledge in and /or affected by the planned activities participate. Participation in planning is not just asking the people what they want without giving them alternatives with their possible outcomes. If people (peasants in rural areas) are not listened to and given attention; these powerless people will attempt to defend their livelihood by migration, non-cooperation and collective action (Kahsay, 2001).

2.5.4 Extent and Levels of participation

The term “participation” has been used to justify the extension of state control and build local capacity and self-reliance; it has been used for data collection and for analysis. Participation has often centered on encouraging local people to sell their labor in return to

food, cash, create dependencies, and give the misleading impression that local people are supported or externally driven initiatives (Reij, 1988; Bunch, 1991; Swanson, et. al. 1997).

Nevertheless government induced participation operates in opposite manners to the voluntary participation which lead to sustainable management of development programs as stressed by Cristovao (1990) that participation should not be seen, as many times in the past, as the occasional presence of rural dwellers in an information meeting, the simple use of public service, the voluntary contribution (with labor, money, etc.) to a project program or as some kind of activity to increase support to pre-planned project/programs. Using the term participation defines ways of shifting from the more common passives and incentive-driven participation towards the interactive end of the spectrum.

Pretty (1994) developed widely used typologies and classifications of form and levels of participation. This seems to be based on three dimensions, viz. with the distribution of information input, decision-making authority between participants and interventionists in relation to different key functions in development planning such as situation analysis, problem identification, goal setting and implementation. Further more, he distinguished seven typologies of participation in ascending order with their respective characteristics as described below, but only the higher level of participation can lead to sustainable results.

A typology of participation: how people participate in development programs

1. **Passive participation:** - people participate by being told what has been decided or has already happened. The information being shared belongs only to external professionals.
2. **Manipulative participation:** - participation is a presence with people's representatives of official boards but unelected and having no power.
3. **Participation by consultation:** - people participate by being consulted or answering questions for the problems defined by the external agents. Such a consultative process people do not concede any share in decision making.

4. **Participation for material incentive:** - peoples participate by providing resources. For example labor, in return for food, cash or other material incentives. People have no stake in prolonging activities when the incentives end.

5. **Functional participation:** - people participate by forming grouping to meet predetermined objectives related to the project. Such involvement may interactive and involve shared decision making, but tends to arise only after major decisions have been made by external agents.

6. **Interactive participation:** - people participate in joint analysis, development of action plans and formation or strengthening of local institutions. Participation is seen as a right, not just as a means to achieving project goals. They have a stake in maintaining structures and practices.

7. **Self- mobilization:** - people participate by taking initiative independent of external institutions to change systems. They develop contacts with external institutions for resources and technical advice they need, but retain control over how resources are used.

With respect to the extent of participation, lack of involving the beneficiaries in decision making and formulation of objectives amounts to assuming that they do not know what they want an assumption, which is eventually inaccurate, and mainly leads to program or project failure (Noronha and Speours, 1985). Rural people can participate in the implementation aspect of project in three principal ways: resource contribution as provision of labor, cash, material goods and information,; administration and co-ordination efforts as either locally hired employee or enlistment in program which is most common form of participation in implementation however, enlistment may not necessarily insure benefits (Cohen and Uphoof, 1979 cited in Kabsay, 2001).

Sah (1993) reported that it is wrong to think that technology will serve an effort. But only an active and willing participation of people in implementation serve a purpose. This implies that people should be free and committed to improve their welfare through their own efforts and should produce the goods and services they need according to their priorities.

Evaluation involves the feed back of information and opinion from participants and others to project staff, during informal and formal discussion. It is an important means of detecting unforeseen outcome, which have adverse effects and impacts on the rural population checking the validity of the project activities and objectives (FAO, 1985).

2.6 Participatory Forestry

Participatory forestry has been defined as “forestry activities executed by local people, sometimes with outside assistance, to improve their own welfare”. The main focus is on community involvement. It includes activities such as: tree planting and wood lots for various individual and community needs; trees as a farm cash crop, processing forest products on the household and small industry level to generate income in the community (Johansson, 1988).

The main aim of participatory forestry is to increase the means and responsibilities of the rural communities in managing their own natural resources in a productive and sustainable way. According to T.B Gebre Egziabher (1990), participatory forestry can be applied by:

- Deciding how much participation is desirable
- Deciding from whom participation is desirable
- Making sure that participation is expected only from those who benefit from that program
- Understanding that forestry programs are essentially long-term undertakings where as members of the rural community generally deals with short-term needs.

The community should feel and decide that forestry activity is its priority problem, must be able to decide who has what right to use the forest; who takes what action in terms of forest management; how the different stakeholders relate to each other and who benefits from the forest (Kahsay, 2001). There fore, communities must possess the knowledge, information and incentives to manage and conserve the resource on which they depend, should share a strong sense of historical presence and a clear sense of identity, and should be granted at least minimal recognition by the state (Agrawal and Gibson, 1999; Ostrom, 1990).

2.6.1 Reasons of participation and social forestry

The reasons for the involvement of people in forestry program may vary with the individuals. However, the participation largely depends up on the extent to which the basic domestic needs of community members are fulfilled through social forestry (Arnold, 1987). So, it is important that community members be sufficiently motivated and made convinced that the benefits including fodder, income, fuel wood, minor forest products and others would occur to them. In general, people participate in social forestry management for various reasons (FAO, 1985; Johansson, 1991; EFAP, 1992). Further categorized these reasons in to two major categories as indicated below:

Need of tree products and services:

- Fuel wood production;
- Securing land tenure;
- Production of building materials;
- Commercial reasons (income from sale of wood);
- Wind break for other crops;
- Trees as “saving accounts” for future needs;
- Catchments management (soil and water conservation);
- Erosion control on cultivated fields;
- To make use of waste land; and
- Fertility management on cultivated fields.

Triggering factors

- Forced by low and threats of punishment;
- Neighbors harvested planted trees;
- Accessing tree seedlings; and
- Payments in return to labor (food-for-work).

The first category are concerned to the different utilitarian benefits of forests such as to obtain construction poles, fuel wood, commercial reasons, catchments management and the likes; and the second category takes the(triggering factors) in to account which gave impulse to be engaged in the management process. Hence, to mobilize the masses toward the program, the primary requirement is to know the motivational reasons for the desire of the people for their participation in the social forestry.

2.6.2 Mechanisms of participation in social forestry

The mechanisms being used to involve local farmers in managing the social forestry program in the region including in the study area are achieved using the conventional extension system through community mobilization, public land allocation for private tree planting, provision of seedlings at subsidized price.

Community mobilization is a collective action based on collective motivation provided by the local leader or the extension worker (Krishnan, 1985). It is also a means of creating awareness or sensitizing about the issue and motivating them for collective self-reliance on a massive scale (Kaarhus, et. al. 2003). Depending on the condition of livelihoods of the community, it can be achieved in collaboration with food aid or free labor contribution basis. Food for work has been a major mechanism for community mobilization in community reforestation schemes in the study area.

As indicated by Desalegne (1998), the first food-for-work (FFW) supported soil and water conservation and reforestation activities started in the country in 1971 in *Tigray* and later in other parts of the country and was replaced by WFP (World- Food Program), as a response to the 1974 drought in drought prone areas of the country including *Tigray*. Later on, WFPs relatively small scale, fragmented projects were consolidated under one support called “rehabilitation of forest, grazing and agricultural lands”.

Since the mid 1980s, watershed management approach become the governments conventional strategy and FFW become linked mainly with soil and water conservation and catchments reforestation activities in which most of the achievements were attributed to the WFP supported food-for-work activities (BOARD, 2003). However, the watershed management approaches had entirely been top-down with more emphasis on the technical solution to the problem of land degradation (TFAP, 1996).

Free labor contribution is also another form of mobilization in using community resources to work for the common goal, and organizing the use of these resources, including voluntary labor used in community work (Kaarhus, et. al. 2003).

Recently, public land allocation for individual tree planting has been one of the mechanisms being used to involve the community for tree planting (TFAP, 1996; BOARD, 2003). Subsequently, the regional government appreciating the initiative taken by the community, decided to formulate a policy through the BOARD for the allocation of sloppy lands to a landless members of the community (Mitiku and Kindeya, 2001).

Governments stimulate private tree planting by providing tree seedlings of species that are difficult to raise either freely or at relatively reduced price (Arnold, 1997). This has been practiced in the study area and according to office reports 75 percent of the seedlings raised in state nurseries is allocated for private plantations and is sold for those who demand it at relatively subsidized price depending on the type of species (TFAP, 1996).

2.6.3 Devolution as an alternative strategy to achieve participation

Many governments in sub-Saharan Africa are decentralizing and devolving responsibility of managing natural resources to local administrators, user groups, and individuals (Lind and Cappon, 2001). The implicit assumption of devolution is that it leads to more equitable and sustainable use of natural resources, resulting ultimately in improvements in welfare, and poverty reduction (Jagger, et. al., 2003).

It is a means of empowerment as Hacklel (1990), indicated that empowering local people to benefit from conservation requires that resources ownership and authority to make policy and devolved from state institutions to lower levels.

As experienced in other countries such as Malawi, Bolivia and Nepal (FAO, 1999; Kaarhus, et. al., 2003) certain conditions that need to be met for devolution to have a positive effect of forest management include:

- Sufficient transfer of authority, and responsibility from central agencies to the local level;
- Sufficient financial resources and mechanisms for generation of local revenue accompanying the transfer of responsibilities;
- Adequate administrative and technical capability and empowerment for handling the new responsibilities;
- Reliable accountability mechanisms in place; and
- A clear definition of what should be transferred and how as well as to whom the transfer should be made.

2.7 Country case studies

This study attempts to bring together available information about the role of communal forestry management as a special form of social forestry by examining success and failure cases from selected countries. The main factors that appear to determine success or failure and success indicators were identified, and their implications for social forestry practices in the study area are summarized for analysis.

2.7.1 Country success case studies

Survival of the more interesting examples of recent initiatives comes from hill community forests in Nepal and Malawi where forests departments have reversed the usual trend of control over large tracts of degraded forests.

Specific power has been given to local institutions in which, local people had come usufructuary rights, local control and authority were increased under agreements in which villagers, would get a much larger share of future produce if they managed the forests to meet agreed conservation and sustainable criteria. The cases focus on the policy, legal and institutional changes initiated by governments in order to implement such participatory local forest management at the community and user group level.

Historically, hill community forestry in Nepal was controlled under various forms of tenure in the name of the state, community and some communal levels. Since the government was unable to exercise its authority in the remoter regions, many owners circumvented this control. In 1978, the government passed legislation enabling substantial amounts of public forest land to be handed over to local communities to manage the forests through the panchayat, the lowest level of political and administrative organization. Panchayats would enter in to agreements with the government to manage local areas under agreed forest management plans. Funding and technical assistance were provided by a number of donors. However, progress was slow at first because: the committee seldom functioned as representative discussion and decision making bodies, management plans designed by the forest department to production targets tended to be neither technically acceptable nor intelligible to the users due to cumbersome bureaucratic procedures.

Following passage of the decentralization act in 1982, the government shifted the focus from the panchayat to the user group with more authority and responsibility. User groups now developed their own operational plans. Accordingly, reforestation for fuel wood and fodder, protection and regeneration of degraded forest areas and erosion control was carried out on successfully on 8600 ha, for the first five-year plan. They also set the prices at which the produce is sold and determine how surplus income is spent. As a result, some become general local development organizations and are registering as NGOs in order to gain greater access to government services. By early 1996, there were 3000 user groups, managing 200,000 ha of forestland. The states role is thus defined as being that of a regulatory authority only. Management and control rests solely with the users of the resource. Training has helped

to remove many of the impediments to and reservations about the process that forest staff had experienced earlier. Sources: (Arnold and Campbell, 1989; Glamour and Fisher, 1991; Talbot and Khaddar, 1994).

A success from Blantyre City Fuel Wood Project (BCFP) has been exemplary as a Social Forestry Model in south Malawi. The focus has been on the transfer of responsibilities and indigenous forests to newly created village institutions set up to manage these assets sustainably. The BCFP was initiated in 1986, setting out to solve some of the problems of accelerated deforestation, scarcity of forest products and rising prices of fuel wood at local markets in the surroundings of the two major towns in Malawi, Blantyre and Zomba. The problems were considered to be addressed through a large – scale wood production and marketing project. The project objective was to provide fuel wood and construction poles at low cost to the urban poor. The project planted eucalyptus on most of the land and by the mid 1990s, 4700 ha plantation had been established and wood was being harvested and sold. By this time, the project has run into series problems due to contradiction between the objectives: financial sustainability on one hand, selling wood at affordable prices to urban poor on the other. In practice, fuel wood from the BCFP plantations was sold at loss. Theft of wood and increased labor costs had contributed to these losses. As a result, in 1993, the project steering committee, commissioned a study to find the best option for achieving sustainability for the project. The study team comes up with the decision that the local communities were the rightful “owners” of the plantations with the objective of improving the living standards of the local communities, and empowerment of local communities to manage forest resources sustainably.

