Policies to Increase Forest Cover in Ethiopia

Proceedings of a Policy Workshop
organized by
Environmental Economics Policy Forum for Ethiopia (EEPFE)
Ethiopian Development Research Institute (EDRI)

Sponsored by
Environment for Development (EfD) Initiative at University of Gothenburg, Sweden

Global Hotel, Addis Ababa, Ethiopia
18-19 September 2007

Editors:
Jonse Bane, Department of Economics, Addis Ababa University, Ethiopia
Sisay Nune,
Ministry of Agriculture and Rural Development, Ethiopia
Alemu Mekonnen,
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Preface

This workshop was first conceived as His Excellency Ato Neway Gebre-Ab requested that the Environmental Economics Policy Forum for Ethiopia highlighted the implications of the far-reaching deforestation that Ethiopia has faced. However, in the preparations of the workshop it became clear that the Ministry of Agriculture and Rural Development had already identified the low degree of forest cover, estimated to be 3.5 percent of the land area, as a major concern and that the recent forest policy has set out to increase this area to 9 percent within five years. It was therefore natural to make policies to increase forest cover in Ethiopia the focus of the workshop. It is an important issue for the sustainable development of Ethiopia, but it is also a daunting challenge since it entails reversing a long-standing trend in the face of a rapid increase in population.

The workshop was very well attended and there was a very strong interest among many of the participants that proceedings should be prepared in order to make more generally available all the excellent presentations that were made. Since the Sida-funded Environment for Development Initiative has as a major objective to support exactly this kind of interaction between civil servants, policy makers and academics we were happy to supply the necessary means for the preparation and printing of the proceedings. However, the credit falls fully on the professional work carried out by the editors of the volume – an important piece of work showing the successful partnership between government and academia with active involvement of Ministry of Agriculture and Rural Development, Ethiopian Development Research Institute, Environmental Economics Policy Forum for Ethiopia and Addis Ababa University. I hope that these proceedings, and particularly the recommendations from the break-out sessions that can be found at the end of the volume, will support a concerted action that will increase the quantity and quality of Ethiopia's forests, and thus contribute to poverty alleviation and a more sustainable development of Ethiopia.

Gunnar Köhlin, Associate Professor
Director, Environment for Development Initiative

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Opening speech

H.E. Mr. Newai Gebre-ab[*]

Invited guests,
Workshop participants,
Ladies and gentlemen,

I would like to start by welcoming you all to this workshop on "Policies to increase forest cover in Ethiopia" organized by the Environmental Economics Policy Forum for Ethiopia (EEPFE) based at the Ethiopian Development Research Institute (EDRI).

With a little over a million square kilometers of land area and altitudes ranging from more than 100 meters below sea level to over 4200 meters above sea level, Ethiopia has a large number of species of flora and fauna in general and forest resources in particular with a significant rate of endemism. However, with a human population of about 75 million and a livestock population of over 60 million, there is a heavy pressure on the forest resources of the country for various reasons including expansion in land area for farming and grazing, illegal settlement, urbanization, demand for forests and forest products such as fuel wood and construction and demand for non-wood forest products.

The consumption of forest and forest products has been shown to be higher than the incremental yield of forests leading to deforestation and forest degradation in the country. Ethiopia's forest cover is now estimated to be well below 5 percent of the total land area. Low and decreasing forest cover have a number of consequences including land degradation, possible flooding, loss of biodiversity and reduced carbon sequestration capacity. These have important implications for the welfare of the population now and in the future.

[*] Director of the Ethiopian Development Research Institute and Chief Economic Advisor to the Prime Minister with the Rank of Minister

Ethiopia is one of the poorest countries in the world. Millions of people depend on forests and forest products for their livelihoods. The significant economic growth that has been achieved particularly over the past few years could also mean that unless the forest resources are managed properly and attempts made to increase their size, the pressure on them would increase, which would worsen the problem.

Market failure is one important reason for deforestation and forest degradation. The fact that some of the benefits of forests accrue to people far away from where the forests are and that these benefits are not reflected through the market is one example of a situation where the existing market may fail to deliver the amount that should optimally be supplied. It is under such conditions that some government intervention/action would be required in various forms one of which is design and implementation of policies and projects to address this problem.

Ethiopia has designed various policies, strategies and programs to address key development issues. The Agricultural Development Led Industrialization (ADLI) is the leading development strategy of the country. A comprehensive plan whose implementation started recently is the Plan for Accelerated and Sustained Development to End Poverty (PASDEP). This plan includes measures to address environmental issues the country is facing.

The particular concern of the Ethiopian government regarding forestry issues is shown by the approval by the council of ministers of the forest development, conservation and utilization policy and strategy in 2007 followed by the approval of a forest development, conservation and utilization proclamation by the House of Representatives. While these are important steps towards a solution to the problem of relatively low and decreasing forest cover, there is a lot to do.

It is also important to note that there could also be policy failures. Policies may need revision, modification and even major changes depending on circumstances. One important task ahead of us in our attempts to find a solution to the problem of deforestation and forest degradation is looking into existing forest policies and practices in the country and identifying key constraints and opportunities. This requires, among others, increased awareness about the relevant issues which would be

augmented through knowledge of country experiences, proper identification of the problems, and identification of research gaps relevant for policy. I believe this workshop would contribute a lot towards achieving these since I have been informed that there is a very good mix of workshop participants that includes policy makers and implementers, practitioners, researchers and experts. This makes me quite confident that the outcomes of the workshop will lead to important ideas that could be used for improvements in policy formulation and implementation and for policy relevant research.

With these remarks, I now declare the workshop open.

I thank you.

Welcome remarks

Mahmud Yesuf[♣]

Your Excellency Ato Yacob Yala, State Minister, Input Supply and Marketing Sector, Ministry of Agriculture and Rural Development

Your Excellency Ato Neway Gebre-ab, Chief Economic Advisor of the Prime Minister, and Director of the Ethiopian Development Research Institute,

Distinguished workshop participants,

Ladies and Gentlemen,

On behalf of the Environmental Economics Policy Forum of the Ethiopian Development Research Institute, I warmly welcome you to this workshop on "Policies to increase forest cover in Ethiopia".

The Environmental Economics Policy Forum of the Ethiopian Development Research Institute is one of the six Environment for Development Centers located across the developing world, supported by Sida to conduct and disseminate policy relevant and independent research on sustainable use of natural resources. Among others, the major missions of the Forum include increasing environmental awareness among policy makers and enhancing the impact of environmental economics research on improving policy formulation and thereby eventually improving the welfare of the Ethiopian people.

Among others, forest and land resources are key sources of livelihoods to millions of the Ethiopian population. However, over the past decades, there has been continuous pressure on these resources leading to massive deforestation and resource degradation across the country. Currently the country's forest stock is estimated to be well below 5% of the total land area.

[♣] PhD, Coordinator, Environmental Economics Policy Forum for Ethiopia, Ethiopian Development Research Institute

This workshop is organized to initiate a dialogue among the relevant stakeholders to identify the policy and knowledge gaps to increase the forest cover in Ethiopia.

The specific objectives of the workshop are:

1. To identify knowledge gaps that could be filled to increase forest cover.
2. To inform about national and international efforts to improve forest management and increase forest cover.
3. To ensure that the research at the Forum will support the on-going domestic processes and contribute to an increased forest cover

I believe the composition of the participants in this workshop would help in fulfilling these objectives.

Finally, I would like to extend my sincere gratitude to the following individuals and institutions whose tireless efforts and generosity made this workshop a reality:

First I would like to thank Sida and the Environment for Development Initiative at the University of Gothenburg in Sweden making the financial support available to this workshop. In particular I would like to thank, the Director of this initiative, Dr. Gunnar Köhlin who has always been instrumental to convert such ideas to realities.

My thanks also go to Dr. Alemu Mekonnen (a research fellow at the Forum) and Prof. Randy Bluffstone of Portland State University who worked tirelessly from inception to realization of this workshop.

I also thank all other research fellows and the administration team of the Forum and EDRI for all their support towards the organization of this workshop.

And above all I would like to thank all of you for accepting our invitation and coming to attend this workshop.

I wish all of us a very productive and successful workshop over the coming one and half days.

Thank you.

Keynote speech

H.E. Mr Yacob Yala[♣]

Invited guests,
Distinguished workshop participants,
Ladies and gentlemen,

It is a pleasure to be given this opportunity to make a key note speech at this important workshop on "Policies to Increase Forest Cover in Ethiopia". It is important at least for two reasons. One is that it addresses a very important topic for Ethiopia. The second is it is being attended by a very good mix of distinguished participants from various institutions including federal and regional governments, international and local non-governmental institutions, donors, research institutes, universities and experts in the area from other countries.

Ethiopia's location makes it a country with a large number of species with a significant rate of endemism. Ethiopia has very low forest cover relative to the total land area and deforestation and forest degradation are important problems. The rate of use of forests and forest products is far above the incremental yield of forests. Problems associated with this include land degradation, possible flooding, loss of biodiversity and climate change.

Invited guests, ladies and gentlemen,

Ethiopian governments have attempted to tackle this problem in various ways. In particular, the Government of the Federal Democratic Republic of Ethiopia has taken various measures to reduce this problem. These include establishing appropriate institutions that address policy issues such as the Ministry of Agriculture and Rural Development and those that conduct research such as the Ethiopian Institute of Agricultural Research. Forestry issues have been handled by various institutions and currently it is mainly under the Natural Resources Sector of the Ministry of Agriculture and Rural Development at the federal level. Forestry research is being

♣ State Minister, Input Supply and Marketing Sector, Ministry of Agriculture and Rural Development

conducted by various institutions including the Forestry Research Center of the Ethiopian Institute of Agricultural Research, the Wondo Genet College of Forestry and Natural Resources, and a number of other universities and institutions.

A number of federal and regional offices are involved in projects and programs that are related to forestry. The projects and programs include Participatory Forest Management (PFM), Productive Safety Net Program (PSNP), Country Partnership Program for Sustainable Land Management (CPPSLM), Managing Environmental Resources to Enable Transition to Sustainable Livelihoods (MERET) project and Agricultural Sector Support Program (ASSP).

Forest policy is an important topic for Ethiopia's forests in 2007. The government showed commitment to restore its natural environment at the start of the 3rd Millennium through afforestation and maintaining remnants of forests. It has already began by mobilizing the public to plant two trees per person (household at least).This workshop is being held the same year the Ethiopian government approved a new forest development, conservation and utilization policy and strategy (in April 2007). A forest development, conservation and utilization proclamation was also approved by the House of Representatives a few months ago. These are important developments for Ethiopia's forestry as they provide the legal basis for development, conservation and utilization of our forest resources.

Promotion of private forest development and better management and use of state forests are envisaged based on these policies and laws. The details are to come out in terms of policies and laws of regional states and corresponding regulations and directives.

Looking at the workshop program, forest policies and associated issues that will be useful to increase forest cover will be discussed. Experiences of Ethiopia and other countries on participatory forest management will also be discussed. It is my belief that the discussions will lead to a better understanding of the constraints and opportunities that exist in these important areas.

Invited guests, ladies and gentlemen,

It is my sincere hope that from your deliberations over the next one-and-a-half days, you will come up with ideas that will contribute towards an improvement in our understanding of outstanding forest policy issues relevant for better formulation of policies and help conduct more policy oriented research. I wish you very successful deliberations.

I thank you.

Introduction

Gunnar Köhlin[♣]

Your Excellency Ato Yacob Yala, State Minister, Input Supply and Marketing Sector, Ministry of Agriculture and Rural Development
Your Excellency Ato Neway Gebre-ab, Chief Economic Advisor of the Prime Minister, and Director of the Ethiopian Development Research Institute,
Distinguished workshop participants,
Ladies and Gentlemen,

It is a great honor and pleasure for me to introduce you to this workshop. I will take the opportunity to give you a background to the Sida supported Environment for Development Initiative, that is sponsoring this workshop. I will say a few words about the global trends regarding forest management and their relevance to Ethiopia. I will mention the new Sida position paper on natural resource tenure and finally present to you the objectives of this workshop.

The Environment for Development Initiative is a Sida-supported project that builds on 17 years of capacity building in environmental economics. Both the name and the initiative emphasizes the environment as a potential for development rather than as a constraint. EfD is designed to apply environmental economics as a tool to foster sustainable development. The EfD initiative supports environmental economics centers in six developing countries:

- Ethiopia – EDRI/Addis Ababa University
- China - Peking University
- Kenya – KIPPRA/Nairobi University
- Tanzania – University of Dar es Salaam/NEMC
- South Africa – University of Cape Town
- Central America – CATIE (Costa Rica)

These centers are supported financially by Swedish Sida, administratively by the Environmental Economics Unit (EEU), University of Gothenburg, Sweden and academically by EEU and Resources for the Future (RFF) in Washington D.C.

♣ Assoc. Prof., Director, Environment for Development Initiative, University of Gothenburg, Sweden

Each of the supported centers is expected to fulfill the following characteristics: (i) it should conduct relevant applied research on environment & poverty issues; (ii) it should entertain strong links with policy-makers, processes and implementing agencies; and (iii) it should maintain an association with domestic and regional M.A. and Ph.D. programs. All of these characteristics are more than fulfilled by the EEPFE.

The following EfD program components are evident for the whole initiative and also visible in the collaboration with EEPFE: The project gives core support to create and enable research platforms. It strengthens academic programs and provides opportunities to forge links between academic programs and policy processes. It actively supports collaborative thematic policy research and, finally, it supports the implementation of Swedish and international environmental initiatives in each of the collaborating countries.

The policy relevant research is influenced by at least four factors. Most importantly, for it to be truly relevant the research identification process needs to start from the local policy processes. That is why workshops such as this are so important. However, research needs to be based on the skills and interests of local researchers. In the case of Ethiopia you are lucky to be endowed with a strong group of environmental economists that have a particular interest in and skills on sustainable land management and forestry economics. We will then link up these Ethiopian researchers with international researchers, such as Professor Bluffstone, who is with us today. This way we expect the research to be even more enlightened, and it will also facilitate international publication which is important in order to reach a wider academic audience. Finally, we have the ambition to link you up with international policy processes, and I will come back to such issues in a few minutes.

Policy – research interaction

Since the Environment for Development initiative is particularly focused on making a real difference with research, the policy – research interaction is particularly important. This interaction starts with the problem formulation when it is important to create a dialogue between researchers and various stakeholders in order to identify the

most important issues and policy processes to focus the research on. This workshop is an excellent example of such interaction that will help focus the research.

The actual research follows, typically both theoretical and empirical, with clear policy deliverables. These should include both an interpretation of the research that is relevant to policy makers and actual interactions where the results are presented. In most cases, continued research and evaluation of findings are needed to refine methodology and recommendations.

Current research themes in the EfD initiative include:

- Land tenure and land management
- Forest policies
- Fisheries
- Wildlife and park management including eco-tourism
- Water management
- Adoption to climate change
- Environmental policy instruments

Regarding land tenure and land management, we currently support the following projects:

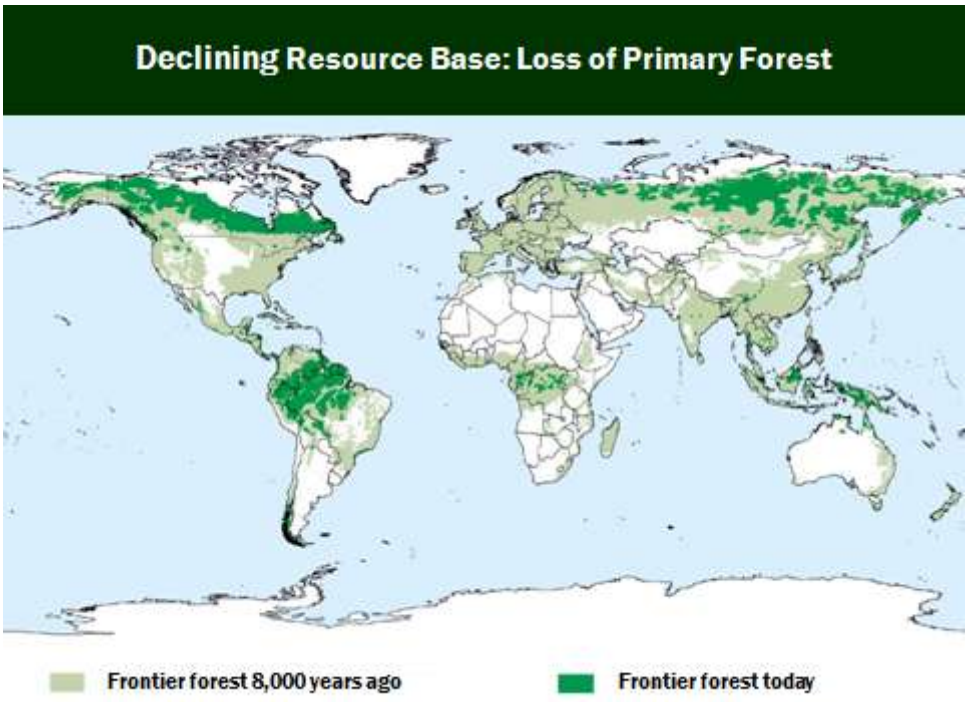
- Production risk, risk aversion and crop productivity (Ethiopia)
- Land registration and certification (Ethiopia)
- Does agricultural extension pay? (Ethiopia)
- Land management in smallholder agriculture (Kenya)

Regarding forest tenure and management, the EfD currently supports the following projects:

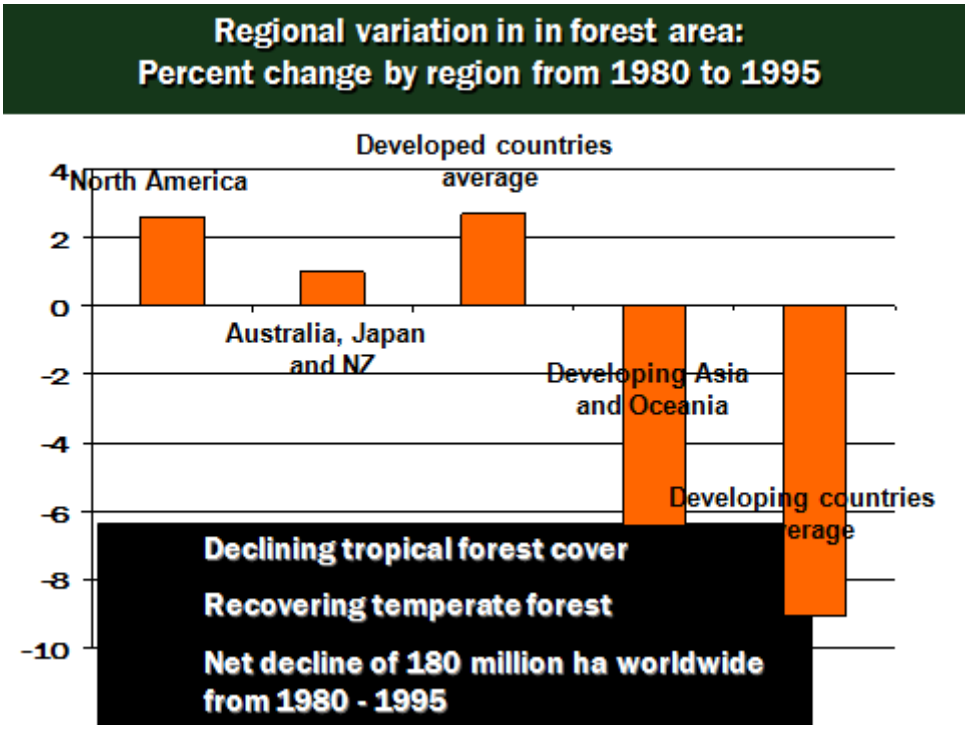
- Chinese forest policy and world timber markets (China)
- Legal or illegal forestry? – determinants of the decision (Costa Rica)
- Local forest management schemes – what are the actual effects? (Tanzania)
- Common property forest management and private tree planting (Ethiopia)

I would now like to turn more specifically to the theme of this workshop, and in doing so, I would like to draw on some findings by Forest Trends, an international

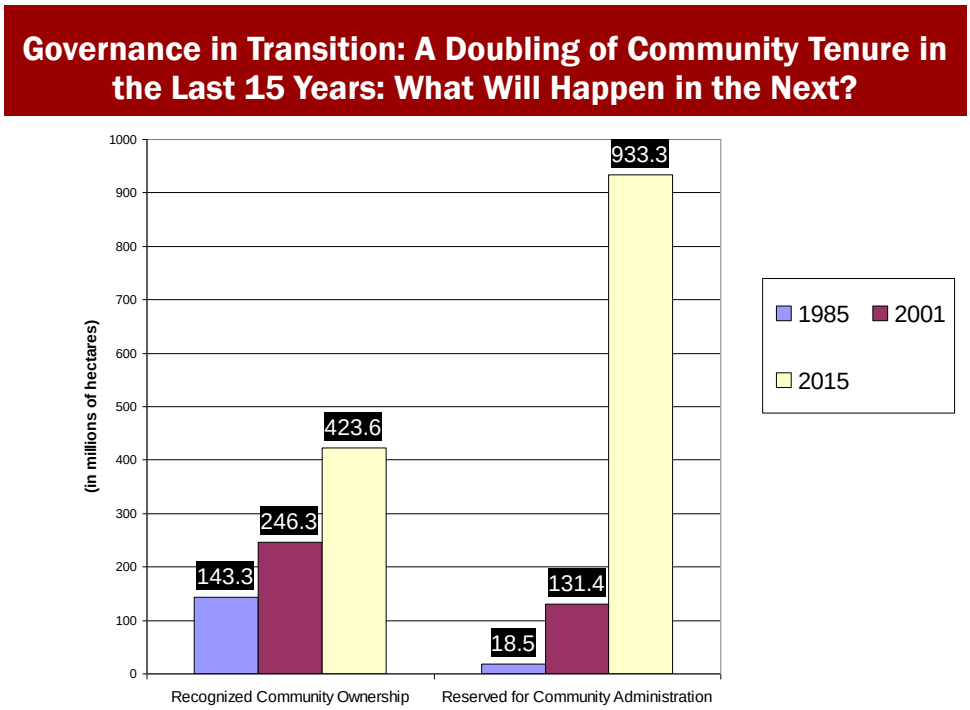
NGO based in Washington D.C. As you can see in the picture below, there has been a massive global deforestation over the last 8000 years. This has particularly affected Europe, North America and Asia, but Ethiopia is one of the countries in Africa that has also been greatly affected. However, it brings out the issue of optimal land use and that we should not take for granted that a past land use, eg forest cover, is the preferred land use for all times to come. The great expansion of human civilization has to a great deal come at the expense of natural forest.



