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Assessment on Effectiveness and Sustainability of PSNP Community Based Participatory Reforestation and Hill Land Management through Watershed Management Activity in Dega, Woina Dega and Kolla Agro-ecological Zones: The Case of Amhara Sayint Woreda: South Wollo Zone

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ADDIS ABABA UNIVERSITY SCHOOL OF GRADUATE STUDIES COLLEGE OF EDUCATION AND BEHAVIORAL STUDIES DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL EDUCATION SUMMER PROGRAM

Assessment on Effectiveness and Sustainability of Productive Safety Net Program (PSNP) Community Based Participatory Reforestation and Hill Land Management through Watershed Activity in Dega, Woina Dega and Kolla Agro-ecological Zones: The Case of Amhara Sayint Woreda: South Wollo Zone

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DEDICATION: This work is dedicated to my mother Machash Boyalew she enthusiastically dedicated her whole life to the educational betterment of her children.

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LIST OF ACRONYM

ABBLZ: Abay Beshilo Basin Livelihood Zone

ANRS: Amhara National Regional State.

ARDO: Agriculture and Rural Development Office

BoFED: Bureau Office of Finance and Economic Development

CICERO: Center for International Climate and Environmental Research - Oslo

DA$_{S:}$ Development Agents

DS: Direct Support

EDF: Enterprise Development Facility

EIAR: Ethiopian Institute of Agricultural Research

EPLAU: The Bureau of Environmental Protection, Land administration and Use.

EPRDF: Ethiopian Peoples' Revolutionary Democratic Front

ESMF: Environmental and Social Management Framework

ESMF: Environmental and Social Management Freamework

FAO: Food and Agriculture Organization of the United Nations

FFSS: Forum For Social Studies

HABP: Household Asset Building Programme

ILRI: International Livestock Research Institute

IPCC: Intergovernmental Panel on Climate Change

MoARD: Ministry of Agriculture and Rural Development

NAP: National Action Program

NBCU: Nature and Biodiversity Conservation Union

NTFPs: Non-timber Forest Product

OFSP: Other Food Security Programme

PFM: Participatory Forest Management

PSNP: Productive Safety Nets Programme

PW: Public Work

SARDP: The Sida-Amhara Rural Development Programme

SDPRP: Sustainable Development and Poverty Reduction Strategy Programme

SMELZ: South Wollo Meher Livelihood Zone

SOS: Save our souls

UNCCD: United Nations Convention to Combat Desertification

UNECA: United Nations Economic Commission for Africa

UNSO: Sudano-Sahelian Office of the United Nations

WB: World Bank

WBISPP: Woody Biomass Inventory and Strategic Planning Project

WFP: World Food Programme

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Abstract

Reforestation, watershed management and hillside rehabilitation is the most essential kinds of natural resource management practices which enable human beings and other animals depend on and sustain their existence. The major causes for deforestation and hillside degradation of Amhara Sayint Woreda are the expansion of agricultural farm, the rapid increasing of population, lack of alternative income source, shortage of grazing and in search of forest product for fuel, construction and commercial activity. The study was conducted on the reforestation, watershed management and hillside rehabilitation program of PSNP, from September 2012 to July 2013. The general objective of this thesis is to assess the effectiveness and sustainability of Productive Safety Net Programme through tree plantation interventions and degraded hillside rehabilitation in Amhara Sayint Woreda.

Primary data are collected through face-to face interview from sample population of Productive Safety Net Programme beneficiary members using research instrument. Information was also gathered from district agriculture office and PSNP staffs for the purpose of getting preliminary idea but the response does not incorporated in the findings report. Some of the factors that discourage participation are arising from the implementation of the project without due consideration of the environmental differences of the agro-ecology, fear of losing their farm land, weak legal actions taken on illegal users and doubt on project continuity. Most of such variables are directly or indirectly related to securing forest right.

Key Words: *Perception, Participation, PSNP, Community-based PFM, Awareness creation, Use right, Exclusive right, Benefits, Bottom-up approach.*

CHAPTER ONE

1. Introduction

Vegetation or tree cover plays important role in the livelihoods of local communities in enhancing water quality, reducing fluctuations in water bodies protecting, soil erosion and improving soil fertility. Though, protection, management, conservation and restoration of the environment are highly deliberated at international levels and generate regional and national programs and policies that impact local community livelihoods.

According to Patrick (2004), a majority of East African communities are dependent on the natural capital or assets that require effective conservation and management strategies. Some of these strategies are embedded in conservation practices and alluded to by emerging international treaties such as the 1992 Rio de Janeiro Protocol on Biodiversity Convention and Climate Change, 1997 Kyoto Protocol on Global warming and reduction of greenhouse gases, management of wetlands, combating land degradation and desertification, prevention of persistent organic pollutants, afforestation, reforestation and management of crop land and grazing land. These treaties provide opportunities for innovative financing for environmental products and services. But, the challenge is how local communities dependent on natural assets for livelihood benefit from these opportunities.

East African region as a whole is endowed with a variety of landscapes with vast areas of woodlands and barren land dominated by sparse trees, upper montane forest, deciduous/semi deciduous broad leaf forest, thorn forest and lowland evergreen broadleaf rain forest. In addition, intensive agriculture, afforestation, reforestation and forest management are practiced (Patrick Karani, 2004**)**.

1.1 Background of the Study

Ethiopia, situated in the Horn of Africa, has an area of 1,100,000 km2 (472, 000 sq. mi) with a population of over 83 million and an annual rate of growth of 2.6%. Moreover, Ethiopia is the second most populous country in Africa, after Nigeria (CSA, 2011). In land area the whole part

of Ethiopia lies within the tropical latitudes which made Ethiopia had relatively small annual range of temperature because of its proximity to the equator (Badege 2003).

According to FAO (2000), community-based forest management, reforestation and hillside rehabilitation has its roots, in most African countries, in the repressive natural resource laws from their colonial past. The forest laws that came to be applied in African countries and the uncolonize Ethiopia starting from the post-colonial era alienated local communities' right to claim ownership of forests. Licenses and other forms of taxation, previously unknown to the communities, were introduced to control the exploitation of produce that used to be freely accessible to them for domestic and commercial use (FAO, 2000).

Rainfall variability generally increases as rainfall total decreases, and thus, it is generally greatest in the lower rainfall areas of the north and northeast highlands of Ethiopia. The climate is mostly determined by the altitude, which dominates all aspects of land use because of its influence on temperature. The country has a wide range of agro-ecological zones reflecting the wide variation in rainfall (both quantity and distribution) temperature, altitude, topography and soils. Moreover, deforestation, accelerated soil erosion, and land degradation are serious problems in Ethiopia. To overcome these problems, efforts have been made to launch afforestation and conservation programs; however, success to date has been limited (FAO, 2000).

Ethiopia’s forest resource conservation, development and utilization today is not the product of a long evolving process in which different land-use planning measures have been devised and used to meet changing needs and various ecological conditions of the country. In Ethiopian forest conservation /preservation defined as state-owned goes back to imperial times. In 1966, the council of ministers placed state forests under the Ministry of Agriculture. In addition, since early 1980s, the *Derg* also carried out environmental rehabilitation and resettlement programme, and the collectivization of agricultural production to combat the root causes of famine and natural resource degradation in northern Ethiopia (FFSS, 2002).

However, initiatives were restricted to delimiting areas, introducing forest guards, and limited tree planting, partly on a food-for work basis. According to FAO (2007) report, the evolution of a sound Forestry Development, Protection and utilization Policy and Strategy 2007 clearly states

that the conservation of natural forests and the development of all aspects of the forestry sub-sector are given high priority. The rural people should have the organizational structure as well as legal obligations and responsibilities to protect the forests from destruction and burning.

This shows that it is the peasant association of government structure to be controlling and managing the forest in the territorial area (Azene, et.al 1997).

In Ethiopia the current re-foresting the degraded sites and hill land through tree planting intervention plays important roles in mitigating the effects of land degradation and it offers significant potential for yielding benefits both locally and globally. It can also provide long term sustainable economic benefits to the country, as well as income generating opportunities and increased welfare for local communities (FAO, 2007). Therefore, the sustainability of the tree interventions and conservation of the hilltop resources lies in the participation of local communities (Alamirew B., 2011). This can be achieved through participatory approaches, which facilitate consciousness raising, social mobilization and empowerment of the local people (Pratt, 2000). Furthermore, reforestation of degraded hill land areas is very important for Ethiopia because that complement ongoing activities to alleviate poverty and could contribute to reduce the risk of environmental hazards (Pratt, 2000).

Based on CSA (2011) statistical data, the Amhara National Regional State has a total human population of 19,611,247 settled in an area of 170,752 square kilometer with an average land holding of 1.7 hectares. From this, 34% of the region is estimated to be within a slope of over 35^0, steeper slope $>50^0$ are estimated to be about 21% and the rest is relatively gentle slope. With reference to the nation's livestock population, about 35% is found in the Amhara region with the major feed sources being communal grazing lands, fallow lands, crop residues and stubble (BOFED in Woreta, 2007). Due to its geographical location, physiographic disposition and the resulting agro-ecological diversity, Amhara region has a comparative advantage of enhancing forestry and agro forestry development in various ways and scale to produce a variety of forest and forest products (Teshome, 2012). As a result, enormous efforts of afforestation and reforestation are under way in the region with governmental and non-governmental initiatives in

order to restore degraded hill lands that are denuded of vegetation and to help communities to develop their own forests.

Teshome (2012), argued that reforestation and hillside management should only be attempted when the local communities are in agreement with the reforestation proposal, local people should understand and have confidence in the efforts and support of investment. Thus, existing or potential conflicts that may hinder reforestation, either within communities or between communities and the investor, must be resolved through governments issued Forestry policies, action programmes, strategies and proclamations that support and guide forestry development at the Federal and Regional government level.

Moreover, watershed management through reforestation and hillside management practice is an essential component of natural resource management and rural development. Good quality and well-maintained watersheds, aside from maintaining environmental services, may also sustain economic development at upstream as well as downstream areas (Cobourn J., 1999).

> In Ethiopia, most watershed projects are implemented with two main objectives that include: The first objective is to improve the livelihood of communities/households in rural areas, through comprehensive and integrated natural resource development. It aims at productivity enhancement measures for improved income generation opportunities, enhanced livelihood support systems and high resilience to shocks and. The second objective is to optimize the use of existing natural resources and untapped potentials in both already degraded areas and in the remaining potential areas in the country (Lakew et.al, 2005).

1.2 Statement of the Problem

Many literatures reveal that Ethiopia has faced a number of problems in extensive forest clearing for agricultural use, overgrazing, and exploitation of existing forests for fuel wood, fodder, and construction materials. Deforestation and land degradation are severe problem in the densely populated highlands of East Africa and elsewhere on the African continent. Soil erosion resulting from cultivation on steeply sloping terrain, mining of soil fertility due to continuous cultivation with limited application of inorganic or organic sources of soil nutrients, and deforestation and

overgrazing of rangelands are among the key factors causing low agricultural productivity, widespread poverty, and food insecurity in the region (IFPRI, 2006).

Like many countries of SSA, Ethiopia suffers from problems of poverty, land degradation, and low productivity. What makes these problems rather challenging is that 84% of the country's million people reside in rural areas (CSA, 2006) where land is a basic means of survival. Agriculture contributes 84% of employment, 90% of the export earnings and about 45% of the Gross Domestic Product (GDP) (Ethiopian Economics Association/EEA, 2004). Because rural people derive their livelihood mainly from traditional and subsistence agriculture, farmers in Ethiopia do not have access to the essentials for their existence (Fritzen, Byon, Nowakovski and Pallock, 2006 cited in Bamlaku 2011).

Besides, the fact that agriculture is subsistent and highly volatile exacerbates poverty in the country. It is also performing poorly, which has been exacerbated by land degradation (Holden, Shiferaw and Pender, 2006 cited in Bamlaku 2011).

High population pressure coupled with improper land use and management cause severe land degradation in Ethiopia and result in poor agricultural performance, drought, famine and environmental stress. The problem being high in Amhara region, approximately 39 percent of the land in this region is estimated to be used for grazing and browsing and 27 percent is under cultivation, much of it being cultivated for three millennia or longer. Many of the soils which shrink and swell have severe drainage and water logging problems during the rainy season. A majority of the land is steep, infiltration rates are low, and little surface cover is left after extensive cropping or grazing. Soil conservation measures are needed, but a high percentage of the land has already been severely degraded. Rainfall is variable and must be utilized effectively. If during the high rainfall period some of the excess water could be stored in or on the soil using water management technologies, the risk of crop failure and erosion associated with rainfall variation could be reduced (USAID, 2000).

More specifically, the Amhara region is one of the poorest regions in Ethiopia. It is characterized by undependable rainfall, very high land degradation, rapid population growth, high rate of poverty and malnutrition (Bamlaku A., 2011).

In Amhara, about 90% of the population lives in rural areas and is engaged in agriculture. The population is very young with 55% below the age of 20 years. The Amhara Region is densely populated and has a rapid population growth (1.7%). With a population of about 19.62 million over an area of 170,752 km^2, it has a population density of 100 persons per square kilometer. In combination with the rugged terrain, this means that little or no unused arable land is left. Food security is also threatened by frequent droughts which as a result makes the majority of the population food recipient (SARDP and EPLAU, 2010).

Sayint, which is the focus of this study, is one of the 126 rural *woreda*s of Amhara regional state and among the 22 *Woreda*'s of South Wollo Administrative Zone. *Sayint woreda* is located in the south-west of South Wollo zone with a total population of 154,142 inhabited an area of 1,437.30 square kilometers. *Sayint* has a population density of 107.24 persons per square kilometer, which is less than the South Wollo Zone average density of 147.58 persons per square kilometer (CSA, 2007).

Sayint has diverse ecological systems with elevation range from 500 meter at the bottom of the canyon of Abay to 3,700 meter at the highest mountain of South Wollo Zone, i.e. Mount *Amba Ferit*. The largest area of landscape in Saint is the most difficult area where 92% of the area is having a slope degree of greater than 16^0, of which 67% of the land has high sloppiness (greater than 30%) and 58.4% has the soil layer of less than 40 cm.

It is estimated woody vegetation cover is about 2.31% of the *woreda*. Examine the above facts, *Sayint* might be one of the most degraded *Woreda* of Ethiopia, in addition to this the area is known for experiencing great variability in the timing and volume of rainfall, and this has caused drought and crop failure. The moisture deficiency due to erratic rainfall regime and recurrent drought are environmental contributions to the overall food insecurity and land degradation (*Sayint Woreda* Agricultural Office, 2007).

According to the Humanitarian Bulletin of UNECA Office (2008), the belg crop growing areas of Amhara Region**, (**such as, Gubalafto and Dawnt *woreda*s of North Wollo zone, Legabmo and *Sayint woreda*s of South Wollo zone, Menze Gera and Menze Mama *woreda*s of North Shewa zone) are facing acute food deficit and identified as hotspot areas.

As a result, *Sayint Woreda* has been an area with chronic food shortage because of high rate of land degradation, rapid population growth, high rate of poverty along with rainfall variability and malnutrition. Moreover, John (2011) stated that *Sayint Woreda* consists of two livelihood zones, namely Abay Beshlo River Basin and West and South Wollo Meher. Agro-ecologically, the part of *Sayint Woreda* with Abay Beshilo Basin Livelihood Zone (ABB LZ) is predominantly *kola* with few peripheral parts characterizing *woinadega*, while South Wollo Meher Livelihood Zone (SME LZ) consists of both *dega, woina dega* and *wurch* agro-ecologies. The SME LZ of the *woreda* is a chronic food deficit area where there was continued food aid in the past years.

According to John (2011) evaluation, the nature of soil is degraded in many parts and loses its potential for crop production, although there are some parts with moderate soil fertility. In addition, most parts of the *woreda* is inaccessible for transportation, there are few roads across this rugged topography and the *woreda* lies quite far from the main highways and big towns. Cattle, goat, and sheep are the prominent livestock types commonly reared. Sale of charcoal and firewood and also migratory labor are the major sources of cash income in the *woreda* apart from the crop and livestock production.

Therefore, to minimize the overall socio-environmental danger of the *woreda*, Productive Safety Nets Programme (PSNP) was launched with enhanced efforts through Public Work (PW) and Direct Support (DS). In *Sayint woreda*, 41,700 household members are beneficiary of the PSNP under Public Work and Direct Support programme (PSNP, 2009). The PSNP Public Work and Direct Support programmes are carried out by the local administration through mass mobilization of the community. Even if the programme of Public Work and Direct Support functioned differently from one *Woreda* to the other, in *Amhara Sayint* Public Work projects function as welfare safety nets for poor communities in food insecure areas, and represent a transition between emergency relief and the achievement of long term development objectives (PSNP, 2009). That is why the PSNP was introduced in the *woreda* to play important role in improving the people's living standards and protection of natural resources. Like in other parts of Ethiopia, in response to high resource degradation, particularly in areas of highly degraded and deforested hillside through comprehensive and integrated natural resources development, participatory community based watershed development through reforestation and hillside

rehabilitation have been promoted extensively since 2005. PSNP (2009) listed the following major rationale and objectives of PSNP for promoting participatory community based watershed development through reforestation and hillside rehabilitation management, biophysical soil and water conservation activities, forestry, agro-forestry and forage development, social infrastructures, training programme for *woreda* and zone experts as well as for farmers at *kebele* level.

Cognizant of the above objectives, the PSNP have been implemented in *Sayint woreda* since 2005, with the overall objective of preventing asset depletion at HH level and create asset at community level & stimulates market in chronically food insecure *kebeles*. The PSNP, especially the public work component encourages community in chronically food insecure *woreda*s to be engaged in conservation based integrated agricultural production interventions through community based watershed development approach. Such integrated agricultural production interventions in conjunction with the other food security program interventions are expected to bring about graduation of beneficiary HHs from food insecurity & ensure sustainable environmental rehabilitation (PSNP, 2009). Regarding the outcome an impact of the program department of natural resource of the *woreda* has proclaimed improvement on the livelihood of the farming community. However, the outcome of the program and its sustainability is not scientifically documented in the *woreda*. It is in line with this aim that the present research is carried out.

1.3 Objective of the Study

The general objective of this study is to assess the overall effectiveness and sustainability of community based participatory reforestation and hill land management practice of Productive Safety Net Programme towards the improvement and rehabilitation of degraded hillside in the case study of *Sayint woreda* three agro-ecological zones.