In order to achieve these goals during the final phase of the project (1997-2001) the activities of community mobilization; training and capacity building; legalized transfer of land and forest user rights to village community, developing participatory forest management agreement and plans; monitoring; marketing and sale of surplus forest products; formulation of bylaws and its implementation; and benefit sharing. Finally, the handling over of the established plantations and indigenous forest areas were made to the 113 local villages presented the communities with a number of opportunities of generating and sharing of

benefits from the sale of the forests and redistribute it to participating individuals. Source: Kaarhus, et al., (2003).

2.7.2 Country failure case studies

In recent years, forest destruction has been intensified in India, social forestry Gujarat state; due to population growth, over exploitation of resources and diminishing forest areas. Farm forestry, is be a natural development consequence of wood shortage, has been constrained by agricultural and forestry conflicts and the peasant farmers dedicated priority to agriculture. In an attempt to improve local forests, strengthening local collective management has been the program of communal woodlots established under social forestry programs since 1976. Shortages of available land had reduced woodlot available to the community. As a result, its contribution to the local needs become insignificant. The legal status of local forests was centralized for national decision-making. The panhayat (elected village government body), managed them in accordance with rules prescribed and management plan developed by the forest department, and benefits were to be split between the forest department and the community. These have created primarily tree stocks, wood products, to be sold, with few immediate products, such as fuel wood and grass. They have experienced great difficulty in attempting to control the use of forests. Community participation in village forestry has not, in general, been successful. Eckholm generalized the features of social forestry in Gujarat, India, clearly. "As practiced to date, social forestry in Gujarat has lead to neither self sustaining community forest improvement nor the transformation of social relations that community forestry can in theory entail. The village woodlot program is clearly an operation of the state forest service rather than a self-help scheme. The Panchayats were dominated by economic elites and political factions" Source: FAO, (1987); World Bank, (1988 in; Arnold, 1998); Chambers et al., (1989).

2.7.3 Lessons drawn from the countries case studies

From the country case studies discussed above, indicators responsible for success/ failure of social forestry were categorized and summarized in to physical, economic, social and legal/institutional. Some of these indicators were reflected in this study.

1. Physical indicators:

- From success case - Availability of potential forest land;
- From failure case - Shortage of land for reforestation.

2. Economic indicators:

- From success case – Initial external support and Increased availability of wood, fodder and regenerated forests;
- From failure case – Insufficient incentive to induce participation.

3. Social indicators:

- From success case – Awareness of the process through effective mobilization;
- From failure case – Limited awareness.

4. Legal/institutional indicators:

- From success case – Conducive environment; to organize themselves in to user groups and local NGOs; to develop agreed management plan and work with; to develop own local rules, regulations and enforce it.
- From failure case – Poor institutional frame work; undefined and ambiguous responsibility of the government and the community bylaw and unclear legal status and security of community forests.

3. DESCRIPTION OF THE STUDY AREA

3.1 General Information of Tigray Region

TNRS is one of the 9 states of the Federal Democratic Republic of Ethiopia (FDRE). The region lies in the northern Ethiopia, extending from 12⁰15' to 14⁰ 54' N and 36⁰ 27' to 39⁰ 59' E. The region is bordered with Eritrea to the north, to the west by the Sudan, to the south by the Amhara National Regional State, and to the east by the Afar National Regional State. It is one of the most land-degraded regions of the country, which has approximate areas of 80,000 sq. km. Out of this, about 25 per cent of the land area was cultivated and about 40 per cent used for grazing and the rest is unused land (Kahsay, 2001). The potential cultivable area of the region is estimated at about 1.5 million hectares.

Altitude varies from 550 m.a.s.l in the Tekezze gorge to 3935 m.a.s.l in the south highland. About 53 per cent of the land is low land referred to as *Kola* (less than 1500 m.a.s.l) according to the traditional classification. Due to the marked variations in topography and altitude, there are agro-ecological niches or microclimates within short distance (Gebremedhin, 2000).

The climate of the region is highly unpredictable characterized specially by unreliable rainfall. The topography of the region is characterized as mountainous plateau and the climate is categorized as tropical semi-arid. It is characterized by sparse and highly uneven distribution of seasonal rainfall, and by frequent drought. Annual rainfall ranges from 450 to 980 ml with significant spatial and temporal variability. Most of the precipitation falls within the three months of June, July and August, and with high intensity (TFAP, 1996; Berhanu and Solomon, 2001).

Average temperature in the region is estimated to be 18 °C, but varies greatly with altitude. In the highlands of the region, during the months of November, December and January, the temperature drops to 5 °C. In the lowlands of Western Tigray, especially in areas around Humera, the average temperature increases from 28 °C to 40 °C during the summer.

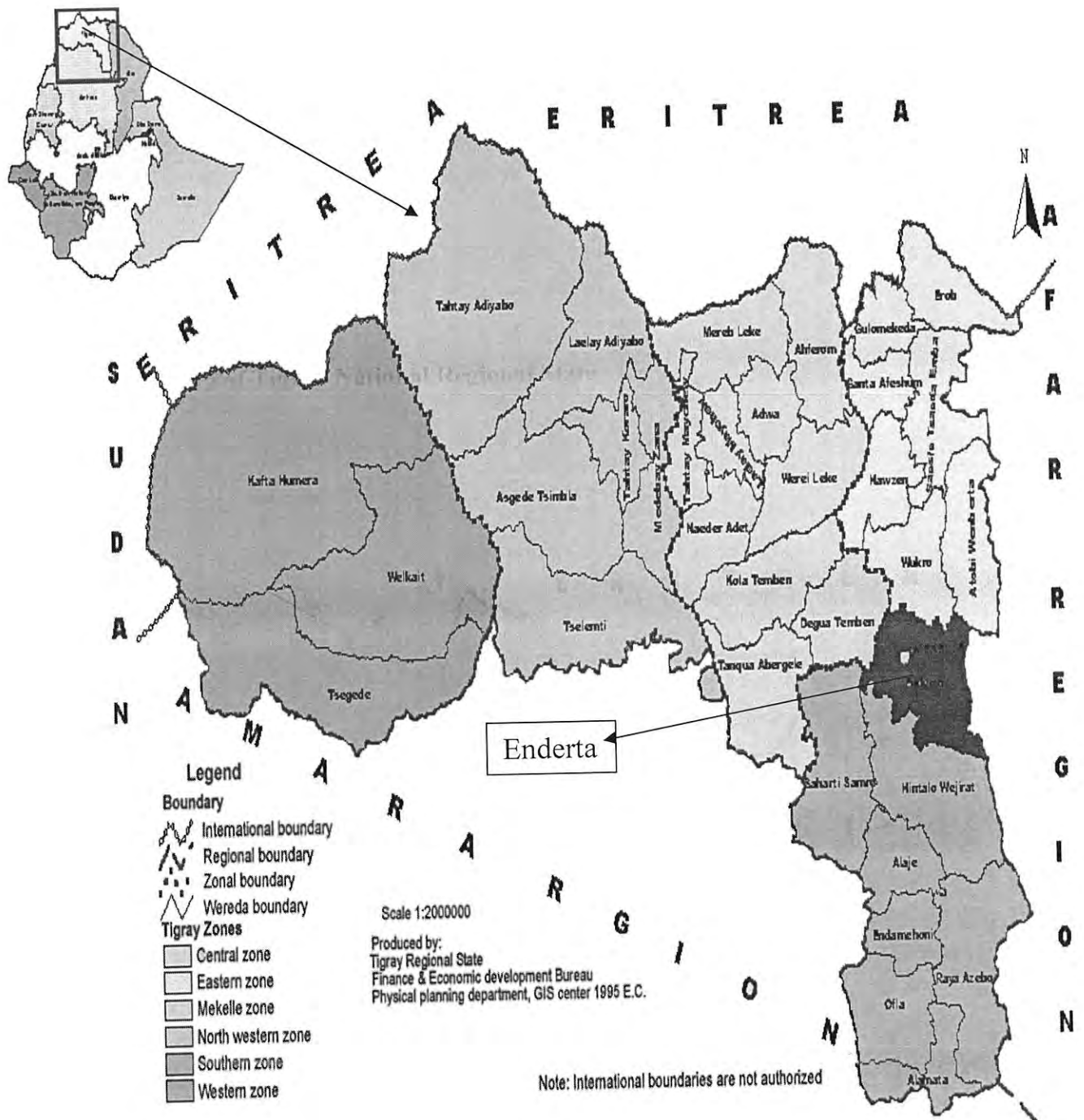
The TNRS is divided into 6 administrative zones, 34 woredas (Districts), 550 *Tabias* (Fitsum *et al.*, 2002), more than 3500 *kushets*, and 74 towns. TNRS has an estimated total population of 4,334,996 consisting of 2,136,000 men and 2,198,996 women. Out of which 3,519,000 or 81.2 per cent of the population are estimated to be rural inhabitants, while 816,000 or 18.8 per cent of the population are estimated to be urban inhabitants (CSA, 2005).

Based on the 1998/99 economic account estimates, agriculture and its allied activities constituted about 55 per cent of the regional GDP and provided employment for more than 85 per cent of the population (BoPED, 2000). Crop production and livestock raising are the major agricultural activities and sources of livelihood in the rural population. The farming systems of the region are largely based on traditional technologies and practices.

According to the estimation of CSA (2005), the types of crops growing in the area includes: cereals, pulses, oilseeds, vegetables, root crops, fruits and cotton are produced for food, making drinks, stimulation and for making fabrics or clothing. Moreover, farmers in Tigray had a total of 2,713,750 cattle, 72,640 sheep, 208,970 goats, 1,200 horses, 9,190 mules, 386,600 Asses, 32,650 camels, 3,180,240 poultry of all species and 20,480 beehives.

Since the end of 1990s, social forestry development and soil and water conservation programs have been the major components of the development endeavors in the region. Promotion of community and private forestry through reforestation, establishment of community plantations, area closures and nursery establishment are among the major activities of the program.

Figure 1: Map of Tigray National Regional State



3.2 Background of Enderta wereda

3.2.1 Geographical Location and Climate

The study area (Enderta wereda) is located in the Southern part of TNRS. Quiha town is the capital of Enderta wereda. It is located at the vicinity of Mekelle, the capital city of TNRS. The wereda is bordered with Hintalowajerat wereda in the south, Deguatemben wereda in the west, Wukro and Atsbiwomberta weredas in the north and Afar region in the east.

Besides, the altitude of the wereda is 1,500-2,300 m.a.s.l. Ethiopian agro-ecological conditions are commonly classified into three categories, namely *dega* (highland), *weyna dega* (mid-altitude) and *kolla* (lowland). Mean annual rainfall of the area ranges from 400-799 ml and the average temperature is 15-20 °c (figure 2).

3.2.2 Land use classification

The wereda covers an area of approximately 142585 hectare. According to Enderta wereda office of Agriculture and Rural Development report (2008), the current land use consists of cultivated land (22.90%), forest land (34.73%), grazing land (2.79%), uncultivated land (0.39%), miscellaneous land (settlement area and roads) (6.97%) and waste lands (gorges, mountains and the like) (32.22%) (Appendix 2).

3.2.3 Population Characteristics

Based on the study of CSA (2005), the total population of the wereda is 144,784 persons; of which, 70,897 are males and 73,887 are females. The density of the population is 108.6 persons/ KM². Regarding the population profile, 46-48 per cent of the total populations in the wereda are youngsters (whose age is below 16 years) while the remaining 52-54 per cent are middle age and old age groups. Life expectancy at birth remains at 47 years and infant and child mortality rates are high at 118 and 173 per 1000 births, respectively. The wereda is subdivided in to 17 rural *kebele* administrations. The economically active population is

estimated at 51.04 per cent. More than 99 per cent of the populations are followers of the Ethiopian Orthodox Church (TBIC, 2002).

3.2.4 Economic, Social and Infrastructure Activities

Agriculture is the mainstay of the economy of the woreda. About 85 per cent of the population depends on rain fed mixed crop-livestock subsistence agriculture, with oxen power supplying the only draft power for plowing. Some areas of the woreda which produce just enough for subsistence during good rainfall years, and the rest face chronic food deficit. Food aid had been given when the problem of food was severe. The causes of the structural food deficit include severe environmental degradation, low soil fertility, inadequate and erratic rainfall, vulnerability to pests, lack of appropriate technology, small size and fragmentation of land holding, lack of diversification in economic activities, and little use of modern inputs (Kahsay, 2001; Berhanu *et al.*, 2000).

The land tenure system is based on the constitution of 1994, all land is the property of the state, and it may not be sold or mortgaged. The constitution also guarantees the rights of individuals to improvements they make to land, including the right to use, transfer, remove and claim for compensation for such improvements if the right of use expires (Kahsay, 2001).

Agricultural extension workers are assigned by the Agricultural Development Office of Enderta woreda and the general principle is to have three extension workers in each Peasant Association. In the study area, there are extension workers on agricultural fields such as crop production, livestock production and home economics all helping the peasant farmers in one way or another.

