

Addis Ababa University
School of Graduate Studies
Public Administration and Development
Management

**An Assessment of Forest Resource Conservation and Development
Strategy in the Case of Ameya Woreda South West Shewa Zone, Oromia
Regional State**

**A Thesis Submitted to the School of Graduate Studies of Addis Ababa
University in Partial Fulfillment for the Degree of Masters of Arts in Public
Administration and Development Management**

By:

Tesfaye Erpasa Chala

November, 2010
Addis Ababa University

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Approved by Board of Examiners

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Acronym

AAC:	Allowed Annual Cut
AWAB:	Ameya Woreda Administration Bureau
AWRADB:	Ameya Woreda Rural and Agricultural Development Bureau
CFCDD:	Community Forest and Soil Conservation and Development Department.
CFDD:	Community forest Development Department.
DAs:	Development Agents
EPA:	Environmental Protection Authority.
FAO:	Food and Agricultural Organization of United Nations.
FRCS:	Forest Resource Conservation Strategy.
FWCDA:	Forest and Wildlife Conservation and Development Authority.
GDP:	Growth Domestic Product.
IUCN:	International Union for Conservation of Nature.
MOA:	Ministry of Agriculture.
MONREP:	Ministry of Natural Resource and Environmental Protection.
NFPAs:	National Forest priority Areas.
NGOs:	None Governmental Organizations
NRCS:	Natural Resource Conservation Strategy
OADB:	Oromia Agricultural Development Bureau
OBNRDEP:	Oromia Bureau of Natural Resource Development and Environmental Protection
PA:	Peasant Associations
RCS:	Resource Conservation Strategies
TFAP:	Tropical Forestry Action Program
TLU:	Tropical Livestock Units
UNCED:	United Nation Conference on Environment and Development.
UNEP:	United Nation Environmental Program
WRI:	Word Resource Institute

Abstract

Deforestation has taken place, and is still taking place, in proportions that are beyond any expectations. The existing production capacity of the remaining forest is small while the demand for forest output is tremendous and growing by the day. The present demand is many times over the present supply and the gap is widening.

The proximate and underlying causes to these problems in the forestry sector are many and varied. Some of the major cross-cutting issues include; macro economic and inter-sectoral effects, land use conflicts in forests and forest fringes, structure and operations of forests and forest fringes, structure and operations of forest related institution, current forestry strategies, land and tree tenure, and consolidated forest policy statement at the national level.

In combating these issues and in order to bring about sustainable production of forest goods and services, we need to look at alternative form of land use to nature forests, issues related to sustainable land use in forest and forest fringes, decentralization and institutions. The concern of this research is, therefore, to assess forest resource conservation strategy, state of implementation of the strategy, gaps in implementation and level of community participation in the program by taking Ameya Woreda, South West Showa Zone, Oromia regional state as a case study. The study has employed structured interview, personal observation, and focus group discussion methods to obtain necessary information. The information obtained is analyzed using descriptive statistics.

The result of the study has revealed that even if different strategies have been employed to conserve forest resource of the woreda there are many problems that can affect its effectiveness. To mention agricultural land expansion, increased demand for fuel wood, free reaming livestock and willing participation of the community are some of it however, the opinions of the farmer indicate that currently, the number and types of tree they do have on their private plot is increasing. As the result, there have been relative improvements in resource conservation of the area.

CHAPTER ONE

1. Introduction

Natural resources are resources which are utilized and exploited by living things for their existence. These resources cover a wide range of both renewable and non-renewable resources such as, soil, forests, vegetations, water (surface and ground water) wild animals, domestic animals, birds, climate, and minerals and so on. Human beings and all the above mentioned resources are dependent on each other for their existence. Environmental Protection Authority of Ethiopia (EPA, 1997: 12) states that natural resources are the foundation of the Ethiopian economy. Small holder peasant agriculture in some areas including forests is the dominant economic sector accounting for about 45% of GDP, 85% of exports and 80% of total employment. Forest and the benefits that they provide in the form of wood, food, income and water shed protection play a critical role in enabling people to secure stable and adequate food supply.

It is an established fact that forests play a key role in maintaining a balanced eco-system in countries like Ethiopia where the majority of the people are living in rural area, forest means everything. It could be said that no forest-no life (Demele, 2001:31).

Deforestation and land degradation in Ethiopia however are impairing the capacity of forests and the land's contribution to food security and provide other benefits such as fuel wood and food (FAO, 1981: 58). Ethiopian are facing rapid deforestation and degradation of land clearing for agricultural use, over grazing and exploitation of existing forest for fuel wood and construction materials. Forest areas have been reduced from 40% century ago to an estimated less than 3% today. Estimate of deforestation which is mainly for expansion of rain fed agriculture vary from 80,000 – 20,000 hectares per annum (UNEP, 1983; EPA, 1997). Demele (2001) indicates that Ethiopia has bitterly experienced the consequences of severe deforestation followed by recurrent drought, loss of top soil, reduction in soil productivity, shortage of water, loss of wild life, etc.

Over-exploitation of natural vegetation cover by a rapidly growing population has threatened the ecological stability and the economic development of the country. As a

result of forest resource degradation there is increased rate of soil erosion, decreased availability of water (both in quality and quantity), and decreased agricultural production and loss of wild life and of bio-diversity. The forests that remain are subject to uncontrolled wood harvesting and rapid rates of clearing to open up new agricultural land partly in compensation for land lost through degradation but mostly to accommodate the rapidly increasing population (Berhanu, 2001).

Forest resource management in Ethiopia has been in the hands of the public sector. The result has been uncontrolled deforestation of the natural forest, encroachment by farmers and desertification. No sustainable forest management program has been put in place due to lack of adequate funding and stable structural set up for the forestry sector. Depletion of commercial tree species through selective cutting and the conservation of these opened up forest areas to agriculture, together with the resulted environmental factors, are giving new urgency to find alternative source of raw materials for the wood based industries, bio-mass energy and other construction materials. The growth of the country's population and the need for more forest products in the construction areas and energy are the two major factors affecting timber demand and supply. (Ibid)

Unless a strong measure is taken to develop the already dwindled forest resources, no question, the country will turn out to be a barren land in the near future, unable to support life. Therefore, efforts have to be made to create conducive environment, such as clear policy frame work and other supportive rules and regulations, efficient bureaucratic procedures to encourage the involvement of the private sector in the forestry conservation and development activities. This situation also calls for an immediate action of developing forest resource together with devising an effective method of conserving the devastated forest resources. The relevant law has to be in place. If there is an effective law that has a strong mechanism to enforce it there by correcting the situation with the forestry sector of the country will change for the better. (Demele, 2001)

In order to reverse and possibly stop the forest depletion trend, the governments of Ethiopia been planning to embark up on programs designed to properly manage the country's forest resource. In the proposed programs, the major role of forestry, as the main support to the intensification of agriculture, the creation of productive employment

and the provision of fuel and construction wood as well as raw material for forest industries for human needs, was also identified. The activities to be undertaken are envisaged to be carried out through various arrangements such as: the five year program, during the Imperial Regime, National Forestry programs, during the Military Regime, Ethiopian forestry action program (FAP) with in the global Tropical Forestry Action Program (TFAP) framework during EPRD (EFAP, 1994 E.C).

FDRE government also pays close attention to the questions of natural resource conservation and development; concerned international and national bodies especially decision makers, planners, academicians, development practitioners and the communities also participate on the issue. The government also state that, a carefully managed resource conservation activities are undoubtedly necessary to be able to achieve sustainable resource development and the result of conservation activities became promising if and only if community's participation is combined with government effort.

Implementation of all these programs has not been made into effect yet. The forestry research are still critically threatened in all cases and the recent forest fire incident e.g. in Balle Mountains, has affected quite a substantial forest resource including wild animals, domestic animals, traditional beehives, harvested coffee, maize and residential quarters. On the other hand, there is no evidence of the continuation of the yearly forest plantation as compared to the yearly deforestation or even at the lower scale, and there is no deforestation and the continued immense threats on forest resource. All these issues reflect over the important problems when resulted due to lack of legally strong and responsible formal forest institution.

In countries likes Ethiopia where the lives of many rural communities are directly related to natural resources, forest means everything, and thus, all efforts, towards conservation of natural resources and sustainable use of its products is a challenging task (Demele, 2001). So, in order to simplify this challenging task, the community at large non-governmental organizations, the private sector, and professional associations and all others should be actively involved in this effort.

The study area Ameya woreda is one of the local governments under the regional state of Oromia, South West Shewa Zone Administration. It is located 145 km away from Addis Ababa in South West direction.

The woreda is bordered with Tikur Inchini and Toke Kutaye woreda in the Northe, Wonch woreda in the East, Nono woreda in the West and Gorro wareda and Southern Nations Nationalities and People Region (SNNPR) in the South. It is well endowed with varied type natural resources. The woreda was taken as a focus of study because of varies reasons (AWRADB, 2008)

The woreda has varied agro-ecologies which resulted in endowment of different species of fauna and flora however, these resource, particularly the forest resource of the area are under due pressure.

In the woreda deforestation has taken place and is still taking place, in proportion that is beyond any expectations. The existing production capacity of the remaining forest is small while the demand for forest out put is tremendous and growing by the day.

The present demand is many times over the present supply and the gap is widening. Even if, there were efforts to conserve and develop forest resource of the area, by both the communities and woreda rural and agricultural development bureau their activities will not replace the rate of depletion of forest resource of the area.

The forest resource of the study area is also degrading from time to time before the very eyes of government institutions meant to protect it and local communities. The underlying factor for this wide destruction of forest is the increased demand for farmland to sustain the livelihood of the fast growing population in the area. Given the back ward agricultural practices with local productivity per unit of land, expansion of farm land in to the forests is the only option for new families where such forests are unprotected from intrusion.

The existing community forests and marginal lands are scrabbled in competition among farmers, even sometimes it became source of conflict in the woreda. There are many reasons for conflicts to arise in the forest resource of the area. To mention, lack of

attention from concerned governmental organization at the woreda level to the process of involving local communities and others who care about the resource in resource management plans, management itself, and decision making process and local communities needs for grazing land, firewood, building materials, fodder, medicinal plants, hunting, etc. No rural development and conservation program can be successful in the long run on sustainable bases with out the willing support and participation of the community. Since most of environmental problems in the woreda are man made, it is up to the people to resolve them or at last to keep further degradation at reasonable level through the application of nature resource management and conservation measures. So, lasting solutions must be sought for the sustainable management of the remaining resources in the area, by mitigating the conflicting resource uses and reducing the pressure on these resources. In spite of the prevailing problems, no reliable and consistent research, monitoring and evaluation have been undertaken, in the woreda. Therefore assessing and analyzing the implementation of conservation strategies, achievements recorded and challenges encountered in the process of realization of sustainable environments in the woreds is found to be timely and critical.

Many researchers have conducted their investigation on the effectiveness of forest resource conservation strategies of Ethiopia however; they came out with different factors that hinder its effectiveness. Among these; low awareness of beneficiaries, lack of genuine participation, ineffective technical package fitting to local conditions (Daniel, 2002) ; conservation and agricultural policy generally contradict, which work against the interest of peasant (Campbell,1991); uncoordinated, untenable, unsustainable and insufficiency of the program (Belachew, 2002).

These studies have been conducted at macro level and since the study woreda is one part of the country, some of these factors mentioned above may encounter conservation strategies of the area. But the research is also conducted to investigate special factors associated with local conditions of the study area.

So, the process and the outcome of this research work is expected to serve various purposes:

- The forest resource of the area has been subjected to undue pressure of destructive exploitation and mismanagement with less attention to their sustainability. So this research work help to inform, the community, concerned governmental institutions at the woreda and other interested bodies about the seriousness of environmental crises in the area and to encourage them to be involved in intensive reforestation program.
- It identifies major factors inhibiting effectiveness of forest resource conservation strategy and suggests possible means to alleviate the challenge, which may serve policy makers as an input to taking policy measures.
- It serves as a secondary data sources for those who want to conduct further investigation in this area.
- It also helps the researcher to fulfill the requirement for Master of Art Degree in Public Administration and Development Management.

Due to time constraints as well as the focused objective of the research the study is limited to assess only forest conservation programs of NRCS in the woreda in addition, because of shortage of time and other resources the research is also limited to the period since 1991 in terms of its time coverage.

Furthermore, during the course of the research the researcher encounter some constraints and limitations which affect the process and outcomes of the study.

1. Shortage of time to gather sufficient data and analyze them properly.
2. The sample kebeles and households selected for investigation may not fairly represent the population and the diversity of the woreda and these in turn affect the outcome of the findings and generalizations to be made.
3. Data collectors' lack of skill and inconveniences in collecting data as the result of scattered settlement of farmers, lack of proper transportation and communication during field survey, problems of the respondents particularly farmers to understand

the purposes of the research, biased and distorted information given by the respondents constrain the course of the research.

Natural resource conservation and development is a global issue, and for developing countries, especially Ethiopia, the issue is related with the daily lives of millions of people. To deal with the issue in the study area the research has the following objectives. The general objective of this study was to describe existing natural resource management strategy with emphasis on forest and to indicate alternative mechanism that may help the peace full co-existence of local people and forest resources of the area.

Specifically:

- High lights the status of forest resource conservation and development in the woreda.
- High lights the state of implementation of the strategy employed to conserve forest resources of the area.
- Under score the gaps in the implementation of the conservation strategy.
- Assess local community's participation level in forest resource management and afforestation effort.
- Examine achievements recorded from the employed strategy.
- Suggest possible recommendations, which help to undertake effective conservation.

In this study, an attempt was made to address the following key questions.

- What do the status of forest resource conservation and development look like?
- What gaps are there in conservation strategy of the area?
- Does the community participate in forest resource management process?
- What achievements are recorded from the introduced conservation strategy?
- What mechanisms do exist to improve the effectiveness of forest resource conservation strategy?

This study comprises of eight chapters. The first chapter deals with introduction; in which background, problem and objective of the study are included. The second chapter predominately constitutes the review of FRCS documents supplied by the EPAE, OADB and rural and agricultural development office of the woreda. A review of various secondary sources is undertaken from document produced by different institutions whose roles and functions are related to the subject of this research.

The third chapter deals with research methodology, in which different instruments have been used for data collection. The fourth chapter deals with situation analysis that over see how things are on the ground regarding forest resource conservation at national, regional and study woreda. The fives chapter deals with presentation and analysis of data collected through different instruments including presentation of opinion survey's results. The sixes chapter presents findings by analyzing and interpreting data collected using different instruments. The research is going to find out; the result attained from the on going conservation programs, gaps in the implementation of the strategy, levels of awareness in the society about the program and its importance and if there are improved ways of under taking the program in the woreda. The seventh chapter deals with conclusion. The research paper is a modest attempt to explore the effectiveness of natural resource conservation strategy of Ameya woreda. Based on the result obtained from the findings the researcher concludes whether or not implementation have been effective, achievement have been impressive and generally as strategy meets its target. The last chapter presents the recommendation of the study. In light of aforementioned findings and conclusions the research recommends strategies that will lead to better implementation of the programs.

CHAPTER TWO

2. Literature Review

2.1. Management and Rehabilitation of Natural Forests

Conservation and management of forest resources have become much more complex and the traditional systems and approaches have become increasingly ineffective. Growing population and demand for forest product and services and declining a resource base have led to a complex situation reducing the efficacy of traditional forest administrations (Militon, 1991: 191). The simple extraction of product must be replaced by a set of goal oriented activities which ensure the future of the resource and sustained yield of forest products or services of both with the objective of achieving optimal human benefits (Hummel, 1984: 50). Hence, sustainable forest management entails the balancing of the economic, environmental and social functions and values of forest for the benefit of present and future generations. In developing countries like Ethiopia, there are areas of extendedly degraded natural forests due to various reasons associated with livelihoods of the people. So it has to be carefully studied of and how such areas can be rehabilitated and brought back in a state which allows them to cope better with the many fold human needs and to compensate for other losses of natural forests. Our national forestry policy has to encourage and to guide this rehabilitation process.

2.1.1 Creation of New Man-Made Forests

In many countries we find vast areas of degraded and only marginally used land which once had been covered by natural forest but where the residual vegetation is not able to reconstitute by itself a nature forest in due time. Most of these areas lend themselves to artificial reforestation through planting of indigenous or exotic tree species (Militon, 1991: 191).

The challenge is to manage natural forests designated for wood production in such away as to meet economic and socio-cultural needs while maintaining and enhancing the forests ecological and environmental functions. As WRI (2006:15) indicates big areas in the tropic have been planted with eucalypts and pines and too little attention had been

given to indigenous tree species which in many cases could serve as well or even better than exotics under the given conditions. FAO (1999:19), also indicates that unsustainable monocultures unable to provide the multiple goods and services available from natural forests. There is concern that some natural tropical forests are being cleared and replaced with forest plantations. Hence, national forestry policies should pay much attention to indigenous species and encourage their use when appropriate man made forests conserve a number of purposes from ecological point of view, however, they are not as precious as natural forests. But nevertheless they are able to improve the ecological situation considerably compared with the naked, degraded and often eroded areas and further more they fix high amounts of CO₂ (Milton, 1991:191). The area of forest plantations established for industrious wood supply can help to compensate for an anticipated reduction in production from natural forests because of deforestation or increased areas being set aside for conservation or other reasons (FAO, 1999: 20-21). The wood they produce is available source of raw material for forest industries as well as a source of energy and timber for the local population. By their own production of wood they reduce the pressure on the still existing natural forests and contribute indirectly to the conservation of them. Artificial reforestation of unused or under well degraded areas constitutes, therefore, other important field for national as well as international forestry policy (Milton, 1991: 191).

2.1.2 Rational Use of Wood as Raw Material and Sources of Energy

The total removal of timber and fuel-wood from tropical forests could be considerably reduced and the pressure on the existing forest diminished by more rational use of the wood and the reduction of waste on all levels of harvesting and transformation (Milton, 1991: 192). WRI (2006: 24) noted that more efficient wood use and charcoal production technologies, such as improved recovery of logging wastes and briquetting of crop residues from large-scale farms, negligence, insufficient training of labor and staff, poor organization, inappropriate equipment and inefficient burning of fuel wood for cooking and heating hamper a rational use of the resources.