In the next picture we can see that these changes continue also in modern times, and that forest cover is actually growing in developing countries as a whole. However, many developing countries are now facing a dramatic decline in forest area.



However, what is interesting now is a quite recent trend where government forests, that have *de facto* been open access, and subsequently mismanaged, are now being turned over to local management, often benefitting both the forests and the local populations.



The governance transition can be exemplified by the following which are examples of community ownership:

- 80% of Mexico's forests are owned by ejidos and indigenous communities (44 M hectares), 7,000 forest communities have commercial potential
- Recognition of ancestral claims in the Amazon basin cover over 100 million hectares in the 8 countries
- Indonesia passed laws in 2000 to recognize customary ownership – potentially affecting 40 million of hectares of forest area
- Tanzania, Gambia, Cameroon, Uganda, and Zambia have followed with devolutionary and decentralizing policies

Also among donors, increasingly more attention is given to local management of forests, and more generally the importance of tenure rules for management of natural resources. Sida has for examples just recently released a position paper on natural resource tenure. In the section dealing with forestry it is noted that:

- Recognizing customary and/or collective rights to natural forests may improve access and secure livelihoods for the poor.
- Evidence shows that local communities can manage forests in a sustainable way if they have secure resource rights.
- In recent years, several countries have changed their legislation in order to strengthen local forest rights.
- Within this sphere, attention must be paid to intra-community relations, ensuring equal access for women and men, and promoting the development of forest enterprises.

With this as a background, I would like to remind you of the objectives of the workshop:

1. To identify knowledge gaps that could be filled to increase forest cover in Ethiopia.
2. To inform about national and international efforts to improve forest management and increase forest cover.

3. To ensure that the research at EEPFE will support the ongoing domestic policy processes and contribute to an increased forest cover in Ethiopia.

Thank you very much and I wish you great success in dealing with one of the most daunting challenges for Ethiopia.

Acronyms

ASSP	Agricultural Sector Support Program
CBD	Convention on Biological Diversity
CBFM	Community Based Forest Management
CBOs	Community Based Organizations
CEEPA	Center for Environmental Economics and Policy in Africa
CFAs	Community Forest Associations
CFPME	Construction and Fuel wood Production and Marketing Enterprise
CIDA	Canadian International Development Agency
CITES	Convention on International Trade in Endangered Species
CPPSLM	Country Partnership Program for Sustainable Land Management
EDRI	Ethiopian Development Research Institute
EEPFE	Environmental Economics Policy Forum for Ethiopia
EFAP	Ethiopian Forestry Action Program
EPA	Environmental Protection Authority
FIDP	Forest Industries Development Program
FREMP	Forest Resource and Ecosystems Management Program
FUGs	Forest User Groups
GEF	Global Environment Fund
GoE	Government of Ethiopia
GTZ	German Technical Cooperation
HRDP	Human Resources Development Program
JFM	Joint Forest Management
JMA	Joint Management Agreement
KFMP	Kenya Forestry Master Plan
KFS	Kenya Forest Service
KWS	Kenya Wildlife Service
MERET	Managing Environmental Resources to Enable Transition to more Sustainable Livelihood
MoARD	Ministry of Agriculture and Rural Development
MoME	Ministry of Mines and Energy
MoU	Memorandum of Understanding
MoWR	Ministry of Water Resources
NORAD	The Norwegian Agency for Development Cooperation
NTFP	Non-Timber Forest Products
OARDB	Oromia Agricultural and Rural Development Bureau

OFAP	Oromia Forestry Action Program
ORCS	Oromia Regional Conservation Strategy
PFM	Participatory Forest Management
PFMP	Participatory Forest Management Program
PFRs	Private Forest Reserves
PMEP	Planning, Monitoring and Evaluation Program
PRA	Priority Resource Areas
PSNP	Productive Safety Net Program
RFAP	Regional Forestry Action Program
SIP	Sectoral Integration Program
SNNP	Southern Nations Nationalities and Peoples
SUN	Sustainable Utilization of Natural Resources
TDDP	Technology Development and Dissemination Program
TFAP	Tropical Forestry Action Plan
TFPP	Tree and Forest Production Program
UNCCD	United Nations Convention on Combating Desertification
UNFCCC	United Nations Framework Convention on Climate Change
URT	United Republic of Tanzania
WAJIB	abbreviation for “Forest Dwellers Association” in Afaan Oromo
WBISPP	Woody Biomass Inventory and Strategic Planning Project
WEDP	Wood fuel energy Efficiency Development Program

Part I

Review of Forest Policies, Legislations and Institutions in Ethiopia and Lessons from Economics and International Experience

Ethiopian government efforts to increase forest cover: a policy oriented discussion paper

Sisay Nune[♣]

1. Introduction

The social, economic, environmental and even political significance of natural resources in general and forest resources in particular, has been researched and discussed both locally and globally. Such researches and discussions are still going on with the help of new technologies and sharing of information worldwide. The value of forests has become much clearer now more than ever as the planet is faced with looming environmental crisis. Countries are pulling efforts towards increasing the green cover, mainly forest cover, of the earth.

This short discussion paper is prepared with a view to give the highlights of the various efforts made by Ethiopian governments, past and present, to increase the ever dwindling forest cover of the country. The discussion will not go into all efforts, but only on those that are made in the form of issuing policies and laws at the federal level.

Accordingly, the discussion paper is organized under six headings. First, some historical facts regarding the development of forest policy and legislation is given. Second, an overview is given on the set up of institutional structure to implement policies and laws concerning forest development. Third, an explanation is given on some of the existing policies and legislations that have direct or indirect relation with increasing the country's forest cover. Fourth, existing projects that have relation with forest cover increase are highlighted. Fifth, given the policies, an attempt is made to indicate the ineffectiveness of current management system. Finally, the way forward is presented.

♣ Ministry of Agriculture and Rural Development, Natural Resources Sector, Forest, Land Use and Soils Development and Conservation Department

2. **Historical development of forest policy and legislation**

Although forest policy is a recent phenomenon in Ethiopian history, there have been enactments and legislations concerning forestland ownership, utilization, and conservation over a period of time. The first elaborate and modern legislation came during Emperor Haile Selassie I in 1965. These were three consecutive proclamations No. 225, No. 226 and No. 227, which respectively recognized three forms of forests, namely; state forest, private forest and protected forest. These proclamations defined what each type of forest is and assigned a responsible body to deal with the conservation and exploitation aspects and provided for penalties on those who contravene what is stated in the proclamations.

Following these proclamations, the concerned organ, the then Ministry of Agriculture, issued nine consecutive regulations Nos. 343 up to 351 in 1968 in order to implement the proclamations well. The regulations set rules for the protection and exploitation of private forests and state forests; the management of protective forests; the establishment of community forests; the powers of forest rangers and forest guards and also obligation of reporting by factories processing forest products about their production to the Ministry of Agriculture. These regulations obliged the concerned private owners and also the Ministry to protect the forests from fire, diseases and any hazardous practices; they also set the need for the preparation of an operational plan or preliminary working scheme to exploit and use any forest. They established and empowered forest rangers to see to it that forests are being exploited and protected in accordance with the procedures set out in the regulations and the respective operational plans.

During the Derge regime there came a change of ideology regarding property ownership including forest resource ownership. Many laws were enacted to nationalize major types of private properties. The most important ones regarding land were--public ownership of rural land proclamation No. 31/1975 and government ownership of urban lands and extra houses proclamation No. 47/1975.

Then in 1980, the Derge proclaimed a new law that reflects its ideology i.e. Forest and Wildlife Conservation and Development Proclamation No. 192/1980. In its

preamble the proclamation accused the previous government of the Emperor for its improper and unplanned exploitation of the country's forest resources and stated that the forest cover was depleted because of the selfish interest of the aristocracy and the nobility. Accordingly, it repealed all three forest proclamations of 1965 and recognized three new types of forest ownership namely; state ownership, ownership by peasant associations and ownership by urban dwellers' associations.

But this proclamation maintained some of the regulations of 1968 which were found to be consistent with the principles in the new law. Out of the nine regulations six were maintained which deal with the protection and exploitation of state forest; management of protective forest and the powers of rangers and forest guards and also the reporting of activities of factories processing forest products. The proclamation established a new institution, the Forest and Wildlife Conservation and Development Authority.

A few years after the fall of the Derge regime, another new Proclamation came into picture during the period of the transitional government, forest conservation, development and utilization proclamation no. 94/1994. This proclamation was also a reflection of the new political ideology of the transitional government namely, the participation of the people and communities in affairs that concern them. It also stated in its preamble the need to consolidate the laws that existed. Accordingly, it recognized three forms of forest ownership: state, regional and private. It repealed all previous proclamations and regulations and consolidated the ideas and procedures in them in the new proclamation. Therefore, the proclamation set rules on the designing and demarcation of forest areas; the conservation, development and management of forests; prevention of forests from fire and diseases; utilization of forests; the transportation and storage of forest products; special considerations for protected forests; research and training; forest guards and inspection of the movement of forest products etc.

Simultaneously, with this proclamation a working document that has direct relation with forest development and conservation, called Ethiopian Forestry Action Program, EFAP, was also in use. EFAP set forth as objectives of forestry development, to sustainably increase production of forestry products, to increase agricultural production by reducing land degradation and increasing soil fertility, to conserve

forest ecosystems and to improve the welfare of rural communities. In order to address these objectives four primary programs were proposed. These were the tree and forest production program (TFPP), the forest resource and ecosystems management program (FREMP), the forest industries development program (FIDP), and the wood fuel energy efficiency development program (WEDP) (Anonymous, 1994b). These primary programs were backed by four supportive programs, namely, the technology development and dissemination program (TDDP); the sectoral integration program (SIP); the planning, monitoring and evaluation program (PMEP) and the human resources development program (HRDP). All these action programs are guided by four principles: ensuring sustainable resource management, promoting a participatory process of development, facilitating private sector forestry and adopting an integrated approach to forestry sub-sector development.

Even after the promulgation of the Constitution in 1995 and the establishment of the Federal Democratic Republic of Ethiopia, proclamation No. 94/1994 and EFAP which later turned into Regional Forestry Action Programs (RFAP) are the most prominent documents as far as forest development is concerned.

3. Forestry administration and governance structure

Due to its importance to different sectors, forestry issues are addressed in many relevant government organs. Federal Ministry of Agriculture and Rural Development (MoARD), Federal Environmental Protection Authority (EPA), Federal Ministry of Water Resources (MoWR) and Federal Ministry of Mines and Energy (MoME) are the main organizations that deal with forestry.

MoARD is the main actor in forest development, conservation and utilization through its different departments and institutes. Habitat for wildlife where major vegetation formation is forest, woodlands, bush lands and shrub lands is conserved and utilized in the department of Wildlife Conservation and Development. Forest biodiversity conservation is addressed by the Institute of Biodiversity Conservation. Forest Research Centre at the Institute of Agriculture Research deals with forestry research. Forest, Land Use and Soils Development and Conservation Department is the main department at MoARD which deals with forest development, conservation and utilization.

Regional Bureaus of Agriculture and Rural Development also have more or less similar structure to that of Ministry of Agriculture and Rural development. Forestry is administered by similar line of offices. At the zonal and *woreda* level forestry is addressed by forest experts.

Governance structure at the federal level is shown in figure 1.

4. **Some of the existing policies and laws related with forest cover increase**

The Nations, Nationalities and Peoples of Ethiopia adopted a new constitution in December 1994[1]. Among the rights and freedoms guaranteed by this constitution the one under article 44 states that "*All persons have the right to a clean and healthy environment"*(Anonymous, 1995). As many researches show, one of the mechanisms to ensure this is through forests, which can keep the air, soil and water free from pollutants.

The constitution established a federal government structure in which there are two forms of government powers i.e. a federal government and nine national- regional-state governments plus Dire Dawa and Addis Ababa City Administration. The respective powers of the federal government and state governments are clearly defined under separate provisions.

[1] The Constitution came into force as of August 1995.

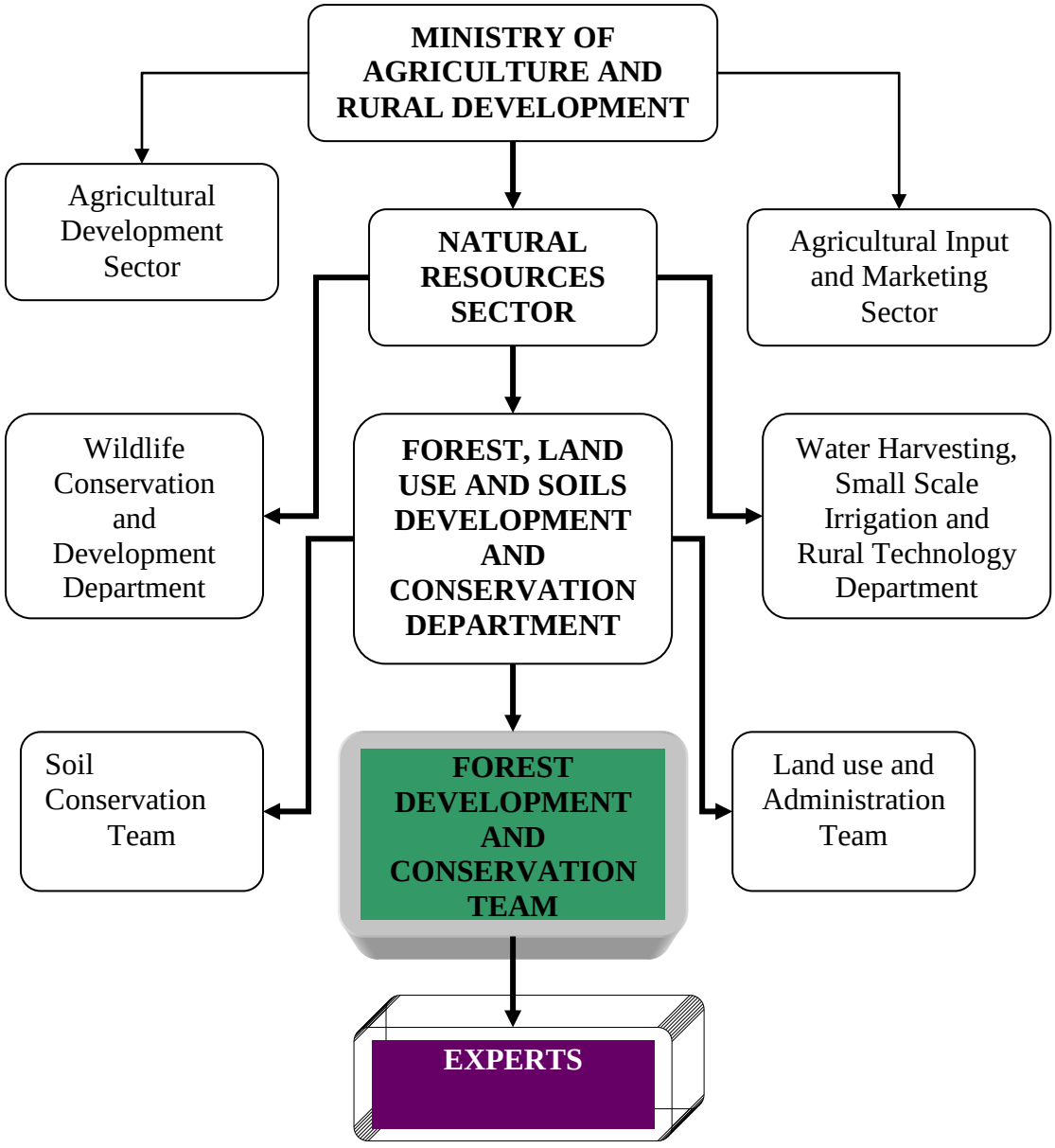


Figure 1: Governance structure of forestry under Ministry of Agriculture and Rural Development

There is no specific provision concerning forest cover in the constitution. But there are two provisions related to forestry. These are Art.51 (5) which authorizes the federal government to "*….enact laws for the utilization and conservation of land and other natural resources…..*" and Art.52 (2) (d) which authorizes the regional states to "*….administer land and other natural resources in accordance with federal laws…….*" (Anonymous, 1995). Therefore, in principle, every policy and strategy designed in relation to conservation and/or utilization of land and natural resources is based on these provisions.

After 1995 quite important documents such as Conservation Strategy of Ethiopia, energy policy, investment policy, environmental policy, land use policy and wildlife policy were issued. Although, the main purposes of these policies were not to increase forest cover, indirectly, they contribute to this goal when implementing their own respective sector's policy. The Ethiopian government also ratified and signed many significant international conventions and treaties that have impact in the efforts made towards increasing forest cover. Some of these contributions are discussed below under each policy heading.

4.1 Rural development policies, strategies and methods and rural land administration and land use proclamation

In 2002, a vital document on Rural Development Policies, Strategies and Methods was published. The document relates policies, strategies and methods of implementation. This policy clearly stated the need for proper land use i.e. using a land that should be allotted for city development only for that purpose and not for farming or grazing and vise versa. It highlighted that such proper land use is necessary in order to maximize the economic return of the land. It warns that any misuse of our land resource will encumber the development of the country (Anonymous, 2002a).

In line with this policy, "Federal Democratic Republic of Ethiopia Rural Land Administration and Land Use proclamation no.456/2005" was issued on 15th July, 2005. The most relevant provision regarding the government's effort to increase forest cover is article 13 sub-article 6. The title of this article reads as" land use planning and proper use of sloppy, gulley and wetlands." Sub-article 6 states that "rural lands, the slope of which is more than 60%, shall not be used for farming and free grazing; they shall be used for development of trees, perennial plants and forage production" (Anonymous, 2005). However, there is no provision which clearly states how any land that is already covered by natural forest is to be administered.

Trees should help the local dwellers in terms of environmental as well as economical benefits. Trees that are planted should bear concrete benefit to the owner. The Rural

Development Policies, Strategies and Methods document addresses the issue of sustainability and profitability of natural resources conservation and livestock development on dry land areas. It recognizes the right of full participation of the local community in such programs. The policy states that farmers should use the forest resources without negligently depleting as well as destroying the forest. The importance of multipurpose tree species in dry land areas is well emphasized in terms of economic benefits in addition to environmental benefits accrued to the farmers. It is also indicated that on sloppy grounds permanent crops such as trees and grasses have to be planted.

Therefore, the policy clearly stated that (a) rural land should be administered based on proper land use plan where forests should be conserved /protected and (b) through agro forestry, multipurpose-trees should be increased (Anonymous, 2002a).

4.2 Energy policy

Biomass energy at the national level provides more than 96.9 percent of the total domestic energy consumption: 78 percent from woody biomass, 8 percent from crop residue, 11 percent from animal dung and 3.1 percent from modern energy (WBISPP, 2004). Acknowledging this fact the Ministry of Mines and Energy prepared an energy policy in May 1994. The general content of the policy focused on energy development, energy supply, energy saving and utilization capacity, major cross-sectoral policies and improvement of organizational structure of the energy sector.

The policy put general direction wherein, among others, expansion of forests and agro forestry is needed to accelerate economic development of the country (Anonymous, 1994a). Other policy areas that are given due attention include hydro-electric power and natural gas development and expansion. In addition, energy saving is one of the policy areas where improvement of saving mechanisms for energy production, transportation and utilization shall be devised. Following this policy different programs were designed and are being implemented. Among such programs Sustainable Utilization of Natural Resources project (SUN) is one. This project is working with rural and urban poor whose energy depends on biomass.

4.3. Environmental policy

Environmental policy was issued on April 2nd, 1997, by Environmental Protection Authority in collaboration with the Ministry of Economic Development and Cooperation.
The policy has 10 sectoral policies, namely soil husbandry and sustainable agriculture; forest, woodland and tree resources; genetic species and ecosystems biodiversity; water resources; energy resources; mineral resources; urban environment and environmental health; control of hazardous materials and pollution from industrial waste; atmospheric pollution and climate change and cultural and natural heritage (Anonymous, 1997).

Under forest, woodland and tree resources, the policy presents ideas that address issues such as complementary roles of communities, private entrepreneurs and the state in forestry development; integration of forestry development with land, water resources, energy resources, ecosystem and genetic resources development in addition to crop and livestock production. Selection of suitable species for afforestation/reforestation with particular emphasis to indigenous tree species is one important statement included in this policy.