According to Tigray Bureau of Finance and Economic Development (2001/02), the per capita income at current cost is 820.85 birr. Over use of farming land, overgrazing, traditional farming techniques and declining rainfall, environmental degradation (deforestation and soil erosion), and massive drought are the main characteristics of the area. Land holding of the farmers varies from 0.25 to 1 hectare. Crop production and livestock

rearing dominate the major agricultural activities. Among the crop production, cereal dominates over other crops. Mostly all kinds of domestic animals are found in the woreda. Especially, cattle, goats, sheep and donkeys predominates the area and some poultry, honeybees and camels are also kept.

The woreda consists of 17 rural peasant associations; all of them having Agricultural Service Cooperatives. According to the report of WoARD (2008), among other social and economic institutions, 17 primary ASCs and 1 multi-purpose union, 8 saving and credit, 9 irrigation users, 4 dairy, 3 construction and mining and 4 others making a total of 48 cooperatives have been established in the woreda. Currently, those saving and credit cooperatives have 384 male and 24 female members, which make a total number of 407 members.

Although the major market center for the Enderta woreda is the Mekelle town, smaller markets are located everywhere in the PA villages. Both crop and livestock products are the main goods supplied by the farmers to the market centers. Wood, potato, tomato, live animals, milk, eggs etc are supplied to the market. In return, the farmers take home consumable goods such as food, edible oil, salt, kerosene, soap, etc.

Regarding the infrastructure of the woreda, improvement is taking place in the availability of public infrastructure such as; roads, schools, health centers, drinking water, power supply, credit service and others, their basic situation is far from adequate. This is especially true with regard to drinking water, electric supply and health service. The main road passing through the region was established in the early 1940s. However, since Mekelle is located at the center of the woreda; its geographical location helps it to get better road and air transport than others. Large investments are being made in other types of infrastructure like telecommunication service and irrigation system.



Figure 2. Map of Enderta woreda

3.2.5 Forestry Intervention in The Study Area

The wereda is among the most degraded parts of the region with a very limited and scarcely distributed vegetation cover. Intensive use of resources and population pressure are considered the major factors influencing the natural vegetation cover of the area. The only remnant natural forests are found around churches. Acacia species, scrubs of *Dodonea angustifolia* and *Rumex nerrosus* scattered in some farms. Cactus (*opunita* species) and a wide spread planting of *Eucalyptus* wood lots are observed around homesteads. The dominant species found in closed degraded area are Acacia species, *Rumex nervosus*, and *Euclea schimperia*.

Forestry departments with the major responsibility of implementing forestry programs have been restructured for several times (TFAP, 1996). Bureau of Agriculture and Natural Resources Development (BOANRD) established community nurseries, produced and planted millions of seedlings with mobilized community labor on community and private lands, plantation sites and enclosures, treated soil and water conservation structures through extension services. Forests established on community lands have become sources of friction between communities and the state because the plantations are often created on communal land without prior consultation with the community.

Tree growing is a component of farming system in Ethiopia. With regard to private tree planting practices, it includes homestead tree planting, field tree growing activity, farm boundary tree planting as live fences and tending of naturally grown tree species.

3.2.5.1 Community Forestry Practices in the Study Area

Community forests in Tigray are understood to include community wood lots, protected degraded forestlands (enclosures) and natural forests with in the boundary of a *Tabia* or sharing borders of communities in a wereda (TFAP, 1996). As it was observed in the study area enclosures are enriched with tree planting and a combination of natural and planting forest vegetation. The natural forests are found mostly around Church compounds, graveyards and other holly places. These tree components are composed of the remnant

indigenous natural forests serve as a shade, and they are being used as a source of seed to be raised in tree nurseries.

The total area covered with community forest in the study area is estimated to be 49518 ha and this constitutes about 35.37 percent of the land area of the wereda. Of which, 23314.5 ha is natural forest and the rest 26503.5 ha is plantation forests (Appendix 2). Since 1991, the government handed over the plantations to *Tabia Baitos* mainly for its protection with out essential pre- conditions that should be completed before the hand over is made.

3.2.5.2 Private Forestry Practices in the Study Area

Private forestry holdings in the study area are the planted trees and naturally regenerating indigenous ones. Since 1991 75% of the seedlings were raised in state nurseries and all raised in community nurseries had been distributed to farmers for planting in their homesteads.

Between 2004- 2008, farmers of the wereda planted 2780118 seedlings in their private landholdings (homesteads, partitioned gullies and hill side partitioned). They also planted 2791057 seedlings in community forest sites (Appendix 3)

4. RESEARCH METHODOLOGY

4.1 Rationales for Selection of the Study Area

The research was carried out in Enderta wereda. The selection of the study areas was done purposefully with due consideration of the extent and severity of land degradation and deforestation, and the efforts given towards reforestation with relatively poor performance.

The wereda was selected due to its severity of soil erosion and deforestation, which caused scarcity of fuel wood and a decline in soil fertility. Efforts made to reserve the situation and the resulting existences of considerable area under social forestry were the major criteria for its selection.

4.2 Sampling Procedures

4.2.1 Selection of Sample *Tabias* and Villages

Among the 17 *Tabias* of the wereda, three *Tabias* were purposefully selected. *Tabia* is the lowest administrative unit in the region. From each *Tabia*, two representative villages were selected. The criteria used for the selection of the sample *Tabias* and representative villages was the existence of large area covered with social forestry plantations due to early start of the intervention. Hence, based on the information obtained from office of agriculture and rural development the sample *Tabias* had started communal and private planting earlier. Therefore, the study has been carried out on community and private forests established at least 10 years ago. The selected three *Tabias* are:

- Arato- more or less “*Dega*” (high land)
- Didba- “*Woina dega*” (middle land)
- May genet- “*Woina dega*” (middle land)

4.2.2 Selection of Respondents

Selection of respondents was made using systematic random sampling from the already registered list of household heads. Those household heads that had land and lived in those representative villages were taken. Among those village households the names of the farmers who practiced forestry activity for at least ten years were screened with the help of DAs, *Tabia* and village leaders.

Accordingly, the number of households interviewed were 34 from Arato *Tabia*, 33 from Didba *Tabia* and 33 from May- Genet *Tabia*, a total of 100 household heads were randomly selected for this study (table 1).

Table 1: Number of Households Interviewed in the Study villages

Name of <i>Tabias</i>	Name of Villages	Number of respondents
Arato	Endaba-Selama	17
	Sheguala	17
Didba	Elkin	16
	Mere-Mieti	17
May-genet	Adi-Gogon	16
	Adi-Daero	17

Source: 2008 Survey.

4.3 Data Collection Methods

Structured and semi structured interview techniques were applied using interview schedule that generate the desired data. The interview schedule was developed based on the context of the specific objectives of the research and information gathered using sample survey method. The major source was sample households.

Exploratory survey was conducted to generate relevant information for the actual survey. This was also supplemented with group discussions and personal observations to generate primary data. This was made to collect data on community level information to use as a reference against which household level data are checked. The data sources for group discussions were sampled and non sampled households.

- 3 female heads
- 3 male heads
- 3 *Tabia* and village leaders
- 1 forestry department worker
- 1 representative of office of Agriculture and Rural Development.

Key informants were employed to introduce the objectives of the research and facilitate access to the study area, get preliminary information about the ongoing social forestry program, prevailing opportunities and constraints in implementing the program. The data sources were Community leaders, Extension/development agents, Field workers/Supervisors, and Government officials.

Review of publications documents and reports were referred to obtain secondary data to get general information related to the study and to be used for triangulation purpose. Secondary data were books, libraries, studies, reports and relevant documents from concerned offices/bodies etc.

Enumerators who completed 10th grade were hired from the neighboring localities, and trained to assist in collecting the desired data. The enumerators assisted in interviewing arranged meetings with farmers, registered their personal observations both in our transect walks across community forests and individuals woodlots.

4.4 Data Analysis

To analyze the household survey data, a statistical package for social science (SPSS, 1996) software program version 13.0 was employed. Thus, after designed data entry format on the

SPSS software program data entry was carried out. This method of analysis was used to identify the current participation of the local people in the social forestry, the benefit of the people get from the activity and the challenges being faced at all levels of the program.

According to the objective of the research and the type of data collected, it was basically exploratory and descriptive in nature. Hence, it was reported using descriptive statistics such as averages, ratios, percentages, frequency and means with different supporting tables and charts in the process of examining and describing distribution of respondents, reasons for their participation and identifying some of the constraints in the study area. Some comparisons were made within the same category of the population with respect to the existing feature of the private and community forestry activities that complement each other in achieving the social forestry program in the study area.

The frequency distribution of the respondents with their response to their reasons for participation and occurrence of constraints were also rated and ranked.

- Rating of motivational reasons for their participation, respondents were asked on three point continuums and assigned; most important by 3 scores, important by 2 scores and least important by 1 score. Similarly, for rating of the frequency of occurrences of constraints were asked and assigned; most often by 3, often by 2 and sometimes by 1 score. And finally it is multiplied with a weight given to each item of the respondents with their response and ranked.
- Ranking of reasons for participation, constraints and other variables was also applied using ranking index method.

5. RESULTS AND DISCUSSIONS

This section presents the socio- economic profile of the respondents in the three surveyed *Tabias*. The chapter also discusses the actual social forestry intervention, forestry strategies and the dimension of participation (motives, extent and mechanisms of participation) practiced in the study area. Motivational reasons of the local people to participate in the program and major constraints faced at all levels of the activity are discussed.

5.1 Socio Economic Profile of Households

The descriptive statistics was run to observe the socio-economic and institutional characteristics of the respondents such as: age, family size, level of education, land holding and other related variables.

Table 2. Gender distribution of respondents in the three *Tabias*

Name of the <i>Tabia</i>	Gender	
	Male	Female
Arato	44.8%	29.6%
Didba	20.7%	38.0%
M/Genet	34.5	32.4%
Total	100%	100%

Source: survey result 2008

The gender profile of respondents shows that males were 44.8%, 20.7% and 34.5%, and females were 29.6%, 38.0% and 32.4% in Arato, Didba and May Genet respectively. More male respondents were from Arato where as more female were from Didba.

The survey showed that of the respondents of Arato 94.1% was heads of the families and the rest were wives. In Didba 87.9% were heads of the family, wives 6.1%, son 3%, and daughter 6.1%. In the case of May Genet 91% was heads of family, but wives were 3% and

sons 3%. On the average, in the surveyed areas, heads of family constituted 91%, wives 5%, sons 3% and daughters 1%.

In all the study *Tabias*, more than 60% of the respondents were married. In Arato 73.5 respondents were married, 5.9% single (unmarried), 14.7% widowed and 5.9% divorced. In Didba they were 81.8%, 3%, 6.1% and 9.1% respectively. The ratio for May Genet was 60.6%, 9.1%, 18.2% and 12.1% respectively. On the average the marital status of the respondents were 72% married, 6% unmarried, 11% widowed and 9% divorced.

Table 3. Educational Categories of respondents in the three Tabias

Name of <i>Tabias</i>	Educational Categories				Total
	Illiterate	Basic Education Grade 1-6	Grade 7-12		
Arato	14.7%	41.2%	26.5%	17.6%	100%
Didba	9.1%	33.4%	33.3%	24.2%	100%
M/Genet	18.2%	30.3%	18.2%	33.3%	100%

Source: survey result 2008

Table 4. Family size of Respondents in the three Tabias

Name of <i>Tabia</i>	Family Size			Total
	1-4	5-10	>10	
Arato	23.5%	64.7%	11.8	100%
Didba	36.6%	60.6%	3.0%	100%
M/Genet	30.3%	66.7%	3.0%	100%

Source: survey result 2008

Mean of family size in the three *Tabias* was 5.42 with a standard deviation of 2.38. The occupation of respondents in the study areas revealed that most of them were farmers (89%) and 5% were both farming and petty traders. The other occupation constituted 2% daily laborers and 4% engaged in other activities.

Table 5. Land holding size of respondents in three Tabias

Name of <i>Tabia</i>	Nil	Size of land holding in Hectare			Total
		0.25-0.5	0.5-1	>1	
Arato	-	70.6%	26.5%	2.9%	100%
Didba	-	57.6%	36.4%	6.0%	100%
M/Genet	-	60.6%	36.4%	3.0%	100%

Source: survey result 2008

The land holding size in the study area showed that 63% of the respondents had land size ranging from 0.25 to 0.5 hectare and 33% had land size ranging from 0.5 to 1 hectare. The rest (4%) of the respondents had more than 1 hectare. The pattern in each *Tabia* showed that, in Arato 70.6% of them were having land ranging from 0.25 to 0.5 hectare, 26.5% had a size of land ranging from 0.5 to 1 hectare. The rest (2.9%) had more than a hectare. In Didba, 57.6% of the respondents were having land size ranging from 0.25 to 0.5 hectare. Those having land size of 0.5 to 1 hectare were 36.4%. The rest (6%) had land more than 1 hectare. In May Genet *Tabia* 60.6% of the respondents had land size ranging from 0.25 to 0.5 hectare. 36.4% of them had land size of 0.5 to a hectare. The rest (3%) had land of more than a hectare. Mean of land holding in the three *Tabias* was 0.5200 with a standard deviation of 0.4385.