2.1.3 Institution Building

Changes in national economic policies and societal demands on forests are having direct and substantial impacts on government forest institutions and administrative arrangements for forest management. These include modification in the role of forest and administration, a move towards decentralization and changes in forest research and education orientations and structures (FAO, 1999: 72). The best national and international intentions and principles of a coherent forestry policy cannot be implemental without appropriate national institutions, consists of an organizational frame-work, a corresponding technical infrastructure and, above all of human beings. All three elements are complements and any institution building activity has to consider them equally (Milton, 1991:192). In most of the tropical countries the forest related institutions are weak and not able to cope with the necessities. Any forest service needs organizational structures which cover the whole country and make sure that everywhere in the field competent representative is available (Ibid). The organizational tradition of the forest service in Ethiopia is characterized by frequent restructuring. This has led to a fast turnover of staff, low morale of employees, discontinuation of program and projects, confusions of responsibilities and mandates, misplacement of documents and files resulting in loss of institutional memories, and progressive weakening of operations (Demel and Tesfaye, 2005). Their persons must dispose of the necessary technical and financial means to move and to reach at any moment any part of the territory for which they are responsible, further more they need an efficient communication systems which allows for fast exchange of information. Most important is however, the quality of the personal on all levels of the organization, not only with regard to education and training but also with regarded to integrity, motivation and personal authority (Milton, 1991:192).

2.1.4 Multi Dimensional Action

The significations of comprehensive national forest sector planning processes and an enabling policy environment to sustainable forest management is now widely recognized (FAO, 1999:61). WRI (2006:14) advice integrated land use planning that optimizes use of land for agriculture, forestry conservation, and other productive activities on a

sustainable basis, while minimizing the negative impacts of transportation, irrigation, and resettlement schemes on tropical forest ecosystems, for sustained forest management. According to Militon (1999:192) development strategy of a country should be based on a coherent and long-term oriented national forestry policy. International assistance cannot replace national activities, but can provide advice, technical assistance in special cases and to a limited extent some financial relief.

2.2. Forest Policy Reform

Forests are part of a nation's heritage and resource endowment. It is the right of individual and state to make use of the forest resource for a continued satisfaction of a wide range of human needs, and their responsibility to provide stewardship for the protection, development and conservation of forest and trees (Militon, 1991:15). However "success in reversing deforestation will depend on political leadership and appropriate policy changes by developing country governments to support community level initiatives. Short term measures will not solve the problem neither will narrowly focused action within the forestry sector. A sustained commitment to forestry, agriculture, energy, and related rural development programmes is required. (WRI, 2006:14)

As Ntia Moa-Baid, et al, (2000), wrote the lack of a declared rational forestry policy has in many countries made forestry the Cinderella of government department with no assurance that activities begun today will be funded or continued tomorrow. In Baid's judgment, too many of the existing forest policies consist of "Pious aspirations," rather than being asset of specific targets linked to declared social objectives accompanied by detailed programs. The consequence of this situation include increasing forest degradation and deforestation, lagging reforestation program, mismanagement of natural forests, wasteful and uneconomic resource use and socially negative practices. Globally, a consensus is growing that comprehensive national forestry policies must be given top priority if the present rate of forest degradation is to be reversed and the full constitution of forestry to social and economic development realized forest policies (and laws) that for much of the past fifty years have promoted forest exploitation for timber production must be revised in order to incorporate environmental and social costs and benefits in to the

decision making process along with the traditionally dominant economic consideration (Milton, 1991:99-100).

Despite greater variability among countries, three broad shifts are apparent, national policy makers have become more aware of the complex nature of policy reforms and the uncertainty of their effects, the interrelationships between forest and other sectors of the economy also better understood, and there should be a greater recognition that policy statements mean little in practice without strong institutional capacity to implement them (FAO, 1999: 63). Call for forestry policy reforms are coming from a variety of sources: rural people seeking to protect or enhance their benefits from the forest; indigenous native groups trying to maintain traditional ways of life; provincials forestry departments seeking greater authority in forest management, environmental NGOs hoping to halt continuing destruction of biologically rich tropical forest ecosystems; and development assistance organizations and agencies responding to public concerns about forest degradation and deforestation (Milton, 1991:10). At the international level the possible link between forest and climate change has become an issue of high public and political concern, along with the need to conserve the genetic and biological resource of forest ecosystems. This is adding increasing urgency to calls for bringing deforestation under control, vastly expanded management of natural forest and reforestation of millions of hectares of formerly forested degraded lands (WRI, 1989: 64). In recent years a number of developing countries have attempted to revise their forestry policies in order to make more responsive to social and environmental needs. Many of these efforts have failed to produce results, however, because they have been carried out by and almost exclusively within the forestry sector, with little involvement of others (Milton, 1991: 100). As might be expected there is also resistance to change. It came from governments heavily in debt and needing to earn foreign exchange for national development by selling timber and putting land in to export crops: from politicians, officials and timber operators who profit for forest exploitation and from entrenched bureaucracies either unwilling or unable to adapt to change (Repetto, 1998: 105).

According to Milton (1991) developing countries put new terms and ideas on paper (i.e. community forestry, agro forestry, sustainable forest management, people's participation)

but in most cases these programs have been generated by the same bureaucracies that have been responsible for past forestry policies. Foresters talk to foresters and came up with policies and programs to be carried out by the same forester. In effect, change have been slow, the forestry sectors remains largely timber oriented, and other sectors continue to go their own way with no regard for the forest policies, which are seen as policies of the forestry sector, not of the national government as a whole. The time has came to take a new approach to forest policy formulation; one that recognize the multi-sectoral nature of forest land management and which also give a greater role in policy formulations to interest groups and professional disciplines outside of the forest profession including the rural people affected by forestry resource conservation management and utilization. Generally with regard to a further improvement of national forest policies the following aspects to be of particular relevance.

2.2.1. Sustained Forest Managements

Sustained forest management entails the balancing of the economic, environmental and social functions and values of forest for the benefit of present and future generations (FAO, 1999: 12). According to Militon (1991:165), it refers to recognitions of the needs of forest dependent communities; increased benefits from forest resource utilization for the rural population, increased local involvement in decision making on forest development and conservation programs; establishment of compensation mechanisms to offset lost benefits in resources utilizations. Countless rural development projects have failed to make a long-term impact because of inadequate involvement of local people. Greater attention must be given to creating incentives for local participation and ensuring that communities are involved meaningfully in project planning and implementations. The roles of women and nongovernmental organizations are especially important.

2.2.2. Institutional Building for Forest Sector Development.

It include determination of a clear institutional focal point in government for forest related issues and strengthening of the responsible public administration. The best national and international intentions and principles of a coherent forestry policy cannot be implemented without appropriate national institutions. Institutions consist of an

organizational frame-work, corresponding technical infrastructure and above all of human beings. All three elements are complementary and any institution building activity has to consider them equally. In most of the tropical countries the forest related institutions are weak and not able to cope with the necessities. Any forest service needs organizational structure which covers the whole country and make sure that everywhere in the field competent representatives are available. These persons must dispose of the necessary technical and financial means to move and to reach at any moment any part of the territory for which they are responsible. Furthermore they need an efficient communication system which allowed for a fast exchange of information. Most important is, however the quality of the personnel on all levels of the organization not only with regard education and training but also with regard to integrity, motivation and personal authority (Milton, 1991:1992).

2.2.3 Intersection Policy Linkage

Some policies and practices in agriculture, energy and other sectors lead to forest destruction. Many of the solution to deforestation must come from outside the forestry sector (WRI, 2006: 14). Some countries have accepted that, despite expected increases in agricultural productivity, additional forest land will inevitably be converted to agricultural uses; relatively limited attention however is accorded to the design of sound policies which would contribute to more effective land use transitions (FAO, 1999:63). These situations are similar with other sectors that have considerable impact on forests, such as mining, oil and natural gas exploitation, agri-business expansion and infrastructure development. Attempts to integrate inter-sectoral considerations in to policy design for greater efficiency and effectiveness is still comparatively weak. Similarly policy reforms in other sectors generally still give little importance to spillover effects on the sustainability of forests (Ibid). However, recently pressure from environmental groups has forced policy-making bodies to give greater attention to these issues based on these facts. WRI (2006) suggest the following solution to policy makers integrated land use planning that optimizes use of land for agriculture, forestry conservation and other productive activities on a sustainable basis, while minimizing the negative impact of transportation, irrigations and resettlement schemas on tropical forest

ecosystem; provision of government fiscal policies outside the forestry sector that encourage exploitation, depletion or waste of forest resource to a greater extent than could be economically justified or commercially profitable without government intervention.

2.3 Bench marks for the assessment forest resource conservation

For the purpose of assessment of forest resource conservation strategy in the study area the researcher adopted FAO's forest conservation principles. The significance of comprehensive national forest sector planning process and an enabling policy environment to sustainable forest management is now widely recognized. Various sector planning efforts around the world are focusing to a significant extent on a common set of principles and approaches, as national forest programs (NFPs) FAO (1999: 61). National forest program is generic term for a wide range of approaches used by countries in planning, programming and implementing forests activities.

FAO identified the following basic principles of NFPs and these basic standards are used as a bench mark in assessment of forest policy of the county and its implementation in the study area:

1. Policy and institutional reform and capacity building
2. Holistic and enter sectoral approaches
3. Partnership and participation
4. Integration with country's sustainable development strategies
5. Secure land tenure arrangement.
6. Establishment of effective coordination mechanism and conflict resolution schemes
7. Recognition and respect for traditional and customary right of indigenous groups, local communities, forest dwellers and forest owners.
8. Environmental awareness and education
9. Sustainability and sufficiency of the strategy

2.4 Social, Economic and Environmental Roles of Forest

The role of forest and forestry in any country or region will be settled by two poles, the forest resource (supply) on one hand and the need by the society (demand) on the other hand. Neither supply nor demanded are static. The forest resource can be managed for the purpose of optimal supply, but with time, society changes its use of products and services in quality as well as in quantity (Hummel, et al, 1984:103). Forest and trees is an important resources base for a sustainable economic and social development, providing a large variety of wood products, non wood products and services. The role of forest and trees with regarded to the protection of soil, water and the environment is of vital importance in many regions of the world and for most mountainous area (Militon ,1991:10). FAO (1999:24) noted the role of forest as follow conservation of biological diversity, carbon storage and sequential for mitigation of global climate change, soil and water conservation, provision of employment and recreation as opportunities, enhancement of agricultural production system, improvements of urban and peri-urban living conditions and protection of natural and cultural heritage. Moreover, the cultural influences of the forest have been recognized throughout the age and poets, painters and philosopher and have derived inspiration from it. The forest has left a deep impression on the minds of men from the earliest times, and is associated with religious belief among the people of many land; this finds expression in the preservation of sacred grows and in the veneration of certain kinds of trees, while, the folklore of many primitive tribes is bound up with the forests and the sprits which inhabits them (Hummel, et al, 1984: 163).

WRI (2006:6) put the contribution of forest and trees to agricultural production as “maintain the soil and water for agricultural production, particularly in upland water sheds, by reducing erosion and moderating streams flow, restore soil fertility in shifting agriculture; increase farm crop yields by 20-30% in arid and semiarid areas by slowing wind and increasing soil moisture; increase soil nitrogen content through use of leguminous nitrogen fixing tree species; and provide a significant proportion of livestock feed requirements especially, in upland and semiarid regions. The production of wood for industry and, in some cases, for the export of forest product has been and is likely to continue to be the main policy objectives for a large proportion of the managed forests of

most countries and it constitutes the main sources of income from forestry. But in many developing countries and especially those with limited forest resources, the provision of fuel wood and of other wood for domestic use in rural areas is even more important. In these countries most people depend almost entirely on wood to cook their food and this situation is not expected to change much in the foreseeable future, (Hummel, et al, 1984: 164). Trees are essential sources of fodder for livestock. They also provide fruits and nuts, honey, gums, oils, resins, medicines, tannins, fibers, and other materials. There is growing recognition of the importance of small-scale forest-based enterprise as a source of on farm employment and income (WRI, 2006: 5). Virtually all forests everywhere have environmental function, but the nature of that function varies. In major water catchment areas forest act as a sponge that absorbs rain and then releases it slowly thus helping to prevent the periodic flooding and drying out of rivers; on slope forests help to retain the soil and prevent erosions, in arid regions forests impede the march of the desert; and almost every where they are playing an increasingly important role as habitats for wild life and as in situ gene bank for plants and animals (Hummel, et al, 1984: 164). Forests and trees are an essential factors for protecting environmental and human and habitat, they are most remarkable achievements in the evolution of nature, an indispensable element of biodiversity and a significant part of many landscape (Milton, 1991:10). The use of forests for recreational purposes has only in recent times created problems requiring policy decisions. The most serious problems arise in developed countries, which are densely populated and have only a limited area of forests under this the number of people wishing to visit forests is very large and the risk of damage is great unless appropriate measures are taken (Hummel, et al, 1984: 164). In developing countries forests are encroached upon by urban development when require land for housing industries, roads, motorways, airports, power plants etc. These losses of forest area are often compensated by afforestation of marginal agricultural land, but usually, in remote areas or in the mountains. The forest areas may thus be in balance or even show an increase but the development as a whole may never the less be unfavorable, because the disadvantages of losing forests near the population centers is by no means counter balanced by the advantage of creating new forest in place where the forest cover may be already sufficient and benefits fewer people (Hummel, 1984: 164).

EPA (2004) pointed out that there are different causes of deforestation in Ethiopia, increase in population and consequent increase in the demand for agricultural land, fuel wood as well as construction and industrial, settlement around forest area and forest fire, the expansion of large commercial farms in forest area, absence of forest protection and conservation system policy , absence of strong forest administration system, incapable of arresting the rapidly increasing rate of deforestation as well as controlling and preventing the disruption of the various ecosystem, lack of effort to ensure the participation of communities in forest protection and conservation and the sharing of benefits. According to Ermias (2003), factors causing deforestation includes economic stagnation and poverty, poor governances and political tolerance, protracted civil wars, entrenched bureaucracy , rampant corruption, weak policies and in appropriate institutional arrangements including tree or land tenure insecurity and population pressure.

2.5 Cause of Deforestation

Deforestation and degradation of forest resources are typical symptoms of an unsatisfactory socio-economic and political situation in most developing countries. The majority of the proposals and concepts aimed at solving down or even reversing the general trend, tend only to treat symptoms and not to heal the disease as such (Militon, 1991:53). Environmental concerns of the poor are related to survival itself while it is unrealistic to expect poor people to conserve resources for the future when they are struggling for survival; the governments of these countries in turn have very scarce economic resources for any activities outside the provision of basics human needs (Jenifer, 1999: 204). Since people in developing countries especially those of Africans depend on natural resource for their survival, it will result in waste full and over exploitations of natural resources. However according to Hummel (1984:163) in many developing countries, hunger for land is the main cause of forest clearance. There is rapid growth of population every year, there are more mouth of feed and more land is needed to do so, the only available land is usually forests thus millions of hectares are cleared every year, the area is burned over and then used to feed and raise domestic animals, most of forest clearance is un planned and the methods of subsequent cultivation are primitive and lead to erosion with the result that after a few years the areas lost to both

agriculture and forestry and the process is repeated elsewhere. For example, in Ethiopia as noted by Gedion (2003) encroachment in to forest and protected areas including to marginal lands cause accelerated land degradation resulting in a self propelling downward vicious cycle of degradation of natural resources, leading to declining crop yields, leading to expansion of cultivated land again leading to further natural resources degradation and to further decline in crop yields, thus substantially contributing to rural poverty and famine vulnerability. In many developing countries grazing in the forest is still very important; the most frequent animal is in many cases the goat the damaging “GRAZER”. It does not only graze on the ground, by browsing it damage and eventually kills the young trees at least up to man height. Millions of hectares of formerly good forest in the Mediterranean Basin the Near and Middle East and elsewhere are more or less bare rock land now and this was to a high degree due to the grazing of goats (Hummel, et al; 165). Ethiopian forest also face similar problem, as FAO (2003) indicate, with 35 million Tropical Livestock Units (TLU), equivalent to 80 million livestock heads, Ethiopia has one of the largest livestock population in Africa. It is estimated that over 80% of the livestock are found in the high land (with an estimated stocking rate of 160 TLU per km²), causing widespread over grazing and degradation on both arable and grazing land. Moreover, the low survival rates of planted seedlings in re-afforestation programs are partly attributed to the free roaming dense livestock populations. In the low land areas over grazing by livestock leads to soil compaction and damage to natural regenerations (Seyoum and De-stoop, 2006:54). Another serious damage is the destruction or diminution of forestry substances by practices such as over cutting, too big clear cuts that cause soil erosion, and creaming; that is felling the best and most valuable tree only, but damaging here by the remaining stand or even destroying it. Commercial greed and corruption are generally the underlying motives, although they may be cunningly concealed (Hummel, et al, 1984:165). Milton (1991) indicate that the traditional tools of forest policy such as legislation, institutions, and forest policy alone unable to solve the problems as long as a number of political, education, economical, social and organization prerequisites do not exist in a country. Hummel and et.al (1984: 165) also support the above ideas, legislation and supervision on one side and information plus education on the other, which must be invoked if the forest substance it

to be protected. There may also have to be rules on how timber is sold, short term concessions in particular are liable to lead to over exploitation and 'creaming'.