More specifically, the study is to assess or examine:

- assess community forestry situation and hillside rehabilitation of the area

- examine the community's level of awareness as well as their sense of ownership of reforestation and hillside management Program of PSNP and the government's commitment in mobilizing the local community through participatory forest management approach.
- explore possible socio-economic benefit and ecological services that the communities can get from the community forestry and hillside plantation programme.
- evaluate whether community based reforestation and degraded hillside management activity will be sustainable or not.
- identify the major factor those enhances and hinder participation of local community in reforestation and hillside plantation activity and the partnership among the different stakeholders and the community.

1.4 Hypothesis

Based on our theoretical and practical experience of the country's development and rehabilitation programme, it is inevitable that the programme will encounter a number of obstacles. By the same indication participatory approach of development project in general and community based reforestation in particular can be limited by several factors.

To carry out this study, it hypothesized that:

- Communities of the study area have positive attitude towards reforestation programme and hillside rehabilitation.
- Unless the communities have given rights on management of forest resource, their participation can be weak and unsustainable.
- Some of government policies on participatory forest management discouraged community participation in tree planting involvements on the hillsides.
- Lack of community awareness about Productive Safety Net Programme is making communities participation in reforestation and rehabilitation practices of degraded hillsides.

1.5 Significance of the Study

The current situation of reforestation programme in Ethiopia is a very great and challenging. Because, reforestation efforts have not been effective as they are constrained by various technological, social, economic, and institutional factors. Likewise, the practices of realizing community based participatory approach in reforestation and covering hilltops with indigenous tree and forest resource management are still new, developing, and often call for adjustment to suite different ecosystems and challenges in different localities.

As a result, the scientific values of research results will contribute to improvement of scientific basis for development of community based reforestation and hillside management, and will serve as scientific basis for orientation/direction in sustainable exploitation and protection of natural resources in *Sayint Woreda.* The Practical values of this research will help farmers in complex landscape fragile environment regions in more effective agriculture and other supported production while not damaging the natural environment and the research will contribute to the rehabilitation of degraded areas. In addition to these it serves as a good basis for forth coming researchers who have a strong desire to carry out a research on this or related topics in Saint *Woreda* or elsewhere. Moreover, the sustainability of community participation has to be sought right at the planning stage rather than at the implementation phase of reforestation and hill land management programs. In Ethiopia, the participatory forest management programme started during the imperial period of Menilik to meet the needs of fuel wood and at some forest priority areas in the country as a pilot project. It should also be noted that tree planting through agro-forestry and social forestry programme in the severely degraded highlands of Amhara region should be an integral part of rural development programs. By and large, since community based hillside vegetation covering activity have come to function very recently in the region, it is difficult to see the success of the programme.

So, it is highly important to study and assess the effectiveness and sustainability of community based reforestation and hillside management activity of the country in general and the practice of *Sayint Woreda* in particular.

Consequently, the study could help to see the success or failure of the programme itself and to replicate this kind of collaborative degraded land rehabilitation practice in other part of the country. Moreover, this study can provide the experience to draw attention to design a project with the involvement of local community in planning and decision-making process in the future and to take it as a guide to the government policy formulation and to assess the deterring problems associated with the sustainability implications, the long term benefits of a project and the dilemma arises from who will take the responsibility when the program phased out.

1.6 Limitation of the Study

To carry out this study, there were many challenges that could be sighted. The major problem was related to financial constraints. The financial constraints confined the data collection effort only on six randomly chosen areas of the PSNP beneficiary members. Additionally, in the study area it could not get well prepared and documented secondary source. As a result the information that could have been included was not considered so that it creates limitation to make comparison of the research outcome with previous report of the programme.

Moreover, the level of perception and know-how for the questionnaire by some respondents were low. Therefore, the problem related to these would not be expected to bring significant change to the research outcome so far great attention has been given to the validity or quality of the information while data collection was going on. On account of this the conductor of the study managed the questionnaire with full involvement to minimize irresponsive result. However, in addition to interviewing the beneficiary of the programme, the conductor of the study made detail oral discussion with the respondents in order to come with nearly actual information. Most of the references used in the paper are up-to-date and outcome research findings. Finally, it is thought to be the conclusion and recommendation of this paper can be used as a guide for policy makers of the country and stack holders for the reforestation and degraded hillside management practices.

1.7 Organization of the Thesis

The study is organized in to five chapters. Chapter one deals with the introduction under which the back ground of the study, the statement of the problem, objective of the study, significance of the study. Chapter two covers literature reviews, empirical studies, and conceptual framework. Chapter three consists of background of the study area and research methodology. Chapter four consists of analysis and discussions of result. The last chapter covers conclusions, policy implications and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2. Theoretical and Empirical Literature Review

This chapter attempts to shed light on the conceptual and theoretical frameworks anchoring issues related to reforestation, hillside management activity and productive safety net programme activities on environmental conservation and sustainability. The framework is used to guide the data generation, analysis and discussion process in the study.

2.1 Conceptual Definitions of Forest, Deforestation, Reforestation, Afforestation and Sustainable Forest management

2.1.1 Forest

The definition of **forest** is still ambiguous. According to FAO (2006) forest is a minimum land area of 0.05-1 ha with tree crown cover more than 10-30% and tree height of 2-5m at maturity. FAO (2007) defined a forest as "land with a tree crown cover (or equivalent stocking level) of more than 10% and an area of more than 0.5 hectare; the trees should be able to reach a minimum height of 5 meter at maturity *in situ*".

The term **forest** is defined as...a community of plants either naturally grown or developed by planting and in many respects is trees and other plants having a woody character. (Art.2.3). Forests are thus defined into natural forests (e.g. naturally growing indigenous trees) and forests established by planting (e.g. afforestation or reforestation). Again trees are defined as "any woody plant regardless of its, species, age, size including bamboo, reeds and palms as well as other plants to be designated as .trees by the Ministry" (Federal Negarit Gazeta Proclamation No.77/2004). In addition, the McGraw-Hill dictionary of Environmental Science (2003) definition, forest is an ecosystem consisting of plants and animals and their environment, with trees as the dominant form of vegetation. Moreover, Young (1997) describes agro forestry as "land use systems in which trees or shrubs are grown in association with agricultural crops,

pastures or livestock, and in which there are both ecological and economic interactions between the trees and other components".

2.1.2 Deforestation

Deforestation is the act or process of removing trees from or clearing a forest. It is also referred to as the change of forested lands to non-forest lands, with a depletion of tree cover to less than 10 percent (McGraw-Hill, 2003). Moreover, according to Richard E. and Meganck A. (2007), deforestation is the removal of forest stands by cutting and burning to provide land for agricultural purposes, residential or industrial building sites, roads, etc., or by harvesting the trees for building materials or fuel Reforestation

Reforestation is the establishment of a new forest by seeding or planting seedlings on forest land that fails to restock naturally. It is also defined as the natural or intentional restocking of existing forests and woodlands that have been depleted, usually through deforestation (McGraw-Hill, 2003). According to the Dictionary and Introduction to Global Environmental Governance definition, reforestation is the action of renewing or improving forest cover by planting seeds or seedlings on land that had been previously forested (Richard E. and Meganck A., 2007).

Eric J. (2012) defined **Reforestation** is the reestablishment or expansion of a forest which was previously destroyed or degraded. Sometimes the reforestation occurs through natural regeneration, when seeds from existing stands of trees are deposited on deforested lands, distributed either by wind, insects, birds, or other seed dispersers. Other times lands are reforested artificially, by planting trees on degraded or deforested lands, with species that are native to that area. Therefore, rehabilitation of degraded lands through reforestation carries a significant potential for yielding benefits without regard to climate change. Properly managed reforestations provide long term sustainable economic benefits to the country, and income generating opportunities and increased welfare for local communities. Furthermore, a forest covers could produce a number of goods and services such as timber and non-timber products, soil and water conservation, and biodiversity benefits (Arne D. et al, 1996).

2.1.3 Afforestation

Afforestation is the establishment of a new forest by seeding or planting on non-forested land (McGraw-Hill, 2003). Moreover, Richard E. and Meganck A. (2007) definition, afforestation is the establishment of forest cover on land not previously forested.

Moreover, Eric J. (2012) described the process of reforestation is similar to afforestation which shows the process of restoring and recreating areas of woodlands or forests that may have existed long ago but were deforested or otherwise removed at some point in the past. Sometimes the term reforestation is used to distinguish between the original forest cover and the later re-growth of forest to an area. Special tools, e.g. **t**ree planting bar, are used to make planting of trees easier and faster.

2.1.4 Forest management

Forest management is the practical application of biological, physical, quantitative, managerial, economic, and social and policy principles to the regeneration, utilization and conservation of forests to meet specified goals and objectives while maintaining the productivity of the forest (Richard E. and Meganck A., 2007). In addition, forest management is the measures concerned with the effective organization of a forest to ensure continued production of its goods and services (McGraw-Hill, 2003).

2.1.5 Sustainable forest management

Sustainable forest management refers forest management activities that benefit people and the resource base today, but do not compromise the resource for future generations. The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions, at local, national and global levels, and that does not cause damage to other ecosystems (Richard E. and Meganck A., 2007). As a result to increase afforestation and reforestation activity accompanied with sustainable forest management program needs the relevant government and non-governmental institutions support through opening of seed centers and capacity building for managing the centers, provide technical and

financial support to seed orchard development, and develop management tools (,i.e. growth models for important tree species by research institutions) and guidelines for enhanced wood and carbon production, and for optimizing other ecological services (Yitebitu, et.al 2010).

Therefore, studies indicated that for the planned process implemented to restore a specific forest type and enhance human well-being in deforested or degraded forest landscapes and for successful rehabilitation of degraded lands in developing countries, local concerns about immediate tangible benefits must be integrated into global concerns about the environmental benefit (Saxena et al., 2001).

2.2 Historical Background on the Extent of World's Forest Resources and Community Forestry Situation

According to FAO (1993) forest resources assessment global forest resource cover just over 4 billion hectares, which is 31% of total land area of the world, which corresponds to an average of 0.6 ha per capita. The ten most forest-rich countries (the Russian Federation, Brazil, Canada (about the size of India), the United States of America, China, Australia, Congo (Zaire), Argentina, Indonesia and India) account for more than half of the total forest area, ten countries have no forest at all and fifty four have forest on less than 10 percent of their total land area. Concerning deforestation, mainly the conversion of tropical forests to agricultural land, the same report indicated signs of decreasing in several countries but continues at a high rate in others. Around 13 million hectares of forest were converted to other uses or lost through natural causes each year in the last decade compared to 16 million hectares per year in the 1990s. Both Brazil and Indonesia, which had the highest net loss of forest in the 1990s, have significantly reduced their rate of loss (FAO, 1993).

2.2.1 Reforestation and Hillside Management

Public campaigning for community-based forest/ natural resource management, reforestation and hillside rehabilitation has its roots, in most African countries, in the repressive natural resource laws from their colonial past (Horne H. 1990).. The forest Laws that came to be applied in the post-colonial era alienated local communities' right to claim ownership of forests. Licenses and

other forms of taxation, previously unknown to the communities, were introduced to control the exploitation of produce that used to be freely accessible to them for domestic and commercial use (FAO, 2000).

According to Gibson (1996), hilltops were designated as conservation area which allow for the conservation of indigenous tree species and medicinal plants. In several areas of Ethiopia, forestry and reforestation was confined on-farm and to the hill slopes. The on-farm planting was in form of woodlots, hedgerows, fodder bank, boundary markers, fruit orchards and other agro-forestry techniques with private ownership. While the trees planted on the hill slopes were under the control of the regional government.

Based on FAO (2007) report, in Ethiopia increasing population has resulted extensive forest clearing for agricultural use, overgrazing, and exploitation of existing forests for fuel wood, fodder, and construction materials. Deforestation and land degradation, however, are impairing the capacity of forests and the land to contribute to food security, and to provide other benefits. Ethiopians are facing rapid deforestation and degradation of land resources. Therefore, to overcome these problems, efforts have been made to launch afforestation and conservation programs; however, success to date has been limited (UNEP, 2002).

However, Arne D. et al, (1996) argued that reforestation strategies should contribute to economic and social development, and the local communities should receive adequate benefits from the activities. Reforestation should also be undertaken in a way that facilitates an increase in biodiversity and contributes to reducing pressures on natural forests.

2.2.2 Theoretical and Practical Experience of Ethiopia's Forest Development and Rehabilitation Programme

According to the environmental outlook of FEPA (2008), the trend in Ethiopia today is to protect the remaining natural forests for their various social, economic and environmental values. On the other hand, there is increasing demand for wood and wood products. The rate of afforestation may increase as market demand for forest product grows. This will be expected to improve forest cover in already degraded highly populated highlands. This may be followed by domination of

few fast-growing exotic species of tree. Increased attention on exotic species of tree on the other hand will displace indigenous trees risking the biodiversity and genetic resources of the country. To strike the balance between the two interests, afforestation/reforestation (here after referred to as plantations) is very important.

Plantations are even-aged forest stands deliberately established by humans on formerly non-forested lands or deforested lands. The purpose can be wood production or protection under the ownerships of the private sector, individual farmers, the community, or the state. Ethiopia has a long history of tree planting activities (FEPA, 2008). According to historical records, afforestation started in the early 1400s by the order of King *Zera-Yakob* (1434-1468). Modern tree planting using introduced tree species (mainly Australian *Eucalyptus*) started in 1895 when Emperor *Menelik II* (1888-1892) looked into solutions for alleviating shortage of firewood and construction wood in the capital, Addis Ababa (FAO, 1985).

However, the historic rapid expansion of large scale and community plantations occurred during the *Derge* regime, which resulted in the establishment of large scale plantations. Several fuel wood projects funded by Sudano-Sahelian Office of The United Nations (UNSO) and United Nations Development Program (UNDP) spread over the country with marked concentrations around big cities such as *Bahir Dar, Dessie, Gondar, Nazareth, Addis Ababa and Debre-Berhan* (FAO, 1985). These plantations were often been established for supplying the huge demand for wood products in Ethiopia.

According to WBISPP (2004), the area of forest plantations was estimated at 189,000 hectares in 1990 In 2000, the area of plantation increased to 216,000 hectares. Furthermore, FEPA (2008) argued that in 2005 Ethiopia's tree plantations cover reached around 500,000 hectares, out of which 133,041 hectares were established as community plantations between 1978 and 1989. The community plantations between 1978 and 1989 consists of the dominant species *of Eucalyptus species* and *Cupressus which accounts* (58%) and (29%) respectively. Other species include *Juniperus procera* (4%), *Pinus* species (2%) and the rest species accounts (7%). Moreover, Million (2011) described that in 2010 Ethiopia's total estimate of forest cover was 972,000 hectares. Of the total area of plantation forests, 190,400 hectares, or 20%, are classified as

commercial plantations that produce timber for sawn wood and poles. The age class structure contains large areas in old age classes reflecting the decreasing rates of plantation establishment in recent years. The remaining 80% are non-industrial plantations, mainly woodlots and trees on farm. These plantations produce fuel wood and construction timber, as well as Non-timber Forest Product (NTFPs).

On the other hand, the recent data on forest resources of Ethiopia reported in EPA (2003), puts Ethiopia among countries with forest cover of 10-30%. According to this report Ethiopia's forest cover is 12.2 million ha (11%), clearly underestimated compared to the IPCC definition. It further indicated that the forest cover shows a decline from 15.11million ha in 1990 to 12.2 million ha in 2002, during which 2.65% of the forest cover was deforested. The cover belonging to other wooded land remained constant in the same period. However, the compiled data by Million (2011), the current rate of plantation forest development is not encouraging and their management is also deficient. They are fragmented and mixed with many tree species with little or no commercial value. Moreover, the area of plantations in relation to total forest area of the country increased from 3.2% in 1990 to 3.8% in 2005 (FAO, 2007).

2.2.3 Community -Based Reforestation and Hillside Management Practices in Ethiopia

In Ethiopia participatory forest management is a new approach. Currently, Ethiopian government has a good stand to implement the programme of community based reforestation and hillside rehabilitation practice at local community through the project of Productive Safety Net Programme (under direct support and Public Work). Even if the project is launched in to practice particularly in severely degraded areas, it needs the State's legal, technical and administrative support for its implementation and success. Policies and laws of the Federal Democratic Republic and Regional governments still require improvements and favorably composed to initiate Participatory Forest Management in the country (PSNP-public work Annual Report, 2012).

2.3 Motivation of Community in Hilltops Tree Plantation Involvement, their Level of Awareness, Attitude and Sense of Ownership

According to the progressive report of (PSNP-public work Annual Report, 2012) in collaboration with assigned government officials of the project, most of the Public Work and Direct Support members of PSNP are aware of the socio-economic and environmental consequences of deforestation in project sites.

Moreover, Environmental and Social Management Framework (ESMF, 2009), explained that Ethiopia's long collective exercise to implement Participatory Forest Management (PFM) in several places has reduced individualistic outlook of community members and has encouraged cooperative spirit. However, not only peasant communities' awareness and confidence were enhanced by the PFM process, but the skeptical/doubtful attitude of local officials and field experts were much reduced as a result. Tangible benefits from the forest resource or livelihood improvement schemes (which are still in short supply) to members' would naturally raise the level of environmental awareness to the highest level (ESMF, 2009).

Moreover, FEPA (2004) report emphasized that awareness and education plays a critical role for the development and appropriate use of environmental resources in general and combating desertification in particular. Strengthening environmental education and raising the awareness of the society is one of the strategies required for combating desertification and mitigating the effects of drought. The report also argued that in line with awareness and education, the following major activities have been undertaken at all levels: incorporation of environmental science in the school curriculum; the establishment of environmental clubs; awareness creation through the media, publications and audiovisual materials; formation of environmental forums, and the celebration of public events such as World Desertification Day, Tree Day & the World Environment Day.

Although Patel et al. (1995); Mekonnen and Randall (2008); Amacher et al. (1999), studies have analyzed the behavioral factors underlying tree planting decisions and linked tree planting to fuel issues, too few studies detail the extent and characteristics of on-farm tree cultivation and management practices, the proportion of households in different regions that have adopted these

practices, and the households' rationales for doing so (Dewees 1995). Cooke et al. (2008) emphasized that more careful empirical analysis, particularly at the household level, is essential for the choice and targeting of fuel wood-related interventions. Moreover, Cooke et al. (2008) argued that security of tenure over the forest resource by communities is another tool to develop positive perception and commitment towards sustainable utilization of the forest resources in the area, but still there is another factor that assists responsiveness is the provision of training on technical and social matters. The level of awareness created among the members of local community in the project sites and the confidence they built is a sufficient example of the impact that the project had brought on members of communities (Cooke et al., 2008).