The general pattern of livestock ownership of the study area was that 21.0% of the respondents had no livestock. The remaining 79.0% had livestock such as cattle, equine, shoats, cattle and shoats, cattle and equine, equine and shots, and cattle, goat and shoat.

In Arato *Tabia*, 26.5% had no livestock and 23.5% had cattle, 5.9% had equines, 2.9% had shoats, 11.8% had cattle and shoats, 17.6% had cattle and equine, 5.9% had shoats and equine, and the rest 5.9% had cattle, equine and shoats. In Didba *Tabia*, 15.1% of the respondents had no livestock and 30.3% had cattle, 12.1% had cattle, 6.1% had shoats, 21.1% had cattle and shots, 15.2% had cattle and equine, and no owner of equine and shoats, and cattle, equine and shoats. In May Genet, 21.2% of them had no livestock, and 24.2% had cattle, 6.0% had equine, 6.1% had shoats, 15.2% had cattle and shoats, 18.2% had cattle and equine, 9.1% had cattle, equine and goat, no owner of equine and shoats.

The major sources of income of the respondents were investigated 45.0% from sale of crops, 14.0% from sale of crops fruits and vegetables, and 12.0% from sale of crops and fuel wood, 20.0% from crops and off farm activities and 9.0% from sale of crops and petty trade.

In Arato *Tabia*, 44.1% of their income was from sale of crops, 11.8% from sale of crops fruits and vegetables, 20.6% from sale of crops and fuel wood, the remaining 23.5%, 5.9% obtained their income from sales of crops and off farm activities and petty trade. 42.4% of Didba respondents were getting their income from sales of crop. The remaining 18.2% got from sales of crops fruits and vegetables, 9.1% from sales of crops and fuel wood, 18.2% from crops and off farm activities, and 12.1% from sales of crops and petty trade. 48.5% of May Genet respondents had their income from sales of crops, 24.2% from sales of crops and off farm activities. The other sources, sales of fruits and vegetables, off farm activities and petty trade were contributing 27.3%.

5.2 Relation between Household Characteristics and Participation

Table 6. Participation on communal plantation activities in relation to the wealth status

Participate in communal Plantation	Poor households n=40	Medium households n=38	Rich household n=22
Yes	63%	93%	47%
No	37%	7%	53%

Source: survey result 2008

Wealth status:- 63% of the poor, 93% of the medium and 47% of the rich households are participating in communal work activities (Table 6). Sometimes only poor farmers are selected by the *Tabia* leader for site preparation and plantation as a provision of food-for work. Moreover, it should be noted that as plantation is performed by food-for work this four years even the relatively rich farmers wants to plant.

According to the respondents, if the activities are based on free labor the attendance was not full. As a result, the local village rule is established by the village administration. For soil and

water conservation the fine is 15 birr, besides the payment in money the work should be performed. For plantation when it was on free labor basis there was punishment in money.

Table 7. Participation on communal plantation activities in relation to gender position.

Participate in communal Plantation	Female headed households (n=29)	Male headed households n=71)
Yes	65%	73%
No	35%	27%

While, 65% of the women are participating, still 35% of the women are not participating on communal plantation (Table 7). The reason mentioned was, either engaged on the construction development activities or other irrigation development activities.

Table 8. Participation on communal plantation activities in relation to wealth and gender position.

Participate in communal Plantation	Poor households		Medium households		Poor household	
	Male (n=23)	Female (n=19)	Male (n=30)	Female (n=9)	Male (n=0)	Female (n=26)
Yes		64%		94%		45%
No		36%		6%		55%

From these data it can be concluded that there is a relation in some cases between the perception on benefits of communal plantation, and the actual participation in the participation in communal plantation. The fact that rich households perceive communal plantation is less beneficial to the household is reflected by there less participation. However, though the medium households perceive communal plantation is also less beneficial, they are highly participating. Although women perceive the benefits of communal plantations higher than men, and the actual participation in managing these plantations is lower than that of men.

5.3 Perception of Farmers in Community Forestry Activity

Understanding and addressing the needs and priorities of the local people is a crucial issue to the successful development of communal resources. In this survey, the households were asked who owns the community forestry; majority of the respondents (58%) responded that they were not clear whether the trees belong to them or not. About 25% responded that they don't believe that it belongs to them but to the government, while 17% of the respondents replied it belonged to the community (table 2). Access to trees in community plantation is forbidden by the enacting rule. This result agrees with previous studies made by Mitiku and Kindeya (1996) at Tembien wereda of the Tigray region.

Table 9. Farmers perception of ownership of community forests in the study area

Ownership	Frequency	Percentage
Government	25	25%
Community	17	17%
I don't know	58	58%

Source: Survey Results 2008.

According to the local rules government paid guards for protection of community plantations and harvesting of trees for the purpose of social infrastructure (school, clinic, roads, etc). This is occasionally achieved with close follow up of WOARD forestry development and protection experts. In the study area the local government enforced rules that focus on the community members are allowed to harvest only grass from the forests. In general the communities passively participated in decisions concerning the management and utilization aspects of trees in the community plantations.

5.3.1 Integration of Community Forestry with Non-Wood Forest Products

Forest development is intimately bound up with varied aspects of the rural way of life especially farm households survival strategies. Problems in these areas cannot be resolved unilaterally; social forestry programs have to be conducted in conformity with other economic sectors particularly agriculture related sectors. Some initiations to integrate

community forestry with animal production such as beekeeping and fodder production have been made through extension support. These activities have generated some early benefits such as non-wood forest products mainly animal feed and honey.

Accordingly, survey results indicate that, the average person-load of grass harvested in the study area in 2008 estimated to be 3527 person loads; and, the number of bee colony utilizing the pollen and nectar mainly from the forests is also above 1037 (Table 10).

Table 10. Number of bee colonies and harvested grass from community forests.

Name of <i>Tabia</i>	Harvested grass		Number of colony	
	Person loads	beneficiaries ⁷	colonies	beneficiaries
Arato	696	308	391	215
Didba	1708	652	608	442
May Genet	1123	556	128	86

Source: WoARD report 2008

It appears that the productivity of the community forests (in minor forests such as fodder, as well as in wood) is adequate and it can easily be improved through enrichment planting of multipurpose trees and leguminous forage species. This can be achieved through inter and intra linkages with relevant sectors to allow for profitable returns to management investments.

Integration of activities has to be supported with in the framework of management plan. However, there is no viable management plan developed for social forests in the study area.

5.3.2 Community Forestry Bylaws and its Constraints

A “Proclamation to provide for the Conservation, Development and Utilization of Forests” of the 1994, does not cover some of the issues of forest development and associated benefits that accrue to local communities (EFAP, 1994). This proclamation also states about the sustainable utilization of the country’s forest resources through the participation of the people

and benefit sharing by the concerned communities. However, the mechanisms to facilitate the participation of local communities in development efforts, including the sharing of benefits are not specified with details. Regional regulations relevant to forestry also lack the details of how to participate, when to get the desired benefits and how should be provided. In general the problem rises on the utilization and benefit sharing aspects of community forests.

As mentioned in the discussions held with respondents in the study area government initiated local bylaws have been operational for community forest management. The general context of the local bylaws is:

- Prohibits the use of community forests with out the permission of the authorized body;
- Prohibits people from cutting big indigenous trees;
- Specifies how to use minor forest products (fodder) and construction poles for social infrastructure;
- Specifies punishments and fines that could be applicable on offenders.

The following constraints were identified from the discussions held with the household respondents:

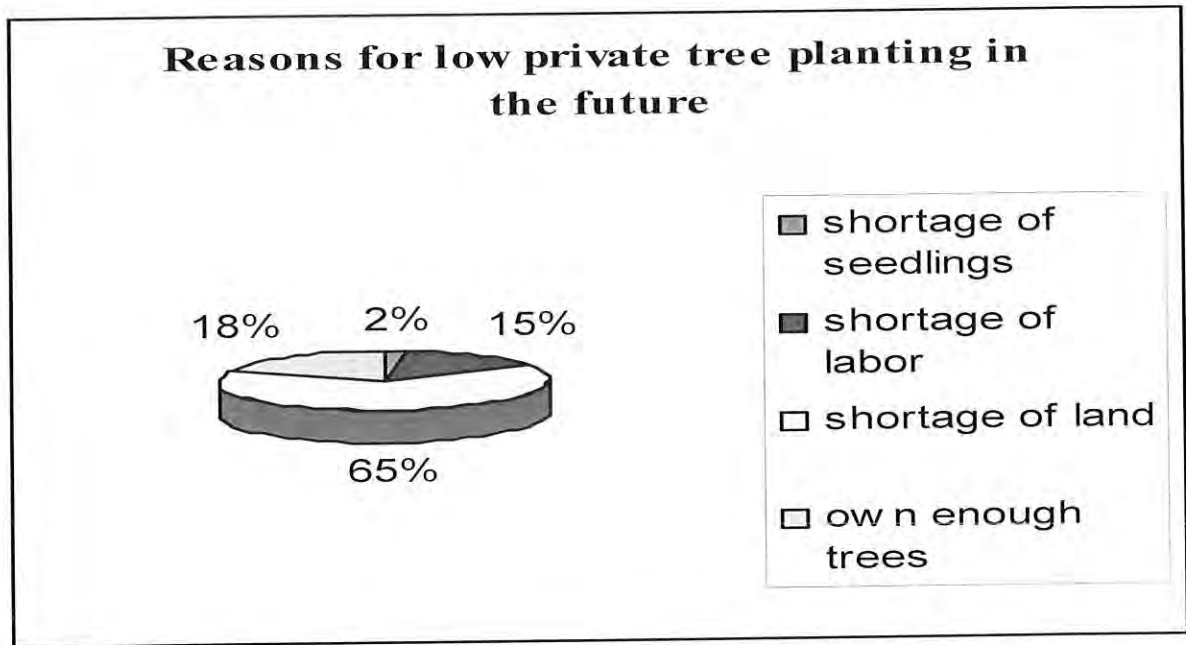
- Does not specify the benefit of individual community members accrued from the community forests;
- Way of punishing offenders and the degree of rule enforcement varies from community to community depending on the commitment of local institutions such as Tabia Baito and courts;
- It emphasizes more on protection through guarding rather than participatory management;
- It is not still amended towards a sustained utilization of forests with out negatively affecting the environment.

5.4 Perception of Farmers in Private Forestry Activity

The awareness about the activities to a great extent will depend on how beneficiaries have been involved either directly or indirectly from the outset of the program. With full involvement from the inception of the program all participants become aware of what is expected of them right from the beginning. This is clearly demonstrated in private plantation program. In this program all the respondents are aware of the activities. Since there was no assistance from outside except technical assistance and since it is private activity, every respondent is quite aware that he/she is responsible for all activities.

Private forestry holdings in the study area are the planted trees and naturally regenerating indigenous ones. The most preferred trees in private plantation holdings are Eucalypts species. In the study area observations revealed that the potentially suitable sites for private tree planting are home compounds and their adjacent areas. However, naturally grown tree species are dispersed around farm boundaries and farm fields. As indicated by respondents homestead areas and their surroundings are secured. They could easily protect damages to the trees by animals and its proximity to carry out regular treatment.

When respondents were asked about their future plan on private tree planting, they replied that the number of seedlings planted in and around homesteads have been gradually decreasing from time to time. The number of seedlings allocated for private tree planting each year and their land holdings is not compatible. Therefore about 65% of them did not have plan for future planting (Fig. 4) due to shortage of land.



Source: Survey Results 2008.

Figure 2. Future plan of respondents on private tree planting

Observation revealed that, few farmers plant *Acacia* and *Opuntia* species; and they maintain also the naturally grown acacia species. The farmers plant them in the farms facing to homesteads or along the boundaries as live fences. The *Eucalyptus* that was planted had been felled by the order of forestry concerned experts for ecological reason.

Farm field tree management is also less practiced in the study area. However, few indigenous tree species are very sparsely retained by individuals in their farm plots. Because, it shades its leaves during the cropping season; it is a good source of fodder in dry season; and crops grown near it are observed to yield better production.

5.5 Extent and Levels of Participation in Social Forestry Activity

In community forestry activity the initial decisions in the identification of local needs and priorities, formulation of objectives and approaches used to involve local people in the program used to be decided by the government authority. The result indicates that, the respondents only aware of some activities such as soil and water conservation structure, site

preparation, planting, guard selection and collaborating in provision of labor organization for implementation. This was an indication that they were not involved in decisions regarding how the activities were to be carried out by whom. While, in private forestry the households make most decisions by themselves.

5.5.1 Participation in Community Forestry Activity

Participation in planning

It was indicated by all respondents that, they had not been involved in any initial discussions. In many cases it is a very common to by pass the beneficiaries at the initial stage may be under assumption that they can not assist in anything at this stage which designers sometimes think it is only for the professionals. In any case if this happened it is very important to insure the involvement of the beneficiaries in all the decisions made. Although, the participants are not participating in the planning stage, after planting, if these plans were brought to discussion during village meetings and all the relevant suggestions included, most likely villagers would identify themselves with these plans.