In addition, the policy has 10 cross-sectoral policies which include environmental impact assessment (EIA). Proclamation No. 29/2002, "Environmental Impact Assessment Proclamation", was amended in 2002. The proclamation has juridical mandatory policy tool where major development undertakings are obliged to prepare and conduct EIA prior to any development activities (Anonymous, 2002b).

The policy emphasizes that utilization of forests should be based on only regenerative capacity of the forest. Hence "forest management" that accounts the sustainable supply without affecting environmental and social amenities derived from the forests is needed. The policy states that such sustainability is attained by formulating and implementing socially suitable, environmentally sound and economically acceptable management plans. Since free grazing affects natural regeneration of valuable indigenous trees the policy restricts free grazing in protected forest areas (Anonymous, 1997).

4.4. Forest development, conservation and utilization policy and strategy

Recently, in April 2007, the Council of Ministers adopted a forest policy for the first time in history. The government has given due attention for forest development and conservation considering its significance to the national economy, food security and sustainable development of the nation.

In its preamble the policy stated that degradation of resources such as soil and vegetation cover caused desertification; increased recurrence of severe draught and also migration of rural population to urban areas.

The overall objective of the policy is to conserve and develop forest resources properly so that there could be sustainable supply of forest products to the society (hence satisfying the demand) and contribute to the development of the national economy. From its specific objectives, policy statements about encouraging public and private sectors to participate in forest development; improving productivity of forests; and also improving, replicating and distributing suitable tree species; are worth noting because of their direct implication to forest cover increment.

In this policy and strategy document, three policy statements have direct relationship with the increase of forest cover (Anonymous, 2007a). These are:

Private forest development and conservation: Private forest development is encouraged through different mechanisms. Such mechanisms, among others, include tax holidays, lease- free land, technical support and subsidy on tree seeds and seedlings. In addition, availability of loan can be facilitated for those who wish to involve in forest development and forest product processing industries.

Development and dissemination of technologies: The policy emphasizes that effective afforestation and reforestation can be facilitated by generating, developing and disseminating technologies that are cost effective and suitable to both the agro-ecological zone and the local people.

Technologies should focus on

- Suitability for local people, economic viability and environmental friendliness;
- Seed supply system development (both indigenous and exotic)
- Research on indigenous tree species
- Agro forestry
- Transfer of skill and knowledge on forest management
- Technology package development in which best practices are included

Promotion of forest marketing development: Farmers in highland areas, semi-pastoralists, entrepreneurs, cooperatives, governmental and non-governmental enterprises will be encouraged to supply quality and competitive forest products to domestic and foreign markets. Strategies to achieve this include, among others:

a. support those who are engaged in the production of seedlings;
b. enable forest products to meet trade and industry standards based on proper forest management plan;
c. establish systematic development of forest products that have high demand in markets;
d. create awareness and provide training on forest development, conservation and marketing for rural people who live in agro-ecological zones that are suitable to grow trees.

4.5. Investment policy and legislations and marketing of forest products

The federal government's law on investment incentives provides for tax incentives like tax exemption on income from activities of enterprises that export most of their products and also the exemption from customs duty on items imported for the purpose of running and expanding such enterprises (Anonymous, 2003). If such incentives are made well known to private investors they will be encouraged to participate in forest conservation and development programs so that they may ensure a sustainable flow of raw material for their enterprises and thereby indirectly contribute for the increment of forest cover.

As an investment endeavor, creating incentives and removing market barriers that used to discourage farmers with respect to tree planting has shown remarkable results in the Amhara National Regional State. Farmers in the region changed a significant part of their farmland to eucalyptus plantation after market liberalization in 1990[2], especially in the 1990s. Before the liberalization in 1990, during Derge regime, the only institution legally empowered to deal in the harvesting and marketing of wood and wood products was Construction and Fuel wood Production and Marketing Enterprise (CFPME) . But even then about 30,000 people used to earn at least part of their living from wood trade which was basically illegal. The enterprise was able to supply only 20% of the demand whereas the rest was covered by unlicensed and illegal cutters and traders.

Another encouragement that should be noted is government's permission of Eucalyptus pole export. In many areas farmers have become beneficiaries of this initiative.

4.6. International conventions

Ethiopia is signatory to most of the key environmental conventions such as the Convention on Biological Diversity (CBD), the UN Convention to Combat Desertification (UNCCD), the UN Framework Convention on Climate Change (UNFCCC) and the Convention on International Trade in Endangered Species (CITES). Acknowledging such important conventions and considering/owning them as the country's laws and policies show how the government is committed to the environment. These conventions help in assisting forest cover increase through financial mechanisms. For example Global Environment Fund (GEF) has given a medium sized grant (Anonymous, 2007b) that provides opportunity for different environment related pilot activities such as Country Partnership Program on Sustainable Land Management (CPPSLM).

[2] New Economic Policy announcement

5. Ongoing projects related to forestry

Cognizant of importance of forestry to food security and national economic development the government of Ethiopia linked forestry to different rural development schemes. Financial sources could be either loan or grant from different multilateral organizations as well as donors.

There are different projects that are involved in natural resources conservation and development especially forestry in the country. The purpose here is not to list all of the projects related to forestry and what each project does but to give a general idea about some of the main ones.

5.1. Agricultural Sector Support Program (ASSP)

ASSP is a program, which is financed by AfDB and executed by Regional Bureaus of Agriculture and Rural Development. In this program, there are two components that are implemented: mountain development and lowland ecosystem management. The mountain development component comprises two major practices: soil and water conservation and plantation.

Plantation program consists of nursery establishment, seedling production, site preparation for plantation up to plantation (tree seedling planting). Costs associated with seedling production, site preparation, and planting in the field are supported by this program. Forest road rehabilitation/maintenance and new road construction are part of the program. In addition, at every stage (from seedling raising up to planting), there is capacity building, monitoring and evaluation. The capacity building ranges from short term training up to higher level education for local people, experts and decision makers.

Lowland ecosystem management focuses on pastoralist areas. It focuses on the improvement of life of pastoralists through management of lowland ecosystem. However this program is undertaken at pilot level. Under this program promotion of plantation and income diversification are the two main components. Income diversification includes fruit tree growing and lowland bamboo processing, among others.

One of the problems in tree growing or afforestation/reforestation is availability of tree seeds that are both genetically and phenotypic quality. Until present time supply is less than demand. Studies indicate that on average it is less than 60 percent of the demand (59 percent) (Abayneh Derero in Girma Balcha et al., 2004). This program noticed the seriousness of the problem and decided to help the establishment of one seed store in Oromia regional state in this fiscal year. The role of the planned seed store in the development of forestry in the future will definitely be paramount.

5.2. Productive Safety Net Program (PSNP)

The Bureau of Food Security under the Ministry of Agriculture and Rural Development is the responsible organ that administers Productive Safety Net Program (PSNP). Major output expected from this program is to bring food insecure communities to food sufficiency through asset building (soil and water conservation, tree planting-fruit tree or forage, etc). The main activity is building asset--make the vulnerable capable of copping with draught--as the activity is mainly focused on food insecure areas.

The areas where PSNP is taking place are highly degraded and agro-ecologically moisture deficit. For about six months in a year there is no cultivation or production. Due to this most of the households remain jobless for more than six months and become food deficit for six months. Within this period the local people spend their time on soil and water conservation where different technologies are applied and soil fertility increased. In this program tree planting is common practice on lands that are steeper.
Mainly this program follows "watershed approach".

5.3. Managing Environment Resources to Enable Transition to More Sustainable Livelihood (MERET) Project

This program is executed in moisture deficit *woredas* selected in different regional states. World Food Program assists the program. In this program, about 70 percent of soil and water conservation is believed to be undertaken (personal communication).

Agro forestry technologies are applied. Some of the technologies applied are alley cropping, multi-purpose trees such as fruit trees on farm land and around homesteads. Apple tree is highly promoted and successful stories are already in place. Strong monitoring and evaluation is believed to be available.

5.4. Eastern Africa Bamboo Project

Acknowledging the importance of bamboo to social, economic and environmental values, the government of Ethiopia has made continuous effort to create awareness and market for bamboo among local people, private sector and researchers. Since 1997 (first bamboo assessment in Ethiopia) many researchers and development practitioners have been involved to create awareness. Currently with the help of International Network on Bamboo and Rattan (INBAR) and Common Fund for Communities (CFC), Eastern Africa Bamboo Project is established.

The project is known as market based development with bamboo in eastern Africa-employment and income generation for poverty alleviation. Its long term objective is –to promote the development of sustainable production and use of bamboo products in Eastern African countries with focus on markets as a driving force behind such sectoral development.

The specific objective is targeting employment and income generation for poverty alleviation and sustainable development with improving the technological and skills input in bamboo processing, developing capacity for the sustainable supply of raw bamboo materials improving technical, functional and aesthetic aspects of bamboo products and diversifying into new markets

Probably it is the first forestry project that is trying to link bamboo growers with bamboo processors. The project builds capacity in development and processing of bamboo at the local level and also assists private entrepreneurs in skill transfer and research. The main actors in this regard, in capacity building, are Forest, Land Use and Soils Development and Conservation Department and Forest Research Centers. So far 150 beneficiaries within three regions are selected and the necessary support is being given. One private entrepreneur called Adal Industrial PLC is working in

Bamboo processing (bamboo curtain, bamboo floor board, incense stick and tooth pick) closely with the project.

5.5. Participatory Forest Management (PFM)

PFM in Ethiopia has been started 10 years ago. Since then four forest priority areas namely, Chilimo, Bonga, Adaba-Dodola and Yabeloo forest areas are put under Participatory Forest Management Program and this program is financed by FARM-Africa and GTZ. Oromiya and SNNP Regional Bureaus of Agriculture and Rural Development have supported the two supporting agencies to achieve their goals. Both bureaus have worked closely with these two funding agencies to meet objectives of the program.

Recently, the pilot program was evaluated by external consultants and found to be the best tool for the management of forest priority areas where social, economic and environmental problems may be addressed in accordance to sustainable forest management. The consultant recommended replicating the program. In the SNNP there is also one other program –NTFP Research and Development Project. The project is funded primarily by the European Union from the Tropical Forests Budget Line. It has also received funding from CIDA and NORAD in Ethiopia. CIDA is supporting the development and initial implementation of a gender sensitive approach to NTFP development and forest management. NORAD is supporting a variety of community-based activities which are seeking to develop local capacity and skills for improved NTFP production in ways which help enhance the role of these products in improving food security and livelihoods.

5.6. Sustainable Land Management (SLM)

Unlike MERET and PSNP, this program is executed in food secure areas. Currently about 32 sub-watershed areas are selected for this program. The total area of these watersheds is about 300,000 hectares. Within the coming five years a total of 95 such watersheds will be selected and put under this program.

A major component of this program is land management where construction of physical structure is supported by biological measures whereby fertility of land is maintained and other benefits derived from that particular land optimized. Fruit trees will be prioritized for this program Fodder trees and other multipurpose trees will also be selected based on suitability criteria that may be designed in the course of action. Forestry and agro-forestry technologies that are suitable for society and agro-ecology will be scaled-up.

5.7. Natural resource accounting

Studies indicate that market and policy failure results in degradation and deforestation of forest resources and discourage private entrepreneurs who wish to invest in forestry (Richards, 1999; Hans and Krishnaswamy, 1999).

One of the market failures according to these studies is missing markets for environmental services and other 'open-access' public goods (Richards, 1999). Typically, the main economic value assigned to forests is the value of the timber produced. Due to this the contribution of forests to the national economy is actually undervalued. Market failure occurs due to absent, distorted or malfunctioning markets in which forest goods and services are undervalued or not valued at all (Richards, 1999). EDRI and CEEPA are working together to undertake natural resources accounting. With good information on the value of natural resources, for example forestry, policy makers will be in a strong position to establish guidelines and institutions for addressing forestry. This is crucial for proper policy analysis and planning of sustainable management of the country's forest resource base. The study has already finalized physical accounting and is about to finalize economic accounting for the forestry sector. Similarly, land accounting is undertaken.

6. Gaps

Weak state control over most of the regional state forests created opportunity to free riders as it led to an open access regime which in turn created unbalanced utilization where harvest exceeds natural regeneration, thereby, resulting in lower area coverage every year (negative increment).

Concerned experts at *woreda* level are not actively engaged in decision making when it comes to investment and other agricultural development activities. Investment Bureau has more power and voice than the forester as investment is said to be the "priority of the government". At the *woreda* level there is no strong forest institution that can produce viable economic analysis on the social, economic and environmental impact of a particular investment. A recent study showed that such investments like coffee and tea development undertaken in the south-west forests have negative impact on the local people.

The constitution gave the power to administer land and natural resources to the regional states. Therefore the work of demarcation, inventory, management plan formulation, and legalization etc, of forests is to be done by the regional states. Then the question: do they have the required human, financial and institutional capacity to carry out these tasks, especially at *woreda* level, is a significant one. If the answer to this question is negative, then, the good statements of the forest policy and legislation may remain on the shelf. Similar questions could be raised: if illegal forest products are in the market, who would be interested to plant and grow? If imported forest products are in the market with lower prices than locally produced forest products who would care to invest in afforestation/reforestation?

The way forward

Awareness creation on forest policy and proclamation to all stakeholders, preparation of guidelines to the implementation of the legislation, support to regional states and private sectors in development, conservation and utilization of forest and forest products are short term plans. Simultaneously reviewing of EFAP and selecting national forestry programs will hopefully be the main agenda of forestry institutions at federal and regional level.

As mentioned above, private sector involvement in forest development, processing and marketing is highly anticipated. For this involvement preparatory works have to be finalized such as demarcation of production forest from conservation forest, selecting suitable forestry sites and making survey and map the area, selecting of seed sources and establishment of seed orchards, establishment of seed centers are few but major activities to be attained.

Sensitization of all concerned regional decision makers on policies and proclamation of forest development, conservation and utilization is very important so that both policy and proclamation will be included in all regional rural land use and administration policies so that implementation of both documents will be guaranteed.

Currently, *thinking out of the box* is the primary agenda of MoARD. Missing horizontal and vertical linkage is supposed to be created through the Ministry's Business Process Re-engineering (BPR), which is about to be finalized. In the BPR watershed approach for natural resources development, conservation and utilization is designed. The policy and the proclamation are expected to be coined to this process.

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Policies to increase forest cover in Ethiopia: lessons from economics and international experience

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1. Introduction

Ethiopia's flora and fauna have a large number of species with a considerable rate of endemism. Forests and woodlands provide various benefits in the country including as sources of wood and construction materials, land for farming and grazing, non-wood forest products and services and various ecological functions some of which have global values.

However, with a growing human population of about 75 million largely dependent on low-productivity and rain-fed agriculture and over 70 million livestock population competing for land and forest resources, deforestation and forest degradation are important problems in Ethiopia. The forest cover in Ethiopia is estimated at less than 4% compared, for example, with an average of 20% for sub-Saharan Africa (Earth Trends, 2007; WBISPP, 2004b). The rate of deforestation is estimated to be as high as 5% per year (EFAP, 1994a; Reusing, 1998; WBISPP, 2004b).

Reduction in forest cover has a number of consequences including soil erosion and reduced capacity for watershed protection with possible flooding, reduced capacity for carbon sequestration, reduced biodiversity and instability of ecosystems and reduced availability of various wood and non-wood forest products and services.

While the importance of causes of deforestation and forest degradation differs across regions, their general nature is similar and include population and income growth leading to increased demand for other uses of land such as farming, grazing and urbanization and increased demand for wood and non-wood products and services such as construction and energy. Poverty also contributes to the problem as millions of poor people are heavily dependent on forests and forest products for their

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livelihood. Forest fires, insect infestation, and disease damage are also less frequently cited but important contributors to the problem.

The main underlying causes include failure of markets, policy and institutions. In particular, the fact that a number of the benefits of forests (and costs of deforestation and forest degradation) are not marketed and that these benefits and costs tend to affect a much larger group of agents than where the forests are means that market outcomes would be inefficient and would worsen the problem. Markets that exist may also be imperfect and hence contribute to inefficiency.

While policies and legislation are designed and implemented and institutions set up by governments to tackle the problem, policy failure would also contribute to the problem as long as there are design and implementation problems with policy. One example is property rights in forests in Ethiopia where forests are typically owned and managed by federal and regional governments. Under these conditions, problems with policy and their implementation may lead to more deforestation and forest degradation as this may, among other things, create a property right regime closer to open access. Recent trends in a number of countries to decentralize management and use of forests are indicators of the realization that forests are more likely to be managed and used at lower levels such as villages and communities or even individuals.

The low and decreasing forest cover in Ethiopia has been a cause for concern for the past and present governments and other agents. The attempts made to tackle the problem of deforestation and forest degradation by various agents including governmental and non-governmental organizations operating in Ethiopia indicates the realization by these agents that the low and decreasing forest cover is a cause for concern and that there are important market and policy failures.

Various policies and projects have been in place and attempts have also been made to implement these with the objective of addressing the problem. However, these attempts do not seem to have brought about improvements and in fact the problem is worsening in a number of places. While there are many reasons for this, the nature of forest policies and projects and issues of implementation are believed to have

important contributions. There are important experiences to be learnt from other countries and economics has also solutions to offer. This paper, therefore, attempts to look into the nature and extent of deforestation and forest degradation in Ethiopia, examine policies mainly associated with forest property rights and draw lessons from economics and international experience.

The paper is organized as follows. The next section looks in more detail into the problem of deforestation and forest degradation in Ethiopia, and briefly reviews policies and institutions mainly associated with forest property rights and attempts to increase forest cover in the country. This is followed by a discussion of the nature of the problem from an economic perspective and a review of the international experience with the objective of drawing lessons. The paper ends with some concluding remarks and implications.

2. Forest cover and policy in Ethiopia

2.1Forest cover and dependence on forests in Ethiopia

Some reports indicate that close to 40% of Ethiopia might have been covered by high forests as recently as the 16th century (EFAP, 1994a; Aklog Laike cited in GoE, 1992; Tumcha, 2004). The basis for these estimates is the extent of the climax forest vegetation cover that take climatic factors into account (Brietenbach cited in GoE, 1992). Some consider this an overestimate for the following reasons: 1. forest-type vegetation could hardly be found in the lowlands which cover over half of the total land area of Ethiopia; 2. human activity in Ethiopia started between two to five million years ago and 3. quite extensive agricultural activities have been going on for at least 5000 years and widespread deforestation started about 2500 years ago (EPA 1997b; GoE 1992). Another estimate puts the original forest as a percentage of the total land area at 25% compared with 48% for the world (Earth Trends, 2007)[3].

EFAP (1994a) notes that about 16% of the land area was estimated to have been covered by high forest in the early 1950s which declined to 3.6% in the early 1980s

[3] Original forest in this case refers to estimated forest cover about 8000 years ago assuming current climatic conditions.

and further down to 2.7% in 1989. Another estimate of the area of land covered by closed natural forest in the early 1960s puts it at about 4,120,000 hectares or 3.37% of Ethiopia (Aklog Laike cited in EPA, 1997b).

WBISPP (2004b) estimated forest cover at about 3.6% and while woodlands and shrublands are estimated at 25.5% and 23% respectively. On the other hand, EFAP (1994a) estimated land covered by natural high forest in 1992 at 2.3 million hectares while the corresponding figures for woodland and bush land are 5 million and 20 million hectares respectively.[4] Plantations were estimated at 200,000 hectares which include industrial plantations the majority of which are found around the boundaries of forest priority areas; peri-urban plantations established and managed by the Government to supply urban centers with poles and fuel wood and are located around Addis Ababa and other major towns; community woodlots which are created and managed by groups of farmers or a community and can be either protection- or production-oriented; and catchment/protection plantations which are designed to prevent land degradation such as the closure and/or planting of steep slopes, catchments and areas of badly degraded land (EFAP, 1994a). About 68% of plantations comprise industrial and peri-urban plantations. Due to lack of information, EFAP (1994a) does not provide estimates of land area covered by farm forestry where tree growing is integrated within farming systems together with crops and pasture.

It is also interesting to note the importance of detailed mapping and issues of accuracy of estimates particularly for forest fragments which may be one reason for differences in the estimates of forest cover across sources. With detailed mapping (at a scale of 1:50,000) of one administrative zone of SNNPR (Kaficho-Shakiso), WBISPP found 185,650 hectares of natural forest had been lost between 1975 and 1987 while it found about 256,380 hectares of natural forest not mapped in the

[4] These estimates are based on estimates of de Vletter (1989) for natural high forest area and those of Cesen study (1986) both adjusted to reflect degradation up to 1992 (EFAP 1994). Note on definitions used in EFAP (1994): natural high forests are land covered by a closed stand of trees with a more or less continuous canopy rising 7 to 30 m and a sparse ground cover of few grasses; woodlands are land covered by an open stand of trees taller than 5 m and up to 20 m in height and a canopy cover of more than 20 percent (they do not include bamboo areas, mangrove forests and riverine forests); bushlands are land covered by an open stand of trees and/or taller shrubs 2 to 5 m tall and a canopy cover of more than 20 percent.

original 1975 survey (at a scale of 1:250,000). Moreover, in the three main forested regions, WBISPP has mapped about 1.75 million hectares of natural forest (which is 43% of the total) outside the designated regional forest priority areas (RFPAs).[5]

WBISPP (2004b) provides estimates of regional distribution of high forests (Table 1) and woodlands and shrublands (Table 2).