Cooke et al. (2008) further argued that the most important motivation for the participants is to regain and secure long-term use right over the forest resources around them directly or indirectly. However, hand in hand with strengthening of a sense of ownership, the participating communities' consciousness of the value of the forest has been raised, and local peoples' access to forest products to secure their livelihood and their need for income generating activities is producing some results. PFM program has contributed to stabilization of the resources basis itself: year round pasturage; fodder for bees; production of wild honey; unrestricted access of members to collect fuel wood from forests for domestic use, and supply of construction wood upon request. The PFM have also stimulated the development of new income sources and marketing structure (Cooke et al., 2008).

2.4 The Benefits of Households from Reforestation and Hillside Management Practices

Eric J. (2012), one can see that there are a number of benefits to reforestation. Those who want to contribute to the environment can learn more about replanting trees and eliminating over-deforestation. Planting trees will help to fight against global climate change and protect endangered species from extinction. It will also enable humans to better address world hunger issues as well as issues dealing with water usage and availability.

According to Eric J. (2012), the primary goal of reforestation is usually to regenerate forests, with the aim of restoring the environmental and economic benefits they provide, but reforestation activities can also provide a wealth of social benefits as well. Furthermore, growing of seedlings

to planting and cultivating them, community-based reforestation projects are not only to enhance the local environment of the people who live there, but also it offers many social benefits as well (PSNP-public work Annual Report, 2012).

2.4.1 Environmental Benefits of Reforestation and Afforestation Programme

The natural benefits of trees and forests are perhaps the first thing to come to our mind when we heard the word "reforestation, " The roots of trees serve as an extensive net that holds the soil in place, thereby preventing excessive erosion of the soil and its nutrients. The roots also absorb water from the soil, allowing the trees to act as natural storage tanks of freshwater, and slowing the loss of rainwater from the ecosystem through runoff (Eric J., 2012). Some of the water absorbed by trees is released into the air as water vapor through the leaves; this restores moisture to the atmosphere and helps maintain the water cycle in the local environment. In addition to regulating the water cycle, trees regulate local temperature by providing shade, cooling both the soil and the air below the upper branches. Perhaps most importantly, trees provide natural habitat for other life forms, as a home and a food source. In these and many other ways, trees stabilize and maintain the soil, biodiversity, and climate of the forest (Hoekstra et al., 1990). Forests can also improve food security for people living in and around them. For instance, the biodiversity that depends on trees for habitat and food are often the same living things that serve as natural pollinators for agricultural crops (Eric J., 2012). Furthermore, the biomass produced by trees - leaves, branches, the trunk and roots - all contain nutrients that, when decomposed, enrich the soil and improve the growth of other plants. The roots of trees also help to retain these nutrients in the soil by reducing erosion from wind and rain.

Therefore, government and non-government organizations are working with communities to promote agro-forestry, a method of agriculture that plants native trees along with crops. Agro-forestry greatly improves yields by providing the benefits of trees to the cultivation of crops - reduced erosion, increased nutrients, and regulation of the local climate (Hoekstra et al., 1990).

2.4.2 The Benefits of Supporting Global Reforestation and Plantation Programme

Mircea G. (2012) stated that supporting global reforestation projects is worthwhile for those concerned about environmental issues and reforestation has broad positive impacts on the global environment. As more people become concerned about protecting the natural environment, many are looking into the potential ways they can contribute to the global environmentalist movement. Among the programs that eco-friendly citizens should consider supporting are global reforestation projects. The positive impact of reforestation is substantial, providing a host of benefits to the chemical, biological, and social dimensions of the global ecosphere (Mircea G., 2012).

Forest trees serve as habitat space for many thousands of species which use them for food, shade, and shelter. Particularly in the Amazonian rain forest, deforestation threatens the existence of many of Earth's most spectacular plant and animal species. Reforestation projects which use indigenous tree species preserve natural habitat space for native insects, mammals, birds, and more. In addition, replanting native forests also ensures forest corridor space which allows forest animals to move freely between sections of mature forest. This prevents animals from being trapped in dangerous or resource-depleted areas, allowing them to survive even in the midst of regional deforestation or habitat loss. Moreover, many indigenous peoples are dependent on local, native trees for sustenance, relying on fruits, nuts, and forest animal species as a primary source of food. Because of this, deforestation threatens the livelihood of villagers in many parts of the world. Reforestation, then, alleviates the loss of food resources among native forest peoples (Mircea G., 2012). Ultimately, Mircea G. (2012) argued that there are many compelling reasons to support reforestation projects for those looking to contribute to an environmental cause. The world's forests are among its most important resources, and protecting them will go a long way towards fighting global climate change, protecting endangered species and their habitats, and addressing world hunger/ water availability issues.

2.5 Ethiopia's Government Experience of Policies and Laws on Participatory Forest Management Programme

Ethiopia has taken significant legal steps towards improved management of forests and may change the forest management regime in the country. According to Hoben et al. (1973), Ethiopia's Government experience of policies and laws on forest management and land tenure categorized in to three periods, i.e. land tenure access rules in the pre-1975 period, land tenure, access rules and resource security during the Derge period (1975-1991) and land tenure, access rules and resource management after 1991.

Though, due to the agro-ecological variations and specific sociopolitical developments in different parts of the country, pre-1975 land tenure in Ethiopia significantly varies across regions. However, two major kinds of land tenure systems prevailed in the northern and southern parts of the country respectively. In the northern highlands the *rist* system was the dominant form of land tenure system in which land was communally owned by descent groups and In the southern part of the country that was put under the political sovereignty of the central government at the end of the last century, the old traditional political, economic and social systems had been dismantled and replaced by new systems imposed by northern state (ILRI,2000).

Accordingly, the existing indigenous, largely communal, systems of tenure were abolished and the state became the sole proprietor of all the land in the occupied areas. Therefore, the largely "unoccupied" land was declared *yemengist meret* (state land) and the *qelad* system was introduced (Hoben, 1973; 1993; Bruce et al. 1992). Following the downfall of the imperial regime the 1975 land reform was introduced by the Dergue. The 1975 land reform is a major landmark in the history of the land tenure systems in Ethiopia. The reform nationalized all the rural land and abolished any form of private ownership of land by individuals or institutions. However, large-scale farms and forested areas were confiscated and turned into state or cooperative farms or parceled out and given to individual farmers (Dessalegn, 1984). But it was not long lasting and the introduction of a Mixed Economic Policy in March 1990 and the related changes in agrarian policy had abolished some of the elements of the former notorious agrarian

policy in rural areas. It relaxed the grip of the government on the rural people and allowed farmers to lease their farmlands temporarily. The prohibition on the use of hired labor was also lifted. This paved the way for the operation of informal mechanisms of having access to land and forest resources (Dessalegn, 1993).

2.5.1 Current Forest/Tree Tenure Systems

In 2005, the Federal government of Ethiopia issued a Rural Land Administration and Land Use Proclamation (456/2005), which was amended in 2007. The aim was to increase tenure security, improve productivity and avoid expectations of land re-distribution. The proclamation provides that farmers will have certificates of use right to cultivated land that can be inherited or passed to others. In the last 20^{+} years, the commitment of empowering local communities and decentralizing decision making to local government has been growing. This is one of the emerging forest tenure arrangements and it is conducive to local management of forest resources (Federal Negarit Gazeta, 2005). Forest legislation makes provisions for establishing community forestry and implementing participatory forest management (PFM). This is sharing of responsibility and benefits. A new management system has emerged and is now in place in which local people have defined control with rights and obligations over forest resources leading to sustainable use. In this regard, communities living in and around some forest areas have already shown interest in and capability to manage forests. However, the process is slow and local people often receive user rights only of more degraded forest resources (Federal Negarit Gazeta, 2005).

Furthermore, the new forests policy and forest proclamation (542/2007) is one such step. In this proclamation, besides the definition of forest ownerships (primate and state) and purpose (protection and production), decentralized forest administration is recognized (Federal Negarit Gazeta, 2007). In addition, FDRE constitution (1991) describes that land belongs to the state and citizens obtain only use rights. Moreover, Article 40 of the constitution of the Federal Democratic Republic of Ethiopia affirms that “The right to ownership of rural and urban land as well as of all natural resources is exclusively vested in the state and in the peoples of Ethiopia and land is a common property of the nations, nationalities and peoples of Ethiopia and shall not

be subject to sale or to other means of exchange." Accordingly, the natural forests are owned by the state and administered by regional agricultural offices after the decentralization of 1991. Therefore, all natural forests are not available for private ownership by law (FDRE constitution, 1991).

Nonetheless, the new forests development, conservation and utilization proclamation (542/2007), which is accompanied by the country's forest policy and strategy on forest development, provides the framework for making fundamental changes to forest resource management. Proclamation No. 542/2007 states that "… The sustainable utilization of the country's forest resources is possible through ensuring the participation of and benefits sharing by, concerned communities, as well as by harmonizing forest policy and programmes with those of other economic sectors, particularly with agriculture and rural development policy (FEPA, 2004). Therefore, according to the proclamation No. 542/2007, the existing forest management categories in public forests include:

- Forests in which extractive activities are strictly forbidden;
- User rights such as permits to gather grass and dead wood and NTFPs;
- Joint forest management (JFM) with communities and short term concessions granted to cooperatives to extract gum and incense resources from natural forests; and,
- Private woodlots managed by individuals.

2.5.2 Impacts of Forest/Tree Tenure on Poverty Alleviation and Sustainable Forest Management

ILRI (2000) study indicated that land used by peasants is characterized by lack of tenure security, which has aggravated the problem and constrained investments in land improvement measures. The existing tenure system does not allow farmers to use land as collateral to secure credits. The number of landless households is also increasing. The rate and level of deforestation is influenced by the security of tenure that local people possess related to forests and the level of rule enforcement related to the use of forest resources. On the other hand, Sustainable Development and Poverty Reduction Strategy Programme (SDPRP) issued in 2002 points out three priority areas for action: strengthening and expanding on-going efforts to address land

degradation, deforestation, overgrazing, soil erosion, loss of soil fertility and the disruption of the hydrological cycle, by giving special attention to highly degraded, drought prone and food insecure areas; strengthening regulatory and institutional capacity; and strengthening the measures currently under implementation to preserve, develop, manage and sustainably use biodiversity resources (FEPA, 2004). Moreover, Million (2011), explained that the conditions of forests, where a system of well known property rights for the local population is in place, are better than in those areas where local people play no part in forest management.

Stakeholders are more likely to invest in forest management when ownership of the land and forest resource is clear and secure. Uncertainty about tenure and future access to resources encourage over-harvesting in the short-term and discourage investments. Without control of the land or secured future use of the trees, forest resources are often rapidly liquidated to secure income that can be invested elsewhere (ILRI, 2002). The change in tree tenure through implementing PFM has had some positive impact.

Encouraging results have been obtained from areas where PFM is being practiced in terms of addressing forest related problems and economic benefits for rural communities. These include securing access to resources, realization of forest conservation, better protection due to a sense of ownership, ensuring sustainable supply of forest products, creating economic incentives, increased local decision-making, and good governance (Million, 2011).

2.6 Factors that Enhances/Motivate Community Participation of Reforestation and Forest Management Practices in Ethiopia

The primary factor that motivates the local community and private sector to plant trees is to generate financial benefits from their participation. The expected returns are usually sufficient incentives for plantation establishment and maintenance if they are coupled with financial security. Opportunities to borrow money with low interest rates from banks for investments in forest plantations are few and reduce the type of incentives in place (Million, 2011).

In addition to the aforementioned factor Million (2011) explained that the government of Ethiopia has allocated some plantations for communities to manage as well as key incentives

provided by the government and non-governmental organizations include the provision of free seedlings, secure tenure through land certification and public work financial support. Moreover, profit sharing agreements between the state enterprises and community groups which attracted many small holders to tree planting and provision of extension services to farmers and provision of tools to private nurseries are among the incentives used. So far sharing a certain percent of the profit from the total revenue generated from forest management encourages the farming communities to plant trees and protect the natural forest since their feeling of secured ownership will be high (Million, 2011).

2.7 Participatory Forest Resource Management and Its Sustainability

There are several definitions for sustainability. However some of the most common definitions are given. According to The United Nation World Commission as cited in EEA (2002), sustainable development refers to the means by which 'development' is made to meet the needs of the present without compromising the ability of future generation needs.

It also notes that sustainable use in rural context involves not only conserving biological diversity, fauna and flora, but also maintaining ecological functions such as soil quality, hydrological cycles, climate and weather, river flow and water quality. The World Commission on Environment and Development cited in EEA (2002) about sustainability as follows:

> Humanity has the ability to make development sustainable-to ensure that it meets the needs of the present without compromising the ability of the future generations to meet their own needs (EEA 2002).

Moreover, ILRI (2000) described that for the sustainability of forests/woodlots, a continuous supply of planting material in the form of seed and seedlings is prerequisite and secure land tenure and rights over crops, including the rights to manage harvest, transport and market produced wood. The frequency of contact and technical assistance from the development agents also contributes to sustainability of woodlot plantations. In communities living in lower potential areas, where agricultural development is difficult to achieve, development and management of community woodlots may be a key element of an effective development strategy.

A recent forest policy in Ethiopia provides farmers with tax incentives that are proportionate to the number of trees they plant. Those who planted more trees will benefit through reduction of taxes on land on an annual basis. In addition, controls are lifted on pricing and marketing (Million, 2011). Sustainability is dependent on the partnership of stakeholders: the community associations that were to maintain and protect reforested areas, local government units to provide manpower and financial resources to manage the sites and to provide technical support (Loretta A. &Minnie D., 2007). Additionally, NGOs pioneering special forest management strategies and the government has also introduced a national tree planting campaign every year all over the country in which every person is encouraged to plant trees, with significant influence on the attitude of the population on trees. Given such developments, it can be expected that the gloomy situation in forest management will not continue. Up-scaling such strategic forest management approaches backed with proper forest management principles (which is not the case in most instances now) should be able to change the current forest management regime (Million, 2011).

2.7.1 Institutional Resilience (Flexibility) as a means for Forest Resource Management and Its Sustainability

According to the baseline survey of FARM-Africa and SOS Sahel (2011), sustaining participatory forest management is dependent upon various factors, internal as well as external. First: the in-house (internal) cohesion that draws together with the degree of the participatory level of decision making, fairness of the decisions themselves, and accountability of leaders, maturity and ease of conflict resolution mechanisms are some of the internal factors that would determine stability and progress. Second: not less significant, and even in many cases determinant to sustainability of participatory forest management in the Ethiopian context, are external factors, i.e. consistency and adequacy of the Federal and Regional rural and forestry policies and laws, political commitment to the principle of participatory forest management, the extent of administrative, financial and technical support to communities engaged in Participatory Forest Management.

Furthermore, according to the evaluation report by Melaku & Tsegaye (2005), particularly the continued support of Development Agents and Agricultural Offices to the new principle of

participatory forest management is significant and it could be argued that once participatory forest management assume the legal status of cooperatives, they would face little difficulty to sustain themselves, one should not forget that in their formative days they are vulnerable to bureaucratic interference. While the district government officials have to be ready to assist participatory forest management even if still worrying is the financial and technical capacity of the Development Agents to follow up the implementation of the working rules of participatory forest management with the amount of budget from government and external donors (Melaku & Tsegaye, 2005).

In general, EEA (2002) argued that to ensure sustainable development of resource, those who have close contact with the resource must accept the objective of participatory forest management practices, unless the goal cannot be achieved without their participation, i.e. sustainable development needs the involvement of beneficiaries. Moreover, sustainable development can be achieved only if it is deeply rooted in every local neighborhood as success can only come through active participation from all corners of the community with individuals and organizations playing to their own particular strengths (EEA 2002).

2.8 Factor that Obstruct the Participation of Local Community in Reforestation and Hillside Plantation Activity

According to the environmental outlook of FEPA (2008), the historical trend of deforestation and degradation of forest and woodland areas continues, as a result of both the need for more land for human settlement, for wood products and conversion to agriculture; in addition, the domestic demand for forest product as well as the drive to exploit forest resources to boost export earnings puts added pressure on the forest and woodland resource, and increasing demand of the human population for more land for agriculture is likely to have a major effect on land availability for plantation establishment. Moreover, EPA (2003) report addressed that the new settlements in natural forested areas are increasing and resulting in the conversion of forested land into agricultural and other land use systems as well as the few remaining high forests, with a potential for the expansion of plantation forests, are threatened by pressure from investors who are converting the forests into other land uses. However, the need for sustainable forest management

to halt and reverse the loss of forests has been recognized and accepted by the government even if management efforts to-date has not yielded desired results (EPA, 2003).

Despite forest policies and strategies being in place, they have not been effectively implemented. There is a lack of a clear forest strategy for the country. A national level forest strategy and policy is developed but the regional states that owns and are responsible for managing and administering the forests have not yet developed policies and strategies for forest conservation and development (EPA, 2003). There are fragmented sectors that have the responsibility for forestry and environment issues. However, they are not well linked and there are poor research-extension linkages to promote forestry. A low level of technical backstopping to promote community involvement in tree planting is another constraint. A strategic land use planning that will facilitate and provide guidance on land use conflicts is planned to be established. In addition, private sector forest development will be encouraged through research and extension, provision of appropriate policies in the area of pricing, and by creating an increased sense of security of land and tree tenure, all of which, if implemented, would enhance opportunities for private sector investments in forestry (FEPA, 2008).

Melaku & Tsegaye (2005), argued that the factors governing sustainability of participatory forest management seems to require more attention and serious follow-up and the level of community awareness, individual capacity to handle comparatively complex legal and administrative undertakings of participatory forest management, and the ability to understand, draw and implement management plans are some of the critical factors that would determine sustainability. In addition Ethiopia government agricultural office employees were directly involved in the leadership, in the processes of participatory forest management formation and implementation of the management plan. In addition Melaku & Tsegaye (2005) emphasized that the control of the public sector in plantation development has had serious negative implications for plantation forest management and most forest plantations owned by the public sector, except under the newly established forest enterprises, have failed to effectively supply wood to the final consumers.