Results obtained do not give a clear picture of what was precisely taking place. All of the respondents for instance admitted that discussion is held on issues such as site selection and guard selection. Though, 65% of those believed that the procedure of site selection is for lip service. I am not accepted that the procedure is for lip service, this was evidenced by the fact that in Debra *Tabia* in the same wereda their complaint on the proposed land for community plantation has been responded to change. However, the intended approach of the agricultural development program is partly participatory; there is a technical problem in implementing the participatory approach. One thing it should be noted that is, communal management decisions are made at *Tabia* level. It has been observed however, the *Tabia* community is not the most effective social unit for forest management organizations.

Wiersum (1996) offers the following generalizations regarding incompatibility of the village community as social unit for effective communal decisions. Villagers are generally not homogenous, but socially stratified; because of the stratification the interest of the village

members in respect of forest produce may widely differ; the existing communal lands are often only small, while their tenure status is often uncertain; and arrangements for distribution of forest products to the neediest segments of the community.

All these points are relevant to the situation of the study area. Firstly, when in a *Tabia* there are 3-5 villages and within a village there are socially stratified groups (landless, landowner, own livestock). The various groups are affected or benefited differently on the communal land decisions. Those villages near to the communal land and more those own livestock resist more than those of less affected farmers far from the selected communal land. Finally, a decision is made on a vote, which implies selection is not with one consent.

To overcome these restraints, attention should be given to the possibility of organizing communal forest management organizations on the basis of common interest rather than common properties. At least if decisions are made at village levels which are relatively less diverse and stratified.

Participation in implementation

Results indicated that, the attendance is never 100% at any time had it been free labor, participation was only involved in some operations, there was not any meeting called to deliberate on how implementation could take place. The activities were carried out by mass mobilization. Oakely and Marsden (1984) described mobilization and coercion as a top-down approach. However, with appropriate institutional support, a mobilization program can pave the way to active participation.

In reality it is very difficult to see where the commitment for the collective participation could come from if individuals are not certain of future benefit from these. This can be witnessed from the respondents' statement that they are participating in communal plantation to obtain food. The technical quality of the plantations was poor. Some of the participants plant 3 to 5 seedlings in one pit, and in some cases together with a polythene bag. This is because they thought only to plant more and receive cash/grain.

Moreover, planting pots with spacing of two meters are prepared before planting date, which is appreciated from technical point of view. However, during actual planting seedlings are planted at spacing of less than one meter or more. In addition to the deliberate action in some cases also lack of the technical know how is observed. During planting activity development agents and forestry development cadres are there to organize the people, to give technical advice and supervise quality of planting. However, there is poor labor organization.

With regard to maintenance and protection there is above all lack of maintenance. The average survival counted was between 40 and 45%. Drought, protection, illegal and free animal grazing were took their share, but overall the primary factor in the low survival rate observed is poor quality planting and lack of or insufficient maintenance particularly weeding. Moreover, farmers during group discussion pointed out those communal lands are less productive because of the lack of post planting care. It could have been more productive if the individual people are given the power. It seems their interest is to distribute the land for individuals in the village.

Participation in benefit sharing

Results have indicated that there was not any discussion held so far by all the beneficiaries. Farmers are only prepared to contribute their time and resources in activities which will gain them with economic gains. Since most communal plantations in their present form do not promise direct individual benefits and the project leaders do not bring this issue how they intend to use the proceeds, securing peoples participation in the program will decline, unless the food-for work is not stopped.

I do believe that the village administration do use their proceeds wisely for the interest of the people. This can be witnessed from the occasionally harvested used for school construction. But why not give the villagers a chance to decide directly or by their representatives on how to spend the proceeds as they are doing for the grass. Even though this only does not lead to active participation on communal plantation.

Monitoring and evaluation

All respondents indicated not to have carried out this activity. There is a great need of including in the program. Evaluation could benefit the farmers in bringing to their attention what they have so far done or not they are doing in the planned manner; whether they should expect some returns out of the program; whether a need of making changes in the programme. If this is carried out efficiently and the results brought to attention of all the members it would give them courage at the progress they have made and tried to achieve more.

5.5.2 Participation in Private Forestry Activity

Participation in planning

Planning here is meant to encompass all decision making stages and therefore it will be considered as a process rather than a single stage. This is supposed to include decisions about whether to participate in planning or not. Result from the study *Tabias* indicated that, decisions to plant or not is left to the land owner. Tree planting practices is not an innovation to the area. Moreover, farmers have been retained some of the naturally grown trees in their holdings. In addition to these, wildings have been planted.

However, with regard to the new massive tree planting practice, results indicate that the idea of the program was induced by the concern of the government official, made all initial decision on project design and none of the respondents indicated to have been involved. One of the main reasons which were indicated by all respondents is that, they believe that the private planting activities are oriented towards one of their priority needs.

Participation in implementation

This stage involves the execution of the physical work, in forestry it includes activities like seedling rising, site preparation, tree planting and maintenance. This stage also calls for sincere commitment of all the parties as the parties involved will be required to contribute

resource such as labor, land, knowledge or money. Although there was not official discussion between the farmers and forestry officials about who should contribute what; this question did not seem to raise problem as it is understood that private tree planting is mostly the farmer's responsibility.

Species selection; site selection and planting activities are vital for the survival of the planted seedlings. The result indicated that information about planting was given at village level during communal plantings. Individual technical support is rare and only to model farmers. The problem of poor assistance in preparation was witnessed in many respondents' fields who planted their seedlings at a spacing of less than one meters. Furthermore, species and site matches are not considered before hand. Farmers only experience which species match their field after a long trial. Considering that it may be very difficult for the extension to meet each farmer in the planting season, which is also the cropping season, possibilities of extending some of the preparation practices in the dry period should be considered.

Maintenance and protection operations seemed to be less problems because the question of who should do what is determined at the household level. Generally participation in these was very forth coming and all the stands visited have been weeded. There is no doubt that the motive behind this was the assurance of individual benefit accruing from.

As regards protection, the problem of protecting small plantations against livestock seemed to be a problem in the study *Tabias*. Trees near by homesteads are easier to tend and protect than trees on farther locations. Uncontrolled stubble grazing is mentioned as a reason for not planting in farms. And attention is not given on how to solve this problem.

Benefit sharing and evaluation

On private plantation decision on how to use tree products and services are determined by the household. With regard to evaluation there is no participatory evaluation. The household evaluates the growth of the planted seedlings. As far as it contributes individual benefits its sustainability is promising.

5.6 What Motivates People to Participate in Social Forestry Activities?

The literature indicated that people's participation is a core strategy and the basis of success in social forestry (Wiersum, 1996). As this study revealed that participation largely depends up on the extent to which the basic domestic needs of community members are fulfilled through social forestry. Reasons for participation may vary with the individual efforts were made. The next section looks the extent of distribution of the respondents on the basis of their reasons for participation in social forestry in relation to the community and private forestry strategies.

5.6.1 Reasons to Participate In Community Forestry Activities

The reasons mentioned by the respondents for their participation were: to obtain grain and cash through food- for- work in return to their participation in the activities, forced bylaw and threats of punishment that may follow in case of their absence from free labor demanding community mobilization work, non- wood forest products such as grass, catchments management which conserves soil and water, and construction material were among their reasons (Table 11).

Table 11. Reasons of respondents for participating in community forestry

Reasons for Participation	Most Important		Important		Least Important		Order of Priority	
	n	%	n	%	n	%	MS	Rank
Food-for work	6	6%	72	72%	22	22%	1.84	1
Threats of punishment	7	7%	67	67%	26	26%	1.81	2
Non-wood forest								
Products	3	3%	47	47%	50	50%	1.53	3
Catchments management			30	30%	70	70%	1.30	4
Construction material			28	28%	72	72%	1.28	5
Agricultural implements			11	11%	89	89%	1.19	6
Demand of fuel wood			5	5%	95	95%	1.05	7
Income from sale of fuel Wood			3	3%	97	97%	1.03	8

Source: survey result 2008

According to the farmers' response, this table revealed that food-for-work, threats of punishment and non-wood forest products have been the main motivational reasons for their participation in the community forestry activity. Whereas, demand of fuel wood and income from the sale of fuel wood have been among the least motivational reasons for participation of the respondents in community forestry activity based on their respective ranks.

Food-for-work. The result indicates that people are aware of highly on benefits of food for work. As it is mentioned earlier the wereda is one of the drought prone areas of the region. Thus, before the inception of the community forestry program food had been given when the problem of food was severe. Furthermore, the people had been migrating to towns for off farm employment. The overall objective of the forestry development program is to consolidate participative rural development which strengthens the economy of the peasant farmer population. To achieve this program has encouraged the development of the various activities using food-for work to promote participation in the program. The justification given is that it is necessary to use food-for work, providing an immediate relief for poverty at the same time save farmers from displacement. Then, improve the environment to secure long term benefits.

This certainly succeeded in attracting farmers to participate in communal plantation practices. And enable to meet the quantitative program objectives (area covered with plantation and number of trees planted). From the results it can be seen that the farmers valued the food more than the trees. As it is indicated in table 11 78% of the total respondents replied that food-for-work was their major motivational reason to participate in community forestry activity. And also some of the local participants consider themselves as daily laborers. Even they complained that the amount of work done is not equated with the payment. If so, it is not only a question of sustainability but also it creates dependency. This finding agrees with the results of Bekele (1997) that, the study in region 3, food for work should not be considered as payment. The allocation of grain should be for stimulating competition in construction of soil and water conservation activities and reforestation. This can be operational by creating competition between farmer groups in a community on the

basis of their best achievements. However what is to be done is best to be identified with the farmers.

Threats of punishment. It is known that amount of time spent on a development activity by an individual will depend on the expected benefit accrued. In the conditions of people with food insecurity, it is difficult to expect voluntary participation. Consequently, coercive measures such as forced by laws and threats of punishment were applied on the people to mobilize them on the government initiated programs rather than facilitating new ways to address the issue. Respondents mentioned that individuals deteriorating to contribute free labor during mass mobilization in SWC and tree planting works were fined in cash or excluded from any benefits coming to the community including participation in temporary food-for-work opportunities. In view of that, 7%, 67% and 26% of the respondents replied that participation for threats of punishment was their most important, important and least important reasons for their participation in community forestry activities respectively and it is ranked in the second in the hierarchy the reasons for participation (table 11). Experiences showed that farmers in many communities are reluctant to participate in free labor demanding activities as expected benefit would be an important determining factor in the choice of whether to participate in free labor demanding mobilization activities (TFAP, 1996). Accordingly, forced bylaw and threats of punishment were applied on the people to mobilize them on the government initiated programs.

Non-wood forest products. Non-Wood forest products are goods of biological origin other than wood, derived from the forests (FAO, 1991). In the study area, most of the community plantations had grass growth that can be used for animal feed by the farmers using cut and carry system. Bee fodder is also among the important products derived mainly from community forest vegetation in the study area. Official reports of the wereda indicated that there were 7458 bee colonies registered (WoARD, 2008). Accordingly, it ranked on the third place in its priority of importance (table 11).

In general, this study revealed that participation in community forestry practices in the study area was mainly attached with the availability of benefits accrued in return to participation.

5.6.2 Reasons to Participate In Private Forestry Activities

In private forestry activities the motivational reasons for participation in the study area have been the products derived from the woodlots that could be used as an income from the sale of wood products, wood for construction and fuel wood has been among the others motives in order of their importance (table 12). Unlike in that of community forests, triggering factors were not much important in private woodlot management and similarities in motivating private forest management to obtain forest products appear in both cases but they differ in their degree of importance as shown in their respective tables.

Table 12. Reasons of respondents for participating in private forestry

Reasons for Participation	Most Important		Important		Least Important		Order of Priority	
	n	%	n	%	n	%	MS	Rank
To obtain income	27	27	45	45%	28	28%	1.99	1
Construction material	6	6%	62	62%	32	32%	1.74	2
To obtain fuel wood	11	11%	44	44%	45	45%	1.66	3
To obtain farm implements	6	6%	37	37%	57	57%	1.49	4
To insure land tenure	1	1%	38	38%	61	61%	1.38	5
To obtain animal feed			22	22%	78	78	1.22	6
Food- for work			20	20%	80	80%	1.20	7
Conserve soil and water			19	19%	81	81%	1.19	8
Use for shade			15	15%	85	85%	1.15	9

Source: survey result 2008

Income from sales of trees- when the productivity of crops or the size of land holdings falls below the level at which the households basic food needs cannot be met from crops, trees provide various income earning opportunities. 72% of the sampled households mentioned that income from the sale of trees grown on their private land has been their major motivational reasons. Accordingly, 27% and 45% of the respondents replied that income

from sale of trees was the most important and important motivational reasons for their participation in private forestry practices respectively. While, 28% of the respondents put it as least important reason for their participation, this may be because of other priorities they have. Majority of the respondents ranked income as their primary reason for managing woodlots under their private holdings. This agrees with Arnold (1998), the expected benefits that trees may enable farmers to spread their risk by diversifying their farm outputs. And, trees can also provide a reserve for use or sale to meet emergencies or unexpected outlays.