Table 1. Extent of Ethiopia's high forests by region[6]

Region	Total (ha)	% of total
Oromia	2,547,632	62.5
SNNP	775,393	19.0
Gambella	535,948	13.2
Amhara	92,744	2.3
Tigray	9,332	0.2
Benishangul-Gumuz	68,495	1.7
Afar	39,197	1.0
Somali	4,257	0.1
Others (Harari, Dire Dawa)	216	0.0
Total	4,073,214	100

Source: WBISPP (2004b)

We note from Table 1 that out of a total of 4,073,214 hectares of high forest in Ethiopia, about 95% is found only in three regions, namely, Oromia, SNNP and Gambella and that most of these are in Oromia region (about 63% of the total).Estimates of the extent of woodlands and shrublands in Ethiopia by region presented in Table 2[7] indicate that the total area of woodlands and shrublands in Ethiopia is 29.24 million hectares and 26.40 million hectares respectively.

[5] Possible reasons for this include that some RFPAs have been inaccurately mapped and/or that the forests have not been mapped before (WBISPP, 2004b).

[6] WBISPP used the definition of Friis (1992) who defined forest as "a relatively continuous cover of trees, which are evergreen or semi-deciduous, only being leafless for a short period, and then not simultaneously for all species. The canopy should preferably have more than one story". It is also noted in WBISPP (2004b) that the land cover data for the first three regions in the table, i.e., Oromia, SNNP and Gambella, was obtained from satellite imagery dated between 1988-89.

[7] The following definitions of woodlands and shrublands are used by WBISPP (2004b): Woodlands are a continuous stand of trees with a crown density of between 20-80%; maximum height of the canopy is generally not more than 20 meters, although emergents may exceed this. Shrublands are a continuous stand of shrubs with a crown density of between 20-100%; there may be scattered individual trees with a crown cover of less than 20% or scatter clumps (i.e., less than 0.5 hectares) of trees (as modifiers).

Table 2. Extent of Ethiopia's woodlands and shrublands by region

Region	Woodlands		Shrublands	
	Total (ha)	% of total	Total (ha)	% of total
Oromia	9,823,163	34	7,750,422	29
SNNP	1,387,759	5	2,434,779	9
Gambella	861,126	3	146,103	1
Amhara	1,040,064	4	4,352,672	16
Tigray	294,455	1	1,841,182	7
Benishangul-Gumuz	2,473,064	8	1,422,191	5
Afar	163,657	1	3,024,697	11
Somali	13,199,662	45	5,384,022	20
Others (Harari, Dire Dawa)	0	0	44,132	0
Total	29,242,949	100	26,400,200	100

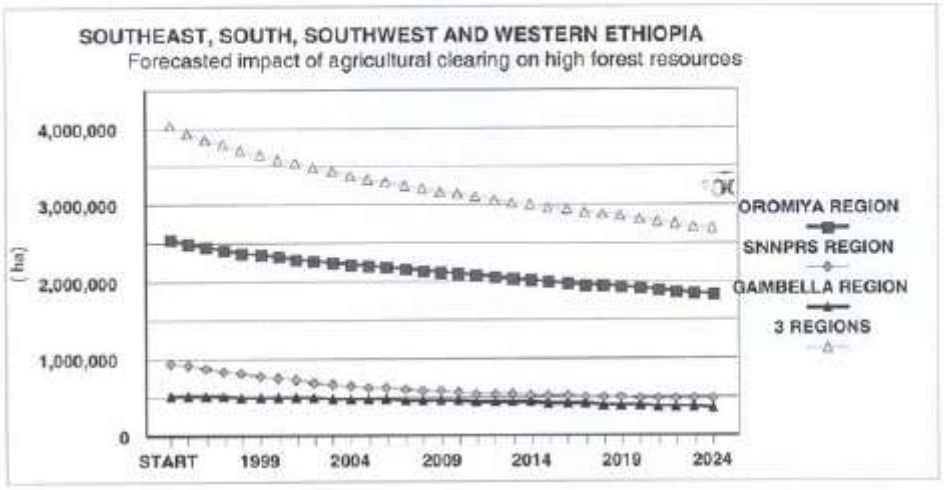
Source: WBISPP (2004b)

We note from Table 2 that the three regions with the largest woodland area are Somali (45%), Oromia (34%) and Benishangul-Gumuz (8%) while those with the largest shrub land area are Oromia (29%), Somali (20%) and Amhara (16%)[8]. WBISPP (2004b) did an analysis conducted in *woredas* where there was high forest to arrive at conservative estimates of rates of deforestation caused by increasing population and its need for agricultural land in the three main forested regions. The results show that approximately 1.33 million hectares of natural forest are forecasted to be destroyed between 1990 and 2020[9]; this loss accounts for about one third of the forest resources in the country. Figure 1 presents the projections for each of the three regions and the total.[10] For the three main forested regions, WBISPP (2004b)

[8] Note that WBISPP has not included bamboos in the estimates of forests, woodlands and shrublands.
[9] WBISPP (2004b) notes that the land cover data used for this exercise was obtained from satellite imagery dating from 1987-1990. Moreover, the projections are relatively conservative as they do not take into account clearing or serious disturbance of forest for coffee plantations nor does the rate of population increase used take into account migration to forested areas by populations from outside the *woredas* considered.
[10] We may also note that while the loss in absolute terms is larger for Oromia region, the overall rate of clearing is the highest for SNNP. The rates of deforestation per annum for these three regions are

estimates the destruction of natural forest for agricultural expansion at about 59,000 hectares per annum.[11] On the other hand, EFAP (1994a) and Reusing (1998) put the estimates of deforestation at 150,000-200,000. These estimates imply a wide range of deforestation rates (between 1.5% and 5% per annum) which have different implications.

FIGURE 1. FORECASTED IMPACT OF AGRICULTURAL CLEARING ON THE HIGH FORESTS IN SOUTHEAST, SOUTH AND SOUTHWEST ETHIOPIA.



The woodlands and shrublands are being depleted by the spread of small-scale farming and commercial agriculture, the growing livestock population and by the demand for firewood and charcoal. Estimates of woodland and shrub land area for the period 2000-2025 in the western lowlands[12] show that land clearing for agriculture due to increasing population and shifting cultivation is estimated to lead to a continuous decline in shrub land and woodland with the picture being more serious when only the potentially arable land is considered for the projections (WBISPP, 2004b). In the semi-arid woodlands of the Southern, southeastern and eastern lowlands,[13] the problem is a long-term cyclic process that is linked with overgrazing and depletion of soil nutrients.

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estimated at 1.16%, 2.35% and 1.28% for Oromia, SNNP and Gambella regions respectively (WBISPP, 2004b).

[11] WBISPP (2004b) notes that in other parts of these and other regions of the country, smaller remnants are also under severe pressure from expansion of agriculture

[12] Where shifting cultivation (a form of bush fallowing) is extensively practiced and cattle production very limited due to tsetse infestation

[13] This is where the bulk of Ethiopia's rangelands which provide feed resources for the pastoral herds of livestock are found. WBISPP (2004b) estimates that in a normal rainfall year about 28% of the total energy requirements of pastoralists' livestock comes from browse from trees and this proportion is expected to rise considerably in drought years thus providing a 'safety net' of livestock.

Excluding a number of non-marketed contributions of forest resources to output and employment, their contribution is estimated at about 5% of the GDP and about 2.2% of employment of the total labor force (EPA, 2003; MOFED, 2006b).[14] Inclusion of non-market benefits such as carbon sequestration with an estimated carbon stock of 0.6- 2 billion tons in 2005 would increase the contribution of forests (FAO, 2006; WBISPP, 2004c; EDRI, 2007).

Forests and woodlands are used for various purposes in Ethiopia. About 96% of fuel consumption in Ethiopia comes from biomass fuels mainly from woody biomass. Wood is also used as pole and industrial wood whose demand is expanding with increased population. Other uses include incense, myrrh and gums as forest products, grazing for livestock especially during the dry season, medicinal plants, sanctuary for wildlife, protection of soil from water and wind erosion, improvement in agricultural productivity through farm forestry, integration of ecosystems and water regimes, and foraging for honey bees. Some important species such as korerima (*Aframomum korarima*) and (wild) coffee are also produced from forests (see, for example, EFAP, 1994a for details).

There are different estimates of supply and demand for wood and wood products in general. But all studies we looked at agree that the volume of wood harvested far exceeds the incremental yield of forest resources leading to an ever-decreasing stock (EFAP, 1994a; ENEC, 1986; World Bank, 1984). EFAP (1994a) reports estimates and projections[15] of requirements (demand) and incremental yield.[16] Demand for wood products in 1992 was estimated to be about 47.4 million m^3 out of which fuel-wood demand was 44.9 million m^3. The projected demand for 2014 is 94.8 million m^3 out of which fuel-wood demand was estimated at 88.9 million m^3. The results also indicate that the total incremental yield will decline from 14.4 million m^3 in 1992 to 10.6 million m^3 in 2014 without intervention.

[14] Though forestry's contribution to employment is not well-documented, most forestry operations are undertaken in rural Ethiopia and a large number of people are involved in forest nursery operations, afforestation, firewood and charcoal collection and sales, and incense and gum collection (Million, 2001).
[15] Using simplified assumptions.
[16] These estimates and projections are made for each type of requirement including industrial wood, construction wood and fuel wood. Estimates and projections of incremental yield are also made by defining incremental yield as the net growth or addition to the growth stock of the resource during any given period. These estimates and projections are made for each type of forest resource. We may also note that the basic results may not change even if one were to consider more recent periods since the data show that while population has been increasing supply has generally been decreasing.

A comparison of the demand (requirements) and incremental yield projections based on a 'without-intervention scenario'[17] indicates that the gap, which was estimated to be 33.6 million m^3 in 1992 will increase to 84.2 million m^3 without intervention. Although these estimates are based on some simplifying assumptions, they indicate that current practices of deforestation are less likely to be optimal.[18] This is more so if we take into account the presence of market and policy failures.

2.2 Forest policy

Policies[19] are an important element of packages that are needed for successful conservation and development of natural resources in general and forest resources in particular. In this section we present a very brief review of the major historical developments related to forestry and forest policy in Ethiopia followed by a more detailed presentation of the current state of affairs and some issues.

2.2.1Brief review of historical developments in Ethiopia's forest policy and related institutions

We present the major developments in terms of policy and institutional arrangements roughly in chronological order. Demel (2004) characterizes the period before 1895 in Ethiopia's forestry research history as one of botanical exploration of forest resources which continued up to 1975. He notes that the period 1895-1975 is also characterized by decline in the size and quality of forest resources, introduction of exotic trees, initiation of formal forestry research trials and establishment of formal institutions responsible for forestry research and development. Important developments in forestry towards the end of the 19th century and the beginning of the 20th century include introduction of exotic trees such as eucalyptus and introduction of, what some refer to as the first forest laws in Ethiopia by Emperor Menelik II of Ethiopia, which were also referred to as 'Menelik II forest laws' .[20]

[17]The 'without- intervention' scenario assumes that policies, institutional arrangements and levels of funding for forestry management and development will continue as in the early 1990s.
[18] We may also note that a study, which used some assumptions , has found that the optimal forest cover in Ethiopia is likely to be over 5 million hectares of high forests (Yonas, 2004).
[19] Unless stated otherwise, we use a broader definition of the word policy in this paper to include legislation, strategies, programs, policies and implementation (Keeley and Scoones, 2000).
[20] For a review of the history of forest policy and forestry research in Ethiopia see Demel (2004).

While eucalyptus trees have disadvantages, due to their ease of propagation and fast growing nature their introduction around Addis Ababa was one reason why Addis Ababa remained a capital city of Ethiopia as this has made available the wood that was needed; thus stopping the history of 'wandering capitals' characterized by southward movement of capitals of Ethiopia. It is also argued that this may have contributed towards limiting the speed of deforestation (Pankhurst, 1992; Demel, 2004). While Menelik II proclaimed that all forest trees on private or state land belonged to the Government and anyone who uses them should pay royalty to the Government, with the proclamation of a civil code in 1960 royalty payment on trees on private lands was exempted. Menelik's Forest laws were abolished and royalty payments were limited only for trees on Government forestland. Owners of private forest would pay only land tax and provisions of fund called reforestation security deposit on contract which would be reimbursed after reforestation on felling sites has been carried out. This was, however, poorly implemented due to lack of regulated management practices and capacity. Orders to preserve all state forests from distribution to private owners and provisions to exchange forests already on private lands against bare land seem to have increased the fear that all forests would eventually fall under state control and led to significant deforestation (von Breitenbach 1962 cited in Demel, 2004).

Important developments in forestry research in the 1960s include the starting of forestry research at the then Alemaya College of Agriculture, the establishment of the Forestry Research Institute in 1961 which was absorbed into Addis Ababa University in 1967 and the start of some research at the SIDA-supported Chilalo Agricultural Development Unit (CADU) in 1965 (Demel, 2004). In the late 1960s investigations carried out by international experts warned that deforestation followed by decline of soil productivity was potentially disastrous for the nation after which one of the worst droughts and famine occurred in Ethiopia's history in 1973/74 with other subsequent droughts and famine (Demel, 2004).

A major National Forestry Development Program was designed with the establishment of the State Forest Development Authority (SFODA) in 1972. In 1975, immediately after the takeover of power by the *dergue* regime that ruled the country until 1991, the public ownership of rural lands proclamation no. 31/1975 was

promulgated. This, among others, made all rural land the property of the state and abolished tenancy with its negative implications for long term investment in land such as tree planting by individuals.

In addition to those institutions already involved in forestry research, Forestry Research Centre (FRC) and Wood Utilization and Research Center (WUARC) were established in the second half of the 1970s to exclusively undertake forestry research. In 1978, the then Wondo Genet Forestry Resources Institute, now Wondo Genet College of Forestry and Natural Resources, was established.

The forest and wildlife conservation and development proclamation no. 192/1980 led to the amalgamation of SFODA with the Wildlife Conservation Organization to form Forestry and Wildlife Conservation and Development Authority (FAWCDA). In the same year log and lumber prices were fixed and stumpage fees for various forest trees determined (TGE, 1980). This proclamation may be considered as the forest policy statement of the country until the forestry aspect of it was repealed in 1994. Among other things proclamation no. 192/1980 specifies the powers of FAWCDA which include issuing permits for use of forests and forest products and states that those who violate or obstruct the implementation of the proclamation or related regulations and directives shall be punishable with imprisonment or fine.

The Addis Ababa Fuel wood Plantation Project was established in 1982 followed by other peri-urban plantations funded by ADB, the World Bank and others. In 1984 FAWCDA was dissolved and reabsorbed into the Ministry of Agriculture where there was a reorganization and all the development activities initiated and planned by FAWCDA were discontinued or stopped. In 1985, the Natural Resources Conservation and Development Main Department was formed within the Ministry of Agriculture, headed by a Vice Minister which included under it the Forestry and Wildlife Conservation and Development Department and the Community Forestry and Soil and Water Conservation and Development Department (Demel, 2004). During this time 58 important forest areas were designated as National Forest Priority Areas (NFPAs).

In 2007, demarcation, inventorying, preparation of management plan and gazetting are still important problems for all or most of these forest priority areas and this contributed to serious uncontrolled and unsustainable exploitation of the forests. Already in the late 1980s 24 of these NFPA had no high forests (Kumelachew *et al*., 2004; Reusing, 1998). Most of these NFPAs are now under the different regional governments and are referred to as Regional Forest Priority Areas (RFPAs). It is also important to note that major afforestation and soil conservation programs were implemented in the second half of the 1970s and during the 1980s. These plantations belonged to the government and the labor contribution of the local communities in the establishment of the plantations and soil conservation structures was mainly financed through food-for-work.[21] Most of the plantations were destroyed in the early 1990s either during or immediately after the change of government in 1991[22](Admassie, 1995; EFAP, 1994a).

The forest conservation, development and utilization proclamation no. 94/1994 was the forest policy statement of the country until 2007 (TGE, 1994; Million, 2001). This proclamation classifies forests into three types, state forest, regional forest and private forest. Within well-established set of rules for forest management and conservation, a greater role was allowed for private sector participation in wood harvesting and processing. The proclamation also states the need for written permits for use of forests and forest products and that violators of the proclamation and related regulations and directives will be punishable with imprisonment and/or fine.

One of the most comprehensive documents in the history of Ethiopian forestry, the Ethiopian Forestry Action Program (EFAP), was produced in 1994 under the Ministry of Natural Resource Development and Environmental Protection which was established in 1991. EFAP (1994b) came up with four primary and four supporting development programs. The primary programs developed to directly address forestry development objectives were Tree and Forest Production Program; Forest Resource and Ecosystems Management Program; Forest Industries Development Program; and

[21] This was largely financed by UN-WFP and the value was estimated to be slightly over half a billion USD over the period 1975-1990 (Admassie, 1995).
[22] After the change of government in 1991, the plantations that survived were transferred to local communities. However, most of these were also destroyed due to lack of proper rules and regulations on their management and use (Admassie, 1995)

Woodfuel Energy Efficiency Development Program. The supportive development programs developed to back up the primary programs were Technology Development and Dissemination Program; Sectoral Integration Program; Planning, Monitoring and Evaluation Program; and Human Resources Development Program.

There was, however, very limited success in terms of implementation of these programs as funding was limited and the Ministry of Natural Resources Development and Environmental Protection was unified with the Ministry of Agriculture and restructured as the Natural Resources Management and Regulatory Department under which Forestry and Wildlife Conservation and Development was a team (Million, 2004; Demel, 2004).

In 1995, the constitution of the country was adopted by the House of Representatives through proclamation no. 1/1995 in which a federal government (the Federal Democratic Republic of Ethiopia, FDRE). This Constitution provides the basic and comprehensive principles and guidelines for environmental protection and management. The federal constitution of 1995 and the rural land administration proclamation that came out in 1997 also made it clear that land will remain under the government (FDRE, 1995). The Environmental Protection Authority was also established at the federal level in 1995 and was re-established in 2002 (FDRE, 2002). The Conservation Strategy of Ethiopia (1997) and the Environmental Policy of Ethiopia (1997) are important documents that included statements about the need to conserve, develop and utilize forest resources in a sustainable manner. A number of regional governments also prepared their own regional conservation strategies, environmental policies and forestry action programs following the federal level documents. The Woody Biomass Inventory and Strategic Planning Project (WBISPP) is another important project that produced extensive reports and strategic plan for regions and at the federal level (WBISPP 2001a, 2001b, 2001c, 2002a, 2002b, 2003a, 2003b, 2004a, 2004b).[23] The establishment of the forest gene bank at the Institute of

[23] There are also a number of other policies and projects that are directly or indirectly related to forestry. These include the Sustainable Development and Poverty Reduction Program (MoFED, 2002); Plan for Accelerated and Sustained Development to End Poverty (MoFED, 2006a); Land Use Policy, Soil and Water Conservation Policy, Energy Policy, Population Policy, Policy on Women and National Biodiversity Strategy and Action Plan. It is also important to mention the effect of other programs such as road sector development and investment in coffee and tea production on forestry and the effect of other policies and the macroeconomic environment in general. Relevant international conventions

Biodiversity Conservation, the National Policy on Biodiversity Research and Conservation and the upgrading of forestry research at the level of a directorate at the Ethiopian Institute of Agricultural Research and preparation of a strategic plan for forestry research are important developments (EARO, 2000; IBDC, 2005; Demel, 2004).

However, the low profile given to the forestry sector in terms of institutional arrangements both at the federal and regional levels and limited funding seem to have been a major factor for the relatively insignificant efforts and achievements in the development and conservation of forest resources (Million, 2001, 2004; Demel, 2004).

2.2.2 An overview of current developments and practices

Currently, there is a Forest, Land Use, Soil Conservation and Development Department under the Natural Resources Sector of the Ministry of Agriculture and Rural Development, a sector led by a State Minister. It appears that there is a renewed attempt to increase forest cover particularly recently. Federal level forest development, conservation and utilization policy and strategy has been approved in April 2007 (MoARD, 2007) and forest development, conservation and utilization proclamation has been approved by the House of Representatives (the Parliament) in 2007 (FDRE, 2007).[24] At the regional level, in addition to laws associated with land use and administration and other laws which have implications for forestry, there is a forest proclamation at the regional level, to our knowledge, only for Oromia regional state (Oromia Regional State, 2003).

There are also attempts to introduce integrated/participatory forest management (PFM) in the main forested regions in and around forest priority areas particularly in Oromia and SNNP regions where regional governments are working with organizations such as GTZ, FARM Africa and SOS Sahel (Girma and Tsegaye, 2004; ORS BoARD and GTZ, 2005; FARM Africa and SOS Sahel Ethiopia, 2007; Zelalem, 2004; Mitiku, 2004).

Ethiopia ratified include the Convention on Biodiversity, the UN Convention to Combat Desertification and the UN Framework Convention on Climate Change (EPA, 2003)

[24] The proclamation was not published in the Federal *Negarit Gazeta* at the time of writing of this paper.

In the less forested regions of the Amhara and Tigray regions, there is significant on-farm tree planting together with a number of community woodlots/forests and provisions associated with trees exist in the regional land use and administration proclamations (Gebremedhin *et al.*, 2003; Jagger and Pender, 2003; Bluffstone *et al.*, 2007; Alemu, 2007).