2.9 Forest Management Scenarios (Situations) and Future Forest Management Options in Ethiopia

Forests have multiple functions in today's society, and the principles of multiple objectives management of different forest categories is expected to achieve such expectations. Addressing the problems of deforestation and forest degradation will enhance ecosystem services that have knock-on effect on other sectors such as energy, and agriculture. Additionally, the demand for wood and non-wood forest and tree products could be satisfied. Through appropriate management, the various objectives could be optimally achieved, including enhanced carbon sequestration in forest resources.

Forest resources have not so far been managed properly, with few exceptions by profit making enterprises (e.g., Oromyia Forest and Wildlife Enterprise) and forest managed temporarily by NGOs in PFM. Consequently, deforestation and forest degradation continued unabated at an annual rate of about 2%. At 2% deforestation, about 700,000 ha of 'forests' will be destroyed every year, releasing nearly 110 million CO2 to the atmosphere. If this scenario is maintained, another important consequence is wood crisis. Further, the country will be forced to import more wood, with a significant implication on foreign currency reserve.

2.10 Impacts of the Productive Safety Net Program in Ethiopia on Tree Holdings of Rural Households

Based on the review of Ashenafi (2006), the PSNP is currently the largest operating social protection program in the sub-Saharan Africa outside of South Africa. It differs from previous food-for-work programs, in that it focuses continuously on selected households over several years and in that the explicit objective is that it will eventually be phased out. For this reason, its impacts and effectiveness are important, both in their own right and because they have implications for food-for-work programs elsewhere.

Moreover, Gilligan et al. (2008) examined that the PSNP public program launches through which food-insecure people are employed in public work and direct support for five days a month during the agricultural slack season. This is intended to enable households to smooth

consumption so that they will not need to sell productive assets in order to overcome food shortages. The public work and direct support is also intended to create valuable public goods; moreover, by reducing seasonal liquidity constraints, it is intended to stimulate investments as well (Ashenafi, 2006).However, there is a risk that the program discourages private investments, which are central to future production opportunities. If more labor is allocated to public programs, then less labor is available for on-farm production and investments. There is also concern that if assets are themselves used as buffers or as a way to spread risk, introducing a public safety net may reduce the demand for asset holdings and lead to reduced on-farm investment. According to Little, (2008), the problem of food insecurity in Ethiopia has, to a large extent, been addressed by annual emergency food aid from abroad. During the past two decades, Ethiopia has been the largest recipient of food aid in Africa and one of the largest recipients in the world.

Gilligan et al. (2008) explained that for the individual beneficiary, food aid has been characterized by uncertainty, poor timing and insufficient assistance. In 2005, to combat the persistent problem of food insecurity and to move away from the previous system of annual emergency appeals, the Ethiopian government and a consortium of donors (including the World Bank, U.S. Agency for International Development, Canadian International Development Agency and several European donors) launched a new social protection program called the Productive Safety Net Program (PSNP). With an annual budget of nearly US$ 500 million, the PSNP is a huge program, reaching more than 7 million Ethiopians (Gilligan et al. 2008). The PSNP has two components: public works and direct support. Public works are used to mitigate the impacts of climatic and food insecurity risks on chronically food-insecure farmers by providing employment to “able-bodied” laborers. It is the core component of the safety net program and creates a labor market for unskilled labor, primarily by involving them in labor-intensive, community-based activities. Direct support is a minor component and delivers assistance to members of the community who cannot participate in public works but need help.

The PSNP is one of several components of the Ethiopian government’s Food Security Program. The other components are subsidies for voluntary resettlement and a package of programs jointly called Other Food Security Programs (OFSP). OFSP includes a wide range of activities that

differ by regions, but the main element is a package of loans for agricultural and non-agricultural activities. The Federal Plan is that 30 percent of the PSNP beneficiaries should also be covered by OFSP. During the 2006–2007 seasons, 70 percent of OFSP funds were slated (putted down) for household packages (Sharp et al. 2006). Previous studies from Ethiopia have indicated that, although food-for-work programs have been crucial for saving poor rural households in times of food shortages, they may have negative impacts on agricultural intensification (Barrett et al. 2004), short-term soil conservation measures (Gebremedhin and Swinton 2003) and informal risk sharing (Dercon and Krishnan 2004). .

The basic principles of the PSNP include partnership, continuity, predictability, productivity enhancement, avoidance of dependency syndrome, integration with *wereda* (district) development plans, and flexibility. Partnership in this case means that the communities own the program and the government plays the leading role, supplemented by donors and nongovernmental organizations. Continuity refers to the need to make the safety net program available throughout the year, financed via development funds rather than emergency funds (PSNP, 2009).

Resource flows must be predictable year after year and the necessary resources should be ready ahead of time so that vulnerable households and concerned government officials can plan appropriately. Safety nets are intended to enhance productivity (in addition to meeting the immediate consumption needs of vulnerable households), prevent asset depletion of households, and create physical or human capital (PSNP, 2009). To discourage development of a dependency syndrome, able-bodied beneficiaries are required to provide labor in exchange for program benefits; in this way, the program will complement—not crowd out—household efforts to manage potential shocks and higher cost needs (Barrett et al. 2004). In addition safety net activities should also be integrated with wereda development plans to ensure that quality assets are built within the (necessary) budget allocated. These activities include public works, on-farm improvements, educational incentives, and environmental protection measures, such as tree planting on public land and soil/water conservation measures. Safety net resources should be flexible enough to offer a wide range of activities that fit the food security plan of the wereda and also ensure timely and efficient use of these resources.

CHAPTER THREE

CHARACTERIZATION OF THE STUDY AREAS AND RESEARCH METHODOLOGY

3.1 Geographical and Socio-economic Characterization of the Study Area

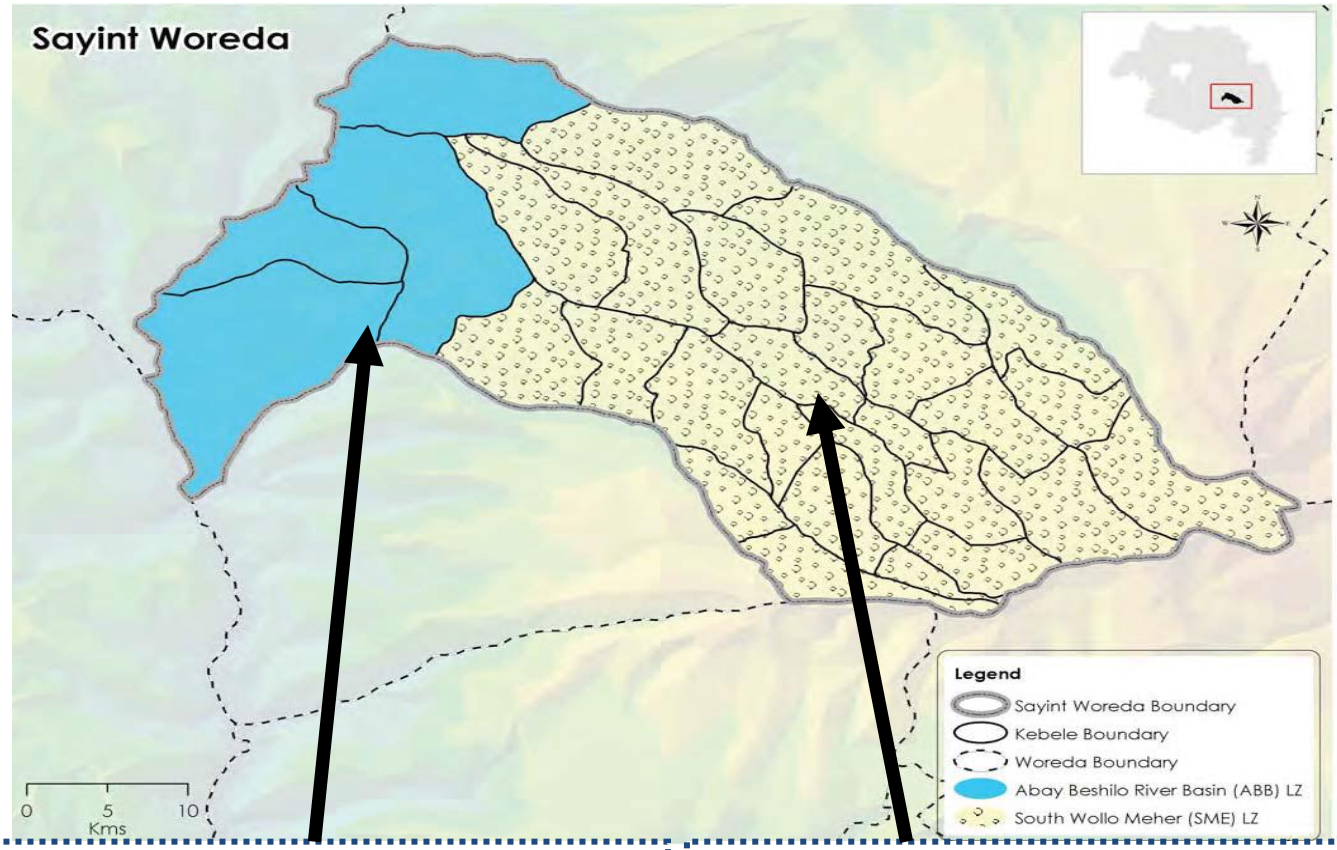
3.1.1 Location

Amhara Sayint Woreda is located in between 11°15′N - 11°.25'N latitude and 38°40′E - 39°.6'7"E longitude. Adjibar is the main town of the *woreda* 12°13'N latitude and 38°53' E covering a total land area of 1,437.30 square kilometers. It is situated at about 187 km distance from Dessie city in the South West direction and at about 587 km north of Addis Abeba. *Sayint woreda* has 31 *kebeles* situated in three different agro-ecological zones, i.e. *kolla*, Woina*dega* and *Dega*.

3.1.2 Demographic Characteristics of the Study area and PSNP Beneficiaries

Based on the 2007 national census conducted by the Central Statistical Agency of Ethiopia (CSA), the total population of the *woreda* was 193,616 in 1994. In 2007 the *woreda* has a total population of 144,972, an increase of -25.12% over the 1994 census, (i.e. the resulted negative population change of *Sayint woreda* was because of the establishment of Mehal *Sayint woreda* which was one of the administrative *kebele* of *Sayint woreda*). According to the 2011 sample survey data *Sayint woreda* has a population of 154,142; of whom 75,979 are men and 78,163 women. From the total population of *Sayint woreda* 5,474 or 3.55% are urban inhabitants. The *woreda* had a total of 34,999 households were counted in this *woreda*, resulting in an average of 4.40 persons to a household. Though, with an area of 1,437.30 square kilometers, *Sayint* has a population density of 100.86 persons per square kilometer, which is less than South Wollo Zone average population density of 147.58 persons per square kilometer. The majority of the inhabitants said they practiced Ethiopian Orthodox Christianity, with 83.59% reporting that as their religion, while 16.37% of the populations were Muslim.

According to PSNP (2010), the total numbers of *Sayint woreda* PSNP beneficiary households are 15,954 with a total of 41,700 household members. From the total number of household members 31,998 are beneficiary of Public Work and 9,702 are under Direct Support programme. Of which 85.22% are Orthodox Christian and 14.78% are Muslim.



Abay Beshilo Basin (ABB) Livelihood Zone

This zone suffers from chronic food insecurity due to erratic rains, small landholdings, degraded farmlands, infertile soil, pest infestation, livestock disease and malaria. Trade across the river valleys is minimal in the dry season and impossible in the rainy season. The middle and better-off barely produce more than their annual food needs. The poor /very poor are dependent on local labor, PSNP and firewood sales to meet their food needs.

South Wollo Meher (SME) Livelihood Zone

This is a chronically food deficient area. The main economy of the LZ is crop production (wheat, teff, red sorghum, barley and pulses) supplemented by livestock rearing (sheep and cattle). The main sources of cash for the middle and better-off are sale of crops, livestock and eucalyptus trees. Migrant, local/urban labor and the sale of eucalyptus tree are the major economic activities for the poor/very poor wealth groups.

Figure 1: Map of Sayint Woreda Livelihood Zone

Source: *Livelihood profile South Wollo zone Sayint Woreda; Amhara livelihood report 2007.*

Table 3.1: Socio-economic Features of *Amhara Sayint Woreda* PSNP Beneficiaries

Socio-economic Features of *Amhara Sayint Woreda* PSNP Beneficiaries			Agro-ecology			
			kolla	*Woina Dega*	*Dega* & *Wurch*	Total
Age	Under 30		1,909	4,102	7,146	13,157
	Above 31		11,455	12,622	4,466	28,543
Level of Education	Illiterate		4,878	5,049	2,382	12,309
	Read &Write		3,393	7,258	4,969	15,620
	Attending School		5,091	4,418	4,262	13,771
Marital Status	Single		662	2,184	816	3,662
	Married		12,314	14,109	10,729	37,152
	Widowed		266	504	116	886
Occupation	Crop Cultivation		4,015	4,443	2,031	10,489
	Mixed Farming		9,226	12,354	9,631	31,211
Religion	Christian (Orthodox)		12,182	16,125	7,230	35,537
	Muslim		1,059	672	4,432	6,163
Forms of PSNP Participation	Public Work	Male	5,824	6,636	4,609	17,069
		Female	4,689	6,173	4,067	14,929
	Direct Support	Male	1,163	1,467	1,251	3,881
		Female	1,565	2,521	1,735	5,821

Source: *Amhara Sayint Woreda* Agricultural Development Office PSNP Coordination office, 2013

3.1.3 Climate

Based on the Ethiopian traditional agro-ecologic classification, the study area categorized as three major agro-ecological zones i.e. *Dega*/*Wurch*, *woina dega* and *kolla*. The altitude of Amhara *Sayint* is ranges from 500 meter at the bottom of the canyon of Abay to 3,700 meter at the highest mountain of South Wollo Zone, i.e. Mount Amba Ferit. According to the 16 years (1996-2011) climatic data obtained from Adijibar (the administrative town of *Amhara Sayint Woreda*) weather station, the average annual rain falls 1165 mm with a maximum of 1649 mm in 2003 and a minimum of 734 mm in 2002. More than 76% of the total rainfall occurs between June and September (*kiremt* season). It is in this season that the major agricultural activities, such as plowing, sowing and weeding are performed.

About 15 % of the total amount of rainfall occurs in the months of March and April, and less than 9% occurs in January, February, May, November and December. Maximum annual temperatures occur in either March or April and ranges from 19.1 to 22.8 ^{0}C. Whereas; minimum annual temperature occur in either November or December with a range of 6.4 to 14.0 ^{0}C over the 10 years (2002-2011). However, as one can see from the climate record of the *woreda*, the following seasonal features of climate are observed:

- July, August and September are the wettest months with high rainfall low temperature
- December, January and February are the driest months with very low rainfall and high temperature.
- March and April are months with moderate rainfall and maximum temperature (i.e. the highest temperature record occurs at these two months).

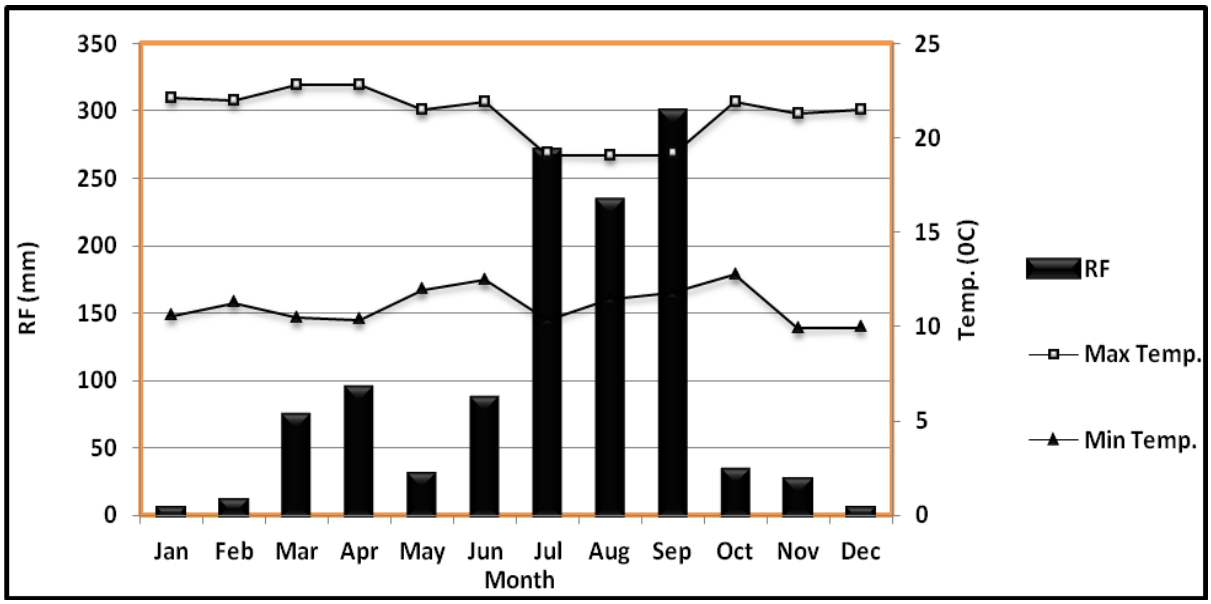


Figure 2: Mean monthly rainfall (RF), maximum and minimum temperature (Temp) of the *Sayint* Adijibar weather station for the years 1996-2011.

3.1.4 Land Use Pattern and Socio-economic feature of the Study Area

Out of 1,437.30 square kilometers total land of the *woreda*, the main land use types were divided in to three parts; they are categorized as cultivated, grazing land and bush & forest. (Table: 3.2).