Construction material- demand for construction poles has increased elsewhere in the country as well as in the study area. Construction pole obtained from private woodlots have been among the most important and important motivational reasons for 6% and 62% of the respondents respectively. While it was least important for 32% of the respondents motivational reasons for their participation in private forestry activity (table 12).

Fuel wood- the importance of fuel wood was ranked in third place in its priority by the respondents. Accordingly it was most important and important for 11% and 44% of the respondents respectively for their motivational reasons of participation in private forestry activity. Where as, 55% of the respondents put it as their least important reason for their participation. This may verify that even if fuel wood is among their major shortage, the respondents were not highly motivated to grow trees on their private woodlots only for the purpose of fuel wood. As alternatives straw and dung etc are available sources of fuel from open access areas. This agrees with FAO (1995), experiences form other countries that even fuel wood is in short supply local people are not highly motivated to grow trees only for fuel.

5.7 Mechanisms to Participate People in Social Forestry Activities

5.7.1 Community Mobilization

Community mobilization is a method of collective action where a group of people come together to carry out an activity for a common benefit. Community/mass mobilization is implemented when a village or PA as a whole decided to do a thing, and even if there is any one who does not agree with it, he/she is taken along with the collective action influence

(Kaarhus, et.al., 2003). Community mobilization is important for the activities which are difficult to be carried out through individual efforts. Depending on the socio economic condition of the community under consideration it can also be achieved with or without inducement/incentives. To reverse the severely occurring land degradation in the study area food-for-work and free labor contribution has been a major mechanism of mobilization. Community mobilization complemented with food-for-work program has been usual in the wereda. The respondents remembered that terracing and a forestation programs started under NGO-sponsored food-for work program. According to the wereda office of Agriculture and Rural Development (WoARD) concerned officials about 95% achievements in soil and water conservation and plantation activities in the wereda for the period of 2004 – 2008 were due to food –for work program. Still the large incentive oriented soil and water conservation mobilization are being used in implemented with WFP supported FFW program in the wereda (Appendix 6)

Poverty is extreme in Tigray, more than 64% of the households in the study *Tabia* can not feed themselves beyond six months even in a good years. This justifies the importance of food-for-work as an impermanent incentive in catchments rehabilitation works in general and reforestation activities in particular. Since both land degradation and drought are among the major causes of poverty, there is a need for both rehabilitating degraded lands to increase long-term productivity to bridge the existing food gap that can be filled from any source (government or donors) to ultimately attain food security.

This is to assist the food insecure households to participate in reforestation and SWC activities and be food -secure through food-for-work (Yeraswork and Solomon, 2001).

Table 13. Condition of food shortage of household farmers in the study Tabias

Name of Tabia	Number of Households	Feeding capacity of households in months			
		0- 3	4- 6	7- 9	10-12
Didba	1614	504	436	521	153
Arato	2034	645	549	647	193
May-Genet	1130	342	591	95	102
Total	4778	1491	1576	1263	448
%		31.2	33.0	26.4	9.4

Source: Wereda food security sub-office



Figure 3. Activities of community mobilization in SWC and plantation

Farmers have been paid grain/cash in return to their participation in environmental rehabilitation activities before creating awareness. Farmers were not aware of the importance of the objectives of the environmental rehabilitation activities and temporary supportive role of the food aid. This has limited the success and magnified the disincentive role of food-for work. Many farmers develop dependency by demanding payment for almost every kind of development initiatives. During discussions with respondents, most of the farmers have been interested in getting the grain/cash for their participation in food for work activities All respondents mentioned that, the government extension service consider food-for work as a means that need a precondition of participating them on free labor demanding rehabilitation activities. They farther explained that absentees from such activities would subject to

exclusion from food-for work opportunities. As pointed out by Kahsay (2001), the short term benefit in cash and grain affected their interests for implementing resource management activities in their own and voluntary involvement of many farmers in reforestation misplaced. This has created the perception of food- for work as disincentive in sustainable development. However, most respondents agree that in the presence of poverty in the study area still development food aid would be a good for the rehabilitation of degraded lands on food insecure areas but, the aforementioned limitations have to be corrected in a way that lead to sustainable management of resources.

Free labor contribution in mass mobilization has played a significant role in implementing activities in community plantation sites. In the study *Tabias*, SWC activities have been performed through community mobilization on free labor basis with in 20 days in a year (Appendix 5). But as described above it should not be a pre-condition to participate in incentive driven activities as it may affect the sense of ownership on the activities.

According to Swanson et, al. (1997), in some projects the community is considered to have participated when it provides free unskilled labor for construction and similar physical activities while the thinking part (planning, designing and decisions) is done by the technically trained managers. Some believe that if farmers have contributed free labor to the activities, they will take pride in it and want to maintain it well. While, others challenge this assumption by pointing out that pride of ownership depends mainly on what the peoples other priorities might be. I agree with later assumption, for example if the treatment of gully is not a priority for the average member of the residents, labor may be contributed by pressure/stress, not voluntarily.

5.7.2 Public Land Shared for Private Tree Planting

In 1992, farmers from *Hadnet* village initiated the allocation of poorly managed community forest area and the land has been parceled for individual tree planting. Their initiations have been accepted by the regional government and served to formulate a policy through bureau of

agriculture and natural resources development for further allocation of sloppy lands to landless members of the community (Kahsay, 2001).

This has been encouraged by the demand of landless youth of the region and it has been practiced in several *Tabias* of the study area. “Between” 2004-2008 poorly managed forest areas; gullies and sloppy lands of the wereda had been distributed (parceled) for individual tree growing activity. Farmers have been allotted plots of land on the commonly held land for private tree planting activity under restrictive agreements. Accordingly, a total land of 41.88 hectare of public land was allotted to 1046 landless youth and other community members with in the specified period of time (Table 14).

According to the discussions made with respondents in the study *Tabias*, it was understood that the long lasting results would not bring because of some reasons:

- Long period return of trees does not bring immediate benefits to bring solutions for their problem;
- Use right certificate was not provided to them like that of the farmlands. However, they committed themselves to restrict their use of land acquire for tree planting only and agreed to work as per the directives of experts;
- The average land distributed to the individual was not generate sustained income to be able alleviate poverty and carry out settled life in the area.

Table 14. Public lands shared to individuals for private tree planting

Year	Area (ha)	No. of beneficiaries
2004	7.54	188
2005	2.6	65
2006	16.44	411
2007	13.18	329
2008	2.12	53
Total	41.88	1046

Source: WOARD Planning & Study Department

5.7.3 Provision of Seedlings for Social Forestry Activity

It was policy of the region that, 75% of the seedlings raised in state nurseries are distributed to farmers for planting in their private land holdings. Accordingly, since 2004-2008, farmers of the Wereda planted 2780118 seedlings in their private land holdings especially around homesteads (appendix 3). Farmers bought seedlings from the near by state tree nurseries at relatively subsidized price. According to the respondents, in 2008, 30 potted and 50 bare rooted eucalyptus seedlings were averagely sold for one birr at all the state nurseries; and the amount of seedlings planted by each respondents were on average from 45- 85. Thus, 6545 potted and 380 bare rooted different species of tree seedlings were planted (Table 15). In the condition where most farmers can afford the prices of most seedlings from community nurseries, it is not clear that cost of seedlings restrain farmers from growing trees.

Table 15. Amount of seedlings planted by households in the study Tabias

Common tree seedlings	Seedlings planted	
	Potted	Bare rooted
Eucalyptus	5855	380
Fodder species	432	-
Rhamnus perinoids	258	-
Total	6545	380

Source: WoARD forestry department

5.8 Constraints Faced by Farmers in Social Forestry Activity

Experiences has shown that there are always conflicting needs with the local villages as well as the priorities of the government in managing the forest resources. Collective orientation towards tree resources may be lacking and existing institutions may not able to develop an effective means of common resource management. As most of these limitations encountered in forestry have not been related to the question of the diffusion of new and innovative rural forestry technologies, they seem to be a question of how and why people cooperate (FAO, 1985).

In implementing the social forestry strategies, this study recognized field level constraints based on their phases of occurrence. These are: constraints of pre-planting, implementation and post-planting phases. The main constraints come upon all levels of private and community forestry activities are referred in their severity of occurrence.

5.8.1 Constraints at Pre-Planting Stage

Table 16. Pre-planting stage constraints identified in community forestry activity in order of their severity of occurrence

Constraints	frequency						severity	
	Most often		often		sometimes		MS	Rank
	n	%	n	%	n	%		
Competition for land	34	34%	49	49%	17	17%	2.18	1
Ownership of land	24	24%	58	58%	18	18%	2.06	2
Passive participation in site selection	7	7%	86	86%	7	7%	2.00	3
Long period return of trees	4	4%	85	85%	11	11%	1.93	4
In adequate training	1	1%	34	34%	65	65%	1.34	5

Source: survey result 2008

Competition of land for reforestation

At pre-planting of the community forestry activity competition of land for reforestation has been the main constraint to both retaining and adding trees on the land. It is probably that of growing competition for land under pressure of increasing population on a limited land base. In such cases, trees are a less intensively managed than crops and livestock. Although trees are essential for sustained agricultural development as land becomes scarce; priority is given to produce food and income in the short term than forest trees due to their long period of return to yield valuable products. In this study 34%, 49%, and 17% respondents replied that competition of land for reforestation was the most often, often and occasionally happening constraint (Table 16). Therefore, the result in the study area indicates that they do not have

adequate land for community tree growing. That is why; community forest land has been pushed away from year to year to degraded marginal and hilly lands.

Ownership of land

Government confirmed the rights of ownership, rent and inheritance of land to family members without gender differences; except it bans the sale in terms of ownership of land. Therefore, the community does not legally secure all the land including forest land and this may affect the need for long-term investment like tree planting.

Community forests are supposed to be protected and utilized by the community. But, in many areas, a success has been limited; because usage right to the land was not legally acknowledged. Community forest sites were not registered for the community. Compensations were not given when the government uses the community forest areas for other purposes for instance, demarcated for municipalities and military camps. For that matter, 24% 58% and 18% of the respondents stated that the question of land ownership insecurity was the main constraint in the management of community plantations and ranked in second in its severity among the constraints of its categories in the pre-planting stage of the community tree growing activity (Table 16).

Passive participation in site selection

Passive participation in site selection for community for community has been one of the reasons for the community resistance to expanded community plantation creation. Old community plantations were created on communal lands with no regard to the needs and priorities of the community in using the land. This led to conflict with traditionally practiced production activities such as livestock production.

Efforts were made to involve appointed community representatives on selecting sites for rehabilitation program. Prior consultations were not made with community members; they were being told after the completion of the selection, with no regard to the needs and priorities of the community in using the land. As a result, low participation in site selection was identified in the study area. Majority of the respondents (93%) replied that they did not

actively participate in selecting sites for community plantations. Then passive participation in site selection is among the primary constraints in pre-planting phase. TFAP (1996) states that in Tigray new community plantations are established each year and the selection of sites are usually carried out by development agents and later inform the community. Therefore, farmers should be consulted before site selection and should be achieved based on their needs and priorities.

Long period return of trees

The time scale of forestry is bounded to conflict with the priorities of the rural poor, which are logically focused on meeting basic present needs. Land, labor and other resources, which could be deleted to providing the food, fuel and income needed to day can not easily be diverted to the production of wood, which will be available only several or many years in to the future (FAO, 1987).

4% and 85% respondents mentioned that long rotation period of trees was one of the major constraints in pre-plantation stages of the community forestry activity in the study area (Table 16). These points out those farmers prioritize crops and fodder on meeting basic present needs than forests in their communal land. Therefore, to narrow the hole to the delayed returns from tree are growing multi- use tree species and promoting complementary non- forest source of income through non- wood forest products.

Table 17. Pre-planting stage constraints identified in private forestry activity in order of their severity of occurrence

Constraints	frequency						severity	
	Most often		often		sometimes		MS	Rank
	n	%	n	%	n	%		
Shortage of growing land	27	27%	68	68%	5	5%	2.22	1
Competition for farm land	21	21%	61	61%	18	18%	2.03	2
Long period return of trees	3	3%	87	87%	10	10%	1.93	3
Inadequate training	1	1%	68	68%	31	31%	1.70	4
Sanction to tree management	-	-	35	35%	65	65%	1.35	5

Source: survey result 2008

Shortages of land for tree planting

In private plantation trees are often planted on homesteads and in rare cases as agro forestry systems on farm lands. In the study area shortage of land for tree growing was important constraint. Accordingly, 95% of the respondents replied that shortage of land for tree planting was major constraint while 5% responded that it was occasionally occurring in the study area (Table 17). Therefore, shortage of land ranked first among the pre-planting constraints in private tree growing activity.

Inadequate training

In both private and community forestry activity in the study area inadequate training was among the constraints. Accordingly, 35% in community forestry (table 17) and in private forestry 69% of the respondents replied that inadequate training at the grass root level is often occurring constraints in the study area, and it is ranked in 4th and 5th in private and community pre-planting phases in its severity respectively.