2. 6 Cost of Deforestation

As deforestation progress, it reduces the quality of life of millions of people in developing countries. For the poorest living close to the land, their survival is threatened by the loss of the vegetation upon which they depend. As trees disappear, so do their sources of household energy and many other goods. Worse, a chain of events is set in motion that leads to declining food production, land degradation, and in extreme cases, desertification (WRI, 2006: 7). There are various cost associated with deforestation, different reports and authors also indicate that there are too many consequence of deforestation both in developed and developing countries. More than 80% of the world forest resources harvested in developing countries is used as fuel wood, compared with less than 20% in developed countries (WRI, 2006:7). Much of the wood harvested in the world each year is used for energy production, of the estimated wood harvested in 1995, about 63% was used as fuel wood (FAO, 1994: 14). In developing countries fuel wood accounted for 81% (91% in Africa, 82% in Asia and 70% in Latin America) of the wood harvested. Wood fuels remain significant sources of energy in developing countries, especially in the rural and domestic sectors. In rural areas, gathering and transporting fuel wood increasingly dominates the daily lives of millions of people. 100 to 300 work days, each year must be devoted to supplying a household. Women and children shoulder most of the burden for finding and caring home the wood needed to cook the day's meals (WRI, 2006:6). In Nepal, groups of villagers must leave at sunrise in order to return by sunset with a back breaking load of wood that will last only 3 to 4 days. The increasing time needed to collect fuel wood is disrupting family stability and shortens the time that can be devoted to weeding and tending crops, preparing food, and other domestic activities. Urban demand for fuel wood and charcoal is expanding, the economic distance for clearing and having wood, leading to ever widening circles of devastation around cities and towns (Ibid, 6). There is also a huge gap between demand and supply for fuel wood in Ethiopia. According to MONREP (1994), the demand for fuel wood in 2020 will reach to 100 million m³ against supply projection of only 7.7 million m³. Without major

policy changes that ensure better fuel wood conservation and increased supplies, by the year 2020 some 2.4 billion people (more than half people in developing countries) will face fuel wood shortage and will be caught in a destructible cycle of deforestation, fuel wood scarcity, poverty and malnutrition. Deforestation is having serious impact on food production. As fuel wood supplies are depleted; families turn to what ever substitutes are available, primarily crop residues and animal dung. The failure to renew soil fertility leads inevitably to declines in crop yields (WRI, 2006:7). Moreover, Seyoum and Destoop (2006:54) noted that, when wood become scarce, rural households switch to the use of crop residues and animal dung for fuel , there by significantly reducing the amount of nutrients returning to the soil, this in turn has negative effects on crop productivity and ultimately food security. The annual burning of an estimated 400 million tons of dung to cook meals in areas where fuel wood is scarce decreases food grain harvests by more than 14 million tons, this loss in food supply is nearly double the amount of food aid annually provided to developing countries (WRI, 2006:7). The removals of tree cover can further reduce agricultural productivity by loss of vegetation; reduces the effectiveness of rain fall by decreasing the amount of water that percolates in to the ground.

Forest exploitation and clearance can create inter linked problems, notably soil erosion, watershed destabilizations and microclimatic change. These threaten the soil and water base for agriculture, about half of the precipitations in the Amazon arise from forest evapo transpiration, and already there are areas which are drying- out which can be correlated with deforestation (Mayers and Bass, 1999:13). Dry land is particularly sensitive to human abuse because of the fragility of the soil and low and erratic rain fall. Traditional production systems are breaking down in these areas under the combined pressure of population growth and poverty. As dry lands are striped of woody vegetations through agricultural clearing, overcutting for fuel wood, over grazing and bushfire, land degradation worsens and the spreads of deserts accelerates.

As Mayers and Bass (1999), indicates deforestation will leads to declining quantity and quality of forest, this is because wood fuel and food are being harvested at rates faster than forest regeneration; because remaining growing stock is often poorly managed, because fire control may be inadequate; and because many forests are being cleared to

make way for other land use. Losses of biodiversity are contributing to a rapid reduction in ecosystem species and genetic diversity. This lowers the world's biological potentials for improving material, food and medicine production and increases vulnerability to environmental, economical, social change with tropical forest being perhaps the major repository of biodiversity, forest abuse in tropical regions is causing particular concern.

Industrial forest product such as sawn wood plywood and paper are important throughout the world. They are a source of essential building material and of the paper needed for school, books, news papers and packing. Sustained development of the third world implies a steady increase in demand for forest product as life way increase and as the needs for housing, furniture paper and other wood based industries grows (WRI, 2006:10).

Developing countries possess nearly half the world's closed forest, but they produce only 21% of its industrial timber. Many developing countries have both large natural forest and ecological conditions that are suitable for fast growing industrial plantations however, a decline in the area of accessible commercial forests causing serious problems. In most of these countries, current levels of forest management and reforestation fall far short of what is needed to limit import and sustain exports (Ibid).

2.7 Experience of other Countries on Forest Management

2.7.1 Canada's Experience

Canada is a forest nation, forests are part of Canada's heritage and history, and their current significance for its economic, social and environmental well-being is undeniable. The pulp and paper and wood industries as well as forest based tourism and recreation, are major components of Canada's economy. Forests provide a back drop for tourism reaction, hunting and fishing, employing thousands of Canadians (FAO, 1991: 189). Of Canada total area of 1997 million hectares, 453 million hectares are forest however, not all this available or suitable for commercial timber production. Only about 233 million hectares or 5% is inventoried productive forest available for commercial purpose. Internationally, Canada is a leading producer of forest products ranking first in meal sprint production; second in pulp production (after US) and 3rd in soft wood lumber

production (after USSR and US) (Ibid). The forest management techniques used on crown lands and to be recommended for use on privately owned land include to facilitate suitable natural regeneration wherever practical and involve selection cutting or the harvesting of individual trees or groups of trees within a stand and the shelter wood harvest system involving one or more partial cuts carried out a decade or two before the final harvest, permit consideration of the size and configuration of areas to be clear cut where circumstances warrant; make provision for early spacing or cleaning where naturally regenerated stands contain too many seedlings for good diameter growth; provide for commercial thinning to enhance the future saw log harvest where stand and site conditions permit provide for weeding or the removal of unwanted competing vegetation in stands to be managed and provide for any silvi- culture technique designed to promote improved growth and vigor of forest stands. (Walstad.D.J. and Peter.J, 1987:63)

Harvesting of Canada's forests is strictly controlled by provincial and territorial regulation, and all harvested areas must be reforested. Each province and territory sets an allowable annual cut based on the sustainable growth rate of the particular forest area. The goal is to maintain biological diversity while considering economic and social factors. About 900,000 hectares forest is harvested annually in Canada (accounting for approximately 0.22% of all forest and other wooded land). In 1994, about 425,000 hectares were replanted and 34,000 were seeded planting and seeding are reliable means of regenerating forests disturbed by harvesting or other influences when advanced or natural regeneration is not an option for a site. The proportions of area planted and seeded may change from year to year depending on the nature of the disturbance, species composition, ages and structure of the forest, success of natural and artificial regeneration, government policies and other factors. The means of regeneration is less important than the end result-the long term functions, conditions and productivity of the forest ecosystems (Wolvekamp, 1999: 210-212).

Regulating the amount of wood that can be harvested is central to forest management strategies. Tracking the amount of wood harvested allows forest managers to determine whether harvest levels comply with regulated amounts. Harvest levels on provincial

crown lands are regulated by provincial governments. Governments usually specify an allowable annual cut (AAC), which is the annual level of harvest allowed on a particular area of crown and over specified number of years. In practice annual harvest levels may be above or below the AAC, but they must balance out over the regulation period. Although AAC is determined for Canada as a whole, it is possible to compare the aggregation of the provincial AACs across the country with the aggregated harvest from the same provincial crown lands base.

Harvest levels on private, federal; and territorial lands are generally unregulated. It is therefore difficult to determine the level of harvest deemed to be sustainable of these lands. For example, for managed forest in a British Columbia assessment property classifications established in 1988 to encourage private land owners to manage their lands for long term forest production. Managed forest land class requirements included a minimum of 25 hectares. The property may consist of more than one parcel provided the parcels are contiguous. If the land is 25 hectares at least, 70 % of the land must be productive. If the land is more than 50 hectare at least 50% of the land must be productive. A signed management commitment filed with the council that signifies the owner's commitment to use the property for production and harvesting of timber and associated forest management activities. Annual administration fee paid to the council. The fee is determined each year by council and is based on area at per \$ 1000 of bare land. Annual declaration form that highlights forest management activities completed during the year including harvesting destroyed timber, road construction, and reforestations. Comply with the privately managed forest land Act and regulations, including protection of key environmental values. Pay an exit fee if the property is withdrawn from the managed forest land class after 15 years (Ibid).

2.7.2 Swedish Forest Policy

In Sweden, legislation on forest ownerships and managements date back a long way, because of their major economic role; forests have been a topic of regulation ever since the provincial laws of the 13th century. The national forest policy currently enacted by parliament in 1993 incorporates the commitments made by Sweden at the united nation's conference on environment and development (UNCED) at Rio de Janeiro in 1992.

Underlying this policy is the convention that there will continue to be a demand for renewable products in the future and that Swedish forest can remain an important raw material based for processes that are based on principles of ecological cycles. Goals for both forest production and forest environment have been established, these two types of goals carry equal weight. The preservation of biological diversity is a key element of the new forest policy (Wolvekamp, 1999:216).

The Swedish forest policy assigns “sectorial” responsibility for the environment. One consequence is that forest owners and forestry workers are responsible for obtaining the requisite knowledge to fulfilling environmental measures. A few years ago, major ecological and environmental training campaign was carried out known as richer forest. The campaign involved 100,000 participants and has already led to environmentally sound forest management in Sweden.

Since 1903 there has been legislation which requires planting and cultivation of new forest after logging .Today’s forest legislation contains provisions aimed at protecting key wood land habitats for flora and fauna, selected viewable broad-leafed deciduous trees, forests located near high mountains and wetland forests. There are also special regulations governing some 4 million hectares of low productive forest land. These regulations allowed only careful low-intensity utilization ensuring that the character of these woodlands alive remain unchanged, key wood land habitats functions as the houses of an ecological network, while forest wetlands and low-productive wood lands often comprise ectopically corridors in the landscape. (Ibid)

The Swedish forest Agency work to implement the forest policy, supervision of the forestry Act is an important part of this work, as there are various forest survey advisory services and the administration of state subsidies to the forest owners. The forest Act sets out the demand placed on forest owners by society. These include the wood production level that was being shown to nature conservation and cultural heritage. The Swedish forest agency is pleased to offer advice on how to meet and exceed the minimum requirements of the Act, both for production and conservation. This include how to regenerate new forest in a way that better utilizes the production capacity of the land, or how to play grater consideration to conservation and the cultural heritage when felling.

(<http://www.skogsstyrelsen.se/episerver4/templates/SNormalpage.aspx?> id=11303
3/3/2010).

As the Swedish forest Act indicate for sustained yield forest management new forest must be planted or naturally generated after felling when land's capacity to produce is not fully exploited. Planting or measures for natural regeneration must have been completed by the end of third year of the land falling in to disuse. This does not however; apply to land to be protected for its, natural characteristics or its cultural heritage. Reliable methods and suitable species of trees must be used in the forestation work. Natural regeneration can be a good method if the site is suitable otherwise, the land must be sown or planted. If there are insufficient numbers of seedlings supplementary planting must take place before it is too late, subsequent weeding and thinning may be necessary (Militon, 1991: 191).

Thinning must encourage forest development. Timber stock after thinning must be large enough to utilize the production capacity of the land. After thinning the trees must be evenly distributed on the area. Regeneration felling must not be carried out until the forest has reached acerbating age, for predominantly coniferous forests the age varies between 45 and 100 years. Regeneration felling is restricted on forest holdings larger than 50 hectares up to half of the land may be made up of finally felled areas and of stands less than 20 years old (Ibid).

Biological diversity in the forest must be preserved at the same time the cultural heritage must be safeguarded and social aspects must also be taken in to consideration. As Militon, 1991) indicates, the most important consideration are don't create excessively large felling areas; leave non productive forest land un touched; avoid damage to sensitive habitats and valuable historical sites; be particularly careful when felling in areas rich in rare flora and fauna, retain some deciduous trees in coniferous forests for the entire rotation period; leave protective buffer zones adjacent to water, non productive land for agriculture, and urban areas, plan felling and transport operation, go as to avoid or limit damage to the land and water courses and land forest roads so as to minimize damage to the forest and safeguards the cultural heritage.

CHAPTER THREE

3. Research Methodology

To find sufficient and relevant information about the topic, the study employed a descriptive type of research, and survey method was used for this research because it is an appropriate method for assessing current status of forest resource in the area and efforts made to conserve this resource and for collecting original data from target population. This was because, it is important to portray an accurate events or situations

3.1. Data Source and Instruments

Evidence of facts, events and circumstances are obtained through data collection. The data were gathered from both primary and secondary sources. Primary data provide a first hand account; so we can observe phenomena as it takes place. As the investigator collects the data, all precautions to ensure their reliability were taken. First hand data were collected from selected officers in woreda administration office, woreda rural and agricultural development office, local development agents (DAs) and households in the three sample kebeds of the woreda.

In order to attain the stated objective in the study area the researcher employed qualitative method which was supported by simple quantitative measurements in the form of percentage, tabular illustration and graphs. The achievements recorded and the challenges encountered in implementing forest resource conservation strategy were assessed based on response factors. The available data were explained, discussed and utilized to suggest ways and means to improve the situation, hence, descriptive methods of research was used.

To obtain sufficient data from the selected sources, the researcher has used different data collection techniques. The major techniques used to gather data from primary sources were interview questionnaires, focus group discussion and personal observation to obtain the required information; structured interview questions were prepared and conducted with the concerned officers in different offices of the woreda.

Direct face-to-face interviews were conducted with the head of forestry department in rural and agricultural development office of the woreda, head of the woreda administration and head of rural and agricultural development office. In addition to the officers at woreda levels a structured interview was also conducted with six development agents found in selected sample kebeles. The objective of this interview was to collect data not covered by the questionnaires and documents due to various reasons.

Closed ended questions were prepared to manage the responses in data analysis about conservation programs implemented in the woreda. The content of the questionnaire has two major sections. The first section of questionnaire includes guidelines on how to respond to the questions, and personal data of respondent. The second section examined respondent views toward forest conservation strategy employed in the area in terms of basic standards (i.e. communities' participation levels, inter-sectoral approach, conflict resolution schemes, and respect for traditional management etc).

In addition to household farmer's questionnaire the researcher held focus group discussion to substantiate the response of questionnaires in each sample kebele. The focus group discussion was conducted with the key persons in the localities, such as, community elders and kebele leaders, those expected to have accumulated knowledge about the past and present situations of natural resource conservation program in the woreda. Finally, minor attempts were also made to observe certain situations to supplement the information obtained from interviews and opinion survey.

During the distribution and collection of the questionnaires, briefings were given to respondents about the objectives of the survey and on some question that needed explanations. This helped to collect a reasonable number of responses and to avoid possible biases.

Secondary data were other source of information, to gather the information it is necessary to review the existing published and unpublished materials and proclamations which can explain about the forest resource conservation, such as manuals, journals, office reports, guides and regulations, books, research and working papers with their findings. Data about forest resource of other countries was collected by browsing internet from different

websites, and from different books. These were the main source of data for the purpose of this study.

3.2 Statistical Methods

A sample design is a defined plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample. It also lays down the number of items to be included in the sample i.e., the size of the sample. The sample size is governed by the total population from which the sample is drawn. The population taken as a reference in this research work was the household farmers in rural kebeles of Ameya Woreda. The woreda was taken as a reference because of various reasons.

The reasons for selection of Ameya woreda as a focus study among others are:

- The woreda consists of kebeles with different agro ecologies which resulted in endowment of various species of fauna and flora, however, these resources are under due pressure.
- In the woreda deforestation has taken place, and is still taking place, in proportions that are beyond any exceptions. The existing production capacity of the remaining forest is small while the demand for forest is tremendous and growing by the day. The present demand is many times over the present supply and the gap is widening.
- However, some measures taken from the woreda's concerned bureau were unable to replace the rate of depletions of forest resource of the area. Generally lack of attention is observed from both the communities and institutions in the woreda meant to protect and conserve forest resource of the area.

Stratified random sampling technique was used in order to select sample kebeles. There are about 37 kebeles in the woreda. These kebeles were stratified in to three groups on the base of agro-ecological zone. Out of the three strata three kebeles were selected by simple random sampling i.e. one kebele from each stratum. Sample kebeles in Kola,

Dega and Weyna-Dega agro-ecology have (675,800 and 538) households. The allocation size to each kebeles was made through proportional allocation methods, out of the three sample about 8% of the total households or 161 sample households (54, 64 and 43 from Gombore Allie in Kola, Ajjo Beha in Dega and Kura Bolla in Weyna-Dega agro-ecologies respectively) were selected through systematic sampling technique by using the name list of households prepared by kebeles for different purpose i.e. every Nth members was selected from the name lists of the household until the assigned proportion to each kebele was obtained. Therefore, the sample frame of the study is household heads in three kebeles of Ameya Woreda.

Table 3.1 Total household heads of the three kebeles and sample size taken from them.

Keble	Total number of household heads	Size of sample taken (eight percent of the total household heads)	Proportion of the total
Combore Allieye	675	54	0.335
Ajjo-Beha	800	64	0.398
Kura-Bola	538	43	0.267
Total	2013	161	1.00

Source: Gobove Allieye, Ajjo-beha and Kura-Bola Administration office

The field survey was conducted for one month in April 2010. Three enumerators, who knew local language, including the researcher, were participated in conducting the structured interview. Between 30 to 45 minutes were spent on average per sample household. All the interviewed household heads were above eighteen years of age. About 94% of household heads were male while the remaining were females. Regarding their educational status about 49% of them are illiterate and the rest can at least read and write. About 93% of them were married while the rest are unmarried and widowed or widower. Their average household size was 6.4. Most of the households 95% were born and residing in the area though out their lives where as the remaining 3.8% and 1.2% stayed in the area for more than ten years and less than ten years, respectively.

3.3 Methods of Data Presentation and Analysis

Data processing phase for the study typically involved the classification (coding) of writer in-answers and the transformation of all information to analysis and interpretation. Because of the nature of the issue under investigation, the researcher mainly used qualitative descriptions to present and interpret the data gathered from different sources. Descriptive statistics was method for presenting quantitative description in a manageable form. In this case, the study used the following statistical methods for data analysis; tables, graphs, and percentage.

CHAPTER FOUR

4. Situation Analysis

4.1 Forest Resource and Traditional Management Systems in Ethiopia

Forest resources are those components of biological diversity that are used or are estimated to have use for people and are often thought as property that is exclusively owned by individual or a group of individuals. The use of the resource is manifested by the production of goods and services from these resources and by its functional values where these values weighted through its contribution to ecosystem sustainability, Marshall (1997). Regassa (2001), also indicate that forest resource are the fruits of evaluation that are developed through the combined influence of physical environment and people, and play important economic, social and cultural roles, particularly in the lives of many local communities much of the bulk of those resources exists outside protected areas and beyond active management authorities of conservation programs and projects. Local communities, therefore, and often de fact are the primary stewards of forest resources.

Traditional management regimes and knowledge system of forest resources have shaped forests through out the world where materials from indivudal species are harvested in a sustainable manner. The use of elaborate taboos, myths, folklore and shared community values to resource use and management are integral elements of traditional forest management systems. The break down of many of these systems due to pressure of urbanization, cash economies and other socio-economic, political and cultural changes has resulted in the loss of forests and valuable species. Absence of secure land tenure and resource use rights as well as lack of proper land use planning also abstract and interferes with the practices of traditional management of forest resources by local communities. (Alcorn, 1990)

4.2 Forest Policy Prior to 1974

The extent of ecological destabilization following forest destruction and the gravity of wood shortages in the country are partly due to the passivity of government up to, 1974

(Eiche-Poschen, 1987:9). Berhe (1997:13) also state that large scale deforestation of the Central Northern Ethiopia highlands is a much older process, in the 1830's and 1840's in many part of this area closed forests were already completely absent. Prior to the revolution forestry, even land use in general, had not been a major government concern. Some efforts to introduce an effective forest administration, including training of professionals, in the late 1950s were soon abandoned (Eiche-poschen, 1987:9).