Table 3.2: Land-use types, average area and their description in the two watersheds (adapted from *Sayint Woreda* ARDO, 2009)

Land use class	Average Area(Km^2)	Average Area (%)	*Description*
Cultivated Land	842.09	58.59	*Areas used for crop cultivation, both annuals, scattered rural settlement that and perennials including they are closely associated with the cultivated field. Some trees mainly eucalypts which are commonly found around homesteads*
Grass land	184.91	12.86	*Grassy area as well as bare lands used for communal and/ or individual grazing*
Bush land & Forest	192.10	13.36	*Areas covered with wood lot such as: Natural forest, plantation (i.e. Eucalyptus and forage plantation), shrubs, and bushes with little useful mixed woods.*
Degraded land/ area	218.20	15.18	*Areas which is highly degraded with no forest cover*

According to *Sayint woreda* ARDO (2009) evaluation report, the main source of economy in *Sayint woreda*s is crop production supplemented by livestock rearing (sheep and cattle). Crops are entirely rain fed, and the area suffers seriously low precipitation. The dominant type of crops Wheat (*Triticum vulgar*), Barley *(Hordeum vulgar*), Field pea (*Pisum sativa*), Bean (*Vicia faba*), Potato (*Solanumtu berosum*) Teff (*Eragrostis tef),* Onion*(Alliu bcepa*) and pulses. All crops are grown for both consumption and sale but the pulses are particularly aimed at the market, where as the dominant livestock in the areas are Sheep, Cattle, Horses, Bees and Poultry are the main livestock types reared in the *woreda*, and sheep are by far the most important, bringing a big slice of household incomes; further cash comes from butter from the cow's milk, hides/skins, chickens, eggs and honey. Moreover, Hailemariam (1999) explained that Oxen are commonly used as a draft power, but on very steep slopes hand tilling is necessary. The main conserved forest in *Sayint woreda* is *"Denkeko forest"* which lays between Mekaneselam, Mehal *Sayint* and *Amhara Sayint woreda*s with 13,452 hectare total land coverage.

Denkeko forest is associated with more than 174 different patches of indigenous tree species, home for more than 23 mammals, (such as: Gellada Baboon and Red Fox) and more than 77 different species of birds.

Starting from 2009 the Denkeko forest was legally established as national park called Borena-*Sayint* national park.. The Denkeko forest terrain is mostly mountainous and lies in the kola, woina*dega* and *dega* agro-ecology. Apart from the protected *Denkoro* forest, most hillside areas of *Sayint woreda* is highly deforested and the vegetation cover is scattered patches of eucalyptus planted by farmers and few dispersed acacia trees and some shrubs, but other indigenous tree species are almost none existent.

3.1.5 Topography

Two-third of *Amhara Sayint* topography is characterized as steep slope with an average slope of 30^0 and above particularly in the *kolla* and *Dega* agro-ecological zones. But, in relation to these two agro- ecological zones the *woina dega* is relatively gentle slope. However, with an alarming increase of population in the study area farmers were forced to farm the sloppy adjacent hillsides. This activity aggravated the degradation of hillside and reduced the bush coverage of the area.

3.2 Research Methodology

3.2.1 Research Methodology and Research Design

Due to the nature of the problem at hand, the intended research will be designed basically based on quantitative data of descriptive research approach. However, the survey method will be employed in order to assess the effectiveness and sustainability of community based reforestation and hill land management practices done by the support of Productive Safety Net Programme through Public Work and Direct Support in *Sayint woreda*, and its socio-ecological benefit for local community. Moreover, for triangulation and to enrich the study, qualitative data will be obtained via focus group discussion and informal meetings.

3.2.2 Sources of Data and Selection of the Study Area

The main data source is primarily which could be collected through socio-economic household survey on Public Work and Direct Support beneficiaries of Productive Safety Net Programme from three ecological zones (*kolla, woina dega and Dega/Wurch*) of *Sayint woreda* by means of face-to-face interviews using structured questionnaire, discussion with randomly chosen focus group discussion from each agro-ecological zones and interview with agricultural and environment offices and experts from PSNP coordination office. Moreover, secondary data will be used to supplement the information from documents prepared and documented in the study area as well as from different funding organizations of the project.

In addition, direct field observations and a number of informal discussions with village elders, farmer groups, and extension workers is conducted to cross-check and verify additional information to acquire significant information for the research.

3.2.2.1 Sample Size and Sampling Techniques

Sayint woreda has total population of 154,142 settled in 31 rural administrative *kebeles*. The population of the *Woreda* is situated in two livelihood zone, i.e. Abay Beshilo River Basin Livelihood Zone and South Wollo Meher Livelihood Zone with three different ecological zones i.e., *kolla, woina dega* and *Dega*/*Wurch*. Thus, five *kebeles* in Abay Beshilo River Basin Zone have the population of 22,406and twenty six *kebeles* in South Wollo Meher Livelihood Zone have the population of 131,736. In the *woreda*, all *kebeles* with total number of 41,700 are beneficiary of the PSNP project under Public Work and Direct Support to work five days a month in the programme of reforestation and hillside rehabilitation through watershed management and area closure.

For the purpose of comparative study, the researcher used two-stage stratified sampling and simple random sampling method to choose respondents from each agro-ecological zones of the study area. It is assumed to increase the representation of the sample to the population where the study was conducted. In the first stage the study area was classified in to two livelihood zones, i.e. Abay Beshilo River Basin Livelihood Zone (ABBLZ) and South Wollo Meher Livelihood

Zone (SMELZ). In the second stage, the two livelihood zones were categorized in to three agro-ecological zones i.e., *kolla, woina dega* and *Dega*/*Wurch*. The main reason that stratified the two livelihood zones in three agro-ecological zones for the purpose to know which agro-ecological zone showed sustainability of the PSNP activity at the time program phase-out. Moreover, purposive sampling method were used to select the sample *kebele* based on the convenience to collect data from the sample Productive Safety Net Programme beneficiary *kebeles*. As a result, six *kebeles* were selected from two livelihood zones with a total number of 3,101 beneficiary households. The sample *kebeles* are Saleda and Yegoda from ABBLZ and *Tedibabe Mariam, Gulmeda, Yedegat* and *Arbatensa* from SMELZ. Finally, informants were selected from six *kebeles* of the two livelihood zone through purposive sampling.

To determine the sample size, there were some factors that should be considered in the study *kebeles* such as, financial shortage, time constraint and inaccessibility of the study area. Accordingly, for formal interview the researcher considered five percent of the households, i.e.155 informants proposed to the survey. Moreover, taking five percent of beneficiary households in the study *kebeles* are believed to be significant because during pilot survey, it is understood that there was benefit homogeneity of the beneficiary households. Then, the proposed to be selected and will be covered by the survey assessment. Therefore, based on this calculation, proportionate numbers of informants were drawn from each *kebeles* who undertake the reforestation and hillside management practices. Moreover, table 4.2 briefly explains the sampling distribution of the study area.

Table: 3.3. *Sayint Woreda* Population by Livelihood Zone and *Kebele*

Livelihood Zone					
Abay Beshilo River Basin			South Wollo Meher		
LZ Population: 22,406			LZ Population: 131,736		
Population by *Kebele*:		Agro-ecological zone	Population by *Kebele*:		Agro-ecological zone
Amba Sembe	4,354	*Kolla*	Amba Ferit	3,544	*W/Dega*
Mese	4,073	*Kolla*	Arbatensa	3,025	*Dega*/*Wurch*
Yegoda	6,862	*W/Dega*	Anshi	4,767	*Dega*
Yemeka	2,536	*Kolla*	Ascha	4,095	*Dega*
Guameda	4,581	*Kolla*	Ashenga	9,258	*W/Dega*
			Beja	5,536	*W/Dega*

		Debtera	3,967	*Dega*
		Duate	6,600	*W/Dega*
		Durka	2,599	*Dega*
		Ewa	5,094	*Dega*
		Feres Bar	5,372	*W/Dega*
		Gedaba	5,297	*Kolla*
		Gulmeda	4,193	*Kolla*
		Hurmo	5,023	*Dega/Wurch*
		Keta Chila	2,827	*Dega*
		Lebot	3,852	*Kolla*
		Loza	5,294	*W/Dega*
		Melesanka	6,380	*Kolla*
		Saleda	6,292	*W/Dega*
		Segerat	3,445	*W/Dega*
		Sehot	5,213	*Dega*
		Tedbabe Mariam	5,611	*Kolla*
		Tengobalel	6,790	*Dega/Wurch*
		Waro	8,986	*Kolla*
		Weker	4,697	*Kolla*
		Ye*dega*t	3,979	*Dega/Wurch*

Source: *Livelihood profile South Wollo zone Sayint Woreda; Amhara livelihood report 2012.*

Table 3.4: Sampling Distribution of the Study Area

Livelihood	Sample *Kebele*	Agro-Ecology	Total Household (Pw and Ds Beneficiary)			Sample Household 5% of total hh)			Focus Group Discussion (20% of sample hh)		
			M	F	Total	M	F	Total	M	F	Total
ABBL	Saleda	*W/Dega*	315	262	577	16	13	29	3	3	6
	Yegoda	*W/Dega*	260	211	471	13	11	24	3	2	5
SMELZ	Gulmeda	*kolla*	316	214	530	16	11	27	3	2	5
	T/ Mariam	*kolla*	448	284	732	22	14	36	4	3	7
	Ye*dega*t-	*Dega/Wurch*	283	169	452	14	8	22	3	1	4
	Arbatens	*Dega/Wurch*	240	99	339	12	5	17	2	1	3
Total			931	619	3,101	93	62	155	18	12	30

3.2.2.2 Population and Survey Population

All households living in the six *kebeles* of the two livelihood zones in a period of 2012/13 were considered as population. Survey populations are the sample population of individuals that registered as a beneficiary of Public Work and Direct Support by Productive Safety Net Programme.

3.2.2.3 Data Gathering Tools and Techniques

3.2.2.3.1 Primary data collection technique

Before comprehensive data collection, interview was carried out and pilot survey conducted in the form of participant observation and focus group discussion. Informal survey through open-ended and non-structured questionnaire will be done. To test the questionnaire and also get preliminary information of the research result, some individuals' shall be interviewed based on check-list of questions structured comprehensive questionnaires.

In addition, some questions were prepared for PSNP experts and district agricultural experts. Thus, open-ended questionnaires distributed to two PW and PSNP experts and one to the district agricultural office expert. Moreover, focus group discussion (FGD) shall be arranged with six PSNP beneficiary households. The FGD accounts 20% of the sample households and shall be conducted during the time of payment for beneficiaries However, it will be helpful to the group that does not freely forward the information, so that the information is not used in the analysis but used only as benchmark.

Cognizant of considering this information, the comprehensive and the structured questionnaire was prepared and then face-to-face interview with those selected sample households beneficiaries was conducted.

3.2.2.3.2 Secondary data Collection Methods

The types of secondary data needed for the study and their possible sources are first listed and summarised by a table. Those available data were gathered before and during the fieldwork from

the identified sources. The secondary data include aerial photos, topographical maps, soils and land use study reports, weather data, policy and strategy documents, resource inventories and information on extension services. Different information's were mainly sought at different levels of the government offices.

3.2.3 Methods of Data Analysis

In this study, descriptive statistics was used to analyze the effectiveness and sustainability of community based reforestation and hillside management practices and looking for the community awareness and their benefit they will get from the programme. Therefore, the study will use frequencies and percentiles as well as tables to describe the results.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4. The Role of Productive Safety Net Programme to achieve its far reaching objective and to promote the Sustainability of Local Beneficiary Community

In 2003, the Government of Ethiopia together with development partners aimed to formulate an alternative to crisis response to support the needs of chronically food insecure households and to develop long-term solutions to the problem of food insecurity. And finally this created a Food Security Programme (FSP) that aimed at shifting households out of the emergency relief system while also enabling them to sustainable food security. It is under the FSP, in 2005, the government of Ethiopia started a major new initiative - the Productive Safety Net Programme (PSNP). Currently, the activity of Productive Safety Net Programme (PSNP) is at its third phase (i.e. from January 2010 to December 2014), the phase will further strengthen implementation of the PSNP to achieve the objectives in all programme areas and maximize linkages with other elements of the FSP to promote graduation from food insecurity (PSNP, 2012).

According to PSNP (2012), the Productive Safety Net Programme is implemented in *woreda*s identified as chronically food insecure areas by the Federal Democratic Republic of Ethiopia government. Their eligibility for the PSNP was defined by the frequency with which they required food assistance in the ten years preceding the design of the PSNP (the ten years up to 2004). Within each *woreda*, only *kebeles* that were persistently food insecure were included for regular PSNP transfers, but all *kebeles* in a PSNP *woreda* are eligible for transitory support through the Regional Contingency Budget and Risk Financing (Sharp et al. 2006). The timing of PSNP is not limited to specific months of the year, in order to meet client needs. PSNP Public Works can therefore be implemented at any time of the year.

The two main considerations for timing of Public Works were: (1) to correspond with the times when transfers were needed in specific localities, including addressing transitory needs. (2) To avoid competition with cropping seasons and other important times when competition for client labor might interfere with client livelihoods. The bulk of public works sub-projects should be

implemented during the agricultural slack season to avoid interfering with the peak period of labor demand in the agricultural cycle (PSNP, 2012).

In the study area PSNP is actively facilitating the local community to make them self sustain and to build their household assets through the program of intervention in different aspects of natural resource management activity. The study area was highly degraded and suffered from chronic drought and poverty due to deforestation and degradation of hillsides. As portrayed in figure 2, PSNP's role in rehabilitation and protection of such hillside degradation through area closure and control of steep slope areas which have a slope of above 30^0 in order to free the area from any kinds of human encroachment shows greater improvement as compared with previous works of other NGO_S and government Agricultural and Environmental protection program. For instance, during the field survey it was observed that, various measures were taken to control hillside degradation and to reduce total amount of runoff from hillsides through proper conservation measures such as, check dams and vegetative measures were conducted.

Figure 3: Hillside Area Closure

The work of Productive Safety Net Program (PSNP) on rural households' holdings of forest assets/trees community forestry is highly encouraging and admirable. In fact, households that participated in the program increased the number of trees planted under community forestry program and private tree holding of plantation around their home and farm area. According to the response of informants in the study area, Productive Safety Net Programme is the vehicle to meet the forest need of the local community for commercial as well as environmental benefits.

Therefore, result suggests that there is increased forestry activity and reduction of degraded areas as a result of PSNP activities. Based on the information obtained during researcher field

observation, the situation of reforestation and identification of degraded hillsides for area closure development is encouraging and their management through hillside terracing is also well-organized. But, the forest plantation sites are fragmented and mixed with many tree species with little or no commercial value with the exception of eucalyptus tree. In the study area, the rural communities depend on eucalyptus tree for fuel wood, heating and lighting and there are no other energy alternatives that can be used fuel wood. Further construction materials in the rural areas depend on wood from small holder forestry woodlots with no much alternative from natural forests/woodlands.

4.1 Believes of PSNP Beneficiaries about Community-Based Participatory Forest Management and Hillside Rehabilitation Programme

In response to the decline of forest cover and hillside degradation the PSNP actively worked with primary purpose of recovering forest coverage of the area and reduce hillside degradation. In *Amhara Sayint Woreda* PSNP prominently gave support all the 31 *Kebeles* under the two major components of the programme, i.e. Direct Support (DS) and Public Work (PW). In principle the intervention of projects and government in the area of reforestation and hillside degradation could be in nursery development, plantation of seedlings, protection of existing trees and hillside bush lands and identification of highly degraded steep slope areas and make it free from any kinds of human encroachment. This is done for the purpose of bush regeneration and rehabilitating its soil fertility in areas of identified hillsides. However, after the launching of PSNP the entire informants reported that they have given attention to nursery and plantation of trees in severely degraded areas as well as in the form of watershed management along side of their farming area.

Based on the data gathered from four different agro-ecological zone, i.e. (*kolla*, *woina dega* and *Dega*/*Wurch*) 85.9, 66 and 71.8 percent of informants, respectively, reported that the intervention of PSNP in reforestation and management of degraded hillside created very great accountability for the sustainable community forest plantation and to ensure their household assets. In addition to this, the local community believed that the Community-Based Participatory Forest Management (PFM) and Hillside Rehabilitation project under PSNP support ensured the

empowerment of the whole community rather than individual beneficiary. In this regard the researcher during his focus group discussion asked the PSNP beneficiaries about the advantage and disadvantage of the whole community empowerment by the project.

As a result, almost all respondents from *kolla, woina dega* and *Dega*/*Wurch* reported that community empowerment of the project created great sense of belongingness towards the works of the project as well as they believed that the sustainability of the project activity is unquestionable.

On account of this, about 62 percent of *kolla*, 89 percent of *woina dega* and 69 percent of *Dega*/*Wurch* respondents stated that the launching of PSNP financial, material and training support developed their sense of trusteeship for the far reaching objective of the project. In contrast with other two agro-ecological zones, the *woina dega* respondents developed more sense of trust on the program. Because, based on the information received from discussion indicated that the first pilot project of the programme was started in the *woina dega* areas.

4.2 Community-Based Participatory Forest Management and Degraded Hillside Rehabilitation V_S Community interest

Community interest is related to ownership right and accountability or moral obligation which is a dominant motivating factor in forest management and hillside rehabilitation activity. In fact, as it is depicted from respondents data, 47 *kolla*, 43 *woina dega* and 29 *Dega*/*Wurch* respondents i.e., (74.6, 81.1 and 74.4 percent respectively) claimed that they have positive attitude and interest towards Community-Based Participatory Forest Management (PFM) and rehabilitation of degraded hillside, because they feel that they are accountable to it. The most important engine in initiating people to forest management and hillside rehabilitation is the benefit they have been granted, awareness of people to the advantage of the existing forest and disadvantage of its destruction and security of forest tenure. On the other hand 36 respondents (i.e. on the average 23.2 percent from total respondents) believed that if all these are satisfied but if they are not accountable to the resource by the law, many problems will rise. They themselves could use the forest unwisely so that there could be competition within communities in using the forest

excessively and started to farm hillsides to solve their problem of limits on farm land expansion, which in turn leads to severe exploitation of natural resources.

4.3 Community Level of Awareness and Perception towards Participation in Natural Resource Management

Understanding farmers' perception to the occurrence of reforestation and degraded hillside management is vital to take appropriate action in the planning of natural resource management. Based on the information received from focus group discussion in the study area, almost three-forth of the participants are very well aware of the importance of increasing the forest cover of their locality and problems of hillside degradation. However, all the farmers that are either participated in the group discussion or interviewed reported that the main problems related to deforestation and land degradation are lack of awareness and perception towards the far reaching consequence of the problem.

In addition, the people were asked what factors initiate them to participate in forest management. Out of all the respondents of *kolla*, *woina dega* and *dega*/*wurch*, 62.5, 56.6 and 41 percent, respectively, expressed that understanding the importance of forest and the effect of the destruction are the major factors that encouraged them to participate in PFM actively. According to the data collected, 93.3 percent of the respondents agreed that the forest has paramount importance for them. When they were asked during the program of discussion whether they were aware or not about the adverse effect of deforestation and hillside degradation 87.3 percent of *kolla*, 77.4 percent of *woina dega* and 64.1 percent of *dega*/*wurch* respondents information showed that they knew about the severity of the problem very well, but on individual base they didn't have concern for its effect on the future generation. According, to respondents information from the above three major agro-ecology *Dega*/*Wurch* respondents have relatively low awareness as compared with *kolla* and *Woina Dega*. This is because *Dega*/*Wurch* areas of *Amhara Sayint Woreda* are commonly covered with short bushes and grasses.