Occasionally short term training was provided for development workers, agricultural cadres and forestry development committees once a year; however it was not focused to the members of the implementing community. During time of planting seedlings were distributed to community members without pre- conditions with a lower care and plant them at plantation sites. As a result this was among the reasons for the lower survival rate especially in community plantations. Training is a crucial factor to scale up the capacity of experts, agents, contact farmers and the implementing members for the successful management of the forestry program.

Sanction to tree management on farm lands

Sanction to tree management on farm fields has been a constraint on two aspects. The government agricultural policy made sanction not to use certain naturally grown tree species on privately entitled farmlands; and the second is not to allow eucalyptus trees on or near to farmlands and water sources. This is because: eucalypts trees are considered to be more utilizes of moisture, soil nutrients; they shade over the crops under them; and farmers give priority for short term annual crops than long term perennial tree crops.

In the study area the sanction not to plant trees on farm fields was one of the pre-planting constraints, 35% and 65% respondents replied that it occurred often and sometimes respectively (table 17).

Article 10 regional government “proclamation for the utilization of Rural Lands” (No 23/1989) forbids farmers from planting trees, mainly eucalyptus species on or near farmlands and water bodies. This is because: eucalyptus species are considered to be more utilizes of moisture, soil nutrients; they shade effect of trees over the crops under them; the share for agricultural land would shrink the area on which crops should grow; and farmers give priority for short term annual crops than long term perennial tree crops.

5.8.2 Constraints at Implementation Stage

Shortage of labor

In the study area temporary shortage of labor during planting of tree seedlings was found to be a major constraint in both community and private forestry practices. It was practically observed during the rainy season, where both tree seedlings planting and seasonal agricultural activities preparation of farm fields and sowing are carried out parallel to compete the erratic moisture prevailing in the area.

Accordingly, 88% of the respondents in the study replied that there was critical shortage of labor during planting of seedlings in the community plantation; as crop sowing and tree planting were achieved at the same time to compete the available moisture. Therefore it was observed that most of the participants in community plantations were children who could not be engaged in ploughing and sowing activities. However, in private forestry practices Shortage of labor was not a serious for the majority of the respondents in the study area.

5.8.3 Constraints at Post-Planting Stage

Scarcity of rainfall (drought), protection, free grazing, community tree tenure insecurity and insufficient incentives to induce people's participation in community forestry were the major constraints identified by the respondents in the study area.

Table 18. Post- planting phase constraints identified in community forestry activity

Constraints	frequency						severity	
	Most often		often		sometimes		MS	Rank
	n	%	n	%	n	%		
Scarcity of rain fall	48	48%	44	44%	8	8%	2.40	1
Protection	32	32%	52	52%	16	16%	2.16	2
Tree tenure insecurity	3	3%	94	94%	3	3%	2.00	3
Insufficient incentives to induce participation	18	18%	62	62%	20	20%	1.98	4

Source: survey result 2008

Scarcity of rainfall (drought)

Drought associated with depleted soil moisture, was one of the major causes for high seedling mortality in community plantations and found to be one of the major serious constraints for the successful establishment of trees in the study area. Thus, 48% and 44% of the respondents replied that, shortage of rainfall has been the most often and often constraint respectively. While, the rest 8% replied that, it is sometimes occurring constraint (Table 18). In general, among the post- planting constraints shortage and erratic of rainfall in the study area ranked first. Several kinds of species have been planted every year with out considering the amount and distribution of rainfall required for the survival of the seedlings. This has been one of the causes for high mortality of seedlings (TFAP, 1996).

Protection

After planting of the tree seedlings protection was one of the main constraints mentioned by farmers. 84% of the respondents replied that protection was most frequently occurring constraint and it is ranked second in its severity (Table 18).

In some areas government paid guards and protecting the community plantations. In areas where government was not paid guards, payment comes from the contributions of the people in the form of money or from the sale of grass. The system of payment from people for the guards was not efficient. The guards have reduced their incentive to work effectively where people are unable to pay permanently; as a result the guards refuse guarding and the plantation area is left open until other alternatives made. Since recent years, community stopped contributing money for the guards. Therefore, protection only through guarding has not been efficient with out finding other alternative solutions for the problem.

Tree tenure insecurity

Ownership rights have been related with the condition of establishment of the plantation sites. Community forestry program were undertaken complemented with food- for work from

various internal and external NGOs. They were established with out participatory approach of their respective local peoples in their initiation and management, as a result farmers perceived these areas as government forests.

This study revealed that after 1991, hand over of the forest was made to the community; but there is no legally valid agreement between the community and the government concerned bureau. This would make difficult for the community right to use the forest resource; because, communities were not consulted on the management and utilization of the plantation sites. Accordingly, 97% of the respondents mentioned that uncertainty of ownership right of trees in community forests has been a major constraint (Table 18).

With regard to private plantation sites, the land owner has a freedom to plant and utilize with no permission from other bodies. When the land was needed for social services or when the land given to holder compensation was given to the previously planted trees. However, planting at the household level was preferred than communal woodlots because of the greater control, management and access to the benefits (FAO, 1985).

Insufficient incentive to induce participation

On this issue different countries experience revealed that, most forestry programs have been encouraged by various activities to induce peoples participation and thereby increased success rate. 18%, 62% and 20% of the respondents mentioned that insufficient incentives were the most often, often and sometimes occurring constraint respectively; and it is ranked in forth place among the constraints listed by the respondents (Table 12). Accordingly, farmers were got inefficient economic benefits from the community forests.

As indicated in previous chapter, the mechanisms being practiced to involve the community members in managing the forests were not sufficient. Since 1970s, community mobilization complemented with food- for work, allocation of public land for private tree planting and provision of seedlings from government nurseries with subsidized price have been the main incentives provided in the study area.

In this case, it was found that food– for work/cash– for work programs have been served as an incentive to achieve conservation and reforestation related activities such as, hill side terracing, nursery activities reforestation and community forest guarding activities. The provision of tree seedlings at relatively low price from state nurseries was to stimulate private tree planting. Sharing public land to landless farmers for private tree planting has also suffered from legal, tenure and economic constraints.

Table 19. Post- planting phase constraints identified in private forestry activity

Constraints	frequency						severity	
	Most often		often		sometimes		MS	Rank
	n	%	n	%	n	%		
Free grazing	27	27%	49	49%	24	24%	2.03	1
Water stress	5	5%	65	65%	30	30%	1.75	2
Insufficient incentive	1	1%	21	21%	78	78%	1.23	3
Inadequate knowledge	2	2%	9	9%	89	89%	1.13	4

Source: survey result 2008

Free Grazing of animals

Free grazing of domestic animals was found to be among the constraints in private tree management practices. The traditional free grazing system in which domestic animals allowed to wonder and graze/browse on grazing areas and farmlands after crop harvest has been one of the major constraints for promoting agro forestry on rain fed farm fields and grazing lands because, animals browse and /or trample young seedlings and saplings grown on the farm and grazing lands.

In private tree planting practices free grazing of domestic animals was found to be among the constraints of post- planting stage. Traditionally domestic animals grazing freely on grazing areas and farmlands after crop harvest; this has been a constraint for promoting agro forestry on rain fed farm fields and grazing lands, because animals trample the young seedlings.

According to the respondents interviewed 27%, 49% and 24% replied that free grazing of domestic animals was the most often, often and occasionally occurring constraint contributing to the deforestation respectively in the study area (Table 19). This may be due to farmers often fencing their private plantation sites/lands using locally available materials. This constraint was ranked first to promote forestry activity at private post-plantation level.

Water stress

Like that of community plantations, water stress has been a constraint to the successful establishment of trees in private tree growing practices during drought seasons, but it is relatively better in its severity as the farmers water their seedlings during the stress period. Most of the time farmers select the seedlings they believed appropriate to their specific sites from what are available at government nurseries. Accordingly, 2%, 21% and 77% of the respondents mentioned that water stress was the most often, often and occasionally occurring constraint respectively (table 19), and it is ranked second in its severity of occurrence in the study areas at post-planting phases of privately managed forestry practices. In general improved planting techniques with recommended water harvesting schemes and selection of proper species adapted to water stress situations could be considered as options to overcome the problem of water shortage in the study area.

Insufficient incentive

Most of the respondents (21% and 78%) mentioned that insufficient incentives have been the often and occasionally occurring constraint in the privately post-planting management activities respectively (Table 19).

Inadequate knowledge on the use of exotic tree species

Inadequate knowledge in the best use of exotic tree species was found to be one of the constraints. Numerous exotic species have been raised in nurseries and distributed to farmers without pre-informing about their use. This inadequacy or lack of awareness on their best use has been one of the reasons for low interest in tending the trees and consequently low

survival rates after planting. Accordingly, 4 respondents in Didba and 7 respondents in May Genet were replied that they often and sometimes encountered such problems and ranked forth in its severity even if majority (89%) of respondents did not consider it as a constraint (Table 19)

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

The research results have indicated that all local village groups were participating in at least some reforestation activities. However, the degree of participation varied from group to group. For instance, the *Tabia* and village administrators were indicated to be involved more in running the project activities. As regards involvement of farmer in different activities, participation was noted to exist in varying degrees for the various stages of project planning and implementation.

In planning both private and communal reforestation schemes no direct participation of all the participants took place. The major decision was made at higher level. Moreover, the involvement of participants in ongoing decisions is very minimal and in some cases lacked completely. In private plantation the effect of this was less noted because all the ongoing decisions are made at the household level and participation in individual. While in community forestry it was felt because of the form of participation is collective participation which needs clear consent and commitment right from the beginning of the development program if it is to be forth coming. Therefore, on community forestry participation is passive.

Participation in implementation was promising. People in all *Tabias* were contented and skillful to participate in establishing it. The great motive being its assurance to offer individual benefits, where all activities were carried out by individual households, and where decision about contributions in terms of labor, management practices was made at the household level. The fields are maintained well, survival of the seedlings is satisfactory. The high interest in commercial tree planting (eucalyptus) is observed in all the villages. The production role of trees has a high priority than the protection role. To obtain income, construction material and fuel wood is mentioned as a main reason for tree planting.

In communal plantation the situation of effective local participation in the planning activities was not popular. Along with the low participation of the people the poor quality planting and

lack of maintenance are contributed to the low survival rate of the planted seedlings. Poor quality planting is resulted because those plantations are perceived as government's property. They perceive food- for work and grass are the individual benefits accrued from this plantation.

Monitoring and evaluation, participation was noted to be lacking completely. If participatory evaluation was done, whereby participants could have an opportunity to assess their progress, or even to confront the participants with results of evaluation carried out by the forestry officials so that they could make their contribution in terms of suggestions.

In respect to benefit sharing there was no mechanism discussed as how the products are to be distributed. However, grasses are allowed to be collected by cut and carry system. The mechanism on how to share the grass was arranged by the villagers.

In the study area, factors contributing to the success or failure of social forestry practices are categorized as: physical factors such as drought, small land size and un adaptable tree species; socio- economic factors constituting seasonal shortage of labor, shortage of land, long term benefit, and sense of ownership; institutional factors constituting poor extension services and inadequate training on the use of exotic tree species; and poor participatory approaches in planning, monitoring and evaluation as well as in the process of community mobilization.

In implementing the social forestry strategies, this study has tried to categorize constraints based on their phases and severity of occurrence as pre-planting, implementation and post-planting for each community and private forestry. At pre-planting stage, competition for land, ownership of land, long time benefit and passive participation was ranked as the major constraints in both forestry strategies. A shortage of labor was the main constraint during implementation. Drought, tenure insecurity, incentive problems and free grazing were the major constraints pointed out during post-planting.

6.2 Recommendations

Based on the above conclusions, the following recommendations are drawn to improve the forestry activity in Tigray in general and in Enderta wereda in particular.

- To adopt better participation in the program it is important to insure the involvement of all community members' right from the inception of the program.
- As regard to mechanisms for participation, community mobilization is directly or indirectly related with incentives because of the presence of poverty in the study area. However corrective measures should be taken to minimize the dependency effect of this mechanism over the long-term interest and self- initiations of the community for voluntary participation by creating the necessary awareness.
- Incentive driven type of participation being practiced in the study area was found to be incomplete and passive. Therefore, responsibility and decisive role should be given to the local communities in planning and managing the forest resources in all levels of the program and thus can ensure their benefit.
- Any stakeholders involved in forestry development programs should follow participatory planning and hence work together with the local communities in the process of setting specific objectives, identifying income distribution mechanisms and other similar activities.
- Participatory monitoring and evaluation system must also be developed by involving the community, together with development agents as facilitators in identifying key indicators which are easily measurable used to:
 - Measure the progress in implementing the activities against the agreed plans;
 - Measure the transparency in equitable benefit sharing;
 - Compare the output gains against the planed targets;
 - Measure the effectiveness of the efforts and efficiency of the mechanism being used in implementing the activities.
- Appropriate technologies and site specific packages should be designed by BoARD and Research institutes to minimize the low survival rates of planted trees supported by post planting tending operations.