In the absence of government interference forest in the country dominated by natural forest exploitation and the operation of some 40,000 hectares of fuel wood plantation in the vicinity of major cities owned by land lords. The feudal land tenure system forced or encouraged exploitation of land while not providing incentives for conservation or investment in improvement like tree planting. Consequently rural afforestation was limited to some Eucalyptus planting around homesteads. Thus, while the failure to intensify agricultures and increase land productivity led to rapid forest clearing no measure were taken to provide other source of fuel and construction wood (Ibid,9).

4.3 Forest Policy After 1974

Agricultural and forest policies changed drastically after Ethiopian revolution, agriculture and rural area moved to the center of government interest and development policy; institutions were created to reach and organize the rural populations. To implement the redistribution of land and to provide an organizational structure in rural areas, the institution of the peasant association (PA) was created (Eiche-poschen ,1987:10).

In 1980, the Forest and Wildlife Conservation Development Authority (FWCDA) were set up which soon a Community Forestry Department added to it. The re-organization in 1985 made community forestry a part of the Community Forest and Soil Conservation and Development Department (CFCDD) in the Ministry of Agriculture (MOA) (Kidane, 1994).

4.3.1 The Community Forestry Program:-

It has taken a number of forms: community woodlots, agro-forestry practices, catchment protection, wind and shelterbelts, and road side shade and ornament in villages and towns. This program has received most of its external support from the World Food Program (FOA) and SIDA (Kidane, 1994).

The Community Forestry Development Department (CFDD) was created with emphasis on planting for fuel and pole wood production. The (CFDD) started to operate based on the contention that mass mobilization was only possible way to achieve the target of self-reliance in production and supply of non-industrial wood products (Eiche-poschen, 1987: 12). According to Kidane (1994), the objective of Community Forestry were: to assist peasant and urban dwellers associations to establish wood lots to meet their requirements for fuel wood and small construction poles; to integrate forestry in to their farming systems in the form of intercropping using multi-purpose tree species to create a suitable and balanced farming ecosystem while, at the same time being able to obtain food, fodder etc. To create awareness among the local people of the need and importance of forestry and be able to enlist their support for the execution country's forest policy. Eiche-Poschen (1987) also sate that the biggest task to accomplish for forestry in Ethiopia was to supply fuel wood to the more than 95% of the country's population depending on it. This was intimately linked with conservation objectives and the maintenance or even improvement of agricultural productivity.

Peasant Associations and peasant cooperatives were expected to establish wood lots to produce fuel wood and construction materials and the establishment of hillside plantations were mostly attempted in food deficit area with Food-For –Work as the incentive. It's estimated that 240,000 hectares of denuded hillside were afforested and or rehabilitated through this program (MNRDEP, 1994). According to EPA (1997) between the year 1976 and 1985 it has been estimated that some 600,000 km of soil and stone bunds were constructed on cropland and some 500,000 km of terrace on hillside, some 500million tree seedlings were planted and about 80,000 hectares of hillsides closed for regeneration. Re-afforestation was implemented on nine catchments in nine regions and peri-urban plantations were established in Addis Ababa, Nazareth Dessie and Deber Birhan.

State forests with productive or protective functions are established with seedlings from departmental nurseries, species selection and management plans aim at industrial wood production (Eiche-Poschen, 1987:18). In 1974 after nationalization of all land 13 natural forest areas later called National Forest Priority Areas (NFPA) were identified in 1988. The, no. of NFPAs were increased to 58 covering some 3.5 million hectares. The idea

behind establishing NFPAs was to implement integrated forestry management systems so that each area could become a self financing and sustainable enterprise. (MNRDEP, 1994)

According to Oromiya Bureau of NRDEP (1994) efforts that have been made to protect and conserve the existing natural forest have not succeeded at all. As a result the size of natural forest is decreasing at alarming rate. The state forestry sector has not been able to protect the natural forest which has been designed as priority areas and there has been a constant threat of encroachment from land hungry neighboring framers claiming residual right in these forests. The forests of Ethiopian have been drastically reduced so that there are now less than three million hectares, despite efforts that have been, put various studies indicate that result obtained was unsatisfactory. MNRDEP (1994) state that there had been little success in efforts to protect and conserve excising natural forest. Similarly efforts to promote community forestry had not been encouraging. As MNRDEP indicates the main problems and constraints were: absences of clearly defined forest policy and forest laws and regulations, lack of land and tree tenure rights, lack of the governments recognition of the seriousness of the situation and hence lack of genuine supports for forestry conservation and development program; lack of trained manpower and of financial and technical assistance, lack of participatory approach in the planning and implementation of social forestry programs, and lack of appropriate technology and extension systems.

State demarcation and management planning of forest land which often encompassed farming communities was under taken with little or no participations of those communities. This coupled with the inability of the government forestry agencies to effectively “ police” all the protected forest lands, led forests to being increasingly encroached up and cleared and turned to farm land because this farmland was “ illicitly” obtained, farmer perceived that they had even less security of tenure on it and consequently had no desire to invest in soil conservation work (EPA,1997).Thus ill defined tenure right on part of both the state and the farmer over forest land and the inability of the coercive state to enforce its own regulations led to the massive and often haphazard destructions of natural forest.

In retrospect a major weakness of past forest policy was lack of clear guidelines on the managements and utilization of community forest lots; ownership and benefit sharing were not made clear from the beginning; decisions were made between extension staff and PA leaders without involving farmer; and community members were not allowed to participate in planning and making decisions regarding the establishment and management of the plantations.

4.4 The Current Forest Policy

Ethiopia's high forests are declining at a rapid rate. In the early 1950s, high forests covered about 19 million hectares or 16% of the land area. By the mid-1980s coverage was down to about 3.6% and in 1989 it had declined further to about 2.7%. By some estimate the rate of depletion of high forest is about (100,000) hectares per annum (kidane, 1994). The causes of deforestation in the country are complex. The immediate causes are: expansion of cropped land; the demand for fuel wood and timber. Underlying these there are an interrelated set of causes to do with population increase, poverty and lack of tenure security. To arrest the ongoing destruction of the country's forest the Ministry of Natural Resources Development and Environmental Protection (MNRDEP) is keen to open up the forest sector to private enterprise and community participation (Ibid). The recent proclamation to provide for the conservation, development and utilization of forest recognizes that "the sustainable utilization of the country's forest resources is possible through ensuring the participation of and benefits sharing by the concerned communities as well as by harmonizing forest policies and programs with those of other economic sectors, particularly with agriculture and rural development policy (Proclamation, No. 542/2007). Considering the seriousness of the situation the country developed forest policy in 1997. The recent proclamations also recognize that the development and conservation of forest resource is the prerequisite for conservation and development of other natural resource. The development, conservation and utilization of forest, plays a decisive role in preventing soil erosion, expansion of desertification, disturbance of ecological balance, depletion of biodiversity and reduction of agricultural production due to alarming situation of forest degradation in the country. (Proclamation, No. 542/2007) By March 2007, the new forestry proclamation had been provided by the

government. It includes recognition of private ownership of trees and forest and as well as state ownership of forest. There are also guidelines for the management and utilization of the different types of forests.

4.4.1. State Forest Program

Existing natural forest and their associated ecosystems, including wild life, are repositories of genetic diversity and endemic species, for which Ethiopia is well known. Ethiopia conservation include nine national parks, four wild life sanctuaries, eight wild life reserves and eighteen controlled hunting areas. There are also the 58 NFPAs, (Kidane, 1991). During the military regime afforestation, conservation and development under the state forest department was essentially a government affairs. However under the new proclamations local communities are allowed not only in the conservation but also in the benefit sharing, forest development, conservation and utilizations plans shall be formulated to allow the participation of local communities in the development and conservation and also in the sharing of benefits from the development of state forest (Proclamation No. 542/2007).

It is now recognized that both protection of natural forest and state plantation cannot be guaranteed unless the local communities are also involved. State nurseries should supply the people with seedlings and in turn people will protect the adjacent state forest from illegal felling and, at harvest time, pay royalties on the seedlings provided. Presently the demand for industrial round wood is mainly met from natural high forest with a small quantity coming from industrial plantation, of which there is about 90 thousand hectares with in NFPAs. Although some of these have reached maturity, silvi- culture (weeding pruning and thinning) has not usually been carried out due to financial constraints (Kidane, 1994). Demand for wood (saw logs, ply logs and transmission poles) is presently around 400 thousand m³ and is likely to rise to 1.6million m³ by 2014. There has therefore, to be a vigorous program to expand industrial plantations with the aim of establishing a total of 250 thousand hectares of plantations in the next 20 years for which most of the land will have to be found out side the existing NFAs (Ibid).

Private forestry refers to all tree planting and management by individual groups and institutions. The most important activity here is farm forestry which is directly linked

with farming systems and involves rural communities. A forest other than state forest developed by any private person and includes a forest developed by members of a peasant association or by an association organized by private individuals, investors and government and non government (proclamation No., 542/2007).

4.5 Management of Forest Resources in Oromia Region

Oromia has large and self-perpetuating ecosystem composed of a large number of different flora and fauna which accounts for a large diversity of biological resource (OBNRDEP, 1994). The estimated natural high forest land of Oromia is about 2.8 million hectares with high pressure from different destruction agents and currently being destroyed at an alarming rate of 5,000-100,000 hectares per year with annual planting pace of 1200 hectares by state and 8000 hectare by individual (2.9-18.4% of destruction rate) (OADB, 1998:10). There is little scientific information on growth rates, natural regeneration or similarly dynamics of the natural forest of Oromia. Many forest activities have been carried out fragmentally at different areas which brought the problem of coordination of resource wastage and ineffective forest management.

One of the main contributory factors for the depletions of the regions forest resource is the lack of understanding and appreciation of the value of forest; the low achievements for the past efforts in forest development and conservation could be attributed to the fact that forestry activities were carried out by government with out or minimum people's participation (OBNRDEP, 1994).

Oromiya's remaining natural high forest is found in South-West, Southern and South Eastern part of the region. The Central and Northern parts are being almost completely deforested. Humid, mixed forest occurs in Southern and Harage zone with podocarpus, croton, olea, schefflera, and hageni at high altitudes. In the West aningeria adolf, fredric is the main emergent to 40 meter. Bamboos are found in clumps with in the high forests (Ibid). There are 37 national forest priority Areas (NFPAs) cover just over 3.1 million hectares. The size and distribution of the NFPA, by Zone is

Table 4.1. Size and distribution of NFPAs by zone in oromia Region (1995GC)

Zone	Area in ha
Arsi	43 400
Aris-East Shewa	98 200
East Shewa	9 600
West shewa	84 300
Bale	649 400
West Hararge	88 100
East Hararge	59 300
Illubabor	1110 000
Jumma	318 600
Borana	412 400
East wellega	66 960
West wellga	174 300
Total	3114 560

Source, (OBNRDE,1994)

Forest management plans have been made for only three forest priorities areas (FPA); Manessa-Shashammane, Tiro-Boto, Bacho and Managash-Suba most FPAs have not been gazette and subject to uncontrolled illegal cutting tire and other types of encroachment as people clear land for crop production. Once people have settled, they can not be forced to leave (OBNRDEP, 1994).

The Oromia Bureau of Natural Resource Development and Environmental protection emphasis in the need to involve rural communities in the conservation and management of forest resources for better success in development activities. This includes providing different incentives to encourage people's participations.

In 1994 there were 30 sawmills producing 66,360m³ of sawn logs annually. However, this is not on a sustainable basis and techniques were wasteful. The government's fixed

stumpage price does not cover the actual price of production and can not pay for replanting. The shortfall between the harvested area and the reforested area opens the way for further encroachment by people living around the forest often once. The large trees have been removed the remaining forest is only good for fuel wood production (OBAD, 1998). The basic problem of today is how to minimize the destructive deforestation and utilize of forest resource for urgently required social and economic development while at the same time conserving natural resources. Accelerated deforestation came up with environmental deteriorations like soil erosion and loss of soil fertility, water resources degradation, threat of extinction of flora and fauna of the region. The objective of forest resource management is for sustainable production to ensure the availability of the resource for coming generation which is fulfilling the need of present generation. However, according to (OBAD, 1998) there are different problems in the implementation of the management strategy “conflict of interest between the local community and forest resource management strategy of the bureau for the benefit of the whole region; lack of clearly demarcated and gazette forest priority areas; absence of reliable data on high forest for the preparation of meaningful management plan for most of our forest area; In efficient utilization of our forest resources during harvesting and consumption; very low stumpage value for the replacement cost of harvested areas and lack of freedom in marketing the forest products in the free market” are few among others. Sustainability in forest resource management is achieved when the quantity of wood product removed in a give period is equal to the net growth (incremental yield) that the forest capable of producing. This principle can be attained through integrated development strategies to harmonize conflicting interest of the rural community with nature resource conservation.

Oromia Bureau of NRDEP (1994) suggests the following strategies to introduce sustainable management of forest resources, “promote agro-forestry, agro-silvi-pastoralism, community wood lots wild life farming, use of minor forest product, and other income generating activities to benefit rural communities and minimize existing pressure on existing forest resources, increase rural community awareness and appreciation of the value of forest conservation and development, involving them in the planning, implementation, monitoring and evaluation processes, establish forest villages

in and around FPAs and provide them with basic social services, infrastructure facilities and new job opportunities and assess existing forest resource and prepare proper forest management plans.

4.6. The Study Area

Ameya woreda is one of the local governments under the regional state of Oromia, South West Shewa Zone Administration. It is one of 12 woredas located under South West Shewa Zone. The capital of the woreda (Gindo town) is located 145Kms away from the capital city of the country and the regional state of Oromia, Addis Ababa, in South West direction. The woreda is bordered in four directions by other woredas and SNNPR. To mention Tikur Inchini and Toke Kutaye woreda in North, Wonchi woreda in East, Gorro and SNNPR in the South and Nono Woreda in the West. The town has begun to serve as a capital town of local administration during the reign of King Haile Silassie I, in 1942 E.C. There are 35 rural Kebeles and 1 town having two kebeles. There are a total of 37 kebeles under the woreda. (AWAB, 2008)

The research assessed the efficacy of forest resource management in Ameya woreda. It also reviewed policies and legislations pertinent to the management of forest resource and discussed about the problems associated with their implementation in the study area. The woreda was taken as a focus of study because of the serious consequences of forest disappearance, it could be said that woreda's forest resources are under emergence situation.

Communities demand for forest product is increasing from time to time however; the capacity of the existing frosts unable to supply the required amount. The existing gap between demand and supply, even to meet minimum needs has not diminished due to the recurrent deforestation process.

Commitment from the government institutions in the protection and development of forest resources is also discouraging in the woreda. Had existing forest law has been enforced correctly; it would have protected the woreda's forests from loss at level by far better than existing situation.

However, it is known that forest and trees are essential factors for protecting environment (i.e. other natural resources) and even human habitat. As life of the communities in the area is totally bound with this resource, exploitation and clearance of the resource create interlinked problems, notably, shortage of fuel wood, soil erosion and decrease in soil fertility, decrease in agricultural productivity, which lead to food insecurity.

Hence, further negligence of this urgent issue will brought other serious consequent to the community in the area and this research work was intended to raise the level of awareness among the communities and government institutions meant to protect the resource, about current status of forest resources and its rate of depletion. And it also intended to encourage, the concerned parties in the woreda to take immediate and decisive actions in order to avert the disastrous situation on the forest by agitating and coordinating the broad masses to plant, conserve, develop and administer the woreda's forest resource.

The area of land under the woreda is 98,000 hectares, cultivated land 59,540 hectares, area covered by forest, grazing land 3015 hectares, area covered by forest, bushes and shrubs 5382 hectares and other use land holds 17663 hectares.(AWRADB,2008)

4.6.1 Agro- Ecological Conditions

As AWRADB (2008) indicates, the woreda is situated in a favorable ecological zone with favorable weather condition, moderate temperature and rain fall, as well as convenient geographic settlement. The climatic condition of the woreda is composed of about 40% Kolla 36% Weyna-Dega and 17% Dega climate. The level of temperature ranges from 25 C⁰ to 15C⁰ with highest medium and lowest Temperature of 25 C⁰, 20 C⁰ and 15 C⁰ respectively. The highest and lowest altitudes of the woreda are 1600 and 2490 m above sea level respectively. There is also moderate rain fall distribution which is favorable to different types of crops and animals. As metrological data indicates the highest level of rain fall is 1600mm, the medium 1250 and the lowest is 900mm. The geographical settlement of the woreda is composed of large proportion of plain land, which is suitable to farm activities. The data from woreda's rural and agricultural development office shows that the woreda consist of 66% plain, 24% hills and the rest 10% is composed of

gorge and mountains, Mount Rogge, Delidak and Jibat are among some of the biggest mountains in the woreda.

4.6.2 Natural Resources

The woreda is also endowed with various natural resources. There are big rivers, that flow throughout the year and with high irrigation potential like Kulit, Derge and Waliga and other medium and small rivers, regarding mineral resources there are different types of stones and sands used for construction purpose. The soil types of the woreda is black (verity), red and brownish in color, each soil types is found in 48%, 36% and 16% out of the total respectively. About 8% (97840 hectares) of the land in the woreda is covered by forest. (AWRADB, 2008)

4.6.3 Demography

Data from AWAB (2008) show that the woreda is a residence for several ethnic and linguistic group, mainly Oromo, Amhara, Gurage, and Tigres and other ethnic groups, numerically, the ethnic group in the woreda is composed of 97% Oromo 2% Amhara and the rest 1% Gurage and others. The major types of religion in the woreda include Christian, Islam, Waqefana (traditional religion followed by some Oromo which means belief in one God) that constitute 79.4%, 18.5% and 2.1% respectively, according to the data from woreda administration; there are 16,200 households in the woreda (15876 male and 324 female headed households respectively).