2.2.3 Forest policy of 2007

The forest development, conservation and utilization policy and strategy was approved by the Council of Ministers in April 2007 and the proclamation was approved two months or so later. The contents of the two documents are quite similar in many respects, which is also to be expected given that they were approved around the same time. Since proclamations are more specific and binding than policies, we focus on the proclamation; we will mention any differences that we consider appropriate for this paper.

The draft proclamation has four parts. Part one is mainly on definition of terms and types of forest ownership. Two types of forest ownership are identified: private forest and state forest.[25] Part two is on promotion of private forest development, conservation and utilization. This covers promotion of forest development, promotion of forest technology, promotion of market for forest products and obligation of private forest developers. Specific sub-articles in part two of the proclamation that are of particular interest for this paper are:

Private individuals, associations, governmental and non-governmental organizations and business organizations who want to develop forest shall have the right to obtain rural land in areas designated for forest development in accordance with regional land administration and utilization laws. Areas in productive state forests that could be developed on concession shall be identified and may be given out for man-made forest development. Management plans shall be developed, with participation of the

[25] Private forest is 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 governmental and non-governmental organizations. State forest is any protected or productive forest, which is under the ownership of the Federal Government or a Regional State.

local community, for forests that have not been designated as protected or productive state forests, and such forests shall be given to the community, associations or investors so that they conserve and utilize them in accordance with directives to be issued by the appropriate body.

In order to introduce farm-forestry practices among the farming and semi-pastoral communities, effort shall be made to provide them with sufficient amount of plant seeds and seedlings of tree species that could give different economic benefits. Any person who develops forest on his land holding or in a state forest area given to him on concession shall be given assurance to his ownership of the forest. The rights of forest owners to use forestland and to transfer their holding rights shall be exercised in accordance with rural land administration and utilization laws. Forest technology packages that enable to properly use indigenous or foreign knowledge, practices and technologies on the development, conservation and utilization of forest shall be prepared and disseminated to enhance the knowledge and skill of forest developers. The forest technology package to be distributed to farmers, semi-pastoralists and the private sector shall focus on maximizing income and ensuring food security within a short period of time. A seed supply system shall be established to supply seeds of indigenous or exotic tree species that are suitable to the different ecosystems. Technical support will be provided to farmers and semi-pastoralists in the selection and planting of tree and forage plant species and conservation of the existing ones that help to prevent soil erosion and serve as landholding boundary marks. Training and education shall be provided on modern forest management skills to all those engaged in forest development so that forest resource is properly developed, conserved and utilized. Conducive conditions shall be created whereby vocational training shall be given to those engaged in the forest development in order to utilize forest resources for different purposes.

Part three of the proclamation is on conservation, development and administration of state forest. It covers the following: designation, demarcation and registration of state forest; conservation, development and administration of state forest; utilization of state forests; administration of protected forests; Specific sub-articles in part three of the proclamation that are of particular interest for this paper are:

- Forest development, conservation and utilization 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 forests.
- The local community may utilize forest products from a state forest to the extent necessary for satisfying their ordinary domestic needs in accordance with directives to be issued by the appropriate regional body and in conformity with the management plan developed for the forest.
- The harvesting of forest products, grass and fruit as well as the keeping of beehives in state forests may be permitted based on the objective realities of the locality.
- The local community may be permitted to keep bee hives and produce spices, forest coffee, forage and the likes in a protected forest by providing them forest development and conservation training and technical support.

Part four of the proclamation contains miscellaneous provisions including prevention of forest fire, production and movement of forest products, prohibitions, forest guards and inspectors of forest products movement, obligation to notify and incentives, powers and duties of the Ministry of Agriculture and Rural Development and of Regional States; forest product movement permit, penalty, and issuance of regulations and directives.

We may also note that there are some differences between the federal forest policy and the federal forest proclamation. In particular we note specific incentives mentioned in the policy but not in the proclamation such as the possibility of exemption from payment of land tax on part of land allocated for trees/forests in an agro-forestry system and the provision of credit services for individuals involved in forest development.

3. Economic explanations for forest degradation and insufficient tree cover in Ethiopia

Of course, land can be used for many activities other than tree cover, but as discussed in the previous section much of the land that previously was heavily forested in

Ethiopia is now degraded and primarily used for low-productivity pasture rather than agriculture. Indeed, for a number of reasons discussed already, for most lands that were previously forested, but now degraded, higher productivity alternatives do not exist. Optimal land use therefore probably implies increasing forest cover.

And with an estimated forest cover of less than 5%, about 1% additional deforestation per year and 83.3% of the population living in rural areas (World Bank 2005) and therefore at least partially dependent on forests for livelihoods, the forestry situation in Ethiopia is problematic. World Bank (2005) presents data showing that the world average forest cover is about 30% of total land area while at 27.3% Sub-Saharan Africa the percentage forested is about six times more than Ethiopia. As noted by the Food and Agricultural Organization of the United Nations, *The current demographic and socio-economic conditions have led to an unprecedented pressure on [the remaining] mountain forest ecosystems*. They find that over 90% of the country's energy for household cooking comes from fuelwood (http://www.fao.org/forestry/site/countryinfo/en/).

And we would emphasize that Ethiopia's link with forests is neither unique nor limited to fuelwood. In rural areas of most low-income developing countries, farming systems are household-based and highly integrated with natural resources like forests and pastures. Households depend on these natural assets for fuels, animal food, building materials, fruits and medicines, and generally access them through various types of "common" ownership and control systems. Furthermore, forests may provide important local "off-site" benefits, including erosion and flood control, which is viewed as particularly important in Ethiopia.

The questions this section seeks to address are the following:

(1) What are the key prerequisites for increasing tree cover in Ethiopia?
(2) What incentives are needed to put those prerequisites in place?
(3) What are potential institutional arrangements that might provide the right incentives for increasing tree cover in Ethiopia?

Prerequisites for increasing forest cover in Ethiopia

Improving the forestry situation in Ethiopia and increasing tree cover from its current very low level involves planting, stewardship of existing tree cover and better management of new and existing forested areas. Each of these measures requires that people make investments, which necessarily implies sacrifices in the short-term for long-run gain. Whether organized and financed by the government or privately, planting of plantations or other forests therefore requires resources that could be used for other purposes. What would have been gained from schools, health sector development and food aid (if publicly financed) or food purchases, livestock and school fee payments (if privately funded) is foregone when the decision is made to invest in forests. It is in this sense that "sacrifices" are made.

But even better stewardship and management of existing forests requires sacrifices. Because forests regenerate if overuse is reduced, another method of investment is to reduce consumption and allow forest quality to improve. What is given up in this case are the forest products that could have been gathered while forests are allowed to regenerate. Furthermore, scarce human energies and time must be used for understanding better silvicultural techniques, monitoring forests against encroachment, negotiating with villagers and perhaps enforcing regulations. These efforts, of course, cannot also be used for agriculture or other tasks.

We therefore find three main types of investments (and therefore sacrifices) that must be made to increase forest cover. Monetary investments in planting are needed when existing cover is insufficient. Foregoing collection of forest products from existing forests so they can regenerate and produce more in the future is the second type of investment that must be made and finally human efforts and energies must be directed toward forest management and away from other activities.

Incentives for making the necessary investments in Ethiopian forests

What is needed to spur these three types of investments? We are assuming here that the Federal and Regional Governments in Ethiopia do not have the resources or incentives to make even close to all investments in forests in the three categories needed and therefore *kebeles* or individual villagers have to be heavily involved. This means that *kebeles* and villagers would need to have some incentives for making these forest investments.

What would create such incentives? This is a critical question, because throughout the developing world it has been found to be difficult to force villagers to invest in forests. In general, therefore, policy makers must devise methods such that villagers and *kebeles* want to invest. Though perhaps other factors also play a role,[26] certainly a critical component of making villagers want to invest in forests is to assure that they receive the benefits from improved tree cover. Indeed, to provide the greatest incentive possible for investment all the benefits from trees should go to those who made the investments. For example, if trees primarily produce fuelwood, creating incentives to plant trees on common lands would definitely include securing villagers' rights to fuelwood over time.

But often forests produce a *variety* of goods directly and even indirectly used by villagers. For example, common forests not only provide fuelwood, but in Ethiopia they also typically produce fuel from leaves, animal fodder, grazing area, timber and fruits. Furthermore, trees may absorb water runoff, protecting area communities from flooding. Conflicts clearly exist in the production of these different goods used by villagers. For example, unless reinvestment occurs, if trees are to produce a steady supply of fuelwood, timber production must be reduced compared with when forests only produce timber. Similarly, there are conflicts between use of forests for grazing and virtually all the other uses, because animals often reduce tree growth, and then fuelwood production conflicts with other non-timber forest products like fruits. This creates the need to manage trees to balance off these different – and often conflicting - uses of forests, complicating investment decisions.

In order to make these tradeoffs effectively villagers must know that for the lifetime of their investments they will get the benefits of better management and this means that they not be required to share forest products with those who have not invested and that they have the right to control access to forests. We know that productive forests (due to planting and other investments) will produce more forest products over time than degraded, low-productivity forests. These products should not be taken away from investors by governments just because they have more than others. If the

[26] For example, technical information villagers may not be able to access on their own

right to do better than others is not secured, villagers may not invest and certainly won't invest as much as they would otherwise.

Second, villagers must make adjustments in forest management and therefore investments over time and must view those steps as being secure. Encroachment into forests by villagers is therefore counterproductive to investment incentives, because if villagers know that any investments they make can be "taken" by others (e.g. fuelwood harvested from trees planted) and there is nothing they can do about it, incentives to invest will be greatly reduced. Villagers must therefore have the right to guard forests from encroachment. They also must have the right to take innovative forest management steps, implying a high degree of control over forests.

These two aspects – the right to benefits from forests and ability to control their management – are the major dimensions of clear property rights. And indeed a standard way to talk about creating incentives to make needed investments in tree cover, improve forest quality and increase forest cover is that clear and enforceable property rights must be established. This is an important – and even critical – point and one that is very well-established and accepted by the resource economics profession (Gordon, 1954; Hartwick and Olewiler, 1998; Field, 2001; Tietenberg, 2007). Without clear property rights, as long as the resource in question has value, it will be used in a less than ideal way and almost certainly will be degraded, often to the point where it ends up close to worthless.

Often this phenomenon is referred to as the Tragedy of the Commons (Hardin, 1968) and reflects the idea that potentially very valuable resources can be degraded when it is not clear who gets the products generated from natural resource investments and/or who has the right to control resources.[27] Essentially, people degrade and deplete forests when they take and do what they want with them without paying the costs and reaping the benefits over time from their actions.

[27] Because now it is recognized that it is not the common nature of resources, but the openness of access that causes the tragedy, in modern terminology it would be referred to as the tragedy of open access.

In the economics of forestry establishing *clear property rights* through appropriate institutional arrangements is perhaps *the* critical prerequisite to increased tree planting, stewardship, improved forest management and more tree cover. Throughout particularly the developing world, the critical forestry problems all boil down to lack of property rights. The names used and contexts differ. In parts of the Amazon the open access problem is labeled "grazing land expansion." In portions of Southeast Asia it is called "slash and burn" agriculture and in Eastern Russia and many other parts of the world the lack of property rights is sometimes termed "corruption." In Nepal and other countries with high rural population densities the problem is sometimes referred as "marginal land cultivation" or just "over-population." In all cases, though, from an economic standpoint the issue is lack of property rights, because people are investing little or nothing in forests, which is manifest in part by them simply taking what they want from forests that are neither owned no controlled. Clarifying property rights may not solve all forestry problems, but the economic literature is absolutely clear in that tree cover cannot be increased on a sustained basis without clear property rights.

Institutional arrangements for improving property rights in Ethiopia

From an economic standpoint hear in lies the main explanation for the excessive degradation of forests and low cover observed in 2007 in Ethiopia. Property rights in rural areas are very weak and this is particularly true for common grazing and forest areas where in most regions villagers do not have incentives to protect the long-run health and productivity of common lands. People simply use the lands as they want with generally very, very limited management. As rural populations and demands on common lands have increased, it is perhaps therefore not surprising that over time forest cover has become so minimal.

Households in Ethiopia enjoy usufruct rights to their agricultural lands, which while still somewhat uncertain, provide a much higher degree of certainty regarding security of long-run investments than for common lands, where access may be totally unrestricted and rules for using lands are typically few. This difference in property rights indeed helps explain why commercial trees are much more likely to be planted on personal rather than common lands – even though planting trees on common lands does not interfere with agricultural land uses as it does on personal agricultural lands.

Households plant on their own lands purely because if they planted on common lands they could not be sure they would get the products of their investments and they would not be able to control the management of "their" trees. Indeed, though agricultural land may not be the best place to plant trees, it is mainly because property rights are more secure that Bluffstone *et al.* (2007) found in the Amhara Regional State that an average household holds 120 eucalyptus trees and on-farm trees are often households' most important assets. How many trees have those Amhara residents planted and cared for on common lands? Probably very few.

Establishing solid property rights over forests and degraded lands is therefore perhaps the critical prerequisite to improving tree cover in Ethiopia. Without such rights investors cannot be sure they will get the benefits of their good management and/or that others will not undermine their steps. What institutional arrangements can be used to establish such rights? Private property, of course, is the first possibility that comes to mind, and it certainly creates the right incentives for forest management if the sphere of forest products produced is small enough. For example, if trees only produce fuelwood, private property may be the correct institutional arrangement, because there are few ways owners of portions of a fuelwood plantation can interfere with each others' uses and therefore infringe on property rights. Privatization of common lands would therefore likely be the correct solution.

But as was already discussed, in Ethiopia forests typically produce multiple products, creating technical barriers to privatization. For example, consider figure 2, which represents a newly privatized common forest near a village in a hypothetical country. Suppose further that the forest is homogenous and each plot has the same known productivity. Each plot produces only grazing, fuelwood, timber and fruits.

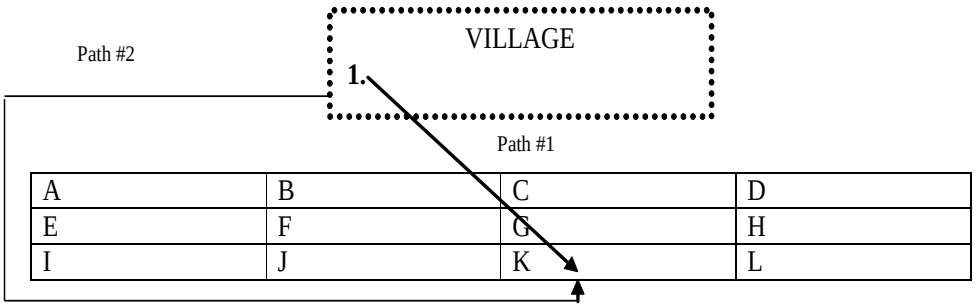


Figure 2. An example of a newly privatized common forest near a village

Consider villagers who own plots E through L. If they go to their plots by the shortest route, they will need to cross others' property. This could generate costs for the owners of plots A through D and potentially also E through H if villagers passing through should damage investments en route. For example, a villager taking cattle to graze in plot K from his/her home at point 1 in the village might follow a path something like Path #1. This would mean s/he and the cattle would pass through plots B, C and G, with the cattle grazing and compacting soil on the way. This would create damages that the owners of plots B, G and K may find unreasonable and they may restrict access. In the limit, if everyone who could be harmed by cattle going to plot K restricted access, the villager living at point 1 would need to take something like Path #2, which would be much more difficult and those owning plots F and G would always have to pass through at least one plot to get to their lands. The point here is not that neighbors are unlikely to cooperate, because cooperation is the norm rather than the exception. The critical conclusion is that for purely technical reasons privatization may not be the best way to create secure property rights to improve productivity of forests.

Politics are also likely to be important. For example, powerful villagers with the ability to restrict access are likely to strongly prefer plots B and C, because they are closer to the village, while plots J and K will be reserved for the powerless that will endlessly have to negotiate passage through others' lands and travel the longest distances. Further, we have assumed that all plots in the forest are homogeneous, but in reality this is unlikely to be the case. Negotiations over who gets which plots would need to occur, and assuming a bargain (albeit a torturous one) is struck it is

likely that the poor and the powerless – if they end up with any plots at all - will have plots with the unenviable combination of highest access costs and lowest productivity of any plots in the forest. It is therefore possible and even likely that poor villagers who typically rely much more heavily on common lands than rich villagers (Jodha, 1986) may find themselves worse off than when the land was open access, because their access has been restricted or eliminated. Privatization of forests that were previously common therefore has the potential to disenfranchise vulnerable groups in the name of increasing overall productivity.

Alternatives to open access and private property as of 2007 are fairly limited. Creating government ownership as a mechanism of securing property rights to forests is a tempting possibility, but as seems to be the case in Ethiopia,[28] in reality state property often ends up functioning as *de facto* open access. Typically, governments in low-income countries have neither the capacity nor the incentives to engage in reasonable levels of regulation, particularly when forests produce goods used mainly by local villagers. Sometimes state property is simply "declared," but no institutional mechanisms are put in place to make forest products available in an orderly way to villagers, invest in forests and defend property rights. In a number of contexts, therefore, creation of government forests as a way to curb open access has proved a failure.

And if the main products produced by forests are used directly by villagers there is perhaps no reason the state needs to hold the property rights. For example, if forested lands mainly produce fuelwood, fodder, grazing, timber, fruits and perhaps some local-area erosion control and flood protection, why not let local institutions that get the benefits of management own and control forests? Under such circumstances, perhaps it would be sufficient and preferable for the government to merely assign and defend local property rights. This is the idea of common property, which is by far the most promising institutional arrangement for creating meaningful forest property rights in settings such as Ethiopia. Common property is not open access – property rights are well defined or as well defined as possible – but the ownership and control of forests is held not by individuals, but by communities who actually use forests.

[28] Where all land is state owned.

A large literature has emerged that focuses on the distinction between open access – where resources are un-owned - and common property where ownership exists, but is held in common. The theoretical strand of the literature has largely found that common property can provide incentives similar to private ownership as long as group members are willing to cooperate (e.g. Dayton-Johnson, 2000; Wade, 1988; Olson, 1965; Ostrom, 1990; Baland and Platteau, 1996; Baland and Platteau, 1999; Sethi and Somanathan, 1996).

Partly as a result of this academic work pioneered by Elinor Ostrom of Indiana University and others, in many countries policies have been adopted to legislate local-level coordination and therefore improve management. Over time indeed almost a conventional wisdom advocating devolution of natural resources to local groups has emerged. Devolution of forests has, for example, been underway in Nepal since the early 1980s and a high percentage of forest lands were transferred to users in 1993 through the creation of forest user groups (Adhikari, 2002; Cooke, 2000; Pradhan and Parks, 1995). Agrawal (2001; 2000) notes that governments in more than 50 countries are ceding some control over resources to local users.

In addition to devolution itself, certain policies are now regarded as best practices. These include institutional characteristics such as more public participation and democracy, fair allocation of forest resources and clear criteria for the right to access resources. Management tools include clear rules for distributing resources, monitoring by villagers and officials, effective and graduated sanctioning of transgressors and payments for forest products if appropriate. This local-level monitoring by villagers who have made investments in local forests reduces or eliminates the need for government monitoring and enforcement, reducing on-going demands on scarce financial resources (Ostrom, 1990; Agrawal, 2000; 2001).

Despite the existence of this emerging conventional wisdom, only recently has empirical work focused on household responses to common property forest management and evaluated which elements spur behavioral shifts that improve social welfare (Hegan *et al*, 2003; Adhikari, 2002; Amacher *et al*., 1996; 1999; Cooke, 2000; Edmonds, 2002; Heltberg, 2001; Heltberg *et al*., 2000; Linde-Rahr, 2003).

Much of this literature has found potential, but also problems and complications associated with devolution and all authors have highlighted the complexity of household responses to changes in local-level property rights, but it seems clear that common property affects household behavior and can increase forest levels and quality. As of 2007 it is widely believed that creation of common property is perhaps the best institutional arrangement available to a) increase tree cover; b) increase the stock of forest products available to villagers and c) minimize potential social disruptions, such as disenfranchisement of the poor, due to redefining property rights *when forests mainly provide goods for use by villagers* as is the case in Ethiopia.

When trees provide goods that go beyond villages, however, common property alone may not be enough or it may not be the right regime. For example, if forests play an important role in biodiversity conservation and providing habitat for animals, this is a set of values that goes far beyond villages. In fact, animals may be considered a nuisance locally and so conservation may not be considered a net benefit, but may be viewed as a cost! In such a case those in a village may want to reduce habitat while the rest of the world may see the amount of habitat as woefully inadequate. Devolution of such a forest to villagers would not be appropriate as an institutional mechanism for optimizing management, because villagers would likely strongly emphasize forest products of direct interest to them, like fuelwood, grazing, timber, etc, and put limited or no weight on habitat values.

We can think of a number of forest products that have varying degrees of such qualities. For example, forests sequester carbon and help stabilize the global climate. This is a very valuable forest function that could be insufficiently emphasized by common property forest management. Indeed, if forests are under local control, unless specific complementary institutional mechanisms are created (e.g. carbon funds or biodiversity conservation funds) to provide incentives to reflect carbon sequestration values, villagers are unlikely to manage forests to take the importance of those values into account. In sum, therefore, if a) non-local values are truly important and b) it is not feasible to create the necessary complementary institutions, state property is probably the best alternative.