Some of the people who lived around the reforested areas explained about the past situation of forest in their environs were covered by forest types of different indigenous plant. On account of this, the elderly people information of the study area at the time of discussion revealed that the

prominent cause for the clearing of forest was shortage of farm land particularly for young individuals who were children during the time of land alienation and absence of alternative energy source for their household consumption. Additionally, they explained about kinds of wild animals that had been living in the forest nearly a decade or so ago and currently most of these animals extinct from the previously forested area and some of them are inhabited in the nearby church compound. Some of them remember that their parents told them about extensive deforestation and the amount of forest off-taken day to day and year after year. The most important thing that strengthened the idea of elderly inhabitants' information of the study area which was covered with forest is that the presence of huge indigenous forest in and around the church and the occurrence of old aged plant species in the farm land.

Moreover, when informants were asked about their knowledge and participation in the programme indicated that 87.4 percent of *kolla*, 90.6 percent of *woina dega* and 68 percent of *Dega*/*Wurch* respondents have developed knowledge about effect of deforestation and hillside degradation that created strong impact on their participation in forest management. Thus, the awareness created about ecological benefit of forest and effects of deforestation initiated them to participate actively and practice their recommendations. But, in remote areas, some people burn the protected forest/bush to expand farmlands because of lack of awareness about the direct and indirect advantage of forest/bush in their life. Generally, most of the informants have got better information and awareness about importance of forest and impact of deforestation, hillside degradation and the effect of forest clearing is the most problematic variable in many parts of the country.

Based on the information surveyed from respondents of the study area, almost all of the respondents agreed that they are reduced unnecessary forest clearing and stopped to conduct slash and burn activity of hillside for the purpose of farming after they became the beneficiary of PSNP. According to the result from discussion, the major factors that initiated them to reduce cutting of forest is the result of direct financial support and benefits from forest product in *kolla* and *woina dega* agro-ecology, and awareness creation is in *Dega*/*Wurch* agro-ecology.

In addition to this, the survey result has indicated that most of the communities have positive attitude or perception to Community-Based PFM. The survey result indicated that on the average 98 percent, i.e. 152 respondents have very high perception that Community-Based PFM is an important solution to alleviate the destruction of forest and hillside degradation; whereas 2 percent respondents of *Dega*/*Wurch* believe that Community-Based PFM have low importance, because it limits the expansion of their farmland.

However, the informants were asked to state the major reasons why PSNP beneficiaries feel Community-Based PFM are an important solution for forest conservation and hillside rehabilitation. The response mentioned by informants is indicated in the table below.

Table 4.1: Frequency distribution that shows Perception of PSNP Beneficiary towards in Forest Resource Management and Rehabilitation of Hillside Degradation

Perception of PSNP Beneficiary	No of Respondents			Percent %
	Kolla	*Woina Dega*	*Dega*/*Wurch*	
Very high	47	38	30	74
High	16	15	6	24
Low	-	-	3	2
Total			155	100

As it has been shown in the table above, 98 percent of the respondents were reacted with positive perception about community-based PFM. This is because they have seen encouraging change as a result of PSNP approach in forest conservation as well as hillside management activity. They have mentioned that the reduction of deforestation rate, the improvement of forest regeneration, and the growing of new young seedlings are the major reasons why they have developed positive view to the approach. Moreover, they are impressed with the forest landscape restoration in their surroundings and the regeneration rate of deforested trees and the growing of seedling under the existing trees in turn which is responsible for rehabilitation of degraded hillsides.

Furthermore, in both agro-ecological zones the empowerment and accountability of community-based PFM given to the community are the two reasons in which 70.1 and 29.9 percent of the respondents positively perceive community-based PFM, respectively. Therefore, people can have positive view towards externally imported program if and only if they are empowered on the

resource, and willingly be accountable for that resource. Moreover, the need to see better change or the change to come after the program has been implemented as an important influencing variable.

The belief of the people under the program of PSNP participation is not limited to short-term effect. Rather, most of them have strong belief on the sustainability of existing forest management in the long run. They were also asked whether the program of PSNP forest management and hillside degradation approach could be a vehicle for sustainable forest life even the study area is situated in different degree of land slope. Accordingly, about 77 percent of respondents strongly believe that community-based PFM approach of PSNP is a means of attaining sustainable forest resource and restoration of degraded slopes. On the other hand 5 percent of respondents told they *do not know* while 23 percent of respondents agreed *on conditional basis*.

According to these 23 percent of respondents noted above, the necessary conditions that ensure the sustainability of forest management are the trust of government, NGOs, the whole community, and other stakeholders on the project, and their involvement in follow-up process, and support them in controlling, regulating and enforcing the rules and regulations. Moreover, one of the key informants during focus group discussion stated that unless those people in which their livelihood depend on hillside farming didn't get yet another option to live on, therefore I have doubt that community-based PFM approach and protecting hillside from human encroachment may not become a vehicle for sustainable natural resource management.

In addition to community perception on community-based PFM activity, cultural value, customs and beliefs of local communities in forest management and utilization are an important factor for sustainable use and conservation. In the study area according to respondents view there is an encouraging cultural value towards forest management and protection of degraded hillsides. Therefore, table 4.2 shows the significant contribution of culture on forest management activity.

Table 4.2: Frequency distribution that shows the cultural value or belief of the community towards forest use

Cultural influence of community on forest use and management	No of Respondents			Percent %
	Kolla	*Woina Dega*	*Dega*/*Wurch*	
Protecting forest from damage	23	33	19	48.4
Sustainable use of forest resources	16	18	14	31
Using more forest for personal consumption	16	2	6	15.5
No concern about forest	8	-	-	5.1
Total	155			100

Based on the information obtained from informants, there is diversified need of community forest usage depending on the level of cultural influence on forest use and forest management. Thus, protection of forest from damage and sustainable use of forest and forest product is the common agenda for all inhabitants of the *Woreda*.

Thus, 79.4 percent of respondents of three major agro-ecology agreed that their cultural value forced them to incline towards protection of forest from damage and using forest in sustainable manner due considering the need of forest and forest product for future generation., whereas 20.6 percent respondents didn't have concern for forest protection and sustainable use, instead they had interest to use forest resources beyond their personal consumption.

According to the data from table 4.2, about 91 percent of respondents of *woina dega* and *dega*/*wurch* agro-ecology developed concern about the paramount importance of forest plantation and their culture also helped them to have a great concern for it. Whereas, 15.5 percent of *kolla* agro-ecology respondents showed willingness to use forest resource as much as their need for personal consumption and they do not have concern for it. At the same time as respondents manifest their view on focus group discussion, for the question why some of *kolla* respondents have little concern for forest management activity as compared with *woina dega* and *dega*/*wurch* respondents? Kola informants forwarded that they do not have any alternative forest resources like, Eucalyptus tree that is predominantly grow in *woina dega* and *dega*/*wurch* agro-ecology for household consumption and market. Because of such conditions, they are forced to use indigenous forest and bushes to fulfill their concurrent needs.

Generally, due to encouraging cultural practice and custom in *woina dega* and *dega*/*wurch* agro-ecology the current situation of increasing forested areas and woodlot development shows their concern for environment in accordance with the direct and indirect benefits from forest product and forest resources.

4.4 Community Forestry and Hillside Situation of the Study Area and Beneficiaries Level of Participation

4.4.1 Present Situation of Community Forestry and Hillside Management Practice of Amhara Sayint Woreda

During field observation I saw dramatic change on the current forest situation and methods employed on degraded hillsides of the study area. In the past two decades, *Amhara Sayint Woreda* was one of the chronically food insecure and highly degraded area of Amhara Regional. On account of this, the farmers were suffered from poor crop production and lack of farm land accentuated by fast population growth. So as to alleviate their concurrent problem the people were forced to farm the adjacent hillsides and started to deforest areas which were covered with forest. The *Woreda* Agricultural and Rural Development Office were also unable to control the increasing need of farmer for farm land expansion and their environmental unfriendly actions.

Figure 4: Eucalyptus plantation site

To solve the problem of forest clearing and hillside degradation, the *Woreda* Agricultural and Rural Development Office designed to resettle inhabitants of hillside by moving them to around 'Metema' on voluntary bases.

Such action was locally called as '*Terara Mawured',* it refers to the relocation of people who was settled on above 30^0 hillside areas. According to Kassahun B. (2003) article on FSS bulletin, the current planned resettlement program of Ethiopia is viewed as a major and essential component endeavors aimed at addressing the paramount problem of food insecurity and an instrument for overwhelming pressure on the fragile resource in the highlands of Ethiopia and it is a means to reduce continued hillside degradation. According to ESMP (2009) operational summary, individuals who didn't have the willingness to depart from their homeland were put under the program of PSNP and Household Asset Building Programme (HABP). However, the objective of launching HABP was to make self-sufficient of farmers through provision of credit with little interest rate to build their household asset through raring high yield cattle around their home.

As a result, with the prominent financial and training support from PSNP and HABP *Sayint woreda* Agricultural and Rural Development Office started to prohibit human intervention from forested areas and hillsides which have a slope degree above 30^0. Therefore, based on the evaluation report of *Sayint Woreda* ARDO Report (2009), the office designed to plant 3 million seedlings of indigenous and exotic plant species per annum on degraded hillsides and prepared sites for plantation. The exotic plants were environmental friendly and used as forage for beneficiary farmers livestock at home. Initially, the program was designed to meet the objective of increasing forest cover and to restore the soil of degraded hill sides. But, it creates paramount importance for PSNP beneficiaries that were discussed under the topic of respondents benefit from the programme.

According to the data obtained from *Woreda* Agricultural and Rural Development Office, the community forestry situation and hillsides protected for regeneration accounts two-third in *kolla,* one-fourth in *woina dega* and almost half of *dega*/*wurch* agro-ecological total land mass, (i.e. 556.2 sq.km/38.7 percent of the total area of *Amhara Sayint Woreda*) with the dominance of Eucalyptus tree plantation in *woina dega* and *dega*/*wurch*. On account of this, the data from Agricultural and Rural Development Office showed that *Sayint woreda* is the dominant supplier of Eucalyptus wood for the nearby *woreda*s of '*Mekane Selam, Legambo, Worehimeno and*

Wogidi'. So far the writer observed a collection of private Eucalyptus wood to sell for housing and fuel for the above listed *woreda*s during field observation particularly in *woina dega* areas.

4.4.2 PSNP Beneficiaries Level of Participation in Community Forestry and Hillside Management Practice

Active community participation is an essential instrument to achieve the expected outcome of the programme. In the forest plantation, conservation and protection of hillside activities, the project officers give technical support and consultation to the communities in addition to the financial and material support from PSNP program. They recommend the communities how to protect the forest, plan their activities, and use the forest rationally or economically. However, the programme beneficiaries have positive response towards what the project coordinators and *Woreda* Development Agents (DA_S) recommended to do. Table shows the level of community's participation in reforestation and hillside management activity.

Table 4.3: Frequency distribution that shows Beneficiaries Level of Participation

Level of Participation	No of Respondents			Percent %
	kolla	*Woina Dega*	*Dega* & *Wurch*	
Fully and very active	47	40	24	71.6
Partially and less active	16	13	11	25.8
Not participant	-	-	4	2.6
Total			155	100

Based on the data obtained from table 4.3: out of the total selected sample population, 111 71.6 percent of respondents agreed that they are very active and fully practiced the recommendations given by the project coordinator/Development Agent/ and 25.8 percent of the respondents have partial participation, while 2.6 percent is not doing their work with the recommendation of project coordinator. At the time of discussion with targeted groups 4 respondents from *dega*/*wurch* agro-ecology said that 'we have better understanding and copping mechanism for doing or not doing plantation activities than the project coordinator. Because, project coordinators and Development Agents have only knew the theoretical concept but we acquired ample skill from experience'. In fact, it should not be thought that all individuals are equally practicing in all activities of forest management.

Some of the areas that people involve in forest management and hillside restoration program are site preparation, nursery, plantation, protecting forest, terracing and attending meeting. When the informants were asked how frequently they were attending meetings. Out of 155 informants covered by this survey, 53.5 percent of the respondents from both agro-ecology said that they always attend meeting while the rest 46.5 percent attend meetings partially. Moreover, they were asked to evaluate the degree of their participation in collective action in afforestation, forest conservation and hillside rehabilitation activity through reforestation and area closure. Therefore, 62, 80 and 13 percent of the respondents have high, average and low level of participation respectively, as they compared themselves with the participation of others.

In addition, when the beneficiaries asked to describe their advantage of attending meetings with project coordinator and Development Agent, 148 respondents (95.5 percent) responded that the meeting was the best means to share experience and acquire skill from beneficiary of other agro-ecological zone, while 7 respondents (4.5 percent) argued the advantage of attending meeting as the best means to receive payment to fulfill their short-term financial need.

4.4.3 Community Source of Information about Deforestation and degradation of Hillsides

Information available on the existing forest resource base and amount of degradation is not reliable. It has to be a priority for Ethiopia to generate reliable and regular information on forest and tree resources including plantation forests.

As it is clearly described above, in the study area the project owner or PSNP played a great role in disseminating information and teaching people. In fact, there are staffs involved from agricultural office and represented from the programme as project coordinator; no one considered them as part of government organ. Therefore, according to respondents of given agro-ecological zone, 99 respondents (63.9 percent) revealed that *Woreda* Development Agents gave little information and 46 respondents (29.7 percent) agreed that the project coordinators gave information among beneficiaries particularly for local representative farmers, whereas only 10 respondents (6.4 percent) from *woina dega* agro-ecology ‘refused to accept the information passed from Development Agents and project coordinators, because they decided that the

information disseminated from them was simply general information about country's forestry situation that has little importance to alleviating their current situation'.

Based on the general consensus of discussion with selected focus groups, school and mass media are the two very important potentials of information dissemination; but only those educated and skilled farmers have access to it. Similarly, even if they have the chance to attend formal education at school, schools didn't deeply incorporate the concern about the severity of deforestation and degradation of land in their curriculum. In addition, teachers in rural areas have low knowledge and skill level about environmental degradation. For instance when we see the association between education level and knowledge about the effect of deforestation and hillside degradation, out of 155 respondents of all agro-ecology, a total of 105 respondents from three agro-ecology, i.e. 39 *kolla*, 41 *woina dega* and 25 *dega*/*wurch* of illiterate respondents only 25.4, 43.4 and 43.6 percent, respectively, knew the effect of deforestation from adult education and mass media release. But those respondents from 63*kolla* 38.1, 53*woina dega* 22.6 and 39*dega*/*wurch* 35.9 percent who got formal education have better information about forest from the mass media. Accordingly, out of 155 sample population 50 respondents had access to formal education. Thus, from both agro-ecology who had access to formal education, 29 respondents attended from grade 1-4 and 21 respondents attended from grade 5-8 had access to information from the media dispatch. However, their access to mass-media helped them to have better understanding to know the situation and sustainability of the project even it will phase out its activity

Again, less number of people learned the effects of deforestation from school. But there is increase in the number of student of farmers who attend school currently. This can be considered as the best means to transform information from school to parents through attendant students. Moreover, from 29 respondents who attended school from grade 1-4, only 25.6 percent of them had knowledge about the effect of deforestation from school discipline. Therefore, disseminating information and awaking people in school and using mass media are important sources of forest management and hillside rehabilitation program for people who are better enlightened than non-educated. Thus, education is one of an important element that helps to relieve forest from destruction.

Regarding the information level about the problem of deforestation, lesser number of the respondent have information about the extent of deforestation going on just around their locality before the PSNP approach was not adopted and when the forest plantation and hillside management was conducted under community-based participation. Accordingly, there is information gap over the respondents based on their educational level. But, there is a positive relationship between educational level and the knowledge of people about the extent of deforestation in their surroundings.

Beside the information result from the study area, based on the current situation at national level there is no reliable and up to date information on forest and tree resources regarding areas, locations, species, wood volumes and growth. The status and trends of forest industries is not well documented. Organizing and documenting reliable information is helpful for improving and planning the management of forest resources and monitoring changes. This study is therefore conducted with the objective to address these deficiencies in information.

Therefore, the future plan will take into account organizing and documenting reliable information on amount of degradation and forest resources of the country through data base establishment and limit the involvement of the public sector in forestry and enhance the involvement of the private sector in forest plantations. In addition, the government has to facilitate risk management strategies and improve the flow of information, including technical packages.

4.4.4 Community Experience about the Effect of Deforestation and Hillside Degradation and their Level of Understanding about its Effect

The presence or absence of vegetation cover is a main factor to the ecological situation and natural balance of the surrounding. According to different environmentalists and scholars view, deforestation and hillside degradation are the main cause and consequence of rainfall variability, declining of productivity and shortage of water supply which in turn aggravated the situation of drought and poverty.

Based on the view of respondents at the time of discussion, most of them agreed that they do not have the need to see the high deforestation and degradation in their locality; they would rather like to see the improvement of the forest and plantation activity. They have bad feeling towards destruction of forest resource and hillside degradation. Accordingly, 52.8 percent of respondents from woina*dega* agro-ecology explained that they have lived in the project site for a longer period of time early from their grandfathers and they had better understanding of severe deforestation and hillside degradation before the launching of PSNP project. So they are very much concerned about the forest but they do not have power to save it from destruction. According to them their active participation emanates from the love they have for the forest. This shows living with the forest for a long period of time in their family chains contributed for them to render great attention to the forest.

As determined by information from respondents on focus group discussion, *Amhara Sayint* was chronically stroked by drought and poverty for more than two decades, because of alarming deforestation and land degradation. Thus, respondents of all agro-ecology revealed that because of severe and aggravated deforestation accompanied with land degradation, the society were suffered from rainfall variability and shortage of productivity by the percentage share of 53.3 and 41.7 respectively, while 5 percent of the respondents from *kolla* agro-ecology responded that they also faced a problem of shortage of wood supply for house hold consumption in addition to the aforementioned severe problems. Accordingly, FEPA (2008) argued that The productivity and sustainability of natural capital is heavily dependent on the way that humans manage their asset, and this in turn can affect the availability , stocks, and functioning of the remaining assets; putting livelihood at risk. Moreover, based on the survey questionnaire to know their experience and level of understanding about the effects of deforestation from both agro-ecological zones, the survey result showed that 99 respondents (i.e. 63.9 percent) knew that there is sever deforestation and 34 respondents (21.9 percent) knew that there is some amount of deforestation, and 22 (14.2 percent) of the respondents answered there is no deforestation in their locality.