The Total Population is about 121,881 out of which 61,469 are males and 60,412 are females. Out of the total population, 99% live in rural area and the rest 1% lives in town. The average number of family per household is 7 in rural and 5 in town (Ameya woreda Administration office, 2007). The density of population in Dega, Wayna-Dega, Kolla climate is 450p/km², 480 p/km² and 320p/km² respectively. Interims of age range, the population is composed of 41% from 0 – 14 years, 56% from 15-65 years, and about 3% above 65 years. This indicates that large numbers of population in the woreda is found in productive age group.

CHAPTER FIVE

5. Data Presentation and Analysis

In this chapter, in order to assess forest resource conservation strategy of the woreda, the research employed different instruments for data collection; data obtained from questionnaire, focused group discussion, structured interview, and personal observation of the researcher is presented and analyzed in tables, graphs, percentage and ratios.

5.1 Forest Policy and Information Gaps

Communities in the study area have limited understanding about the country's forest policy, rules and regulations issued by the regional government. This is due to mainly, absence of environmental education and awareness creation campaign.

Table 5. 1: opinion survey on awareness level of the community

The community's awareness level regarding forest policy, laws and regulations is very low.	Alternatives	Frequency	Percentage
	❖ Strongly agree	143	88.8
	❖ Partially agree	-	
	❖ Strongly disagree	-	
	❖ Partially disagree	7	4.3
	❖ No comment	11	6.8

Source: field survey; 2010

As table 1 indicate 88.8% of sample respond have very low or no information about forest laws and regulations issued by national and regional government and only 4.3% of the respondents indicate as they have limited knowledge of forest laws and regulations issued by both national and regional government and 6.8% of the sample population do not comment on it. In depth interview held with woreda rural and agricultural development office and development agent, however indicate that even if awareness level

of the community was very low, but, currently continuous education is given to households in the woreda, about their right and obligation in development, conservation and utilization of forest resource of their locality. On the other hand, findings from field observation confirm with the result of opinion survey. There is involvement of people in cutting prohibited indigenous species tree, planting different species which were prohibited like Eucalyptus and Euphorbia is found extensively and haphazardly without proper land use planning and land tenures. Farmers are also expanding their farm land in near by forest from year to year. Efforts made to increase productivity and to be food secure in the area have adverse impact on forest resource. Interview held with, forestry department head of woreda's rural development and agriculture office shows that the main obstacle to conserve forest resource of the area is expansion of agricultural land. Effort made to boost increased productivity leads to forest destruction. "Some countries have accepted that, despite expected increase in agricultural productivity, additional forest land will inevitably be converted to agriculture uses; relatively limited attention however is accorded to the design of sound policies which would contribute to more effective land use transitions" (FAO, 1996:63).

The same events happened here in the study area, even if resource conservation department is under rural and agricultural development office, the sector does not work in harmony. Each sector work independently to attain there narrowly defined objectives and goals. As information from the interview also indicates, there is a problem of organizational structuring and restructuring for effective coordination among different sectors (department) related to forest resources. For example, environmental conservation team of the Woreda was under natural resource department however, later on this department put under rural land development and administration department. Interview result indicate that the rural land development and administration department mainly aimed at attaining increased productivity and solving problems related to land, among the peasants, instead the environmental conservation team work for improved environment so, this factor create a problem of coordination and it is rather better to put the conservation team under the natural resource department, since they have close task responsibility. "The intention might have been a better integration of forestry and agriculture so as to create synergy, but where there is sector computation for scarce

resources, the forestry department has come as the loser”. (Seyoum and De-Stoop, 2006: 55). Results from opinion survey also indicate the intention of farmer is to expand their farm land into the nearby forest to be food secure.

Table 5.2 Opinion survey on farm land expansion

Due to low fertility of your plot and small size holding, you need to expand your farm into the forest.	Alternatives	Frequency	Percentage
	Strongly agree	36	22
	Partially agree	78	48
	Strongly disagree	-	-
	Partially disagree	23	14.2
	No comment	24	15.8

Source: opinion survey 2010

In Gombore Allie kebele very few households use chemical fertilizer to increase their productivity. In the kebele there is open space as it is found in kolla agro-ecological zone with lower population density than the other two kebeles. This leads to scramble for the open space among farmers which brought destruction of bush lands and other ecology of the area. Only 14.2 percent of sample household partially disagree with the idea of expanding their farm into forest land and 22% strongly seek to expand their farm land into the near by forest. These are those who have large family size, but very small land holding. The children of this family have no chance except sharing, the existing family plots. This uneducated young generation is the main threat of forest resource especially in kola agro ecological zones of the wereda. Interview held with wereda’s administration office however indicates they are working to solve the problem. They try to organize landless young farmers in to a union to be engaged in activities that brought them benefit while developing the forest resource of the area in each kebele of the wereda. These include keeping bee-hives in the protected forest and other activities like extracting sands from rives and resettling those who don’t have land, on other better place in the worda and other parts of the region. According to the proclamation No. 72/2003 article 14 (2003- 10-11) state “It is prohibited to cut and utilize protected tree species , such as

,hagenia abyssinia , cordial africana, producarpus falctus , pronus africana, junipersu procera.” Moreover, as stated in article 15 “who committed act of performing activities mentioned in article 13 and 14.... shale be penalized with 5 to 15 years of imprisonment. However, the information from the expert of Gombore Aliye kebele has revealed that in the year 2008 out of 83 illegal tree (prohibited tree species) harvesters only 15 of them appeared in court and no one of them was penalized. Information from opinion survey also indicates that those who expand their farm land into forest land and illegally destroy the natural forest in the identified forest land have never been penalized and this encourages others to do the same. More than 93 percent of the respondent belief that penalizing those who violate rule and regulations should be strictly enforced to save the forest.

Table 5.3: Opinion Survey on penalizing those who violate rules and regulations

Penalizing those who violate rules and regulations should be strictly enforced	Alternatives	Frequency	Percentage
	Strongly agree	102	63
	Strongly disagree	-	--
	Partially agree	48	30
	Partially disagree	5	3
	No comment	6	4

Source:- Opinion Survey 2010

Among these 63% of the respondents strongly acknowledge the above opinion and only 3% of the respondents partially oppose it. These are landless young farmers who wants to expand their small plots into the forest or those who want to settle in to the forest. “Forest regulations are generally not strictly followed. Law enforcement is loose particularly at the lower administrative levels. There is an urgent need for increased accountability and transparency in forestry governance. The administrative environment should be all set to effectively control undesirable practice (Seyoum and De-stoop, 2006:56)

Table 5.4:- Opinion survey on the impact of corruption on enforcement of laws and regulations

Corruption highly affect the strict enforcement of forest laws and regulations at the lower administrative levels	Alternative	Frequency	Percentage
	Strongly agree	98	61
	Strongly disagree	-	-
	Partially agree	57	35
	Partially disagree	-	-
	No comment	6	4

Source: Opinion survey, 2010

The community belief that if laws and regulations strictly enforced it will be possible to minimize illegal activities, such as expansion of farm land into forest area, clear cutting of open access forests for different purposes and cutting of prohibited indigenous tree species. As the table 4 indicates 61 percents of respondents strongly agree that corruption made at kebele level highly aggravate destruction of natural forests in the area. Those who hanger for land give what do they have to kebele administrator, to expand their plot size. The important finding here is that there is no respondent that oppose the impact of corruption on law enforcement.

Interview held with development agents on the enforcement of laws and regulations show that most farmers are not responsive to orders and advice given form experts; they are purposely engaged to scramble marginal land near by their holdings because they know the final results, simply selling their oxen or their cereal products and brought the money to concerned kebele leaders. For a mater of fact unless the kebele respond to the problem, the woreda’s forest department have no means to halt these illegal activities.

5.2. Livelihood Source and its Impact on the Forest Resource

Agriculture is the base of livelihoods for the people residing in the woreda. Of all samples household heads of kebeles in the woreda nearly 85 percent practice mixed agriculture which for most of the rest either crop production, trade and other (daily labor) are the major occupations table 5. The majority of people in the sample kebeles are

entirely dependent on agriculture. For about 90 percent of the sample households of Gombore Allie and Ajoo Beha kebeles, mixed farming is the main stay of their livelihoods while the remaining sustain their households through crop production, trade and other activities like daily labor.

Table 5.5:-major occupations of sample households

kebele	Major occupation								Total	
	Crop production		Mixed farming		Trade		Other(laborer)		No	%
	No	%	No	%	No	%	No	%		
Gombore Allie	3	6	49	91	1	2	1	2	54	100
Kura Bola	9	21	31	72	2	5	1	2	43	100
Ajoo Beha	6	9	57	89	1	2	-	-	64	100
Total	18	11	137	85	4	2	2	1	161	100

Source: Field survey, 2010

As it was learned from focus group discussion held with kebele leaders of each of the sample kebeles, to carry on their livelihoods households who held either mixed agriculture or crop production as their major occupations, practice activities like fuel wood selling, trading or running on small business like shops and working as daily labor. During summer season up to the harvest period, some households will face food shortage and these households are engaged in selling charcoal and fuel wood as a coping mechanism. Others engaged themselves in daily labor to earn their livelihoods.

Table 5.6:- Additional income source of sample households

Kebeles	Additional income source								Total	
	Selling fuel wood		Trading		Others (working in own small Private business)		No additional income (but diversifying agricultural)			
	No	%	No	%	No	%	No	%	No	%
Gombore Allie	1	2	3	6	5	9	45	83	54	100
Ajoo Beha	-	-	2	3	13	20	49	77	64	100
Kura Bola	3	7	5	12	9	21	26	60	43	100
Total	4	2	10	6	27	17	120	75	161	100

Source: Opinion survey, 2010

As information collected from opinion survey indicates (Table 6) 25 percent of households acquire their additional income from fuel wood selling or trade or other activities. These activities are mostly confined to Kura Bola kebele than the rest two kebeles. The remaining 75 percent; on the other hand, do not engage in activities aforementioned rather they diversify their agriculture so as to meet the different needs of their families. Those who engaged in selling fuel wood and charcoal as additional income brought the wood not from their own plantation but from “father less tree” in the open access forest. Interview held with woreda administration also indicates that next to agricultural land expansion, demand for fuel wood can be taken as the main source of deforestation in the woreda. Since the demand for fuel wood have been increasing in the area, selling charcoal and fuel wood became a good source of revenue during seasonal income insecurity. According to (MONREP, 1994: 4) the demand for fuel wood in 2020 will reach 100 million m³ against a supply projection of only 7.7 million m³.

Table:-5.7 Opinion survey on fuel wood source

The main source of fuel wood	Alternatives	Frequency	Percentage
	Private plantation	33	20
	Open access forest	114	71
	Crop residue and animal dung	14	9

Source: Opinion survey 2010

As information obtained from opinion survey table 7 shows 71 percents of respondents got their fuel wood requirement from open access forest and only 20 percent of the respondents fulfill their fuel wood demand from their own forest (plantation). This indicate that the main purpose of plantation in the woreda is mainly aimed at getting wood for construction and selling timber products and generating income . As table7 shows among the sample respondents only 4.5 percent planted tree to get fire wood, such intention will leads to the scramble of forest on the marginal lands. The sample households cultivate a number of crops; enset, maize, chatt, teff, barley, wheat, sorghum. In addition to this, vegetables like potatoes, cabbage, carrot, onion and sweet potato are grown. Fruits like avocado, mango and banana are also produced in kebeles of the woreda particularly in Ajjo Baha kebele. However, all crops do not cover equal areas and also differ in their importance, as the sample kebeles differ in their agro- ecology. As the survey result and focus group discussion indicates in Gombore Allie kebele, teff, maize, sorghum and pine and in Ajjo Beha enset ,teff, wheat, barley, sugarcane and chat are the major crops covering large areas. On the other hand, the sample households of Kura Bola kebele cover most of their farm lands by enset, barley, wheat and maize. The major staple crop of Kura Bola and Ajjo Baha kebeles is enset, however as it is found in kola agro-ecological zone,Gombore Allie kebele staple crop is teff. As information obtained from opinion survey indicates considerable number of households generates benefit from agro-forestry activities. As focus group discussion with community elders of Ajjo Baha and personal observation of the researcher, agro forestry practice in the area have significant benefit in controlling climatic change of the area, at the same time becoming important sources of revenue for a number of households in the area.

Table:-5.8 opinion survey on agro- forestry practice

Agro-forestry is becoming important source of revenue for you	Kebele	Frequency	Percentage
	Gombore Alliyie	5	9
	Ajjo Beha	32	50
	Kura Bola	19	44

Source: option survey, 2010

In Ajjo Beha and kura Bola kebeles which have Dega and Weyna-Dega climate, considerable number of households getting revenue from selling agro-forestry products, 50% of the sample household in Ajjo Beha and 44% in Kura Bola are generating income from this activity. Among products of agro-forestry revenue from chat covers the largest portion (field observation). For agro forestry activity seeds are supplied mainly by government nursery sites as interview held with agricultural office indicates. In Gombore Alliyie kebele only 9% of respondents are generating income from agro forestry practices. Here sugarcane and mango takes the largest portion, since the kebele found in kola climates it affect the agro-forestry activities in the area. Of the surveyed households of Gombore Alliyie, Ajjo Beha and Kura Bola 78%, 89% and 81% rear livestock respectively. These households rear cattle, sheep, goat and equines (horse and donkey).But the number of livestock they rear vary across the kebeles as indicated in table 8.In Ajjo Beha kebele 84% of the sample households that posses livestock, the number of livestock they keep is less than five while in Gombore Aliye and Kura Bola 32 and 31% of the households have between 5 -10 livestock, respectively. In the two kebeles even 4% and 6% of the remaining livestock tenders own more than ten livestock in that order. So, households in Gombore Aliye and Kura Bola keep more cattle than that of Ajjo Beha kebele. This is because as information from focus group discussion held with community elders and kebele leaders indicates there is a series scarcity of land in Ajjo Beha kebele which limit the number of livestock kept by individual households.

Table:-5.9 numbers of livestock owned by sample households.

kebele	Number of livestock sample household rear						Total	
	Less than five		5-10		More than ten			
	No	%	No	%	No	%	No	%
Gombore Alliyé	30	64	15	32	2	4	47	100
Ajjo Beha	48	84	9	16	—	—	57	100
Kura Bola	22	63	11	31	2	6	35	100
Total	100	72	35	25	4	3	139	100

Source:- Opinion survey, 2010

Such dense livestock population in the area is causing damage to the forest resource of the area “with 35 million tropical livestock units, equivalent to 80million livestock heads Ethiopia has one of the largest livestock populations in Africa (FAO, 2003: 53). It is estimated that over 80% of the livestock are found in high lands causing widespread over grazing and land degradation on both arable and grazing lands. The low survival rates of planted seedling in reforestation programs are heartily attributed to the free roaming dense livestock population (Seyoum and De-Stoop, 2006). Information from opinion survey also indicates that those free rooming livestock are one of the damaging agents to forest resource of the resource area.

Table-5.10 opinion survey on the effect of free rooming livestock on forest

Free roaming livestock in forests cause great damage to forests in your locality	Kebele	Frequency	Percentage
	Gombore Alliyé	41	76
	Ajjo Beha	8	13
	Kura Bola	27	63

Source: opinion survey 2010

76% of respondent in Gombore Alliyé kebele confirm that free roaming dense population of livestock in their locality create great damage to forest resource. Goats which are damaging “GRAZER” causes great destruction of forest, as the kebele is found in kola

agro ecological zone, most households possess goats in this locality. The most important findings here is that in Ajjjo Beha kebele only 13% of respondent accuse the livestock as cause of deforestation in their locality. Because in this kebele since there is acute land shortage and there is a tradition of having own grazing lands. Every farmer holds their livestock to graze on small plots that he or she leaves from their crop land in the vicinity of their compound for this purpose. The major source of grazing for 69% of households who keep livestock in Gombore Alliyee kebele is communal grazing land however for those in Ajjjo Beha 54% and Kura Bola 55% mainly depend on own grazing land.

Table-5.11 major source of fodder for livestock of the sample households

kebele	Communal grazing land		Own grazing land		Crop residue		Own grazing land and crop residue		Other-buying grazing land		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
Gombore Alliyee	24	57	5	12	3	7	10	24	--	--	42	100
Ajjjo Beha	5	9	32	55	4	7	12	21	5	9	58	100
Kura Bola	6	15	21	54	3	8	7	18	2	5	39	100
Total	35	25	58	42	10	7	29	21	7	5	139	100

5.3. Conservation and Improved use of Fuel Wood in the Area

As a part of natural resource conservation program there is an efferent in the woreda to reduce fuel wood conservation since demand for fuel wood is the second most important factor for destruction of forest resource of the area, it is reasonable to search mechanism that lower fuel wood consumption. As interview with woreda's rural and agricultural development office indicate improved stoves made from a clay and sand mixture have been distributed to individual households at a cost of 97 birr each. Data from opinion survey indicates that there is a tradition of collecting wood from open access forest in the area; moreover energy from these woods has been wasted by traditionally constructed

stove. So it have been one of the devastating agent to forest “laboratory tests showed that traditional “three stone” open cooking fire had a very low efficiency, only 5-10% of the wood energy actually served to cook the meal.” (WRI, 1985: 14)

Table 5.12: opinion survey on fuel wood consumption

Are you using improved stove	Alternation	Frequency	Percentage
	Yes	49	30
	No	32	20
	No, but I need to use it	80	50

Source; opinion curve 2010

Survey result indicates that currently only 30% of the sample household use this modern stove. The remaining 70% still use the traditional “three stone” open cooking fire. However, 50% of the sample households who currently do not use the modern stove but they do have a plan to buy it in the near future. Observation result also indicates that buying the stove is not easily accessed. It is stored in the woreda’s agricultural office at one center for all 36 kebeles. Those who need to buy this stove should go to the office with their donkey, since the stove is too heavy. This is a discouraging factor to have the improved stove in the area. Using such improved stove highly save the energy and it is among the solution held to conserve the environment. However, the impact of an improved stove program will depend on number of households that use the stove and the amount of time the stove is used.

Table 12: indicate that 20% of the sample household never used the stove and even do not have planned to use it, so it is necessary to invest on awareness creation and easily accessibility of the stoves. “Test of improved stove prototypes demonstrated potential increase in efficiency of 20-40%. Many of the improved cook stove models were made from mud-brick, sand, clay and other low cost materials which meant that a relatively small investment could result in annual saving of 1.5cubic meter of wood. (WRI, 1985:14)

5.4 Conservation Effort in the Woreda

Finding from in depth interview held with woreda administration office indicates that forest resource of the woreda have been exposed to different pressures for a long period of time. During the military regime resettlement program was under taken in the woreda, people from different part of the country who had been affected by drought made to settle in the woreda, especially in the low land areas. This program created devastating impact on forest and wild life resource of the area. After the down fall of the regime the pressure reaches its climax, due to increased population and other factors. Land hunger immigrants from different area came and settle in the area during transitional period in large number because institutional control during that time was not as such strong to control this activity. Latter on to arrest the on going destruction of natural resource of the area woreda's rural and agricultural development office working hard. To conserve the natural resource of the woreda two strategies have been employed.