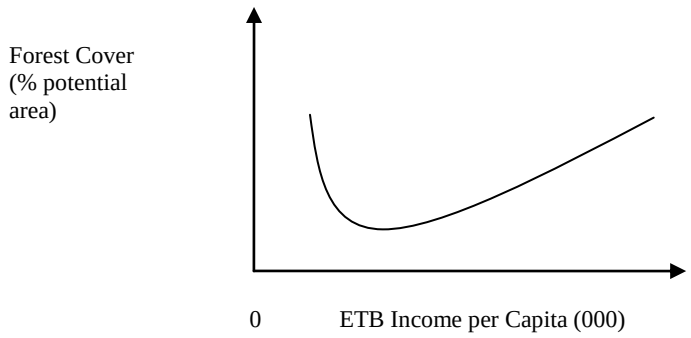
But we note that in Ethiopia most lands would not satisfy these criteria. This litmus test therefore dramatically reduces the set of lands that should be owned and controlled directly by the government. Scarce public resources can therefore be directed to areas where values are truly non-local, perhaps increasing the effectiveness of those expenditures compared with when government funds are spread thinly – and ineffectively - across the whole country.

4. Policies to increase tree cover in developing countries

Policies appropriate for development level

This section discusses international efforts to increase forest cover in developing countries. Looking across countries it is clear there is a dynamic at work that tends to result in increased levels of or smaller declines in forest cover at higher incomes than at lower levels. The relationship between economic development and changes in forest cover is very much the subject of current research, but as Barbier (1997) reports in his survey piece on the so-called environmental Kuznets curve there may be a "U"- shaped relationship between tree cover and income per capita. As a general rule, across countries as incomes rise tree cover may first decline, perhaps with increasing rapidity, before leveling off and then increasing. This pattern is illustrated in Figure 3.

Figure 3 "U" shaped relationship between forest cover and income per capita

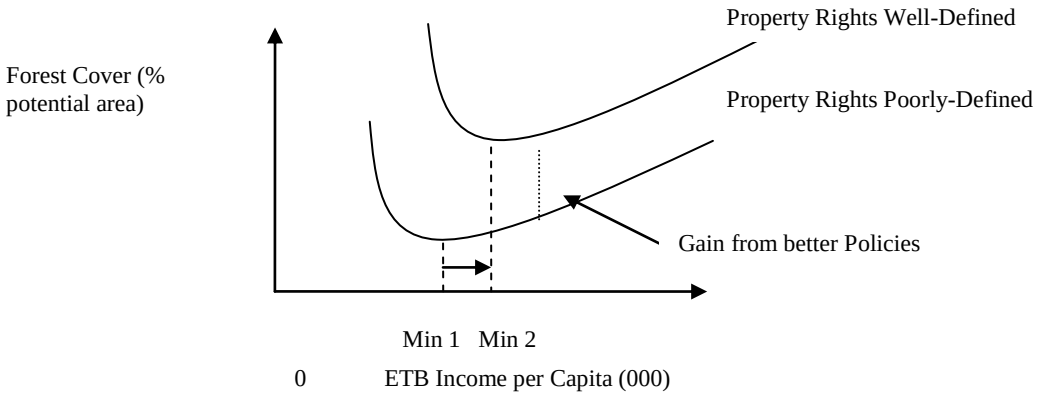


Where does Ethiopia fit into this pattern? Ethiopia's annual deforestation rate of 0.8% is similar to low-income countries as a whole, but is well above the average middle income rate of 0.2% or the high income deforestation rate of -0.1% (World Bank, 2005). Middle and high income countries affect other environmental resources

like climate stability, air quality and open space, but in aggregate forests are marginally affected or improving over time in higher-income country groups.

Noting this regularity is of interest for two reasons. First, it suggests that given other countries' experiences, we can expect that Ethiopia's level of development puts a lot of pressure on forest resources, because it *needs* those resources more than other countries. Second, the pattern confirms that policies for increasing forest cover should be oriented toward *use of forests* rather than *conservation of forests*.

Figure 4. Alternate patterns of forest cover as incomes rise in a country



The challenge is therefore to take account of the nature of the economy and the need for forests at various levels of development, but use known better policies, such as establishing and enforcing property rights, to reduce the depth of the forest cover "trough" and push that minimum point to the right as incomes rise (Panayotou, 1997). Figure 4 illustrates this point. We see that whether property rights are effectively or poorly defined, as incomes rise forest cover declines dramatically, reaching minima and then increasing. With better property rights, however, the minimum point is higher than if rights are poorly defined. Furthermore, the minimum occurs at a higher level of income than when property rights are weak. At least from a conceptual economic standpoint, this should be the goal of better forest policy in Ethiopia.

As discussed in the previous section, because of technical and equity issues, private property is often not appropriate. Due to particularly scarce public resources in low-income countries, when values are primarily local, state ownership and control of

forest resources often simply devolves to open access. This likelihood typically makes state property an inappropriate alternative when forests are actively and directly used

Practical experience and theory both point to common property as the most interesting set of policy interventions to explore in Ethiopia. As the World Rainforest Movement put it more forcefully, "Community-Based Forest Management is not Only Possible it is Essential" (http://www.wrm.org.uy/subjects/CBFM/book.html). This section therefore focuses primarily on international experience with the use and creation of common property in low-income countries. We give particular attention to cases, like Ethiopia, where for customary, legal or ecological reasons farmers are unable to expand their areas under cultivation. They therefore must, as is largely the case in Ethiopia, work with the land they have rather than cutting forests to increased cultivated area. Forests therefore tend to be degraded or converted to pasture over time rather than being essentially "privatized" and converted to other uses like agriculture.

Creating common property from open access in Nepal

Nepal is a mountainous country, like Ethiopia, with income per capita of $240. The population is approximately 23 million or less than one-third that of Ethiopia, but Nepal has 1/8th the land area of Ethiopia, implying much higher population density (World Bank, 2005). As discussed in Bluffstone (1933; 1995), in the 1970s and 1980s many researchers and even the World Bank thought that Nepal was heading for environmental collapse and virtually complete forest loss. This has not happened, and while forests have declined it is widely believed that due to policy changes forests are better used and protected than in the past.

In Nepal agricultural lands are private, but since 1957 forests have typically been state owned and controlled. In a mountainous country with few roads, the government could not effectively monitor or manage the country's forests and so forests were effectively open access. As a result of this and other factors, serious deforestation occurred. In response, the Government of Nepal passed the National Forestry Plan of 1976 that among other things recognized the need for local involvement and

encouraged pilot community programs. In 1979 the Community Forestry Program (CFP) was launched. The Decentralization Act of 1982 then provided the legal basis for devolution, which proceeded rather slowly until 1993 with the passage of the Forest Act.

The Forest Act is important, because it directs the staff of the Forestry Department toward building forest user groups to manage all of the nation's forests without interference from outside of the community (Edmonds, 2002). This represented a fundamental shift from previous practice of essentially centralized management with piecemeal devolution. The CFP regulations call for establishment of forest user groups (FUG) at the village level. Each FUG elects a user committee and writes a management plan and rules. The plan is then approved by the district forestry officer, who is the key forestry officer of the central government, and the chairman of the village development committee, which is the politically elected local government institution. The legal ownership and control of the forest area then passes to the FUG along with some operating guidelines. As of 1995, 28,000 hectares of plantation forest and 35,000 hectares of reserve forest were managed by FUGs, but perhaps as much as 1/3 of the forest area was managed informally by user groups (Pradhan and Parks, 1995) and thousands of groups were waiting for formal approval (Joshi, 1997).

Joshi (1997) claims that 61% of actual forest area is suitable for distribution to FUGs and notes that devolution is a major government priority. While he says that 11% of potential forest had been distributed as of 1997, by the end of 2001 almost ¼ of all potential forest had been given to FUGs (Adhikari *et al*, 2004). Joshi notes that villagers were receiving substantial economic benefits, though these were unspecified. The critical distinction between open access and common property is investment, including restricted access to allow forest regeneration. Edmonds (2002) finds that indeed communities with FUGs reduce their use of forests, allowing regeneration. He estimates that new FUGs have 14% lower fuelwood extractions than communities without FUGs, suggesting that governments are able to affect forest quality through devolution and creation of common property.

Adhikari *et al* (2004) agree, noting that the "… program has succeeded in halting the ongoing trend of deforestation," but they contradict Joshi (1997) in that their major

point is that much of the economic benefit has gone to the owners of livestock and land who can most benefit from better forest management. These are the relatively richer villagers. In sum, the Nepal case is a very interesting one for Ethiopia, because the country was faced with a very serious forestry problem in a policy environment of open access. It addressed this problem through the creation and enforcement of property rights at the local level. It seems that the program is having many of the expected effects. Forest decline has slowed and demands on forests have been mitigated, but the literature suggests that changes in property rights can cause social problems that need to be addressed in program design.

Experience of Tanzania with Common Property Forest Management

Tanzania has one of the most well developed systems of participatory forest management (PFM), which is the name used for a variety of common property forest management schemes. Currently about 2.8 million hectares are under some type of PFM management as part of a concerted effort to end open access on public lands. The allocation of forests and their management responsibility to villages, private individuals or to government will be promoted. Central, local and village governments may demarcate and establish new forest reserves. (http://www.fao.org/Participation/PFMTanzania-lesson.html).

Devolution of power from the central government to local or village levels is nothing new in Tanzania and even in the 1960s and 1970s the government began to devolve control over natural resources through the process of "villagization." The Villages and Ujamaa Villages Act (1975) and Local Government Act (1982) among other things helped develop common property as a legal form of ownership and control (http://www.wrm.org.uy/subjects/CBFM/book3.html).

The National Forest Policy (1998) promotes the transfer of public forests and national forest reserves to village level management and the Forest Act (2002) provides for registration and other procedures through which villages, groups or individuals may secure local jurisdiction over forests or take on management functions in forest reserves (http://www.wrm.org.uy/subjects/CBFM/book3.html). There are three forms of common property forest management. In village forest reserves villages have ownership of forest lands. Community forest reserves are owned and managed by

part of a village and village forest management areas are parts of government reserves placed under community management only.

There are two management approaches. Joint forest management (JFM) divides both management responsibilities and returns between local and/or central governments and communities living near forests. Community based forest management (CBFM) can be applied to village lands that were registered under the Village Land Act (1999). What is interesting about CBFM is that, like in Nepal, villagers take full ownership and management responsibility for an area that has been designated as village forest reserve lying within the village territory. After the village forest reserve has been established, villagers can harvest and sell timber and other forest products and have full rights to define and enforce rules of access and monitor villager performance. Early reports indicate that PFM can improve forest quality. Although, as in Nepal, empirical evidence is limited, many villages are reporting improvements in water level and quality, natural regeneration in degraded areas, fewer fires, reduced encroachment by farmers and more wildlife (http://www.wrm.org.uy/subjects/CBFM/book3.html).

Experience of Bolivia

Bolivia is different than the other two cases noted, because there has not been a concerted effort to reduce open access through the creation of common property. There are a variety of institutional regimes that control natural resources in rural Bolivia, but local communities have had substantial control over natural resources since 1952 when a major revolution ushered in an agrarian reform. Government reforms in the mid-1990s further decentralized forest control, but these measures mainly affected the lowland forests. In most areas systems are informal and evolved locally, implying significant and idiosyncratic differences in CPFM across communities. Some indeed are indigenous and have evolved over centuries

According to Bluffstone (2007a), based on a 2000 survey of village level officials and 378 households in 32 communities in the five Bolivian Andes departments of Cochabamba, Chuquisaca, Oruro, Potosi and La Paz, in some villages there is de-facto open access, with effectively no management. In the remainder, though, a variety of locally-developed structures and officials regulated forests. For example in some areas no managers were named, but in meetings villagers agreed on limits to

forest use. Other areas had a variety of officials involved, including mayors, deputy mayors, council members, community directors, general and agricultural secretaries, peasant union presidents, community presidents, forestry officers, forestry directors and heads of committees for environmental protection.

According to recent research by Bluffstone *et al* (2007a), management in most villages is based on custom rather than formal rules and by some measures could be considered very weak management. For example, only 28% say that forest access is at least "somewhat clear," few respondents reported having fixed allotments for fuelwood (only 8%) and about three-quarters thought they would "definitely not" be penalized if they took more forest products than they were allotted.

Nevertheless, this system, which largely evolved naturally, appears to be affecting villagers' behavior. For example, Bluffstone *et al* (2007a) find that better CPFM is positively correlated with more and higher quality on-farm trees and response is generally quite elastic. This means that reducing open access causes villagers to put less pressure on the (free) common lands and perhaps use their own land more effectively. Furthermore, using this same data set Bluffstone *et al* (2007b) find that better common property spurs adoption of a variety of new production techniques that substitute for products from (free) common lands. For example, households experiencing better common property forest management were more likely to use improved *lorena* cooking stoves that often use less wood. They also more frequently use compressed natural gas as cooking fuel. These results suggest that common property management creates incentives to shift out of the free good from the forest and/or use forest products more effectively. Finally, Bluffstone *et al* (2007b) find that households facing better regulated forests tended to have fewer animals. To make up for the loss in fertilizer produced by animals, these farmers tend to adopt chemical fertilizers more readily than households having open access to forests.

5. Conclusion

The performance over the last few decades as reflected by the relatively high rates of deforestation and forest degradation indicates the presence of problems in the way forests are managed and used. Virtually all the major forests are owned and managed

by the (federal and regional) governments and this is one reason for the poor performance of the forestry sector as there was limited capacity to enforce rules and a *de facto* open access situation is created. This is in turn associated with frequent change in institutional arrangements (separation and re-unification of bodies responsible for forest policy and implementation), poor staffing, limited funding and high staff turnover and encroachment by local communities as there is no incentive for them to utilize forest resources sustainably. There is a need to clearly demarcate and gazette the major forests, and prepare management plans without any delay. Use of a permit system with huge penalties for violators of the rules and regulations is likely to lead to corruption particularly in countries like Ethiopia and may be ineffective in achieving the objectives of sustainable use of forest resources.[29]

Decentralization of management of forest priority areas to the regional level could be a step in the right direction as it could create an opportunity to manage the resources taking the local conditions into account. It is, however, necessary to carefully consider what level of decentralization is better for each forest when there are potentially conflicting objectives to be achieved such as environmental sustainability and livelihood of the community (Jagger *et al.*, 2005) and also depending on the capacity of the institutions that exist (Ribot *et al.*, 2006). In the absence of enforcement capacity it may be preferable to go down to lower levels and make the communities or individuals responsible for management and also beneficiaries.

The recent federal forest law and policy does indicate the need for providing incentives to encourage tree growing by individuals, associations and organizations which is an important development. But the details have to be worked out through laws, regulations and directives for these to be effective. In the absence of changes in the existing land policy which makes land the property of the government, it is important to effectively ensure that individuals and associations are assured of their rights to trees/forests on their land and that communities participate in decision making in the management of the forests and are also beneficiaries from these resources which are important sources of livelihood. It is important to have clear rules and regulations regarding the legal basis and operation of different forms of

[29] The recent forest proclamation includes penalties of up to 15 years of rigorous imprisonment and a fine of up to Birr 30,000.

organizations involved in forest development, conservation and utilization. There is a need to learn lessons from experiences in Ethiopia so far and from other countries.

Forestry research in general and on socio-economic aspects in particular is very limited (EFAP, 1994b; Demel, 2004). It is therefore necessary to look into the social and economic aspects of existing practices to come up with solutions to problems. It is necessary to conduct policy relevant studies on issues such as behavior of households and communities in relation to forestry. A critical assessment of the socio-economic aspects of existing experiments in participatory forest management in the most forested regions of the country is one general area of research. In the less forested regions of Amhara and Tigray regions where significant on-farm tree planting and community woodlots/forests co-exist, it is important to know about household behavior in terms of the interaction between community forests and on-farm tree planting. Insufficient information, knowledge and awareness about the value of forest resources seem to have led to under estimation of these values by different agents. Thus a study of the role of forests for the livelihoods of the communities and the broader benefits to the country and to the world would also have a useful contribution.

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Part II

Review of Regional Forest Resources, Policies and Institutions

Benishangul Gumuz region's land and forest resources: an overview

Bekele Guta[♣]

1. Background

Benishangul Gumuz region is situated between $9^0 35'$ and $11^0 39'$ latitude north of the equator and $34^0 20'$ - $36^0 30'$ longitude east of the Greenwich meridian. The region covers an area of 50,336 sq. kms. and it is under the Abay and Baro-Akobo river basin. The topography varies from 500 to 2731 meters above sea level. It is divided into 3 zones and 20 *woredas* (districts) with two special *woredas*. The climatic conditions vary with topography. There is a continuous rainfall (700-1400mm) from April to October. The temperature varies from 18^0c- 36^0c. The agro-ecological zone is 75% Kola, 24% Woynadega and 1% Dega. The region's population is estimated to be more than 650,000 of which 91% live in rural areas making the rural population density 10 persons per sq. km.

2. Agriculture in the region

Agriculture is the main source of livelihood of the people in the region. It employs 93% of the population. It comprises mainly shifting small holder cereal cropping using woodland fallowing. In many areas livestock production is not easily possible because of the widespread prevalence of tse-tse fly (Glossing SPP) and the disease Trypanosomiasis.

There is the potential to develop medium to large scale commercial agriculture due to the availability of huge resource base such as cultivable land and vast irrigable land. However the productivity of agriculture is still very low. Low productivity is partly associated with natural resource degradation. If agriculture is to continue to play the leading role in economic development it is essential to take measures to increase its productivity one of which is combating natural resource degradation.

♣ Benishangul Gumuz National Regional State

Even though agriculture is subsistence for rural people, it is extremely backward. Especially most indigenous (native) people of the region do not have access to improved agricultural tools and equipments due to lack of financial capacity and shortage of supply. Therefore they are forced to use simple tools like hoe, spade, pale, teba and sharpened wood, which are inefficient and laborious. The people grow maize, sorghum, finger millet, haricot beans, sesame, onion, potato, ground nut, pulses, and oil seeds through shifting cultivation.

3. Forest resources of the Region

From the total land area of the region 49% is woodland, 28% shrub land, 9% lowland bamboo (oxytenanthera abyssinica), 5% cultivated land, 3% grass land, 2% forest land, 2% rock and bare soil and 2% others. The proportion of the various land cover types is more or less uniform among the three administrative zones and the two special *woredas*.

Vegetation patterns are closely related with rainfall and temperature and differ by altitude, local variations of soil and drainage factors. The woodlands can be divided into Acacia-commiphora woodland found in the drier lowlands in the west and the broad leafed combretum-terminalia woodland found in the wetter eastern lowlands. Below 1600 m.a.s.l. lowland bamboo occurs as extensive pure stands (ticket) or as clumps in woodland and shrub lands.

Trees in agricultural areas constitute the major source of wood for fuel and domestic construction. They can be found as natural trees remaining in individually owned fields, in communal areas and are also planted by farmers in or around their cropland or close to their homestead.

There is a wide range of tree production and management systems throughout the region. Indigenous trees are not planted except as part of hedgerows around fields and houses. In shifting agriculture areas they are often left in cropland, where they may be pollarded to a greater or lesser extent. Only in the sedentary agricultural areas is eucalyptus planted. It is planted on small patches at higher densities than industrial plantations.

Multiple harvesting strategies are practiced, with nested rotation cycles for the management and harvesting of trees and wood products on the farm. Harvesting of trees commences after two to three years for fuel wood which is a relatively easy task left to women and children. The remaining trees are left to develop into small or large poles.

4. Gaps and challenges

The regional state now faces conflicting demands for the limited amount of land available. The current challenges regarding land use are: Identifying the type, extent, area coverage and the potential for development of the land resources; and deciding the most rational use of the scarce resources

Moreover regional land planners must be more effective in mediating land use conflicts and identifying alternatives for land allocation in the future. For this reason setting up a strong land use planning institution and coordinating activities of sectoral and trans- sectoral institutions is becoming increasingly important as a means of harmonizing the demands of private and public land users.

Farmers and pastoralists depend on land for growing their crops and pasture of their livestock. The government also depends on land to produce food and fuel for its citizens.

The current trend of natural resource exploitation is also unsustainable and it has led to land degradation (like soil erosion and loss of soil fertility), loss of fresh water bodies and decline of biodiversity. The forestry sector is facing the challenge of balancing utilization with conservation which requires appropriate forest policy and legislation; strong, autonomous and stable institutional set up and strong forest related research backing.

Due to decentralization there is weak linkage between regional and federal institutions and also between regional and *woreda* institutions which affects the capacity to monitor and evaluate some activities that need close supervision. There is also marketing problem for the various products of the region.

Amhara National Regional State's (ANRS) efforts towards forest cover increment

Woreta Abera[♣]

1. Background

The ANRS is located in the north-western part of the country between 9^0-$13^0$45'' north latitude and 35^0-$40^0$30" east longitude. The total area of the region is approximately 170,752 sq. km. The region has boundaries with four national regional states of the country namely Oromia in the south, Afar in the east, Tigray in the north and Benishangul-Gumuz in the west. It also shares boundary with the neighbouring country, the Sudan, in the west.

According to EPLAUA (2004), about 34% of the land in the region is estimated to be within a slope grade of over 35%. Steeper slopes of greater than 50% are estimated to cover about 21% of the land.

According to BoFED (2006), ANRS has a total human population of 19,611,247. Population density is in the range of 5 - 236 persons per sq. km.; the smallest density being in Quara and the heaviest density in Tehuledere *woreda* respectively (WBISPP 2002).