Therefore, it is possible to conclude that the local communities in the study area had good understanding and experience about the causes and consequences of deforestation and land degradation. On account of this, they can manipulate different mechanisms to reduce the impact

on their natural environment. Because, environmental degradation in Ethiopia threatens physical and economic survival, reduces the environment's ability to produce biomass for food, feed and household energy and undermines prospects for fighting poverty and achieving sustainable development (FEPA, 2008). Therefore, local community initiation commitment and understanding of environmental condition of their locality is important for the sustainability of their work and effective accomplishment of the project's objective.

4.5 Effectiveness of PSNP on Reforestation and Hillside Management Activities

According to the evaluation report of *Sayint Woreda* Agriculture and Rural Development Office (2009), the project of establishing plantation site on degraded hillsides and community forestry has started its activities since 1990_s through the adoption of different approaches to save areas from forest destruction and alarming hillside degradation. But, there were no promising result and changes as such except prohibition of fuel wood collection. According to the PSNP (2009) report, the multi-dimensional development approach of PSNP has started its activities since 1995 at very few pilot villages particularly in woina*dega* agro-ecology to know the major problem of food insecurity in *Sayint woreda*. Though, the pilot project identified that deforestation and hillside degradation are the prominent factors that made the *woreda* under food-insecurity and chronic drought and poverty. Since 1998, the project expanded its coverage in *kolla* and *dega*/*wurch* agro-ecology.

Before the launch of the PSNP, the forested hillside areas were open and have free access to everybody interested for farming and to collect wood from it. Accordingly, 96.1 percent of respondents from both agro-ecology reported that the forest stock had declined and hillsides were degraded due to excessive exploitation of forest resource and bush lands. Most of the informants like to explain the past situation, which had been in effect since the coming of the Derg regime to early establishment of the current approach. According to them, many people had come from adjacent village/*Kebele* and town to clear the hillside forest and bush land for sale without taking care for the resource and ignoring the upcoming environmental damage. The damage was not only confined to the tree intended to be cut but the bush and young tree growing under the forest were also damaged. Most of the respondents regretfully responded that they

were unconscious about the environmental and socio-economic disorder of deforestation and land degradation. Thus, the past situation on the forest stock of their surrounding and the unloosed fertility of soil helped them to be active participant in the program of reforestation and hillside rehabilitation under the monetary and material support of PSNP. However, even if it is difficult to conclude there is significant achievement with in such very short period of time, one can see some kind of fortune in the future if the existing situation continued. Moreover, the most observable result of the project effort is that, the rate of deforestation and hillside degradation has reduced and there is an improvement in the regeneration of harvestable trees and growing of young seedlings in areas of previously degraded hillsides and prepared sites for plantation.

4.5.1 PSNP Beneficiary Involvement & Areas of Participation in Community Forestry and Rehabilitation of Degraded Hillside

Active participation and involvement of local community in the process of idea generation, planning, controlling and decision-making is important to create accountability to sustain the program of plantation and restoration of degraded hillsides. Table 4.4 shows respondents of *kolla*, woina*dega* and *dega*/*wurch* involvement and their areas of participation in the program of community forestry and rehabilitation of degraded hillside.

Table 4.4: Frequency distribution that shows local community involvement and areas of participation in community forestry and rehabilitation of degraded hillside

Areas of Participation	No of Respondents			Percent %
	Kolla	Wiona *Dega*	*Dega* & *Wurch*	
Idea generation	60	52	38	96.7
Planning	64	47	36	94.8
Controlling	56	48	34	89
Decision making	53	42	27	78.7
Total	155			

According to the result obtained from total informants covered in this survey from both agro-ecological zones, 150 respondents (96.7 percent) were participating in idea generation while the discussion was taking place. Similarly, 147 respondents (94.8 percent) participated in planning

process, 138 respondents (89 percent) involved on decision-making, whereas 122 respondents (78.7 percent) had active involvement and participation in controlling the community forestry and hillside rehabilitation activity. This could more likely showed their accountability and trust to the PSNP project.

When the program of community-based forestry and rehabilitation of degraded hillside was launched by PSNP in *Sayint woreda*, local community elders were advised to generate idea from their long experience to arrive on the consensus of how to start and perform the project. Because, generating idea from inhabitants make ease to raised from the ongoing problem and to formulate objective so as to alleviate the problem of the project area. Similarly, not only before the launch of the project but also on the ongoing activity of the program there is place for communities who generate new ideas and approaches for altering and/or amending the mechanisms of project implementation. In addition to this the planning activity is also conducted with the consultation and active involvement of the local community leaders as well as it was harmonized with the program of government.

4.5.2 Controlling and Decision-making Process among PSNP Beneficiary Members

According to FEPA (2008), the control of the public sector in plantation development has had serious negative implications for plantation forest management as well as most forest plantations previously owned by the public sector, except under the newly established forest enterprises, have failed to effectively supply forest to the final consumers. Moreover, there should have to be effective controlling mechanism for the sustainable use of forest resources. But, in the study area PSNP beneficiaries have well developed and clear management plans that are seriously followed and implemented by members of the project. Most woodlots of eucalyptus tree, newly planted hillsides and fodder plants are managed and controlled at the village level by a village council and community elders that had to be used only by members of that village. The major benefits from woodlots are in the value of trees. The most commonly planted trees are eucalypts which can be sold for cash income, even if the plantation activity accompanied with different indigenous and non-indigenous tree species.

Additionally, the factors that significantly influence the decision to adopt woodlots as a form of land use include: tree tenure security, quality of seed, contact with extension agents and size of land holdings. Woodlots require farmers to set aside part of their land for growing trees that results in the cultivable area under food crops being reduced. Therefore, farmers with smaller plots of land may view tree planting as competing with food crops, thus reducing incentive to establish woodlots. Control over the allocation of harvesting rights for many woodlots is limiting the economic potential of woodlots. In the study area, farmers have the ownership right to trees growing on his/her homestead and cultivated lands, but they needs to get permission from the local government to cut harvested trees. This hindered participation of the farmers in woodlot plantation at the time of their early involvement.

Based on the data received from group discussion and report from *woreda* Agriculture and Development Office in the study area, forests that are managed by households/individuals are estimated to yield higher rates of return than those managed by the government. It has been shown that devolved woodlot management empowered resource users by providing greater autonomy regarding the management of forests and in particular the ability to make decisions about the harvest of woodlot products.

4.5.3 Community Areas of participation in Community Forestry and Management Activity

4.4.3.1 Nursery

The intervention of PSNP project and government in the area of forest conservation could be in nursery development, plantation of seedlings, protection of existing trees and forest areas and marketing of harvestable trees with active participation of beneficiaries. In the study area most seed procurement is

Figure5: Nursery site

carried out from natural forests and plantations and not from seed orchards. But, the genetic history of most plantations is not very well known. There is also a problem of species provenance-site matching. However, the entire informants reported that community-based participatory forest management programme has given prior attention to nursery and plantation of trees within the forest areas and degraded sites.

According to informants surveyed data from interview and group discussion the major participants in areas of nursery are *woina dega* inhabitants, i.e. 95.7 percent from the total informants. This is because, almost 90 percent of the nursery sites are found in woina*dega* agro-ecology due to the presence of favorable climatic conditions and availability of water as compared with other two agro-ecologies.

Table 4.5: Frequency distribution that shows PSNP beneficiaries area of participation

Areas of Participation	No of Respondents			Percent %
	kolla	*W/Dega*	*Dega*/*Wurch*	
Nursery	90	16	26	85.2
Plantation	64	41	33	89
Protection of regenerating tree	32	8	60	64.5
Protection of harvestable tree & product	38	46	32	74.8
Total	155			

In principle, the project promised to establish nurseries for tree seedlings in certain regeneration area with different agro-ecology. Till now the intervention in nursery development is confined to woina*dega* agro-ecology. Nursery development and plantation activity outside the project site by self-initiative farmers contributes significantly to wood supply. According to *Sayint Woreda* ARDO (2009) report, peasants produced 3 million eucalyptus seedlings and sold for farmers who want to plant it around their farmland and home stead. As a result their contributions of seedling have positive impact on the programme of plantation and reforestation of degraded hillside by PSNP. However, outside the PSNP members, adjacent to the forest site, there are activities going on in distributing tree seedlings to personal consumers, which resulted in reducing the pressure on high forest.

4.5.3.2 Plantation

During the initial period of the program, plantation activities were conducted in the form of watershed management of the degraded hillsides and plantations are not expected to provide the multiple uses and services which used to be available from the natural forests. Their history goes back to the late 1990s. Because of the lack of active consultation and participation of local communities, many of these were poorly established and rarely maintained. But, as I received information from informants of different agro-ecology, the current government has shifted away from centralized management of forest resources with the objective to enable resource users to have greater decision making power over the management and plantation activity, farmers developed and established woodlots that have been placed under the management of communities and villages with the support of PSNP and the government.

Figure 6: Plantation site on degraded hillside

Thus, PSNP financial and material support encouraged beneficiaries to actively participate in plantation program, i.e. 89 percent of the surveyed sample are participating in plantation activity.

In addition, the government of Ethiopia has also allocated some plantations for communities to manage and key incentives provided by the government include the provision of free seedlings and secure tenure through land certification. Based on the data obtained from field observation, most forestry operations are undertaken in highly degraded hillside areas, and a large number of laborers are required for the operation of forest nurseries, afforestation, and construction and maintenance of roads. Land preparation, production of planting materials and planting and

maintenance are important sources of employment and the cost is covered by PSNP through cash transfer.

Forest plantations of several species have suffered varying degrees of attack by disease causing agents in *kolla* agro-ecology and sever climatic conditions. Plantation activities conducted in *dega*/*wurch* agro-ecology are the one that is highly affected by frost which is responsible for the dying of newly planted seedlings. The plantation activities in the study area, like everywhere in Ethiopia, are characterized by lower bio-diversity than natural forests. The dominant tree species is Eucalyptus which is usually harvested at the age of 5-7 years for pole and construction materials.

New areas for forest plantation expansion are usually obtained through negotiations with local administrations and local communities, mainly due to the competition for land for agriculture and grazing. But, in most areas the new approach through hillside distribution systems in which communal hillside plantations are established on degraded slopes, mainly with eucalyptus, fodder plant and few number of indigenous tree seedlings of *'Kosso, Zigba and Woira'*. This system has been in operation for a few years, and has been adopted by the Office of Agriculture and Natural Resources Management as a means of allocating land in degraded hillsides to landless members of communities.

In some of the community-based PFM sites, plantings on degraded forest parts and hillsides under the forest user groups (PSNP beneficiaries) have exercised enrichment plantings to treat previously degraded forest sections. The groups have implemented enrichment plantings by raising seedlings of various indigenous and exotic species.

4.5.3.3 Protection of Regeneration of Forest and Harvestable trees

As we learnt from the discussion with the PSNP project coordinator, *woreda* agriculture and Rural Development Office and key informants of the study area, before the launching of the programme the *woreda* Administrative Office and officials from Agriculture and Rural Development Office designed voluntary resettlement program for inhabitants who settle on a slope above 30^0 to free the degraded hillsides from human intervention.

As a result, the degraded hill sides became under the joint control of PSNP and government in the form of area closure, i.e. each and every community neither the PSNP beneficiary nor non-beneficiary who lived adjacent to such closure was forbidden to use grass, bushes and wood from the area that is conserved for regeneration and rehabilitation. Accordingly, protected hillsides showed improvement in its forest and soil fertility.

As one can see from the information obtained from respondents from three agro-ecologies, 100 respondents (i.e. 64.5 percent) are actively participating in protection of forest regeneration through construction of check dams, terracing and other additional activities. This shows that the commitment and motivation of local communities to conserve their natural resource from damage. Similarly, as the project is young in the study area harvestable trees are merely under the protection of beneficiary community with the exception of seed collection. Based on the information obtained from both agro-ecology, 116 respondents (74.8 percent) have strong participation to protect harvestable trees in their locality. But, in areas of seed collection from different tree species, almost all of the respondents participated without damaging the health of trees.

4.6 Factor that Enhances (Benefits) the Participation of PSNP Beneficiary Members

There are many factors that can be taken as reasons for people participation in forest management, reforestation and hillside management activities. Due considering the status and situation of reforestation and hillside rehabilitation programme of study area the researcher listed out some of factors that enhance/benefit the project beneficiaries in particular and the whole community of *woreda* in general. In study area, the most important initiating factor in participatory forest management is the environmental benefit that local communities will be benefiting directly or indirectly due to an increase in forest cover of their surroundings. In addition to these the enhancing factors are identified in the field survey by making use of closed-ended questionnaires. The respondents have expected to put their preference in order from the most important variable that enhanced their participation to the least variable. Focus group discussions are also used to confirm and at what extent the variable can play a role in benefiting them.

Table 4.6: Frequency that shows factor that enhances (benefits) the participation of PSNP beneficiaries

Factor that enhances (benefits) PSNP beneficiaries	No of Respondents			Percent %
	Kolla	*Woina Dega*	*Dega/Wurch*	
Physical existence of forest for future use	55	41	29	80.6
Monetary benefit	57	45	32	86.5
Environmental benefit	60	44	34	89
Direct and indirect forest product benefit	51	38	27	74.8

4.6.1 Physical Benefit and/or Local consumption

When the informants were asked whether they expected any benefit from participating in community-based PFM, the entire respondents reacted they are expecting much benefit from PSNP participation. Accordingly, from both agro-ecological zone 80.6 percent of respondents indicated that the physical benefit of forest for future use motivated them to be active participant in the programme. One can understand from this result is that the level of benefit that people derived from future use of forest is in compliance with the level of participation in forest management and rehabilitation programme.

As information revealed from beneficiaries at the time of discussion, there are many kinds of physical benefits that people need to get from forest and forest products, it include products for their own consumption like fuel wood, timber and pole for housing and fence construction, fodder for their cattle, shading purposes, regulation of climate, soil conservation and aesthetic purpose. But, they put more emphasis on local consumption which is the most important kind of benefit. This is directly related to day-to-day life of the people. Moreover, out of total respondents from *kolla* agro-ecology, 87 percent stated that the physical benefits, which they get out of forest resource in existing condition and its future benefit from forest products initiate them to participate in community-based PFM programme. Based on the data from the table above, it is possible to see the community from both agro-ecology accepted that the benefit from forest resources will be useful for their day-to-day life and becoming source to generate income.

4.6.2 Monetary benefit (generating cash income)

The second type of benefits people expect and currently generate because of their participation is monetary benefits. According to the FEPA (2008) description, currently most development assistance program in the sector has been shifted to the development of national forest programmes and management of degraded hill sides. Thus, the current financing agent of forestry activities and task force to rehabilitate degraded hillside in *Sayint woreda* is derived from PSNP. Accordingly, it is one of the basic sources of additional cash income for those who are the member of PSNP project activity and for communities who is living around the project site. The earnings that they received from the owner of the program are one of the prominent income sources that helped them to support the day-to-day expense of their households. On account of this, the surveyed result from table 5.6 showed that 86.5 percent of respondents of the study area argued that their participation in PSNP comprehensive project is an engine to participate actively, because it makes them to have money in accordance with their level of participation.

Moreover, based on the evaluation report obtained from *Amhara Sayint woreda* PSNP coordination office 2009, the average level of PSNP member beneficiaries expenditure on the programme shows that for cash transfer, (i.e. public work through provision of employment) it is calculated on the basis of the cost buying 3kg cereals on market price per day labor work on the basis that 5 days should be worked for each person receiving transfers and for food transfer (i.e. direct support) it is considered to be 15kg of cereals per person per month. But, according to respondents on discussion, even if the cash transfer was considered to buy 3kg cereals on market price per day labor work during the launch of the programme, still now the payment do not consider the inflation rate of the country and the programme did not do any amendment on cash transfer beneficiaries. However, information of respondents from discussion shows that the beneficiaries of food transfer are more benefited as compared with the cash transfer receivers due considering the current market price.

Based on the socio-economic data of *Sayint woreda* PSNP beneficiaries shown in table 3.1 from both agro-ecologies about 50.2 percent of the respondents are occupationally engaged in mixed

farm. As some observations go and some respondents told, the majority of their family members are engaged themselves in labor work during keremt so as to generate additional income. The income from such activity is used for subsidizing their income to pay taxes, to buy school materials and clothes for themselves and their families. Thus, the monetary income people get from the programme through participation in community forestry and hillside management is an important factor in initiating people to take care of the forest and degraded hillsides. However, if they are not guaranteed the right to use the forest resource product in the near future, there is a threat that individuals will excessively exploit or use it inefficiently causing great damage on the forest.

Therefore, as one can see from the current economic situation of the country and most forestry activities that have continued to depend on external financial assistance to poverty alleviation and sustainable livelihoods for people living in and around forests instead of developing the local community economically independent entities, I argued that it may be difficult to arrive on the far reaching objective of the project following the phasing out of the programme.

4.6.3 Ecological Benefit of PSNP Community-based Participatory and Hillside Rehabilitation Programme

The average annual area of plantation establishment is estimated at about 200 sq.km, which is below the required area for ensuring a sustainable forest cover of previously degraded hillsides. Annually, more than 3.5 million seedlings distributed for both PSNP and Non-PSNP beneficiaries within the three main agro-ecology of the *woreda*. The dominant species of the seedling is exotic in nature with high percentage share of eucalyptus.

As a result, plantation for the purpose of harvestable tree, watershed management and harvestable fodder are dominated by exotic type with few indigenous plant species in the project site. Additionally, commercial plantations are mainly exotic tree species with only a few indigenous species in some of the national forest priority areas of the *woreda*s, such as *Borena-Sayint* national park (locally called '*Denkoro Chaka'*).

Based on the surveyed data from respondents, the ecological benefit of the reforestation and hillside management is unquestionable, because 95.5, 88.9 and 88.4 respondents of *kolla*, *woina dega* and *dega*/*wurch* respectively are happy with the benefit they had got from the project, i.e. rehabilitation of soil fertility, regeneration of trees, rehabilitation of grazing land restoration of water availability, increase in productivity of their farmland and reduction of rainfall variability in their surroundings.