1. protecting and conserving the existing natural forest and
2. afforestation and reforestation of new areas and already deforested up lands

The reforestation and afforestation program is undertaken by individual households on their plot, government and religious institutions (school and churches) and communally on highly degraded and erosion exposed hill sides. Voluntary tree planting programs produce impressive result when local people believes that such activities are feasible and in their interests. In this program as information from the interview indicates that private plantation takes a great deal in replacing the destroyed forest. In the woreda almost every family has private tree plantation, and most individuals claim to have planted at least 100 seedlings. The opinion survey also revealed that 38% of the farmers are raising seedlings, many farmers raised very small quantities of seedlings, but it appears that on-farm nurseries far out number and even out produce the state managed forest department nurseries and do so at virtually no cost to the government. Even if such voluntary participation of household is a back bone of the program, it is not as such encouraged by technical support of experts. As the result plantation program of the area is characterized by unsustainable monoculture species which unable to provide multiple goods and

services available from natural forest. The table below evidenced what have been mentioned above and highlights the reforestation and afforestation effort in the woreda from the year 2007- 2009.

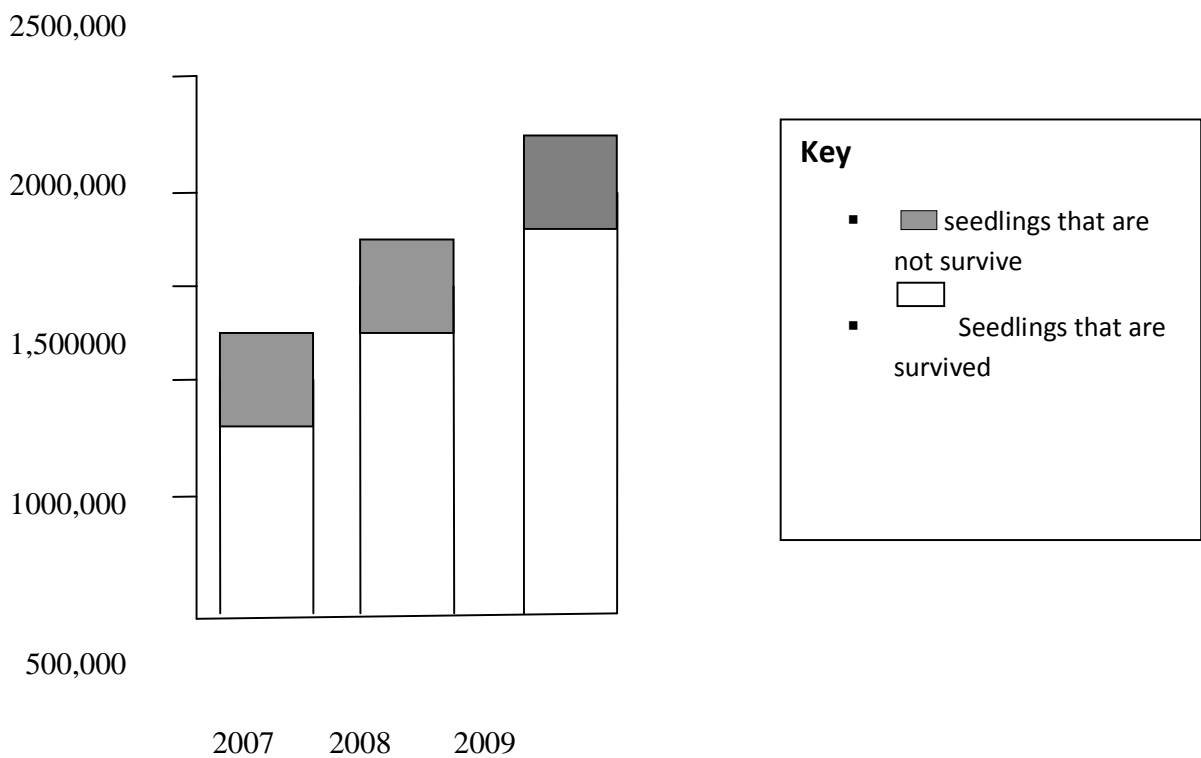
Table 5.13: planted and survived seedlings in 2007-2009 in the woreda

N ^o		2007		2008		2009	
		Planted seedlings in N ^o	Survived seedlings in N ^o	Planted seedlings in N ^o	Survived seedlings in N ^o	Planted seedlings in N ^o	Survived seedlings in N ^o
1	Indigenous tree species	5200	4892	6610	5374	542942	434354
2	Exotic tree species	1004372	897341	1533353	1246616	1528970	1223176
Total		1009572	902233	1539963	1251990	2071912	1657530
1	Fodder for livestock	82590	57636	133873	107245	561265	449012
2	Fruits	17028	11741	34058	24706	232394	185915
3	Tree for soil conservation	158520	103855	243812	184339	97264	77812
4	Other use trees	751434	729001	1128220	935700	1180989	949791
Total		1009572	902223	1539963	1251990	2071912	1657530
1	Privately planted	647551	593245	1065669	831048	1464712	1171769
2	Schools	259820	221295	457210	409149	593814	475052
3	Religious institutions	102201	87693	17084	11793	13386	10709
4	Associations	-	-	-	-	-	-
Total		1009572	902233	1539963	1251990	2071912	1657530

Source: rural and agricultural Development office report 2009

As information from table 13 shows the tree planting program was launched with the aim of producing more construction materials and fuel wood which holds 57% of the total plantation in 2009. For soil and water conservation purpose fore example in the year 2009 only 5% was undertaken. In the same year out of the total plantation in the woreda 74% was exotic species in which eucalyptus tree species got greatest portion. Out of the total plantation, 71% was undertaken by individuals in the year 2009. In the same year the second highest plantation was by schools which have 29% share.

As the table: 13 shows in these three consecutive years both the number of trees planted and survived has increased, for instance in the year 2008 the number of tree planted has increased by 52.5% in the woreda and also in the year 2009 it have been increased by 34.5%



Graph: 4.1. Source: modified from table 13

Information from the interview also indicates that to protect the existing natural forest in the woreda, identification and demarcation activities have been done. The process started in 2006 and up to 2009 five fatherless, open access forests were identified and

demarcated and also got recognition from the region’s forest development agency. These forests include.

Table 5.14: Identified and Demarcated Forests

N^o	Name of the forest	Kebele (where found)	Area in hectare
1	Haro Gango	Abado Holle	50
2	Gefersa	Kersa Kille	104
3	Roghe forest	Kura Bola	204
4	Aliye forest	Gombore Aliye	50
5	Jibat forest	Jibat Kuchulo	120

Source: Woreda agricultural office 2010

There are also many other open access forests, bush lands and marginal lands that is planed to be demarcated in the near future. Demarcation and area enclosure with out community participation resulted in failure as learned from experience. “State demarcation and management planning of forest land which often encompassed farming communities was under taken with little or no participation of those communities. This coupled with the inability of the government forestry agency to effectively “police” all the protected forest land led forest to being increasingly encroached up and cleared and turned to farm land because this farm land was “illicitly” obtained. Farmer perceived that they had even less security of tenure on it and consequently had no desire to invest in soil conservation work (EPA, 1997:63). In the already identified forest site the society takes the responsibility of protecting and cultivating the forest. Forest committee is established from the member of the community. However, results from the distributed questionnaire shows that there is limited involvement of local community in identification and demarcation of the forest resources of the area.

Table 5.15: Distribution of forest resource in different kebeles of the woreda

Kebele	Owned by	Area in hectare	Dominant tree species
Ajo Baha	Community	320	Pedocarpus forest (zigba), Aningeria (kerero) and Juniperious forest like Tid
Baro Muri	>>	200	Dedeho (Euclea shimperi), Agam (Carissa edulis), different mixed low land forest eg. Shola and Warka
Gute Eteya	>>	300	Arundineria (kerkeha), Kosso (Hagenia absinica), Weyira (Olea) and Tid
Kura Bola	>>	204	Tid Zigba, Injorr (Rubus apelatus)
Gulti Bola	>>	150	Kosso, Tikur inchet, Zigba
Bereda	>>	120	Wanza, Dedeho, Acacia
Jibat Kuchulu	>>	120	Zigba, Tid, Tikur inchet
Kersa kile	>>	140	Baphia (Riverine) forest
Mujo jila	>>	120	Baphia (gallery forest)
Abado hole	>>	50	Baphia (gallery forest)
Gombore alliye	>>	50	Wanza, warka, sholla, agam
Kono kulit	>>	120	Acacia, girar, agam, wanza
Ajoo lita	>>	12	Weira, wanza, dedeho
Kota	>>	10	Riverine
Aroji ejersa	>>	2	Agam, sholla, dedeho
Ajoo gidu	>>	18.3	Bisana, kosso, zigba

Source: Rural and Agricultural Development Office of the Woreda 2010

Table 5.16: Area covered by bushes in the woreda

Kebele	Owned by	Area in hectare	Dominant tree species
Abado Holle	Community	310	Acacia, Wacho, Agam
Arba Seden Kura	>>	168	Warka, Sholla
Aroji Ejersa	>>	17.75	Dedeho
Kati Bare Wachilali	>>	30	Gallery forest
Gambella Ashute	>>	25	Agam
Muko Ujuba	>>	20	Acacia, Wacho
Sekela Muri	>>	10	Warka, Sholla
Dire Aroji	>>	10	Dedeho, Bisana
Denekaka	>>	10	Wacho, Wanza
Mugno Jilla	>>	6	Wayira
Kaba Laku	>>	40	Gallery forest

Source: Rural and Agricultural Development Office of the Woreda 2010

Out of the sample households the majorities of respondents strongly disagree or partially disagree with the idea of their involvement in identification of forests in their respective kebele. 60% of the respondents strongly disagree and only 5% of the respondents strongly agree, this is because there is variation in the level of involvement among the sample kebele. In Ajoo Beha and Kura Bola there is a little better involvement than in Gombore Allie Kebele. This low level of participation of local people will leads to the ineffectiveness of the conservation strategies. For sustained forest management in the area, active participation by thousands of farmers and landless people who daily use forest and trees to meet their needs is mandatory. “Countless rural development projects

have failed to make a long term impact because of inadequate involvement of local people” (Milton, 1991: 150)

Table 5. 17: community participation in forest conservation effort

You and your locality participated in identification and demarcation process of open access forest in your kebele	Alternatives	Frequency	Percentage
	❖ Strongly agree	8	5
	❖ Partially agree	21	13
	❖ Strongly disagree	96	60
	❖ Partially disagree	36	22
	❖ No comment	-	-

Source: opinion survey, 2010

Identification and demarcation of the forest resource contributed a little to minimize the existing pressure on the forest resource of the locality. Experience in Adaba-Dodolla forest of Oromiya shows that conventional approach for forest management such as setting up of village forest protection committees, awareness creation, enrichment planting; forest guards, area closure, etc. have been ineffective. “It was later realized that this was not the case. Rather, the best arrangement was to grant exclusive use right to the primary stakeholders through consensus among the whole village community.” (Seyoum Mengistu and De-Stoop, 2006:57)

Table 5.18: Opinion survey on the impact of identification and demarcation on deforestation

Identification and demarcation minimized the rate of deforestation in the area.	Alternative	Frequency	Percentage
	Strongly agree	-	-
	Partially agree	32	20
	Strongly disagree	56	35
	Partially disagree	75	45
	No comment	-	-

Source: opinion survey 2010.

In the sample kebeles only 20% of the respondents partially agree that the strategy minimized the rate of deforestation in the area. 35% of the households strongly disagree with it. Focus group discussion held with kebele leaders in Gombore Allie indicates that even if the forest committees are from the community there is no special benefit for the committees, like other farmers and households they are engaged in their main occupation agriculture, so they are busy to devote their time to manage the forest and discharge their responsibility. “In most of tropical countries the forest related institutions are weak and not able to cope with the necessities. ...these persons must dispose of the necessary technical and financial means to move and to reach at any moment any part of the territory for which they are responsible. Further more, they need an efficient communication system which allowed for a fast exchange of information” (Militon, 1991: 92)

As indicated in the above discussion the other strategy held in the woreda to conserve the forest resource of the area is replacing the deforested area or reforestation and afforestation of new areas. The second strategy is better applicable than the first one. As focus group discussions held with the community elders of the sample kebeles indicate currently farmers have planted more tree than ever before. Since most plantations undertaken in the area is by individual farmers on their plots, there is greater degree of

survival for planted seedlings as it gets close cultivation and protection by owners. “In many countries we find vast areas of degraded and only marginally used land which once had been converted by natural forest but where the residual vegetation is not able to reconstitute by itself a nature forest in due time. Most of these are as lend them selves to artificial reforestation through planting of indigenous or exotic tree species” (Militon, 1991:191). Information collected from questionnaire distributed to households in the sample kebeles indicate that their replacement and afforestation out numbered their consumption of wood and wood products.

Table 5.19: Opinion survey on afforestation trends

Annual plantation and replacement out number your consumption of wood and wood products	Alternatives	Frequency	Percentage
	Strongly agree	51	32
	Partially agree	76	47
	Strongly disagree	-	-
	Partially disagree	34	21
	No comment	-	-

Source: opinion survey 2010.

32% of the sample households strongly agree that their replacement is more than their consumptions. Only 21% the respondent in the sample kebeles that indicate as their consumption is more than their replacement. As the focus group discussion shows currently households planted more trees, in response to the observable environmental degradation in the area, fuel wood shortage, and acute scarcity of wood that is used in construction of houses. The technical and material support from experts however, not as such significant for the change obtained. Generally the problem they faced forced them to respond and some households get revenue from selling wood used for construction of houses such as eucalyptus. So experience of such farmers encourages others to be involved in intensive afforestation of eucalyptus trees in the area.

Table 5.20: opinion survey on material and technical supports

Technical and material support from DAs and other experts contributed more for current afforestation program	Alternatives	Frequency	Percentage
	Strongly agree	-	-
	Partially agree	27	17
	Strongly disagree	43	27
	Partially disagree	86	53
	No comment	5	3

Source: opinion survey, 2010

Even if it vary among the sample kebeles majority of the respondents do not agree with the contribution of DAs and experts for the current afforestation in the locality. Table 20 shows that only 17% of the sample households partially agree with that technical and material support contributed for their achievement. The institutional weakness also observed in the type of seedlings planted in the area. Farmers worry is only solving the problems of shortage of fuel wood and wood for construction. It seems they do not go further to ecological and environmental functions of forests “big areas in tropics have been planted with eucalyptus and pines and too little attention had been given to indigenous tree species which in many cases could serve well or even better than exotics under the given conditions. (FAO, 1999: 19)

Table 5.21: opinion survey on types of seedlings planted in the year 2009

Species	Where do plant?						Total	
	Private land		Communal land		Both			
	N ^o	%	N ^o	%	N ^o	%		
Eucalyptus	70	73	15	16	11	12	96	100
Other exotics	3	100	-	-	-	-	3	100
Indigenous	5	42	-	-	7	58	12	100
Both indigenous and Eucalyptus	40	84	-	-	8	16	50	100
Total	120	75	15	9.7	26	16.3	161	100

Source: opinion survey 2010

As the data from the sample survey of (table 9) indicates in the woreda 75% of plantations were undertaken on private land and only 9.7% of afforestation effort undertaken on communal land such as in school compound and churches. Surprisingly 60% of respondents planted only eucalyptus tree species where as only 7% of the respondents planted indigenous tree species alone. Field observation and data from focused group discussion held with kebele administrators show that farmers in the kebele have limited access to seedlings provided by governmentally managed nursery sites, which have its own impact on the number and type of tree species planted in the area.

Table 5. 22: Opinion survey on the purpose of trees planted by farmers

	Alternatives	Frequency	Percentage
Purpose for planting trees	Soil and water conservation	13	8
	To get fuel wood	7	4.5
	To sell and generate income	34	21
	To get construction material	68	42
	Shade	5	3.3
	As asset	33	20.2
	Others	1	1

Source: opinion survey, 2010

42% of households in the sample kebele planted trees for the purpose of getting construction materials, and also a considerable number 21% of respondents are for the purpose of selling and generating income. Those respondents who plant trees for the purpose of controlling environmental degradation is only 8% and very few 4.5% of the respondents planted tree for the purpose of fuel wood which implies that to get fuel wood most farmers still use the open access natural forest and crop and animal residues. The other important findings from the table is that 20.2% of respondents plant tree as an asset in the future which show that farmers confidence in the current land and tree tenure right. As in depth interview result held with the woreda administration office revealed, the current land and tree tenure right have only positive impact on the forest conservation process. The interview result also indicates that the current land and tree tenure system assure ownership for those who develop forest on their land holding. Under this system the right of forest owners to use forest land and to transfer their holdings is respected. It prohibited selling and buying of lands hold by farmers which have positive externality. If farmers are allowed to sell and buy their farm holding those, who face acute food shortage wood sell their plot and aggravate the number of unemployment in the country.

CHAPTER SIX

6. Findings

This chapter provides the summary of key findings in order to improve forest resource conservation strategy of the woreda based on data obtained from different sources and analyzed data results.

The study woreda is endowed with rich flora and fauna but, currently the natural resource in general, and forestry in particular has been exposed to different destructive agents. To arrest the on going depletion of natural resource of the area woreda's rural and agricultural development office employed two strategies.

1. Afforestation and reforestation of new areas and already deforested uplands,
2. And protecting and conserving the existing natural forests.

In the reforestation and afforestation strategy, many farmers (74%) have taken part and able to have their own private forest from which they got fuel wood and wood for construction of thatched house. Most farmers annually plant 250-500 trees, equivalent to a block planting of about one tenth of a hectare. Local communities participated in afforestation and reforestation program due to a serious shortage of wood products and associate environmental problems which can be taken as a push factor for farmers in the woreda to be engaged in the reforestation and afforestation of private plot.