The regional state is divided into 10 administrative zones, 126 rural *woredas* and 3,105 rural *kebeles*.

2. Land use/cover[30]

The forest resource base

Though, a lot remains to be done with respect to forest resource survey, according to previous studies, the forest resources are estimated to cover about 5.91% of the total area of the region. These forest resources include: high forest (0.48% of the total area or 81,047 ha); woodlands (4.2% of the total area or 716,915 ha); plantation forests (1.23% of the total area or 209,799 ha). These forest resources are administered under three forms of ownership: state, private and community.

♣ Bureau of Agriculture and Rural Development, Amhara National Regional State

[30] Unless specified the main source of information for this section is AFAP (1999).

Opportunities for forestry development

Severe shortage of wood for fuel, construction and industries calls for huge forest development programs in the region, which in turn creates an opportunity for investment in forestry. There is available communal land in rural areas that can be converted into tree plantations. These are lands with slope grade of greater than 35% and 50% which is 5.8 million ha and 3.6 million ha, respectively.

Forestry activities are also being integrated into the farming system by using either of the following plantation strategies;

- Alley cropping
- Boundary planting
- Planting on gullies
- Homestead plantations
- Multi-storey agriculture
- Woodlots
- Planting trees on grazing lands and hillsides

There is possibility of leasing commercial natural forests and plantations under concession for various purposes. Rural land is granted free of land rent for 25 years for those who develop more than 10 ha of forest land. Investors can also rent land from farmers or *kebeles* for investment in forestry.

There is a huge local and export market potential for forest products. For instance neighboring countries like the Sudan, Yemen, Djibouti, etc, are close markets that are in need of pole, lumber and other wood products. Since 2002, more than 60% of tree seedlings in the region are produced and planted by farmers. This shows the existence of out-growers who can supply raw materials for industries.

There is a relatively cheap and abundant labor force with rich indigenous knowledge and experience. Furthermore, although, highly trained professional foresters are not sufficiently available, one development agent, who is trained in natural resources development, is assigned in almost every *Kebele*. Forestry policies, action programs,

strategies and proclamations that support and guide forestry development have already been issued by the Federal and regional governments. The following are the main ones at the Regional level:

- Forest Resources Protection, Control and Utilization guideline (No. 002/2007)
- Natural Incense and Gum Development, Protection and Utilization Guideline (No 001/2006),
- Rural Land Administration and Use proclamation (No- 133/2006)
- Forestry Development and Protection Task Forces Implementation guideline (July, 2006)
- Woody Biomass Inventory and Strategic Planning Project January, 2002
- Amhara Forestry Action Program (AFAP, 1999)
- Regional Conservation Strategy (1999)
- Rural Land Distribution Guideline for Forestry Investment (Amhara Regional State Executive Committee January, 1997) and
- Forest development, conservation and utilization proclamation final draft is prepared.

Major challenges for forestry development

The following are the major challenges facing the success of forestry development in the region:

- Lack of sustainability in forest resource development and utilization,
- Lack of appropriate technology for forestry development and utilization,
- High deforestation rate due to illegal logging, encroachment, etc.
- Insufficient allocation of budget for forestry development,
- Weak institutional capacity (in skills, equipment and management structures),
- Poor infrastructure in most parts of the natural forest areas.

Future forestry development directions

Currently, protection and sustainable utilization of the existing forest is being carried out by either the government (from region to *kebele* level) or the community (through direct stewardship of the forest).But in the future, if we are to reverse problems of forest resource degradation and increase the economic contribution of the sector, the

following actors must directly participate in afforestation and reforestation programs: The community at different levels (either in group or individually); The government; Investors; NGOs; Different civic institutions.

Furthermore there is a need to promote participatory forest development and utilization in order to increase the income individuals can raise from involving in natural resource protection activities. Priority shall be given for industrial and/or fuel wood plantation forests. We should also protect the indigenous species and study their silvicultural practices. Inventory and improved silvicultural practices of the bamboo resources must be done since the region has abundant bamboo cover.

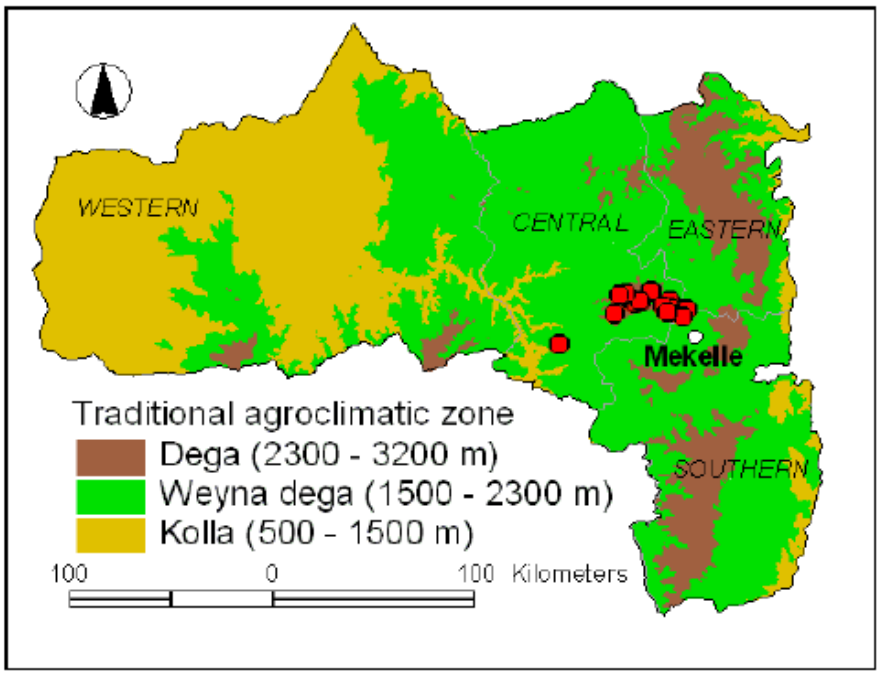
Forest resources of Tigray National Regional State

Nigus Esmaile[♣]

1. Background

Tigray Regional state is located in northern Ethiopia. It is bordered by Eritrea in the north, Sudan in the west, Afar in the east and Amhara in the South. It covers about 53,000 sq. km. The population is estimated about 4.5 million. There are 7 zones, 34 rural *woredas*, 12 town *woredas* and greater than 600 tabias. The altitude ranges between 500 and 3900 m.a.s.l. Average precipitation is 400 to 800 mm per year. Eastern lowlands have as low as 200 mm, whereas western zone has as high as 800 mm per year. The region is broadly divided into three agro-climatic zones: Dega, Weyna dega and Kolla (figure 1).

Figure 2. Traditional agro-climatic zones, Tigray



Despite the low and unevenly distributed rainfall, much of the Tigray plateau was evergreen forest, with belts of mixed deciduous and *Acacia* savannah woodland. As

[♣] Tigray Bureau of Agriculture and Rural Development

population increased the forest area has declined at alarming rate and the forest area covers less than 1 percent of the region at the moment. However, the regional state is endowed with gum producing tree species such as *Boswellia papyrifera*, *Acacia Senegal* and *A. Seyal*.

In order to conserve and develop natural resources in general and forestry in particular the regional government took various steps among which adoption of national programs is worth mentioning. Such programs drawn from the national programs include Tigray Forestry Action Program (TFAP, 1996) and Conservation Strategy of Tigray (CST).

According to Wisborg et al. (2000) area enclosures in Tigray have initially spread as a community-based and NGO supported venture since the late 1980s and 143,000 hectares have been enclosed and the regional government planned to establish a further 128,000 ha during five years from 1997. The TFAP recognizes the area enclosures as common lands protected for natural regeneration. Since enclosed land is usually degraded forest, the objective is mainly environmental rehabilitation along with the provision of tree products (Wisborg et al. 2000).

2. Potential forest resources of the Region

In the region it is estimated that about 400,000 hectares of forest areas and 400 watershed sites are identified and being managed (table 1).

The existing highland and western lowland forests of the region fall into Afromontane and Sudanian phyto-geographic area respectively. For example, Hugumburda gra kahsu and Desaa forest priority areas are under the Afromontane vegetation zone. According to EFAP (1994) the Afromontane flora overall is around 75 percent endemic. Sudanian areas contain flora and fauna which probably have fewer country-specific endemics than the Afromontane (EFAP, 1994). Afromontane forests are being conserved and developed for their ecosystem values. Noting the seriousness of forest degradation and deforestation in Tigray, the regional government restricted the utilization aspect but put strategies to develop and conserve these remnant forests for ecosystem services.

Table 1: Name and extent of forest areas in Tigray Regional State

No	Name of the forest area	Size in ha	Remark
1	Hugumburda gra kahsu	21,635	
2	Desaa	118,600	
3	Hirmi	30,000	
4	Shiraro kafta wildlife reserve	500,000	
5	Wolquit	91,140	*Boswellia papyrifera**
6	Humera	93,880	*Boswellia papyrifera**
7	Tahtay adiabo	95,270	*Boswellia papyrifera**
8	Asgede tsembla	49,682	*Boswellia papyrifera**
9	Tselemti	50,000	*Boswellia papyrifera**

* Main species

Much of the forest utilization is going on in Western regions of Tigray, lowland vegetation. Trees and shrubs in the western region are known for their Non-Timber Forest Products (NTFP), gum and resins. Annually it is reported that in the range of 30,000 to 40,000 quintals of olibanum and 3,000 to 5,000 quintals of gum Arabic is produced. The production is conducted by private and government enterprises. This created a lot of job opportunity to the local people.

3. Regional Government efforts to increase forest cover

In collaboration with government and NGOs different working documents and guidelines are prepared and some of them are being implemented. Among vital documents prepared the followings are worth mentioning.

During the preparation of the guidelines socio-economic situation was taken into consideration. The main guidelines prepared so far are: guidelines for allocation, development and utilization of hillsides; guidelines on wildlife conservation and protection; guidelines for allocation of gullies and wastelands for protection and development, guidelines for development and utilization of area closures; guidelines for development and utilization of incense and gum Arabic and guidelines for utilization of surplus grass from area closures and natural forests.

Table 2. Working documents on forestry available in Tigray Regional State

Working Document	**Year prepared**
Tigray Forestry Action Program	1996
Management guidelines for developing natural gum and olibanum resin bearing trees species	1998
Strategic plan for the sustainable development, conservation and management of woody biomass resources	2004
Management plans of Kafta Sheraro Wildlife reserve	2002
Management plans of Hugumburda gra kahsu forest	1997
Management plans of Desaa forest	1995
Management plans of Hirmi forest	2006
Area closure in Tigray	2002
Tigray community plantation survey	1996

The regional government also produced a number of proclamations relevant to forest increase. These are proclamation to utilize, develop and protect forest resources, proclamation to decide on utilization of rural lands, proclamation to utilize forest development fund and proclamation to develop and protect Sheraro kafta regional wildlife park.

4. NGOs working on increasing forest cover

World Food Program (WFP) is working on sustainable land management within 17 *woredas*. These *woredas* are mostly food insecure. Farm forestry and reclamation of degraded areas are being managed under WFP program within these *woredas*. Relief Society of Tigray (REST) is a local NGO that has put tremendous effort to rehabilitate degraded areas in the region. According to Wisborg et al., (2000) REST was established in 1978 to assist the war and drought affected population of the areas of Tigray that the Tigrayan People's Liberation Front (TPLF) controlled during the war with the Derg (military regime). After the victory by TPLF in 1991, REST gradually changed its approach from relief to rehabilitation and development. Since

1985, REST has worked with local communities on rehabilitating degraded commons through creating area enclosures. Area enclosures in this context refer to protected sites for natural regeneration found in different villages for conservation, fuel wood, fodder and *other* products to benefit the adjoining community. By the end of 1998, REST estimated that with its support 58,000 hectares of land in its intervention area had been developed under area enclosure. The enclosures were distributed in about 1,242 sites in REST project areas. World Vision Ethiopia, Catholic Church and GTZ conduct similar efforts.

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Forest resources of Oromia National Regional State

Nigussu Feyissa[♣]

1. Introduction

The Oromia Region is located in central part of Ethiopia, stretching from the Sudan border in the west and then to the eastern part making a curve to the south up to Kenya border. The region extends from 34° 05' E to 43° 11' E, and from 3° 20' N to 10° 35' N.

Oromia covers an area of about 367,000 km^2. It is estimated that Oromia Region covers about 31.17% of Ethiopia. The region is divided into 17 administrative zones

The available information on the forest resources of Oromia is very limited and inconsistent. There is inadequate data on the location, extent and standing volume, annual increment, and rates at which these resources are being depleted.

Some 60 years back Oromia high forests were estimated at about 14.7 million ha which covered about 40 % of the land at that time. This figure does not include the lowland woodlands. If the lowland wood lands are considered the cover will be more than 60 % of the region's area. These forests were located at Central, Western, Southern, Eastern and South-Eastern mountainous areas. Currently the remaining high forest of the region is estimated to be only 7%.

2. Forest resources of Oromia

Reports on land use, forest and woody vegetation provide different figures. The reason could be the methods and tools each study used. The following classification for forest and woody vegetation is adopted from EFAP (1994). These are natural high forest, woodlands, bush lands, plantations (industrial, peri-urban, community and catchment protection plantations), bamboo and farm forestry.

2.1. Natural high forest

[♣] Oromiya Regional Bureau of Agriculture

These are defined as land covered by a closed stand of trees with a more or less continuous canopy rising 7 to 30 m, and a sparse ground cover of few grasses. The natural high forests of Oromia are grouped into the following major categories.

(i) Moist evergreen forest and

(ii) Dry ever green montane forest

2.2. Woodlands and bush lands

Woodlands can be defined as land covered by an open stand of trees taller than 5 m and up to 20 m in height and a canopy cover of more than 20 percent. Bush lands are land covered by an open stand of trees and/or taller shrubs 2 to 5 m tall and a canopy cover of more than 20 percent. In Oromia, woodlands and bush lands are largely restricted to the agro-pastoral and pastoral zones in Arsi, Bale, Borena, Hararge, Illubabor, Jimma, and Wellega.

Reports indicate that the extent of woodlands and bush lands in Oromia is estimated to be 12 million ha that is about 32.7 percent of the total area of the Region (ORCS, 1996). The following major types of woodlands can be distinguished.

(i) Juniperus woodland

(ii) Combretum-Terminalia (broad leaved deciduous) woodland

(iii) Acacia woodland

(iv) Acacia-Commiphora woodland

2.3. Plantations

Plantations include industrial and peri-urban plantations established and operated by the Regional Government of Oromia as well as community woodlots and catchment protection plantations. Industrial plantations are found within the boundaries of the Forest Priority Areas (FPAs) in Arsi, Borena, Illubabor, Jimma, Shewa, and Wellega. Eucalyptus spp and Cupressus lusitanica are the main species in industrial plantations. Peri-urban plantations established to supply urban centers with poles and fuel wood are found around Addis Ababa and Nazareth. These plantations cover 29,523 ha around Addis Ababa and 5,181 ha around Nazareth (CSE, 1996).

Community woodlots are plantations established and managed by groups of farmers or a community. They can be either protection or production oriented. Community woodlots are found in Hararge, Arsi, Shewa, and Wellega. These woodlots consist mainly of Eucalyptus camaldulensis.

Catchments and protection plantations are operations designed to prevent land degradation through area closure and/or the planting of steep slopes, catchments and sub-catchment areas of badly degraded land. These types of plantations are found in the most degraded zones of the Region (East and West Hararge and East and West Shewa).

2.4. Bamboo

Highland and lowland bamboo (Arundinaria alpina and Oxytenanthera abyssinica respectively) do exist in the region. It is estimated that naturally occurring highland and lowland bamboo cover 94,170 and 35,169 ha respectively (Luso Consult, 1997). Spatially the resource is located in Bale, Jimma, Wellega and Shewa (Jibat). These figures show that the Region has a considerable resource of bamboo (Table 1).

2.5 ***Farm forestry***

It is a farming system that integrates trees into the farm. In the region there are different traditional farm forestry practices existing in different agro-ecological zones. The main types of farm forestry are:i. Homestead trees: Eucalyptus spp, Cordia africana, Croton macrostachus and other valuable trees like Gesho (Rhamnus prinoides) and different species of fruit trees.

ii Field trees: Indigenous trees are either retained or planted on cultivated field for the purpose of fodder, fuel wood and pole. Retained tree species are *Faidherbia albida, Cordia africana and Croton macrostachus*. Retained tree species that are important for production include *Albizia lebeek, Mellitia* and *ferrugenia.*

iii Farm woodlots: It is a system of planting on a small area of land -on farm. The objective could be to sell tree products as fuel wood or/and small poles. Tree species planted in most cases are eucalyptus globulus, eucalyptus saligina and eucalyptus

camaldulens. Other farm forestry systems include farm boundary tree planting, roadside tree planting, fodder block and windbreak.

Table 3: Estimates of forest area in Oromia region

Forest Resources	**Area (Million ha)**
High Forest	1.43
Slightly Disturbed	0.45
Heavily Disturbed	0.98
Woodland	3.0
Bush land	9.0
Plantations	0.2
Bamboo	0.13
Farm forestry	n/a

Source: EFAP, 1994; ORCS, 1996

3. Problems of forest and land degradation

Major causes of deforestation in the region are expansion of agriculture, grazing, timber and fuel wood extraction and charcoal burning for household consumption and for sale.

Deforestation has led to environmental degradation which causes soil erosion, poor agricultural performance, food insecurity, depletion of plant and animal genetic resources, loss of animal and plant biodiversity, destruction of wildlife habitat and shortage of browse and fodder etc.

4. Past efforts

Designating forest as forest priority areas (FPA) and plantation of seedlings is among the worthy efforts by the concerned authority and by forestry professionals. Nevertheless, most of the efforts have failed to bring the expected improvement of forest cover in the region. On the contrary, continuous deforestation, forest degradation and loss of biodiversity have taken place.

After the establishment of Oromiya regional state considerable efforts have been made to increase forest cover through conservation, development, management, and rational utilization of natural and manmade forest resources.

4.1. Formulation of Oromiya Forestry Action Program (OFAP)

OFAP document was formulated by local consultants. The study is funded by UNDP. The document in general addresses the development programs, associated with forestry and forestry–related policy; proposes institutional reforms and investment programs, which foster forestry development in Oromiya regional state. Due to budget constraint the document is not yet fully implemented.

4.2. Implementation of Five-Year Development Plans

In the first five–year development plan (1996-2000) some 800 million tree seedlings were produced and planted on an area of 75,000 ha. From these seedlings 95% have been used for development of farm forestry. During the second five-year development plan (2000-2004) 1.4 billion seedlings were produced and planted on an area of some 130,000 ha

4.3. The development and management of industrial and fuel wood plantations

Some 10,000 hectares of industrial and peri-urban plantations have been established and managed by the regional government. The majority of industrial plantations are found within the boundaries of the regional forest priority areas.

4.4. Demarcation and preparation of management plans in Regional Forest Priority Areas (RFPAs)

Management plans for Munessa-Shashamane, Tiro-Boter-Bacho, Belete-Gera and Sigmo Satama have been prepared, from which two are implemented (Munessa-Shashamane and Tiro Boter –Bacho RFPAs). Almost all of the 37 identified RFPAs have been demarcated. However, none of the forests is gazetted so far.

4. 5. Development of forest proclamation and re-establishment of check-points

Oromia forest proclamation no 72/2003 has been endorsed by the regional council. This proclamation recognizes three types of ownership, namely state, private and community forests. In addition, it encourages the participation of local communities living within and adjacent to state forest priority areas on conservation, development and proper utilization of state forests. The proclamation also stresses on provision of technical support to those from the private sector who are willing to invest in the forest sector.

To minimize the flow of illegal forest products to different towns and the capital Addis Ababa about eight cheek points are established.

4.6. Establishment of forest enterprises

In June 2007 forest enterprise was established by the regional government council. At the moment eight forests will be managed by this enterprise. These enterprises are expected to be managed by a board and the chairperson of the board is the president of the Oromia Regional State.

The approach includes the protection, development, utilization and marketing of forest resources. An ultimate goal of organizing these enterprises is to establish a self-financing forest organization in the region.

4.7. Initiative to implement participatory forest management projects (PFMP)

Oromia Region Agricultural and Rural Land Development Bureau in collaboration with FARM-Africa Bonga and Chilimo, GTZ Adaba Dodola, JICA Balte Gera forest priority areas are developing participatory forest management (PFM) approaches in Oromia .

General objectives of PFM projects are: To contribute for the development of new sustainable forest management system;

To build the capacity of government staff and the community to manage natural resources in sustainable and equitable way; and to catalyze the adoption of PFM within the policy framework.

Currently there are three PFM projects being implemented in the region:

- Adaba Dodola Integrated PFM project
- Chilimo PFM project
- Baleta Gera PFM project

5. Tree development program

In this program the regional government has planned to execute the following:

5.1. Tree and Forest Development Program

This program is implemented by the enterprise mentioned above and individual investors who wish to invest in forestry.

Objectives:

- To improve the supply of fuel wood, pole and industrial wood to meet the demand of rural and urban communities and wood processing enterprises.
- To promote integration of trees in farming system
- To promote sound land management system and enhance agricultural production

Tree development program

Increasing forest and tree can be achieved through farm forestry development program and industrial plantation program.

Farm forestry development program

This program will be practiced all over the region, and totally implemented by individual farmers and by the community. The regional government will provide free technical and material support. This program focuses on agro-forestry practices mainly on:

- Homestead trees.
- Field trees.