Generally, PSNP reforestation, community forestry and restoration of degraded hillsides played significant role for the rehabilitation of previously degraded areas and severely deforested land of the *woreda*. In addition, it laid its magnificent contribution in increasing productivity, poverty reduction and securing food self-sufficiency of local communities.

4.6.4 Granting ownership right (improved property right and land tenure policy)

According to the data obtained from discussion with key informants of *kolla*, *woina dega* and *dega*/*wurch* agro-ecologies, ensuring ownership right to benefit themselves from forest resource and forest product is an essential instrument to see the forest as their own resource and attain its far-reaching sustainability. From this we can understand that, having ensured the right to use forest product and giving priority to current benefit which they practically get rather than the ownership right should guarantee in the property right which is everlasting. In fact, what they practically get outweighs the future expectation. This could be for some major reasons like most of the people's view is overshadowed by past government nationalization of private property, extreme poverty of the country and the level of people's understanding about the differences between exclusive right and use right. These situations lead community members to neglect future benefits in the interest of immediate survival. Additionally, the view of one respondent from *woina dega* agro-ecology indicated that ownership feeling and positive expectation of using forest in the future are the most important factors that encouraged him to manage and control the reforestation activity actively.

According to some informants from three agro-ecological zones, if there is no rule and regulation that ensures people's right to use, they will have the intention of overuse and or inefficient utilization for only temporary benefits.

Moreover, when they were asked whether the approaches ensured empowerment on resource and create sense of accountability, the entire respondents reacted that community-based participatory forest management programme ensured empowerment and create a sense of accountability to all of the individuals collectively.

Currently, ownership of natural forests and community forestry are under the control and ownership of local community in the form of public property. Plantations are also held by the public, individual farmers and communities. But, we can understand from the respondent's view that there is a difference between public property, which is open-access to all, and collective property where the resource is clearly defined and demarcated to specified people. In the case of public property, people may not have clear sense of ownership or sense of privacy on the forest resources.

Therefore, the effort in protection and economic utilization in the case of public property is minimal, while in the case of collective property, there are specified people ensured of the ownership right. In such a case, there is some sense of private ownership. There is also internal rule and regulation to administer the beneficiary members.

The continued deforestation and forest degradation reveals that conventional approaches that are in use to manage the forests in Ethiopia have not been able to guarantee the conservation of these resources. Ownership rights must be legally recognized and assisted by building capacity of the beneficiaries in planning and implementing management plans of forests, assesses available resources, and develops marketing information and strategy. For the sustainability of woodlots, a continuous supply of planting material in the form of seed and seedlings is prerequisite and secure land tenure and rights over the rights to manage harvest, transport and market produced wood should be needed. The frequency of contact and technical assistance from the development agents also contributes to sustainability of woodlot plantations.

In communities living in lower potential areas, where agricultural development is difficult to achieve, development and management of community woodlots may be a key element of an effective development strategy. The 2005 forest policy in Ethiopia provides farmers with tax incentives that are proportionate to the number of trees they plant. Those who planted more trees

will benefit through reduction of taxes on land on an annual basis. In addition, controls are lifted on pricing and marketing. Nonetheless, the new forests development, conservation and utilization proclamation (542/2007), which is accompanied by the country's forest policy and strategy on forest development, provides the framework for making fundamental changes to forest resource management (Federal Negarit Gazeta, 2007).

In 2005, the government of Ethiopia issued a Rural Land Administration and Land Use Proclamation (456/2005), which was amended in 2007. The aim was to increase tenure security, improve productivity and avoid expectations of land re-distribution. The proclamation provides that farmers will have certificates of use right to cultivate land that can be inherited or passed to others. Forest legislation makes provisions for establishing community forestry and implementing participatory forest management. This is the idea of sharing of responsibility and benefits.

The new forestry proclamation recognizes private forest ownership and encourages joint state-community management of forests. It also ensures ownership security and transfer rights over lands planted with trees in accordance with the new Federal Land Use and Land Administration Proclamation (Federal Negarit Gazeta, 2007). Thus, based on this proclamation Profit sharing agreements between the state enterprises and community groups which attracted many small holders to tree planting are among the incentives employed. Sharing a certain percent of the profit from the total revenue generated from forest management encourages the farming communities to plant trees and protect the natural forest since their feeling of secured ownership will be high. In addition, provision of extension services to farmers and provision of tools to private nurseries are among the incentives used. Consequently, there will be a better management and relatively efficient utilization of resource.

4.7 Factor that Obstructs (Hinders) Participation of PSNP Beneficiaries

There are many factors that could inhibit people motivation toward the care they give to the forest in their surroundings. These factors sometimes have an indirect impact so that it is difficult to solve at all. It is very clear that the enhancing factors of people participation are the inhibiting factor when they are in a reverse situation. That means, if people inhibited to use forest for their

future consumption and some commercial purposes they will develop offence and they will play a destructive role. As 56.7 percent of the respondents from all agro-ecology are illiterate and they have little information or knowledge about the economic and biological use of forest and effect of deforestation in the short and long term period on overall economic and social life, the role they will play in forest management will be minimized.

Similarly, if people who live in the vicinity of the forest have no right on the forest, some other people will use it freely with the permission of the state. Moreover, if there is no and action taken on illegal users, and there is no accountability for the loss of forest; and if the composition of the community is heterogeneous so that there could be disagreement and conflict in planning from top-down approach will come dominant over bottom-up approach. All these are hindering factors of people participation. Some of the major hindering factors that the respondents identified noted next.

4.7.1 Income disparity among beneficiaries

Despite an increase in area of forest plantations, there is no forest management study that has followed the original plans and many plantations are now over-mature and of poor quality mainly due to the financial problems to undertake maintenance operation. There are also budget constraints that make management of forests difficult.

Table 4.7: frequency that shows income disparity among PSNP beneficiaries

Income level of beneficiaries	No of Respondents			Percent %
	Kolla	*Woina Dega*	*Dega/Wurch*	
High income	24	23	16	40.7
Medium income	46	13	21	51.6
Low income		7	5	7.7
Total	155			100

Based on the data observed from respondents of both agro-ecology, high and middle level income respondents have greater participation as compared with low level income PSNP

beneficiaries. In order to strengthen the idea of respondent's information, key focus informants were asked to answer why middle level income groups are active participant than others.

Their response is that the middle level income groups have the awareness and early understanding about the program of reforestation, forest management and its foreseen output benefit before the implementation of the programme. Moreover, they have their own woodlot and forested areas around their home and farming area and had received greater benefit from it. As a result, the weak participation of low income community emanates from their engagement on other income earning jobs to support their family members.

In addition to these, responses from discussion shows that there is income variation among PSNP beneficiaries, i.e. the selection of beneficiary mostly done by local Development Agents (DA_S) and *kebele* administrators which leads them to make favor for their relatives and colleagues. According to them, there is a possibility of getting the whole family which have financial benefit from the programme, whereas even the households who have more unemployed family, the households only get financial benefit through participation of father and mother. This situation of discrimination resulted to decline their active participation in the programme.

4.7.2 Government forestry policy integration with other Food Security Programme

According to Devereux et.al (2006) explanation, Productive Safety Net Programme (PSNP) identified determinants of income or consumption poverty by disaggregating into three clusters: (1)*Low productivity* – inadequate returns to labor and other productive inputs; (2)*Vulnerability* – risks and consequences of collapses in income and consumption; (3)*Dependency* – inability to generate an independent livelihood due to inability to work. Thus, due to the expanded activity of the programme, the government is forced to integrate forestry project as one part of development and poverty alleviation mechanism.

Despite forest policies and strategies being in place, they have not been effectively implemented because of its integration with other policies. In addition, there is a lack of a clear forest strategy for the country. A national level forest strategy and policy is developed but the regional states that owns and are responsible for managing and administering the forests have not yet developed

policies and strategies for forest conservation and development. There are fragmented sectors that have the responsibility for forestry and environment issues.

Even if Non Governmental Organizations (NGOs) support community woodlots plantation establishment, they initiate the establishment of plantations on degraded lands and hand over to communities and they also promote state-community ownership and administration of plantation forests, as well as planting forests for energy use; they are not well linked and there are poor in research-extension linkages to promote forestry. Additionally, low level of technical backstopping to promote community involvement in tree planting is another constraint.

Therefore, for the sustainability of plantation development and to conserve the alarming degradation of hillsides, there should be strategic land use planning that will facilitate and provide guidance on land use conflicts is planned to be established. In addition, private sector forest development will be encouraged through research and extension, provision of appropriate policies in the area of pricing, and by creating an increased sense of security of land and tree tenure, all of which, if implemented, would enhance opportunities for private sector investments in forestry.

4.8 Disadvantages of PSNP participation & its Disincentive Factors

In addition to the paramount importance of PSNP participation, it has its own disadvantage and disincentive factors that put pressure/limit on the beneficiaries.

Table 4.8: frequency distribution that shows disadvantages of PSNP participation and its disincentive factors

Disadvantages of PSNP participation and its Disincentive Factors	No of Respondents			Percent %
	kolla	*Woina Dega*	*Dega/ Wurch*	
Limits farmland expansion	34	22	25	45.8
PSNP adds extra work	31	24	23	50.3
Cost of participation is greater than benefit	10	-	6	3.9
Total	155			100

Accordingly, the respondents pointed out the following problems that they faced because of their participation.

4.8.1 Limitations on Posed Farmland Expansion

According to key focus group informant's view, the most sensitive part resulted from the launching of the project lies on the fear of limitation on their farmlands when forest resources are transferred to some group of community and the continual establishment of forestation sites along side of their farm. In addition the PSNP beneficial members are also in a state of fear in which the project will reduce their farmland to compensate those who lost their farm for forest plantation. They prefer losing forest right instead of losing farmland. According to some of them their livelihood is more dependent on crop than forest.

As we can see from respondent's survey result from table 5.9, almost half of *kolla, woina dega* and *dega*/*wurch* respondents which accounted for about 45.8 percent told the PSNP project limited their farmland.

4.8.2 PSNP Project adds extra work on participants

The result from table 4.8 shows that 50.3 percent of the respondents from both agro-ecology indicated PSNP has significantly increased the probability of off-farm participation of the beneficiary households. This may be due to the reason that participants switch their labor supply from farm to off-farm activities and the transfers from PSNP results very low income effect. This circumstance eventually would worse the poverty situation of these poor households, even though PSNP is aimed to protect the assets from depleting that the program offers food and cash transfers for member beneficiaries.

4.8.3 Cost of participation is greater than benefit from the programme

Based on the 10 respondents from *kolla* and 6 respondents of *dega*/*wurch* agro-ecology argument, lack of reasonable incentive from the programme is one factor that hinders their participation in participatory forest management. In addition, the informants related the issue of incentives with the amount of payment they pay for tax and fertilizers they received from

agricultural office. They stated that *as far as they look after the forest day and night, they should get better incentives (monetary or in-kind), but they should not get as much as they engaged themselves in community-based participatory reforestation and hillside management activities*. These people have self-centered interest and they do not consider the benefit they are currently getting out from the programme and they lack the future benefit that they will get it from forest resources and products in the form of the common public property.

4.8.4 Fear of Human Encroachment in Forest Plantation

Increasing demand of the human population for more land for agriculture is likely to have a major effect on land availability for plantation establishment. New settlements in natural forests are increasing resulting in the conversion of forested land into agricultural and other land use systems. The few remaining high forests, with a potential for the expansion of plantation forests, are threatened by pressure from investors who are converting the forests into other land uses. The need for sustainable forest management to halt and reverse the loss of forests has been recognized and accepted by the government. However, management efforts to-date has not yielded desired results.

4.9 Forest stock before and after PSNP financial and training support to community forestry and forest management activity

Based on the data obtained from field observation and compiled documentary pictures from the project office, the current situation of forest plantation, forest rehabilitation through demarcation of area closure, regeneration of bush land and improved soil fertility of hillsides shows remarkable and magnificent positive change which have greater environmental and socio-economic advantage for local communities in particular and increase the forest coverage of the country at national level. Figure 7 and 8 shows contrastive picture of hillside situation of before (figure 7) and after (figure 8) the PSNP activities:

Figure 7: Hillside before PSNP Project

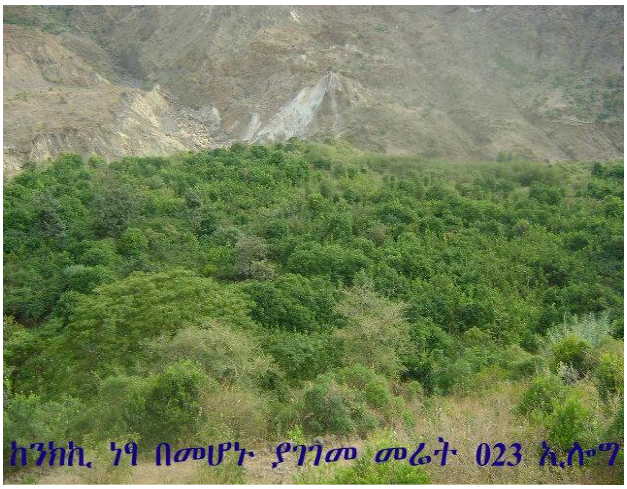


Figure 8: Hillside after PSNP Project

CHAPTER FIVE

RECOMMENDATION AND CONCLUSION

Conclusion

It is observed that hillside conservation and forest management effort through active community participation have got prior attention at all levels of government office and other development support non-governmental organizations. For this reason, PSNP beneficiary members has given great attention to controlling activity with re-plantation and nursery development within the well prepared sites. However, if forest to be improved and its sustainability to be attained, it is necessary to give attention to plantation and nursery development within the forest and outside the forest area. It is convenient that PSNP beneficiary members have involved in sharing ideas, planning process, and decision making process. This trend must be maintained for the effectiveness and sustainability of the programme.

The findings show that majority of PSNP members have positive attitude towards community-based PFM approach. Some of the major factors that develop such feeling are decline of forest exploitation rate, improvement on regeneration of area closure and the increased local community level of awareness about the reforestation and hillside management practices. Therefore, this effort should not be left to PSNP members only. It needs multi-dimensional effort by the community, local government (*Kebele* Administration), police, court, etc. Moreover, empowered community to decide themselves and increased on PFM accountability are other factors that made the PSNP beneficiary members to have a positive view towards PFM.

The findings show that forest conservation and hillside rehabilitation sustainability can be effective when the community shares the responsibility, accountability and access to the right to use of forest products among those beneficiaries who are active participant and responsible to manage the forest possibly be made accountable for the loss of forest. To manage the forest resource in a sustainable manner, there must be a clearly defined property right so that some must be excluded from using it while some others must be granted the ownership right. On

account of this, the number of users should be balanced through beneficiary level of participation in accordance with the carrying capacity of the resource.

Under the circumstance of clearly defined accountability and empowerments, there is a positive contribution in ensuring wise utilization of the forest. This could be realized if there is a contractual agreement that enforces the materialization of the sustainability of utilization and effective protection of the forest. Therefore, the problems of over utilization will be overcome through the collaboration of government with forest users and beneficiaries.

As the current forest development, forest conservation and hillside rehabilitation program are dominantly done by PSNP beneficiary members, granting ownership right of forest resource to all members are highly substantial. Giving the member with ownership certificate will also encourage their self-initiative to manage the forest and ensure its sustainability. Moreover, replicating similar projects, NGO's and government organs should clearly understand the major factors that enhance active participation and factors that limit community involvement in participatory management system. As a result, one can see that the involvement of the community has so far directly correlated with securing an authority over management and utilization of forest.

Moreover, three important things are considered to be determining factors in participatory forest management of Ethiopia. The first one is related with the decision making and project implementing approach. Thus, bottom-up approach which leaves decision to the people on their own is important motivating factor in community-based PFM. Second, considering the social contact between communities, because it could help a lot in doing cooperatively so that there will be no significant difference in taking action. Good social contact will also develop agreement between the communities for the achievement of similar objectives. Finally, there will be a potential damage avoidance mechanism due considering the dynamic nature of economic, political, social changes. Unless conflict between users and the government policies will arise one time, and it could be a danger on the existence of the forest resource and its sustainability. Therefore, assurance of property right must clearly answer the question of ownership right on

forest and land. Thus, legal institutions must be strengthened in order to protect the community and private right and, the rule and regulation.

In general, community-based participatory forest management strategy and hillside rehabilitation program is a feasible measure that could ameliorate the problem of forest destruction and it is believed to be successful in Ethiopian context.

In this regard, securing forest use right, community empowerment (devolving authority, responsibility and accountability), bringing about behavioral change of the community through awareness creation on forest conservation and protection of hillside degradation practice, there should have to be a sound practice of bottom-up(local community-government body) approach over decisions by direct involvement of people in all stages of participation and arranging the homogeneous group based on historical background and community's personal background are the most important variables that must be given high attention to arrive at active participation of people and to see the far reaching objective of the programme for the benefit of local community as well as the country as a whole.

Proposed Recommendations

Based on the research finding, the following recommendations are proposed:

i. Better achievement of reforestation and hillside management pilot project should be done through strict protection of agricultural expansion in the forest area and degraded hillsides and government must have promotion strategy for role model participants like annual model farmers award.

ii. Effort must be put forth to awaken the whole community towards ecological and socio-economic benefit and creating public awareness on economic and ecological cost and benefit of forest resource and hillside rehabilitation is necessary.

iii. There should be positive and voluntary integration between government and local community in developing economic and social infrastructures in addition to forest management activity. The project as well as the government should encourage off-farm activities to generate household income and supplementary food sources for the project beneficiary community and farmers for instance shall develop small scale industries like bamboo technology, beekeeping, strengthen the eco-tourism activity; providing technology that reduces the consumption of fuel wood etc. which is a mechanism to support any poverty reduction strategy and must be taken as special interest of the project and the government.

iv. The government currently practiced a program of community asset building under Household Asset Building Programme (HABP) and fertilizer supply in the form of credit. Thus, it should be advised to increase such a kind of assistance through continuous assessment of the communities built asset.

v. Strong efforts should be made by government and project implementing organizations for the realization of forest policy, rule and regulation that protect existing forest from damage and hillsides from degradation.

vi. Executing participatory community-based hill side management practice to all nearby *woreda*'s through experience sharing have to be done.

vii. Government should support establishment of forest user unions/ control of forest based on locally established indigenous institutions.

viii. Before the implementation of project, government and project implementing partners should have to assess the overall environmental situation and perception of the local community.

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