- Solution for land tenure and/or ownership problems and free grazing should be considered as the main priority for sustained forest development. Thus it is necessary to revise the forest proclamation to have clear policy and strategy on forest utilization and land use system

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1. Appendices

Appendix 1. Name of Tabias, Number of Villages and Number of Households by Sex

No.	Name of Tabia	No. of Villages	No. of Households		
			Male	Female	Total
1	Didba	3	905	709	1614
2	Meseret	5	1288	518	1806
3	Felege-Selam	4	995	412	1407
4	Lemlem	4	1300	427	1727
5	Chelekot	4	777	454	1228
6	Shibta	4	1750	442	2192
7	Derge-Ajen	4	1654	577	2231
8	Arato	4	1648	386	2034
9	Messebo	3	684	551	1235
10	Felege-Mayat	3	686	264	950
11	May-Tsedo	4	1164	428	1592
12	May-Alem	4	731	273	1004
13	May-Genet	4	895	235	1130
14	Mariam-Dehan	3	940	347	1287
15	Mahbere-Genet	4	1005	416	1421
16	May-Anbesa	4	1038	329	1367
17	Debri	3	998	510	1508
Total		64	18458	7275	25733

Source: WOARD Planning & Study department

Appendix 2. Land use classification of Enderta wereda

No.	Land use type	Coverage (ha)
1	Farmland	32649
2	Forest land	49518
3	Grazing land	3978
4	Unusable land	561
5	Miscellaneous land	9945
6	Waste land	45934
	Total	142585

Source: WOARD Planning & Study Department.

Appendix 3. Number of tree seedlings planted and survived between 2004- 2008 in the wereda

No	Year	Private plantation			Community plantation			others		
		planted	survived	Survival (%)	planted	survived	Survival (%)	Planted	survived	Survival (%)
1	2004	434510	181565	41.79	414732	163208	39.35	23620	14321	60.63
2	2005	416252	202854	48.73	401587	152877	38.07	8040	2600	32.34
3	2006	612098	475615	77.7	634802	397692	62.65	34897	25998	74.5
4	2007	545026	400932	73.56	459566	340078	74	61490	41731	67.87
5	2008	772232	655132	84.84	880370	466596	53	11907	9144	76.8
Total		2780118	1916098	68.92	2791057	1520451	54.48	139954	93794	67.02

Source: WOARD Planning & Study department.

Appendix 4. Number of tree seedlings planted and survived in the public lands shared to individuals for private tree planting

No.	Year	No. of seedlings			Area coverage/ha/	No. of beneficiaries
		Planted	Survived	%		
1	2004	18850	11544	61.24	7.54	188
2	2005	6484	2688	41.46	2.6	65
3	2006	41103	29172	71	16.44	411
4	2007	32595	25267	76.66	13.18	329
5	2008	5311	4144	78.03	2.12	53
	Total	104343	72815	69.78	41.88	1046

Source: WOARD Forestry section.

Appendix 5. SWC structures constructed on free labor basis with in 20 days in the study Tabias

Name of <i>Tabia</i>	Participated farmers				On farm land techniques			
	Men HH	Youth	women	total	Stone bund	trench	Soil bund	Check dam
Arato	6800	4008	9975	20783	5122	4720	-	6437
Didba	6450	4015	1436	11901	8525	-	10215	3052
M/Genet	5035	4958	7525	17518	25455	6755	-	4370
total	18285	12981	1836	50202	39102	11475	10215	13859

Source: WoARD report 2008

Appendix 6. SWC structures constructed on FFW basis and grin paid from 2005 2008

year	Participated man power				Structures constructed					Grain paid(qts)
	Farm HH	youth	women	total	Stone bund	Check dam	Hillside terrace	Stone faced trench	Small ponds	
2004	24257	35496	74983	134736	624888	4025	-	1134	-	3993.63
2006	35167	31838	134931	201937	432650	2105	-	34074	-	6336.45
2007	33163	32683	65349	372377	440636	4606	1005	66754	-	4213.41
2008	12946	8992	26884	48822	26303	284	8295	52175	66	2396.06

Source: WoARD report 2008

Appendix 7. Household Questionnaire

Name of the interviewer _____ Date _____ Woreda _____ Tabia _____
_____ Kushet _____ Household identification no _____

I. Base Line Data

1. Sex of respondents

1. Male 2. Female

2. Age of respondents

1. Below 18 2. 18-30 3. 31-50 4. Above 51

3. Education

1. Illiterate 2. Basic education 3. Grade 1-6 4. 7-12

4. Marital status

1. Single 2. Married 3. Widowed 3. Divorced

5. Relationship of informants to family head

1. Head 2. Wife 3. Husband
4. Son 5. Daughter 6. Relative

6. Occupation of the household head

1. Farming 2. Trading 3. Both 4. Others

7. How is age of your family?

1. Under 18 years 2. 18-50 years 3. Over 50 years

8. What is the educational status of your family members?

1. Illiterate 2. Read and write 3. Junior school 4. High school

9. Since when have you been residing at this village? _____

10. Size of land holding _____ ha.

11. How did you get this land?

1. Inheritance 2. Purchase 3. Given by government 4. Others specify _____

12. Since when have you been farming this land? _____

13. Does the household have access to other land outside the farm?

1. Yes 2. No

14. If yes, how was it obtained?

1. Communal 2. Rented 3. Others _____

15. What is it used for?
 1. Crops 2. Grazing 3. Fuel wood/tree 4. Others-----
16. Are there sources of water other than rainfall?
 Yes 2. No
17. If yes, what are used for?
 1. Livestock 2. Tree 3. Supplementary irrigation 4. Others-----
18. What livestock does the household have?
 1. Cattle _____ 2. Goat _____ 3. Sheep _____
 4. Equine _____ 5. Camel _____ 6. Others _____
19. What is your main source of income? (Circling more than one is possible)
 1. Sales of cash crops 5. Sales of fuel wood
 2. Sales of surplus food crops 6. Off farm Employment
 3. Sales of fruits & vegetables 7. Petty trade
 4. Sales of livestock & livestock products 8. Others
21. What are the major causes of deforestation in your locality? Put in order of their severity of occurrence.
 1----- 2----- 3-----
22. Is there a problem of grazing land?
 1. Yes 2. No
23. If yes what are the reasons? Put in order of significance
 1. ----- 2----- 3-----
24. What type of social forestry strategies being carried out in your area?
 1. Community forestry 2. Private forestry
 3. Communal forestry 4. All

2. Information on community forestry strategy in the study area

25. Since when was the plantation being established? -----
26. What was the land use type before it is selected to be as plantation site? -----27.
- Who were using the site before?
28. Who decided the site to be selected for reforestation?

1. Experts 2. Tabia Baito 3. Community representatives

29. Do the community being consulted before site selection?

1. Yes 2. No

30. Is there a conflict over a loss of grazing land to reforestation?

1. Yes 2. No

31. Did you participate in planting tree seedlings?

1. Yes 2. No

31. What is your observation on the survival of the tree seedlings?

1. High 2. Medium
3. Low 4. Very low

32. What forest products were being harvested last year? Take estimation of person loads

1. Fuel wood----- 2. Construction poles----- 3. Fodder grasses-----
4. Farm implements----- 5. Others-----

34. Is there management plan developed for the coming years?

1. Yes 2. No

35. Did the government hand over the community plantations?

1. Yes 2. No

36. If yes, is there legal written agreement among responsible bodies?

1. Yes 2. No

37. Is certificate of use right is given like that of farmlands?

1. Yes 2. No

38. Did you ever involved in developing local bylaws?

1. Yes 2. No

39. If yes what are the major contexts of the local bylaw?

40. If no, who initiated the bylaw?

41. Do they apply it in a desired way?

1. Yes 2. No

42. Are you satisfied with the currently operating community forestry management system?

1. Yes 2. No

3. information on private forestry strategy in the study area

43. Did you plant trees individually?

1. Yes 2. No

44. If yes, where did you plant them? (List)

45. From where do you get the seedlings?

46. If you bought them, how was their price?

1. Very cheap 2. Cheap 3. Medium 4. Expensive

47. Did you get them from nurseries as per your preference

1. Yes 2. No

48. Did you observed any problems in relation to seedlings availability and distribution?

1. Yes 2. No

49. If yes, would you describe them?

50. What is the proportion of seedlings averagely survived?

51. What are the major reasons for mortality of seedlings in private plantation?

52. Did you sale any forest product last year?

53. Have you a plan for planting more trees in the future?

1. Yes 2. No

54. If yes, where do you plant them?

55. If not, what are your reasons for not planting more tees?

1. Have sufficient trees 2. Shortage of land 3. Not economical
4. Shortage of labor 5. Others-----

56. Did you protect naturally grown trees around homesteads?

1. Yes 2.No

57. If not, why not?

4. Information on the mechanisms of participation in social forestry

58. Do farmers voluntarily participate in social forestry activities?

1. Yes 2. No 3. Most people were not voluntary

59. If yes, why do problems of mobilization occur in free labor demanding activities?

60. Did you ever participate in selection of site for reforestation?

1. Yes 2. No

61. If no, who select the site?

62. Did you participate in selecting the types of tree seedlings to be raised in nursery sites?

1. Yes 2. No

63. If no, who select them?

64. Did you involved in any forestry related training?

1. Yes 2. No

65. What was the incentive provided?

66. Who plan and how is the process of community forestry implemented in your area?

Describe it.

67. What activities are being implemented in mass mobilization in your area? Describe

68. At which activities are you obliged to contribute free labor and which activities are paid for? State

69. Is there any connection between free labor contribution and engagement in food- for work? 1. Yes 2. No

70. If yes, explain-----

5. Information on the extent and levels of participation

71. Did you participate on community plantation activity? 1. Yes 2. No

72 Who is responsible for planning plantation activities in your area? Explain

73. At which stage did you participate in the community forestry management activity?

(Circling more than one is possible)

1. in planning 2. Implementation
3. Monitoring and evaluation 4. Benefit sharing

74 In which aspect of decision making did you participate for the last three years?

1. Situation analysis 2. Need assessment
3. Prioritization of problems 4. distribution of benefits 5. Others

75. Who is responsible in decisions with respect to implementation?

76. In which aspect of implementation did you participated in the program?

1. Contribution of labor 2. Contribution in money/ kind/ 3. Others-----

77. Did you participate in monitoring and evaluation activities?

1. Yes 2. No

78. If yes, what were the points of discussion?

79. If no, who were responsible in decisions concerning monitoring and evaluation?

80. In which activities of participation did you participated for the last three years?

1. In information giving 2. In consultation 3. Attendance in meeting
4. in organizing groups 5. Others

6. Information on the motivational reasons for participation

81. What were the motivational reasons for participation of people in social forestry activity?

List out:

- a. Most important motivational reasons -----
b. Important motivational reasons -----
c. Least important motivational reasons -----

82. Who owns this community plantation?

83. How do judge the degree of sense of ownership when you compare with your private plantation?

84. What are the reasons of the people for participation in the reforestation activities in community land in free labor?

85. What has been the socio- economic and environmental impacts (benefit) of the reforestation? Mention:

- a. socio-economic impacts -----
b. environmental impacts -----

86. Where there any sale of forest products in the last three years?

1. Yes 2. No

87. If yes, who sold them?

88. For what purpose was the revenue utilized?

89. Which do you prefer on the future fate of the community forestry management?

1. It should continue as it is
2. It should be shared to individuals for tree planting
3. It should be changed to communal grazing land
4. More power should be given to village community to manage and utilize it

7. Information on the constraints faced at different stages of the activity

90. Would you please mention, the constraints occurring in community forestry activity at pre- planting stage?

- a. Highly occurring constraints (Most often) -----
- b. Usually occurring constraints (Often) -----
- c. Sometimes occurring constraints -----

91. Would you please mention, the constraints occurring in private forestry activity at pre-planting stage?

- a. Highly occurring constraints (Most often) -----
- b. Usually occurring constraints (Often) -----
- c. Sometimes occurring constraints -----

92. Would you please mention, the constraints occurring in community forestry activity at implementation stage?

- a. Highly occurring constraints (Most often) -----
- b. Usually occurring constraints (Often) -----
- c. Sometimes occurring constraints -----

93. Would you please mention, the constraints occurring in private forestry activity at implementation stage?

- a. Highly occurring constraints (Most often) -----
- b. Usually occurring constraints (Often) -----
- c. Sometimes occurring constraints -----

94. Would you please mention, the constraints occurring in community forestry activity at post- planting stage?

- a. Highly occurring constraints (Most often) -----
- b. Usually occurring constraints (Often) -----
- c. Sometimes occurring constraints -----

95. Would you please mention, the constraints occurring in private forestry activity at post-planting stage?

- a. Highly occurring constraints (Most often) -----
- b. Usually occurring constraints (Often) -----
- c. Sometimes occurring constraints -----

DECLARATION

I declare that this thesis is my original work and has not been presented for a degree, diploma or certificate in other university, and that all sources of materials used for this thesis have been duly acknowledged.

Name: Gebre Hailezgi Atsbeha

Signature:  _____