In the year 2009 about 10% of plantation was undertaken on communal land such as in school compound and churches. In the same year 16% of plantation was undertaken on both private and communal land

Voluntary tree planting programs produce impressive result when local people believes that such activities are feasible and in their interests. Local communities proofed the economic feasibility of the program as some of them got considerable benefit from wood and wood products and it is also on their best interest because there is an observable environmental crisis in the area and they also know that they are the first victims of the risk. For that reason in the woreda almost every family has private tree plantation.

As a part of the strategy, in the year 2009, about 166 hectares of land have been afforested by farmers in the woreda, in the same year 49 hectare planted by schools and about 3.5 hectares were planted by religious institutions.

Most plantations held in the area do not give attention to indigenous tree species which will provide better ecological and environmental benefits. About 75% of private plantation in the same kebele was covered by eucalyptus tree species, as the result plantation program of the area is characterized by unsustainable monoculture which unable to provide goods and service available from natural forest. So, the communities mainly develop forests for construction purpose as a means of income generation and fodder. Community's objectives in forest development do have narrows in scope, however, plantations should have to be undertaken for more wide service and externalities as provision of wood products for different purposes, services (recreational, educational etc) as well as environmental benefits.

A survey of farmers who had planted trees found that people had planted trees for a variety of purposes; for selling construction wood (21%), for sheds (3.3%), as an asset and soil conservation (28.2%). Few trees were planted explicitly for fuel wood but farmers expected to obtain fuel wood from fatherless forest and some of it from trees planted for other purposes. 20.2% of respondent plant tree as an asset for the future use, which indicate farmers confidence in the current land and tree tenure right. Interview result obtained from the woreda administration office state that, the current land and tree tenure right has positive impact on the forest conservation process of the area. The system assures ownership for those who develop forest on their land holding. Under this system the right of forest owners to use forest land and to transfer their holding is respected. It assured that peasant's life long right to use the land that already held leas, since forests need longer period for their development calls for along-lasting tenure.

The survey also revealed 38% of the farmers were raising seedlings. Many farmers raised very small quantities of seedlings, but it appears that on-farm nurseries far out numbered and even out produced the state managed nursery sites, so it result in plantation of large eucalyptus tree species.

Woreda's forestry department operational constraints, limited the quantity and quality of the program. There are limited staff experts that work on forest related issues in each kebeles. As the survey result indicate only 17 % respondent agree with that the logistical support of experts contributed to the current conservation effort in the locality. So it is possible to say most plantation by farmers is not the result of awareness creation campaign made to conserve the forest resource of the area. The current forest conservation and development activities are not adequate to cop up with the increasing demand for forest products and accelerated deforestation of the forest resources of the woreda. Investing on forestry by the government, community and private individuals is crucial.

Woreda's rural and agricultural development bureau also try to engage in some conservation activities of natural forest. For example in the last four years the woreda demarcated five forest areas, and also planned to demarcate other fatherless forests in the coming years which are exposed to greater pressure from the community As the interview result indicates the identification and demarcation process arise many conflicts because it involve a large number of stakeholders all with their own needs, perspectives, values and goals. There are people who live with in the boundaries of forest or conservation area and are with long standing claims to the land. There are also local communities living near by the forest who have the tradition of using the land with in the conservation area for fire wood collection, pasture, building materials, medicinal plants, hunting or other uses.

On the other hand, results from focus group discussion in the sample kebeles revealed that, forest committees at kebele level, kebele administration and assigned DAs specialized in forestry did not able to settle these conflicting interest and manage the conservation area effectively due to the forestry institution at the lowest administration units are characterized by weak arrangement allocation of inadequate budget, lack of necessary skill in forestry and ambiguity in mandate and responsibilities. Conservation area management should therefore, often broaden their horizons far beyond the forest or conservation area itself in order to respond to conflicts effectively.

For sustained forest management in the area, active participation by thousands of farmers and landless people who daily use forest and trees to meet their needs is mandatory, unless the program will be failed to make long term impact. Only 18% of respondent participated in identification and demarcation of naturally forest. Rather than putting the out dated bureaucratic arrangement such as village forest protection committee, forest guards and enrichment planting, it is advisable to grant extensive use right to the primary stakeholders though consensus among the whole village community.

Intense human pressure on the forest because of population growth, agriculture land expansion, and poverty; lack of skilled personnel and material needed to manage forests and lack of political commitment are becoming obstacles to the introduced natural forest conservation activities in the area.

Efforts made to increase productivity and to be food secure have adverse impact on forest resource of the area, despite expected increase in agricultural productivity additional forest lands inevitably converted to agricultural uses; relatively limited attention is accorded to the design of sound policies which would contribute to more effective land use transitions. Corrupt kebele administrators also aggravate the rate of deforestation in the area, 61% of respondents strongly agree that corruption mad at kebele level highly aggravate destruction of natural forest. Agricultural land expansion in to forest and protected area cause accelerated land degradation resulting in a self propelling downward vicious cycle of degradation of natural resources leading to declining crop yields leading to expansion of cultivate land again leading to further natural resources degradation and to further decline in crop yields, thus substantially contributing to poverty in the area.

Illegal activities such as expanding farm land in to the forest, settling in to the forest area and destroying forest for fuel wood consumption never been controlled by the lower level administrative units, such as kebele administration. Information from opinion survey also indicates that those who expand their farm land into forest land and illegally destroy the natural forest, may appeared in court, but non of them has been penalized and this encourage others to do the same. There should be an increased accountability and transparency in management of the demarcated forest. The administrative environment

should be all set to effectively control undesirable practice in the area. That is why 93% of respondents indicate unless rules and regulations are strictly enforced; demarcating conservation area by itself will not save the forest.

Gifts are a means of getting marginal lands near by their farms for those peasants who have small holding. Since more than 96% of peoples in the area dependent on agriculture for their livelihoods it creates heavy pressure on the environment. Most farmers in the area have large family size and they are forced to share their holding to their children which result in land fragmentation. Those members of the family with very small holdings are the main threats of marginal lands and forest lands. However, there are some activities from the woreda administration office to solve the problems of these landless young generations. They try to organize land less farmers in to a union to develop and conserve forest and to under take activities like keeping bee-hives and collecting fodder for their animals and other activities like extracting sands from rivers and resettling those who don't have land on other parts of the region.

In kolla agro-ecological zone of the woreda free roaming livestock are the main cause for low survival rate of planted seedlings followed by harsh climatic condition of the area. These large livestock population is also causing wide spread over grazing and land degradation on both arable and grazing lands. The major source of grazing in the woreda is communal grazing land.

During summer season up to the harvest period some households will face food shortage and these households are engaged in selling charcoal and fuel wood as a coping mechanism. 25% of households in the study area acquire their additional income from fuel wood selling and other activities. Those who engaged in selling fuel wood and charcoal as additional income brought the wood not from their own plantation but from "father less tree" in the open access forest. In the woreda next to agricultural land expansion, demand for fuel wood can be taken as the main source of deforestation. 71% of respondents got their fuel wood requirement from open access forest and only 20% of the respondents full fill their fuel wood demand from their own plantation. Opinion survey results indicate that only 4.5% of respondent plant trees for the purpose of getting fire wood.

Significant numbers of households engage themselves in agro-forestry activity which has dual benefit of controlling climatic change of the area and becoming important source of revenue for a number of household. Limited supplies of seedling hinder the intensification of this activity, farmers got seedling mostly from the government nursery sites, which is 62% of the total.

Introducing and distributing improved stoves that save energy and made of clay and sands have been on going in the area. Demand for fuel wood is taken as the second factor for deforestation in the woreda. So the strategy can be taken as an ample opportunity to minimize impacts on existing natural forest. However, only 30% of the sample household used this stove. Even if 50% of the respondents need to use the stove due to, in accessibility of the stove, and low purchasing power of the households it is difficult to use the stove.

The best experiences that our country has to learn from Suedish forest policy for sustainable forest resource management include:

- The main stakeholders, farmers and forestry workers have to obtain the requisite knowledge to fulfill environmental measures.
- Reliable methods and suitable species of trees must be used in the forestation work.
- Regeneration felling must not be carried out until the forest has reached acerbating age.

What should be learnt from Canadians forest policy?

- Harvesting of forest should be strictly controlled by regional regulations.
- Regions should set an allowable annual cut based on the sustainable growth rate of the particular forest area
- Permit consideration of the site and configuration of areas to be clear cut where circumstances warrant.

CHAPTER SEVEN

7. Conclusions

In this chapter a summary of information about the status of forest resource of the woreda, effort made to conserve the resource and result obtained from the introduced strategy is presented.

Peoples of Ameya woreda base their livelihoods mainly on agriculture (95%). The woreda has diversified climatic condition, in traditional classification Dega, Woyna-Dega and Kolla climate, households in Gombore Alliyé produce cereal crops like teff for markets where as those in Ajoo Behaa and Kura Bola use barley and wheat for the same purpose, for these kebeles enset is the staple crop though many other crops are used in addition. Farmers, in these Dega and Woyna- Dega kebeles also engaged in agro-forestry practices, with the increasing population and shrinkage of land holding per household among the woreda small holders, integrating trees with crop and livestock becomes an emerging potent strategy. This technique of integrating crop, livestock, and trees on the same geographical location across space and time is known as agro forestry. However, agro forestry activity practiced in the area is not without problems. First, the level of extension, currently, is inadequate. Those few technologies that are currently disseminated are perceived by the farmer to have draw backs (competes for land, reduce crop yield, makes land tilling difficult etc.). Since inadequate extension exists, most of the technologies are implemented incorrectly on the ground (wrong spacing, incorrect planting spots, etc). While wood lots appear to be, relatively the most widely adopted agro forestry technology, it is usually limited to few species mostly eucalyptus.

Livestock rearing is also practiced in the study area. The number and types of livestock tended in Gombore Alliyé and Kura Bola kebeles is higher than the number of livestock in Ajoo Beha kebele. These large numbers of livestock reared in the sample kebeles has suppressed the recovery or regeneration of deforested areas and are also taken as a reason for low rate of survival of planted seedlings. Agricultural livelihoods which are mainly practices cereal crop production served as the push factor for the deforestation.

The forest resource of the woreda has been exposed to different pressures for along period of time. As the result of the resettlement programs in the past and currently due to mainly increased number of population, agricultural land expansion and poverty, lack of skilled personal and material needed to manage the forest and lack of political commitment in the area.

Migration to forested lands is generated by the external pressures of rapid population growth, poverty, and lack of employment opportunities in the area and is therefore, an inter-sectoral issue. The movements of existing people with in the forests are related to unsustainable shifting cultivation, and sometimes to pressures to move exerted by forestry staff or by settlement policies. Even if, much remains to be understood concerning the dynamics of migration and its driving forces, but there is a great urgency to find solutions, since encroachment on forests is leading to loss of economic opportunity to environmental degradation and loss of biodiversity which threaten the future productive capacity of the resource.

Nature forest resources of the area are depleting more than any body can imagine. Due to this factor soil erosion is rampant, quality and quantity of water supply is deteriorating from time to time. Forest product supply is getting diminishing where as the demand is ascending geometrically. However, the attention given to the forest conservation and development is surprisingly very low.

The continued depletion of the forest resource needs responsible body who can design adequate and appropriate development plan, planning is not only enough, but needs long-term commitment in the implementation of the prepared plan. For the successful implementation of the plan, the existence of stable, well-structured organization is essential.

Law enforcement is loose particularly at kebele level, however it will be possible to minimize illegal activities, such as expansion of farm land in to forest area, clear cutting of open access forests for different purposes and cutting of prohibited indigenous tree species if laws and regulations was strictly enforced in the study woreda, corruption is

also can be taken as an obstacle to the conservation program of the area. Almost 96% of respondent indicate that corruption aggravate destruction of natural forests in the area.

Marginal lands and wood lands in the area becomes important source of revenue for kebele administrator, since landless are willing to give what ever asked to get small holding. So to strength the already started activities more awareness creation campaigns should have to undertaken, creating strong village forest administration unit and over site and making close controller to the function of kebele administrator on issues related to forest and rural land.

There is poor integration among different sectors which have direct relation with forest resource especially the agriculture and development. The expansion of agriculture to the steep slope forest area, loss of bio-diversity and wild life habitats, deterioration of catchments areas, etc are attributed to the absence of land use polices. Intention to be food secure lead to the putting of additional land for cultivation of crops and this brought agricultural land expansion which is the main source of deforestation in the study woreda.

The existing organizational structure down to the kebele level makes forestry extension activity to be totally marginalized and very much dominated by agricultural extension. Furthermore, identical approaches as in agricultural extension are used that sometimes are inappropriate or ineffective for the extension of forestry technologies. Much human and financial resource is observed to be re-allocated to non-forestry extension activities from forestry extension activities. In fact, some interviewed foresters indicate that they are involved in fertilizer and improved seed distribution year round and they don't seem to be engaged in forestry activities. As a whole, the perception is that forestry activities compete for organizational resource with crop and livestock and the anticipated synergy among the sector is totally lost. I can, therefore, conclude that the intended integration of crop, livestock and forestry invariably has so far done more harm than good.

The current land and tree tenure system assure ownership for those who develop forest on their land holding. In the new Ethiopian constitution, land belongs to the state and citizens may obtain only use rights, certain legal and social instruments could have been employed to increase the level of security of tenure of farmers and forest investors.

Under this system the right of forest owner to use forest land and to transfer their holding is respected. It is prohibited selling and buying of lands hold by farmers which have positive externality. If farmers are allowed to sell and buy their farm holdings those, who face acute food shortage wood sells their plot and aggravates the number of unemployment in the country.

Majority of people in the study woreda meet their daily household needs through biomass or biomass-related products, which are mostly collected freely from the immediate forest resources. The most affected groups due to depletion of forest resources, therefore, are those local communities which strongly depend on resource surrounding them. Local communities know that they are the most affected due to depletion of resources around them. They also know that it is mainly due to neglect of resource ownership rights, and because of being pushed away from the management responsibilities and concern that they care less about the resource around them.

Local communities' proper access to forest resource around them, and respect to their traditional institutions and systems of management of the resources, therefore, provides the opportunity for safeguarding the resource sustainability.

Traditional forest management relies on a complex of economical processes and on a variety of habitats in order to maximize the range of products and service that forests can provide. Unfortunately, lack of understading of the way of life of local communities and in equitable resource ownership and use patterns including shrinking of the survival option of those who have no alternative economic opportunities violate the operation of the systems.

As a part of the strategy woreda administration also take fuel wood conservation program using modern improved stove. 80% of respondents still use the traditional "three stone" stove to cook meal, however, as different studies indicate only 5-15% of the energy will be used in the traditional stove, the discussion also indicate that fuel wood demand is mentioned as the second most important cause of deforestation in the area. The production capacity of forest land is finite but the demand is high and growing rapidly, exacerbated by a burgeoning population. The existing gap between demand and supply to

meet minimum needs has not diminished due to the recurrent deforestation process. So to alleviate (minimize) the problem using improved stove is crucial which increase the efficiency of cooking fire by 20-40%. However, to distribute the stove to all households in the kebele, there is a problem of accessibility and for some households, the poorest family; it is economically inaccessible to purchase it. The increasing awareness of the important role of forestry and a better understanding in terms of its contributions to rural and national economic development, should contribute to over coming the above mentioned problems and lead to a concerted effort toward forest conservation and development.

To control resource depletion and forest degradation in the area woreda's administration implemented two main strategies;

1. Protecting and conserving natural forest and;
2. Afforestation and reforestation of new areas and already deforested areas.

Private individual, schools and religious institutions participated in afforestation and reforestation program. Private plantation is promising in the improvement of environmental problems of the area that is why almost 79% of the respondents indicate that the annual consumption of wood and wood products is less than there replacement or plantation. Currently households planted more trees in response to the observable environmental degradation, fuel wood shortage and acute scarcity of wood that is used in construction of houses in the area. Tree planting program was launched with the aim of producing more construction materials and fuel wood which holds 57% of the total plantation in the year 2009. For soil and water conservation purpose for example in the year 2009 only 5% was under taken. In the same year out of the total plantations 74% was exotic species in which eucalyptus tree species got greatest portion. More than 75% of plantation was under taken by privet individual in the woreda for three consecutive years from 2007-2009, and only 9.7% of afforestation effort undertaken on communal land such as in school compound and churches. Surprisingly 60% of respondents planted only eucalyptus tree species where as only 7% of the respondent plant indigenous tree species alone and these private plantations have greater degree of survival because it has

close cultivation and protection by owners. However, there are many problems with this program among these, farmers don't supplied with seeds that are economically and environmentally fit with the area, and also there is no effective logistic support, that will help farmers to plant more number of trees and better tree species that give them benefit at the same time friendly to the ecology. Institutional weakness is observed in the type of seedlings planted in the area. Farmers worry is only solving the problems of shortage of fuel wood and wood for construction. It seems they do not go further to ecological and environmental functions of forests. Big areas have been planted with eucalyptus and pines and too little attention had been given to indigenous tree species which in many cases could serve well or even better than exotics under the given conditions. For that size of vast woreda, there are only two governmentally managed seedling production sites. This limited the capacity of the woreda, to promote better fast growing tree species, agro-forestry practices and indigenous tree species, on-farm nursery by individual farmers lack technical as well material support from experts.

In the second strategy, woreda administration takes the right decision, that is identification and demarcation of fatherless forests and wood lands which have been exposed to heavy pressure from land hungered peasants. The woreda administration also makes effort to register these forest areas to regional forest development agency. However these strategy also encircled by many different problems among these; those demarcated forests did not have strong administration, even if they were taken as community property, but the community don't show any sense of belongingness, rather they scramble over them to get their fuel wood and to expand their agricultural land. Those who have been elected from the community as forest committee don't work, in relation with kebele administration and DAs, because of many reasons, first they are busy by their own business they don't have necessary technical and managerial skill to do so and finally there is no commitment from all above mentioned, parties.

The main problem related with identification and demarcation is the low level of popular participation in planning and implementing the program. That is why community is working against conservation of the existing forest. As experience show there is no rural development becoming effective without willing participation of the community. The

boundary of this demarcated forest is also other problem to the strategy. The society claim that some parts of the forest and wood land as their communal grazing land. As it was discussed there is dense livestock population in the area, and the society have been using the area as a communal grazing land particularly in Gombore Allie kebele. These dense livestock population in the area are not only damaging and grazing the existing natural forest but also affect the newly planted trees. That is why up to 76% of respondent in some kebele blame the free roaming livestock population for depletion of forest resource. Even if in some kebeles of the woreda farmers use their own grazing land, however mostly there is a tradition of using communal grazing land. Moreover the immediate notification of and demarcation of the area became unacceptable by the community and they are still involved in the same practice, since they are not provided with other means of grazing before the implementation of the program. That is why almost 82% of the respondents don't participate in identification and demarcation process.

During forest identification and demarcation, loss of access to the forest resources, which traditionally belong to local communities, can be a predominant cause of forest resource loss in the study area. Denial of access to these resources results in loss of ownership and responsibility, and creates the feeling of being pushed away or left out from resource use and management concerns. Such situations lead to a massive flow of local communities, to the exploitation of natural forest resource, which at times occur beyond the recovery capacity of these resources.

CHAPTER EIGHT

8. Recommendations

Based on the findings of this thesis the following recommendations are given as solutions to promote sustainable forest management through voluntary popular participation of people in the area.

Active participation of local communities in forest resource management is quite decisive. Increased local involvement in protecting and managing forests and wood lands productivity can be increased by organizing community control over access and uses by using techniques that conserve soil moisture and enhance natural regeneration. The low level of local people involvement should be improved in identification and demarcation of remaining wood lands and marginal lands in the area, since some households in the already demarcated forest, even an aware of whether it is demarcated or not. There should be a program that strength the institutional frame works to support field activities and promote policy changes.

To facilitate the involvement of different interested groups, the government has to create conducive environment, such as short licensing procedural mechanisms, clear policy on forestry and land-use system, availability of credit, etc. provision of incentives to those involved in the investment and necessary training and awareness creations on forestry can motivate investment on forestry. The involvement of the private sector will help to increase the forest products available for domestic and foreign markets. This also contributes to the sustainable development of forests for which the country aspires. A private individual or groups can select different alternatives to invest on forest and forestry related areas. In addition to production of wood products, it is possible to be involved in the production of non-timber production areas such as development of gum and incense, ecotourism, wild life zoos, and other can be lucrative for the investor and beneficial for the economic development of the country. Ostrich, civet cat and crocodile farms can be developed by private enterprises. The current forestry development activities are not adequate to cop up with the increasing demand for forest products and accelerated deforestation of the forest resource of the country. Investing on forestry by the government, community and private individuals is crucial. Investment should come

from public and private as well as from foreign and domestic sources. There is a need to work more to encourage more people to be involved in forest development. This could be promoted through organizing different workshops and seminars for the private investors. Compiling necessary information on forest marketing, land species selection for different purposes and the availability of seed are very important. Training on development of economic analysis of forestry and proper valuation mechanisms of forestry goods and services, preparation of project document, monitoring and evaluation is beneficial to investors on forestry.

Development of natural resource can create job opportunities for many people, can contribute in the improvement of the livelihood of the local communities and be profitable to the investors. In the study woreda there are many degraded and wasted lands and if woreda's administration gives these to the communities and unemployed individuals to reforest and develop the area, it will be possible to create job opportunities for many unemployed young generation and at the same time conserve the environment. To encourage the land less, the program should provide free seedlings, fertilizer and incentive payment over the first three years, based on the number of tree planted and surviving. The forestry extension agents should assist the most willing and committed member of the community in order to later convince others by the example of neighbors' success. Encourage local support and participation in tree planting by increasing the use of fast growing; multipurpose tree species that meet people's perceived needs. In exchange, compulsory compensations are to be expected from the government; these could be reflected in tax compensation and incentives of that nature, especially in guarantees of long-term establishment; as investment in forestry is long term and some times may not be financially feasible, but has economical significance in environmental protection, biodiversity conservation, water shed management and other service, which might not be priced, on market.

Open-up of the market outlets to the outside world could also profit the investors and attract more private investors to be involved in the forestry development. Technical support by the government is essential to minimize unwise use of resources and improvement of the project plan, preparation and its implementation.

In addition to reduced forest lands, attention should also be focused on the issue of the large areas of unproductive land in the woreda that have already been stripped off trees and whether such land could be reclaimed economically, and for what further purpose. With the increasing shortage of space and fast growing population it becomes inevitable to try and make this waste land productive, one such effort is done through area closures.

For example in some regions such as Tigray, measures to transfer greater responsibility for forest management and afforestation from government agencies to local authorities, communities, and individual stakeholders are already in hand, although much remains to be learnt about the risk, benefits, and successful mechanisms for implementing them. A further extension of such measures is distribution of forest land and degraded to households, or alternatively, right to plant trees on land leased from the state; if these experiences are learnt by the woerda and even zonal administration of South West Shewa, it will be possible to minimize the rate of depletion of forest resource of the area and restore the degraded up lands.

As mentioned above the importance of creating a favorable policy environment for forestry investment through economic incentives and the provision of supporting infrastructure and institutional devices is indispensable. Foresters should provide the necessary information on forests, their possibilities and limitations to contribute to sustainable development.

To bring effective result in the afforestation program monitoring and detailed surveys are necessary. Wored's rural and agricultural development office, especially the forestry department should have to give recognition to traditional forest related knowledge as it is essential to forest resource management, and is intimately bound up with the ownership and control of hands and territories and the continued use, management and conservation of all types of forest. Traditional knowledge must remain alive, culture must continue to develop, and indigenous contemporary knowledge and technologies must be respected.

Encourage private sector involvement in establishing and maintaining plantation; give priority to planting deforested lands. Support programs to develop more efficient cook stoves, make it easily available, by facilitating means to be distributed to each kebeles

and farmers from each kebele to buy it. In order to minimize the impact of fuel wood demand on the forest government must supplement the price of this modern stove. While a variety of forest development activities has been in recent past, the achievement could not bridge the gaps between the demand and supply. Thus, there is a need for further increasing current efforts by the government and private sector in forestry development in effective ways. However, the major hindrance for mitigating optimal forest development activity is lack of financial resource for the purpose.

The government also has to attract funds form domestic and foreign sources through bringing forestry issues on the political agenda and linkage to the main political and social problems such as drought, war, etc.

Lack of sufficient man power with modern management skills, as well as a serious shortage of personnel in the forestry sector with training in natural resource management and social sciences is the other constraint that challenge forest resource conservation and development strategy of the area, and the same will happen in other parts of the region, so, training to strengthen regional forest professional and development agents, especially with respect to the disciplines required for sound natural resource management, socio-economic, and policy research, is an area that should receive immediate attention and support, both regionally and nationally. Even at national level, little efforts have been made by the government to allocate necessary budget for forestry conservation and development, and to establish adequate forestry institutions. The issue of forest policy and legislations development was not given due consideration.

There should be continuous over site and control for woreda rural and agricultural development office to what is happening in each kebele, how DAs and assigned forest committee discharge their responsibility. Clear mechanism should be suggested that can halt activities of those who expand their farm land in to the forest. Woreda administration should check activities of those kebele administrators, particularly, for issues related to land and forest.

The concerned woreda level administrations and the communities as a whole must commit them selves for the implementation of forest legislations, particularly regulations

and directives and for undertaking extensive forest development activities to achieve effective conservation of top fertile soil, and water resource the area in order to combat desertification problem and also to design an effective and efficient system and strategy which unable the area to rationally utilize the remaining forest resource for fuel and various construction purposes, and implement it effectively.

Therefore, it is important to strengthening the forestry institution (stable but dynamic government organization) through allocation of adequate budget and manpower as well as clear mandate and responsibilities. This could help for its effective and efficient activities in the conservation and development of forestry for different purposes, and the promotion of private investment on the forestry sector.

To save the environment and the depleted forest resource of the country in general and the study area in particular the researcher recommends the following two direction strategy. The strategies are **decreasing demand** and **increasing supply** of wood and wood products.

The first strategy can be attained through:

1. Fuel wood conservation e.g. by
 - Improved wood stove
 - Improved charcoal conservation
2. Fuel wood substitution e.g. by
 - Rural electrification from hydropower
 - Subsidizing locally available commercial fuels
3. Improved use e.g. by
 - Improving transportation, sustain or increase forest product distribution and marketing
 - Investigates wood price and cutting fee.

The second strategy can be attained through

1. Protection and management of existing forest and wood lands e.g. by
 - promoting local participation in development management plans for forest reserve
2. Expanding tree planting e.g. by
 - creating incentive for local participation
 - decentralizing seedling distribution
 - supporting involvement of schools and NGOs
 - Emphasizing agro-forestry approaches and use multipurpose trees.
3. Strengthening of extension, training and research
 - use mass media to mobilize popular support
 - use audio visual materials as extension aids
 - increase and improve training of forestry extension
 - improve coordination and cooperation with agricultural extension and research service

If these two strategies properly employed it will help to

- sustain or increase agricultural production
- satisfy basic needs for wood, fodder and minor forest products
- control deforestation and land degradation
- reduce demand for imported commercial fuels

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Annex I

Questionnaire for M.A thesis

This questionnaire is used during a field work of data gathering. The study is conducted for a research purpose under the title “an assessment of forest resource conservation and development strategy; the case of Amaya Woreda”. The data is gathered by enumerators who assiste the researcher.

Dear respondent

This questionnaire has only research purpose. Thus, the out come from this research will help to address the problem of deforestation and land degradation. Its finalization is thought to lead to a better and inclusive conservation and management of forest resource in the area. The government, community, NGOs and religious institutions will use it in their respective concerns. Therefore, I kindly request the respondent to fill this questionnaire. I assure you that all your response will be held confidentially.

Part I: General Information

Questionnaire No. _____

Kebele or village _____

Age of the respondent _____

Sex of the respondent _____

Educational status of the respondent _____

Date of interview _____

Name of enumerator _____

Language of the respondent _____

Part II: to answer the questions, please use tick mark (✓).

1. Forest resources in your localities are exposed to high rate of deforestation.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

2. Identification and demarcation of existing natural forest minimized the rat of deforestation in the area.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

3. Absence of strong forest administration and lack of continuous environmental education from the woreda forestry and agricultural office highly contributed to the current deforestation in the kebele.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

4. Due to low fertility of your plot and small size holding, you need to expand your farm land in to forest area.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

5. Most people carelessly destroy forest in your locality because it is open access.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

6. Free roaming live stock in forests case great damage to forest in the locality.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

7. If you agree with the above idea, one of the solutions to save our forest is that individual farmer should have their own private grazing land.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

8. In order to improve the forest resource of the localities, the communities play a great role in supporting conservation effort in the area.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

9. If you agree with the above idea, it should be the community that cultivate, protect and safe guarded, the newly planted trees.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

10. Annual plantation and replacement outnumbered your consumption of wood and wood products.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

11. You and your locality participated in identification and demarcation process of open accesses forest.

- Strongly agree - Strongly disagree

- Agree - Disagree
- No opinion

12. Eucalyptus plantation is preferable than other indigenous tree species because, it is harvested in short period of time, require simple cultivation and commercially valuable.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

13. If woreda forestry department support farmers, technically in giving advice and materially in providing various indigenous trees species, it will be better possible to improve the forest resources of the area.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

14. The main problem of re-forestation and afforestation in the area is the low survival rate of planted trees due to free roaming of livestock.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

15. Participation of women, in plantation of tree is low because it does not concern them.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

16. It is not as such a burning issue to have private plantation on farm land because there is open access forest, where fuel wood, wood for construction, wood for sell is obtained.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

19. Forest conservation activities in your locality lack cooperation and coordination among different stake holders, such as the communities, woreda forest bureau and NGOS.

- Strongly agree
- Strongly disagree
- Agree
- Disagree
- No opinion

20. Your annual plantation and replacement outnumbered your conception of wood and wood product in the area.

- Strongly agree
- Strongly disagree
- Agree
- Disagree
- No opinion

21. If you don't agree with the above statement, every stake holders should work hard to reverse the trend.

- Strongly agree
- Strongly disagree
- Agree
- Disagree
- No opinion

22. Technical and material support from DAs and other experts contributed more for current afforestation program.

- Strongly agree
- Strongly disagree
- Agree
- Disagree
- No opinion

23. There is no clear understanding of forest laws and regulation among the community.

- Strongly agree
- Strongly disagree
- Agree
- Disagree
- No opinion

24. Laws and regulations do not strictly followed and enforced by kebele administration and woreda officials to protect the existing natural forest.

- Strongly agree
- Strongly disagree
- Agree
- Disagree
- No opinion

25. Penalizing those who violate rules and regulations is the best methods of forest conservation.

- Strongly agree
- Strongly disagree
- Agree
- Disagree
- No opinion

26. There is tradition of selling fuel wood and charcoal as a source of income when a household face food shortage in the localities.

- Strongly agree
- Strongly disagree
- Agree
- Disagree
- No opinion

27. Forest lands are better fertile than farm plot, so it is reasonable to expand farm land in to forest area.

- Strongly agree
- Strongly disagree
- Agree
- Disagree
- No opinion

29. If open access forests are demarcated as protected area the community will be happy.

- Strongly agree
- Strongly disagree
- Agree
- Disagree
- No opinion

30. Since forests are part of tradition, belief and culture of the community the traditional conservation methods should be appreciated and practiced to save the endangered forest.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

31. If you agree with the above statement, community elders, religious leader and influential people can play better role.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

32. The society should plant trees, protect exiting natural forest and participate in reforestation program not because it is order that came from the woreda but it is a question of survival on which their livelihoods depends.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

35. The restriction on the community form cutting the forests resource never been respected.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

36. If you agree with the above statement, it is because of there is no body that controls the enforcement of the restriction.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

37. Corruption highly affects the strict enforcement of forest laws and regulations.

- Strongly agree - Strongly disagree
- Agree - Disagree
- No opinion

38. What is the main source of fuel wood for your house?

- A. Private plantation C. Crop residue and animal dung
B. Open access forest

39. What is your major supplementary income source?

- A. Selling fuel wood C. Other (Working in own small business)
B. Trading D. no additional income but diversifying agriculture

40. What is your major occupation?

- A. Crop production C. Trade
B. Mixed farming D. Other

41. How many livestock do you have?

- A. Less than 5 C. More than 10 livestock
B. 5-10 livestock D. None

42. Where do plant seedlings?

- A. On private land C. Both on private and communal land
B. Communal land

43. What type of tree species do you plant?

- A. Eucalyptus C. Indigenous
B. Other Exotic D. Both Eucalyptus and Indigenous

44. For what purpose do you mainly plant trees?

- A. Soil and water conservation C. To sell timber and generate income
B. to get fuel wood D. To get construction material
E. Shade F. Asset G. Other

45. Are you using improved stove?

- A. Yes C. No, but I need to use it
B. No

Annex II: Structured Interview

Date. _____ Serial, NO. _____

Previous position _____

Duration _____

Current position _____

Duration _____

Place _____

Educational Status _____

A. For Agricultural and Rural Development Office

1. Do you think agricultural development programs have effect on forest resource?
2. Are there reforestation or afforestation schemes in the woreda? On communal land or private land?
3. To what extent the forest conservation program involve the community?
4. From where do seedlings for plantation came?
5. How do the woreda manage areas that are not designed as protected or productive state forest?
6. Is there rules and regulations that prohibit illegal cutting and transportation of forest products?
7. If “yes” how do evaluate the applicability of this rules and regulations in the woreda?
8. What are the impact of crop and grazing land scarcity on the forest resource of the area?
9. To what extent peasant’s farm land have soil erosion and depletion of soil fertility?
10. To what extent different households use chemical fertilizers, pesticides, insecticides, herbicides?

11. How do explain the fuel consumption pattern in the woreda?
12. Is their regular collection of information regarding forest resource (forest inventory)?
13. Is there land scarcity in this area? If so why?
14. Is there community forest in the woreda? How do manage it?
15. Is there agro forestry practice among peasants in each kebele of the woreda?
16. If so, how do you evaluate them? Do they generate income why improving forest conditions of the area?
17. How do you explain the awareness level of community regarding forest policy, laws and regulations?

B. For Wereda Administration Office

1. What is your opinion about the forest resource conservation and use laws of the government?
2. Is it feasible? Do people in the woreda aware?
3. What is your opinion about the relationship between the forest policy and other related policy (agricultural policy) of the government?
4. What should be done to minimize the threat of land less young farmers on forest land in the woreda?
5. What have been planned to manage open access forest in the woreda?
6. Is there mechanism to control the activities of those farmers who settle or expand their farm land to unprotected forest area?
7. How can the community use the forest resource with out causing deforestation? Explain?
8. What are the current forest ownership conditions in the woreda?
9. Have there been any successful efforts in terms of forest resource conservation and management in and around the district?

10. What do you think about the forest resource conditions in this area in the past (total forest coverage)?
11. Is there an effort to involve the landless in forest development that will generate income for them?
12. What are the main obstacles to forest conservation effort in the wereda?

C. For Development Agents

1. To what extent deferent trainings are provided to the rural people in relation to better fuel conserving alternatives in this area?
2. How do you evaluate the effectiveness of government institutional control for protection of forest resources?
3. Do you think the conservation of forest in the woreda have been effective?
4. If “no” what factors hinder its successfulness?
5. To what extent environmental education is given to farmers? For how long? Is there behavioral change?
6. To what extent the community involved in forest resource conservation in the woreda?
7. Do farmers supported to have their own private wood lots?
8. Where plantation and regeneration of trees do takes place? On private or communal land?
9. For what purpose house hold plant trees in the woreda?
10. Do the woreda give training on different activities of forest conservation?
11. If “yes” is it enough, helpful, and create difference?
12. What they (farmers’ families) do as coping mechanism during seasonal income insecurity? (e.g. before harvesting in the summer season)
13. What they (peasant families) do as coping mechanism during fuel wood crises?

14. To what extent peasants farmlands have soil erosion and depletion of soil fertility?

15. Do the employed conservation strategies fit with the local condition?

Annex III

A. Focus Group Discussion Checklist for Community Elders

1. What is your perception in the area regarding forest degradation and related environmental problem?
2. What do you say about the current forest conservation effort in your locality?
3. What solution would you suggest?
4. What are the indigenous experiences of community with forest resource conservation?
5. How do you perceive the impact of the current land and tree tenure rights in forest conservation process among peasants?

D. For kebele Administration

1. How do you evaluate the sufficiency, sustainability and effectiveness of material and technical support to households involved in conservation process?
2. What motivate farmers to be engaged in intensive afforestation?
3. What do say about community participation the conservation of forest resource of the area?

Declaration

I declare that this thesis is my original work and has not been presented for a degree in any university and all the sources of materials used for the thesis are duly acknowledged.

Tesfaye Erpasa

Signature: _____

Date: _____

Place: Addis Ababa University

This thesis has been submitted for examination with my approval as an academic advisor.

Minas Hiruy (Dr.)

Advisor