- Farm woodlot.
- Farm boundary trees.
- Roadside tree planting.
- Fodder block and windbreaks.
- Development of community woodlot on the communal lands.
- Hillside plantation or protection forestry.

5.2. Industrial Forestry Development Program

This program will be implemented by public forestry development enterprise. In addition to this public enterprise, individual investors, non-governmental and governmental organizations are also expected to participate in the development of industrial forest plantation**.**

Strategies

The beneficiary farmer's need is recognized and they will be encouraged to have their own nurseries. Competent development agents will be assigned for the work. Reliable extension packages are prepared and disseminated through different systems like training, demonstration plots, etc. Farm forestry is integrated or coordinated with other components of land use and soil and water conservation activities.

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Overview of natural resources in SNNPR

Tsegaye Fikadu[♣]

1. Introduction

Ethiopia is a country of diverse cultures with a variety of physiographic and ecological characteristics, which resulted in coexistence of numerous indigenous flora and fauna. The south nations, nationalities and peoples region has got the largest share in diversities in both cultures and natural resources. The rural economy in general and especially agricultural development is not possible without healthy natural resource base. Forests, soil and water are among the main resources on which everyday lives of rural households depend. Due to a combination of factors including land demand for expansion of agriculture, increasing construction and energy demands, infrastructures etc. which are fueled by population growth, there is shrinkage of natural resources, especially forests, from time to time. This fact warns everybody to take care of the forests and other natural resources.

2. General features

2.1. Geographic location and area

Ethiopia situated in eastern horn of Africa, is a country with attractive natural beauties and historical sites. Its rolling mountains, breath taking landscapes, agreeable climates, endemic wildlife, diverse cultural heritages, hospitable people, and artifacts could make the nation an alluring destination.

The south nations, nationalities and peoples region (SNNPR) being one of the nine autonomous states, located in the south and south western parts of the country bordering with Kenya in the south, the Sudan Republic in the west, Gambella region in the north west, and Oromiya in the north and east. The region lies $4^0$27'-$8^0$30' latitude north and $34^0$21'-$39^0$11' longitude east, indicating that the region is situated

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within the tropic of cancer close to the equatorial region. SNNPR has a surface area of about 113,539 sq km which accounts about ten percent of the country's total area.

2.2. Topography

The region is a land of plains vast escarpments, deep canyons, gorges, hilly and mountainous landscapes. Generally its undulating land features dissected twice both by Omo-Gibe basin and rift valley lake basin in the western, central and eastern part of the region. The latitudinal variations range from 375 m.a.s.l. at Lake Rudolf to 4207 m.a.s.l. at mount Guge in Gamogofa zone.

2.3 Climate and agro-ecology

According to BOFED (1998) five agro-ecological zones are identified. However, the modern climatic classification indicates 13 major and 20 sub divisions. The average rainfall ranges from 400 mm-2200 mm and the mean annual temperature is from 7.5 ^{0}c to 27.5 ^{0}c.

Table 4 Climate and agroecology

Agro-ecological zone	**Altitude m a.s.l.**	**Area coverage in ha (%)**	**Av. .annual Temp. in °c**	**Climatic condition**
Bereha	Below 500	9540.14 /8.6/	27.5	Very Hot
Kolla	500-1500	54246 /48.9/	22.5-27.5	Hot
Woimadega	1500-2000	37605.7 /30.9/	17.5-22.5	Warm
Dega	2500-3500	9313.3 /8.4/	12.5-17.5	Cool
Wurch	Above 3500	221.8 /0.2/	7.5	Very Cold

Source: BoFED (1998)

2.4 Demography

The population estimate is about 14.98 million which accounts for 21 percent of the country's population and 92.8% are living in rural areas depending on agriculture where as 7.2% are urban dwellers. The average population growth rate is 3.2% and the average family size is seven.

2.5 Administration

The region is administratively divided into 13 zones and 8 special *woredas* with a total of 104 *woredas* and more than 3600 *kebele* administrative units. Further, there are also 19 city administrations. The capital of the region is Awassa, with the area of 32.8 sq. km located 275 km from Addis Ababa.

3. Natural resources: an overview

3.1. Forest

The density and distribution of natural forest varies from place to place with relatively wider forest land in the western parts of the region. The north western part of the region is covered with dense mountain forest, whereas the southern part is covered with open grass and wood lands. According to Woody Biomass Inventory and Strategic Planning Project (1996) forest coverage of the region is 11% of the total area. This includes broadleaved forests, mixed forests, riverine forests and plantation forests. The natural patches of forests are found in Kafa, Bench Maji, Sheka zones, Konta special *woreda*, and partly Dawuro zone. Most of the plantation forests are located in central zones of the region (Guraghe, Hadiya,Kambata tambaro, Silte, Wolaita, Gamogofa, Sidama, Gedeo zones and Alaba special *woreda*.

The yearly average lower limit deforestation is 80,000 hectares due to different reasons, mainly expansion of farmland with growing population pressure, increasing construction and energy demands, and unwise use of forest resources.

3.2. Problems and issues related to Southern Region's natural forests

3.2.1. Forest clearing for settlement and agriculture

A major issue is the destruction of the natural forest for agricultural expansion. The overall rate of clearing is the highest in the SNNP region compared with the two other main forested regions of the country. .Annual rates of clearing for the three regions

are as follows: SNNP region (2.35 % per annum); Gambella region (1.28 % per annum); Oromia region (1.16% per annum).

There is an urgent need to undertake detailed land evaluation of the high forest areas to determine where controlled expansion of agriculture should take place, sustainable logging can be allowed, and where pristine forest should be preserved for biodiversity conservation.

3.3. Impact of deforestation and forest degradation in Southern Region

Land degradation

Land degradation induced by deforestation involves both soil erosion and the loss of soil fertility. Shrinkage of availability of suitable farmland results in conflicts between crop farming, animal grazing and forestry.

Water resources degradation

Sedimentation and siltation seriously affect water resources in Ethiopia. Deforestation increasing surface run-off and reduced the amount of rain fall infiltrating the soil and eventually percolating into ground water aquifers. Lower levels of infiltration and water storage in soil also affect the availability of water for human use throughout the year.

Loss of biodiversity

Southern region is an important regional center for biological diversity. Reduced forest cover and the associated impact on land degradation threaten ecosystems of flora and fauna and, thus, for genetic resources as well. In addition, the removal of vegetative cover reduces the amount of carbon that can be sequestered from the atmosphere.

Food crisis

The removal of vegetation through over grazing and uncontrolled fire results in erosion, flooding, sand dunes, siltation of rivers and lakes, and desertification. These are important causes of lower agricultural productivity and a yet deeper food crisis.

Energy crisis

Ethiopia relies mainly on biomass fuel as a result of the lack of development of other energy alternatives and the overall poor economic condition of the country. SNNP is no exception and is facing energy problems. Scarcity of firewood has become acute in many parts of the region causing a continuous rise in prices, and thus increasing the economic burden on the households.

Table 5 Land use /land cover of SNNP region

Land use/land cover	%	Area in ha
Cultivated land	34.6	3,905,454
Grass land	15.7	1,689,925
Shrub land	22.8	2,451,255
Wood land	14.9	1,601,877
Natural forest	7.3	784,705
Plantation forest	0.1	15,401
Wet land	2.6	281,576
Others	0.04	
Total	100	10,734,308

Source; Woody Biomass Inventory and Strategic Planning Project (2000).

4. Soils

The south region is endowed with diverse natural resources of which the soil resources serve as a base for all others. Soil is an irreplaceable resource and the mounting pressures up on land are constantly making it more valuable.

Based on geomorphology and soil study conducted by Ministry of Agriculture,18 dominant soil associations were identified in Ethiopia, of which 11 soil associations (Luvisols, Vertisols, Nitosols ,Gleysols, Andisols,Cambisols, Lithosols, Acrisols, Flurivisals,Regosols and Pheozems) are found in the south region. Each of these soil groups are having their own specific physical, chemical and biological properties, and the associated management practices. Among the soil associations identified Nitosols cover a larger area (about 38% or 53,000 sq km) of the region and are the most suitable for crop production.

Soil degradation extended to heavy gully erosion is the most serious problem. This might be attributed to lack of forest cover, soil mismanagement, over grazing and cultivation of steep mountains aggravated the situation. According to WBISPP(1996), 180-200 million tons of soils lost every year on average from different parts of the region, mainly the central zones.

5. Wildlife

Because of diverse ecology, the region is rich in wildlife resources .The highest record of wildlife diversity in the region is observed around the lower valley of Omo. About 70 mammal and 333 bird species are known to be found here. Currently there are five national parks, Nechsar, Omo, Mago, Maze, and Churchura chebera , as a potential for tourism industry in the region. In addition there are 8 protected hunting zones and the crocodile ranch at Arba Minch.

6. Water resource

The region is well known for its surface and underground water resources. There are a number of water bodies which have significant importance for irrigation development (for agriculture), fishery production and other essential needs. Rift valley lakes (Awassa, Abaya, Chamo, Turkana and Chew bahir), rivers (like Omo, Gibe , Gojeb, Akobo, Segen, Bilate etc), springs and waterfalls are found in the region. Among 12 watersheds identified in the country four of them–namely, Omo-Gibe, Baro-Akobo, Genale-Dawa, and rift valley lakes—are found in the region.

7. Conservation and development efforts

During the last development planning years efforts have been made in the conservation and development of natural resources(mainly the forest, soil, water, and wildlife resources) because of their ecological and economic significance. A brief summary of the last planning years achievements is the following.

Forest: the forest conservation focuses on protection of the remaining natural forests by demarcating on participatory basis. This gives an opportunity to the surrounding communities to share some of the economic advantages from natural forest conservation mainly from non-timber forest products like forest coffee, spices, honey production among others. Due to the growing awareness and ownership sense of the communities currently over 130,000 hectares of natural forest is demarcated and under protection with the community. Tree planting is another major development achievement including seed collection and nursery work. Therefore, 97, 109, and120 million seedlings were planted and under management during 1996, 1997and 1998 E.C, respectively.

Soil and water conservation: Soil and water conservation activities were done to re-habilitate the degraded land there by making it suitable for agricultural production and biomass cover. During the last planning years (i.e., 1996, 1997 and 1998 E.C.) more than 62,000 hectares of land has been covered by different soil and water conservation structures, 99,655 ha of degraded land has been under protection and biomass is regenerating by area closure and enrichment plantation. About 209,938 ha is selected by the community and integrated watershed management development activities are going on. About 155,000 house hold water harvesting structures have been constructed and under use. Including modern irrigation schemes out of 2.4 million estimated households in the region 181,880 are getting agricultural water services. Moreover, many of in-situ soil and water conservation activities including thousands of trenches, micro basins, eyebrows etc. have been implemented during the past years.

Wildlife: The number of national parks was increased from three to five. These are Omo, Mago, and Nechsar and the newly demarcated national parks Maza and Chebera churchura .The Arba minch crocodile ranch and eight controlled hunting sites were mainly the results of past years efforts.

5. Legal framework

There are some policy documents and proclamations devised at Federal and Regional level concerning natural resources. The regional ones include:

- The Southern Nations, Nationalities and Peoples Region Rural Land Administration and Utilization Proclamation no 53/2003
- The Southern Nations, Nationalities and Peoples Regional State Forest Management, Development and Utilization Proclamation no 77/2004

However, the law is not effectively implemented, especially the justice organs' involvement and decision are not encouraging. Existing laws also need further revision by looking into current situations and in a way that can favor speedy development activities in the sector.

6. Community forestry

As part of the community forestry program of southern region's forestry department a number of documents were specially prepared in order to uncover existing information and to provide the basis for an objective understanding of the linkages between forestry and the community of the rural people . As a result community forests in the region have been undertaken for two main purpose s. These are to provide fuel wood and construction poles for the community and to reclaim degraded areas which are usually hill sides. It is estimated that these woodlots cover a total of 67,000 hectares with an estimated yield of $8m^3$/ha per annum which would result in a total incremental yield of 536,000 m^3 per annum.

In the late 1980s, catchment/protection plantations were initiated on a large scale by the then community forestry and soil conservation and development department of the ministry of agriculture as part of its soil and water conservation program.

It is estimated that catchment/protection plantations in the region currently cover an area of 37,000 hectares with a total estimated incremental yield of 41,000 m^3 assuming a $1.1m^3$/ha/year incremental yield .

Participatory Forest Management (PFM) in Bonga regional forest priority area has been practiced since 1996 E.C with the help of FARM Africa. In order to get better results, this endeavor should be backed by appropriate policy that favors PFM.

7. Challenges

The loss and degradation of natural resources mainly soils, forests and water is still beyond the conservation efforts as a result of which agricultural production and productivity is significantly influenced. This also causes the loss of human and animal lives due to frequently occurring draughts and unexpected flooding. Population pressure is another threat.

8. The Plan

The five years plan was devised for effective and participatory implementation so as to conserve and rehabilitate the natural resources for economic and ecological advantages contributing to the improvement of livelihoods.

8.1. Implementation principles of the Five-Year Plan

a. Conservation and development of natural resources on the basis of integrated water shed management
b. Making natural environment suitable for habitat and development activities
c. Integrating with improving agricultural production and productivity
d. Natural resources conservation and development for economic advantage
e. Participatory approaches on voluntary basis
f. Maintaining population and natural resource balance
g. Ensuring women's participation
h. Respecting useful community culture and values.

8.2. Major Activities of the Five-Year Plan

- Integrated watershed management
- Different conservation and development activities
- Suitable agriculture
- Area closure for biomass production
- Soil and water conservation
- Physical conservation

- Biological conservation
- In-situ conservation
- Water harvesting technologies
- Forest development and conservation
- Seed collection, seedling raising and plantation
- Participatory natural forest demarcation and management
- Plantation forest management
- Agro-forestry development
- City greening and road side plantations

These major activities of the five years plan are grouped into three goals to be achieved during the planning period and are the following.

Goal 1. To increase the existing 11% forest coverage to 13.5% by 2002 E.C.

Activities:-

- 472,396 ha participatory natural forest demarcation and management
- 65,000 kg multipurpose tree seed collection
- 1.676 billion seedling raising
- 1.370 billion seedling planting
- 548,000 ha plantation forest management

Goal 2. To increase the current 260,000 ha of integrated micro catchments development to 1.3 million hectares and to cover 383,659 ha of land by different soil and water conservation structures

Activities:-

- 1.3 million ha micro catchments identification and preparation of development plan
- 931,659 ha integrated micro catchments development
- 383,659 ha physical soil and water conservation
- 57,173 ha biological soil and water conservation
- 451,750 ha area closure, with conservation activities and enrichment planting

Goal 3 Ensuring each farmer uses at least one of the options of water harvesting technologies by the end of 2002 E.C.

Activities: -

- 266,184 different water harvesting structure will be constructed
- 383,280 shallow well construction
- 5,979 community ponds
- 2,404 river diversion
- 42,787 hectares of land will be cultivated

8.3. Implementation strategy

The breakdown of five years general plan will be made into *woreda* and *kebele* basis so that they can adjust according to their own situations in such a way that it can be more participatory. The plan will also be divided on time frame, yearly and monthly basis considering special features of each plan. Implementation is on participatory approaches with close monitoring and technical supports including field visits.

9. Conclusion

The government attention on natural resources conservation and development should go beyond the current efforts. There is a need, among others, to revise policy and legislative matters, sufficient resource allocation for management and administration, revisiting the structural adjustments. The decision makers at their hierarchy should also take the upper and their commitment will play a significant role for every citizen to take responsibilities to conserve and wisely utilize natural resources. Thus the issue of natural resources must appear at the forefront in every day agenda.

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Part III

Forestry Research and Training Activities

Forestry research activities of Forestry Research Center

Alemu Gezahegne ♣

1. Introduction

Ethiopia is characterized by very diverse climatic conditions which are also thought of to result in diverse fauna and flora (with about 6,500-7,000 species) in the country (Anonymous, 1991). The lowlands and the rift valley are very hot through out the year while the western and southwestern highlands are wet the year round. In general the climate of the country is tropical monsoon with wide topographic induced variation. According to Central Statistical Authority (2000) the productive area which forms about 56% of the country's area falls in the medium and high potential agro-ecological zones with 3.5 million ha of potentially irrigable land. Out of this total 14% is utilized and 0.05% of the land is under irrigation. The natural resource base, including the forests and trees are the foundation of any economic development, food security and other basic necessities of its people. Smallholder agriculture is the dominant sector that provides over 80 percent of the total employment, 90 percent of foreign exchange earnings and approximately 54 percent of the GDP (CSA, 2000).

The forest and woody vegetation resources of Ethiopia had been estimated to cover more than 27.5 million ha of land in 1992 (Ethiopian Forestry Action Plan, 1994). These resources comprised natural high forests, categorized as slightly and heavily disturbed high forests, woodlands, bush lands, plantations and on-farm trees. Forests have been identified as one of the key life support systems. The importance of forests goes beyond their status as the habitat of many plant and animal species. They are a vital element of national and global ecosystem and economies. However, a major potential forest area has been converted from its natural state to support alternative land use including agriculture, urbanization and settlement (Ethiopian Forestry Action Plan, 1994). The continuing losses of forests demand a new approach to forest management. The dwindling forest cover has a severe effect on the climate, wildlife, streams and human population. Deforestation is also associated with the loss of flora

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and fauna and loss of biological diversity. Thus, arresting deforestation and enhancing its vital role in addressing food security, rural poverty, and restoration of degradation and loss of biodiversity is essential.

The low agricultural productivity and environmental degradation prevalent in Ethiopia have been attributed to several constraints which can be generally categorized as biological and ecological/climatic, socio-economic and policy, institutional arrangements, scarcity of resources (human, physical and financial), insufficient supply of improved technologies, etc., all of which are further aggravated by the widespread poverty. Forest policy is a key feature envisaged in the implementation of the wise use of forests. However, defining, developing and implementing national policy that promotes forest conservation and management remains an elusive goal for many contracting parties. Previously issues related with forests are seldom explicitly covered at a national level in other existing natural resource management policies. In many cases forest strategies are components of national agricultural or other sectoral environmental policies. The message about forests can thus become diffused and overpowered by these broader objectives of the government. Development of a unique or "stand alone" forest policy statement and/or strategy can be an important step in recognition of forest problems and targeted action to deal with them. A unique forest policy provides a clean opportunity to recognize forest as ecosystem requiring different approach to their management and conservation.

2. Historical milestones

Before 1974 about half of the forestland was privately owned or claimed, and roughly half was held by the government. There was little government control of forestry operations prior to the revolution. The l975 land reform nationalized forestland and sawmills, which existed mostly in the south. The government controlled harvesting of forestland, and in some cases individuals had to secure permits from local peasant associations to cut trees. But this measure encouraged illegal logging and accelerated the destruction of Ethiopia's remaining forests. Currently the forestry sector is organized under the ministry of agriculture and rural development. For decades forestry research too was fragmented and scattered in several organizations. In the

past, unlike research on agriculture, there was no institution with well developed facilities and adequate number of highly qualified staff to bring about significant impact on the outcome of forestry research. It can be said that experimental forestry research started in 1895 during the reign of Emperor Menelik II (Amare Getahun et al., 1990). However, the history of forestry research in the country could be divided at least into three major epochs characterized by specific situations and activities related to the forest resources and forestry research in those eras (Melaku Bekele 1998; Gebre Markos Wolde Selassie and Deribe Gurmu, 2001).

I-Prior to1975

This epoch is characterized by exploratory expeditions, mainly on the flora of forest resources, botanical explorations of forest resources, decline in size and quality of these resources, introduction of exotic trees, initiation of formal forestry research trials and establishment of formal institutions responsible for forestry research and development in the country. Different organizations were involved to administer forestry research such as ministry of Agriculture, higher learning institutions and non-governmental organizations mainly the Swedish International Development Agency (SIDA). For instance in 1961 forestry research institute was established by Addis Ababa University but disbanded and completely absorbed by the Faculty of Science in 1967. Some forestry research was included in the SIDA-supported development program since the commencement of Chilalo Agricultural Development Unit (CADU) Project in 1965. It was at this time that the first species trials were laid out in Assela (Berhanu Hika *et al.*, 1988). Efforts on forestry activity initiated in 1956 at Holetta continued during this period involving both indigenous species such as *Juniperus procera*, *Hagenia abyssinica* and some selected exotic species. Around 1970, the State Forest Development Agency (SFoDA) realized the need for the start up of forestry research and laid the foundation for today's FRC. During this time Shola nursery and seed laboratory became operational under silvicultural services. At that time they were developed to address development of nursery techniques, species selection, seed biology, germination and seed procurement. It was this period in which the earliest documented records on the forest flora of Ethiopia were made. The introduction of exotic tree species in the late 1890s marked the beginning of selection of suitable species.

II- The period between 1975 and 1998

Appropriate institutions that deal with forestry research were established. Forestry Research Center (FRC) and the then Wood Utilization Research Center (WUARC) were established in 1975 and 1979, respectively, within the ministry of agriculture. This was the era, which was referred to as the "foundation of scientific forestry management in Ethiopia" (Gebre Markos Wolde Selassie and Deribe Gurmu, 2001). In 1975, the UNDP/FAO assisted the start-up of the present FRC and initiated a small part of the research program promoted earlier by the then State Forestry Development Agency (SFDA). From 1979 to 1982, i.e. in a second phase of UNDP/FAO, emphasis was given mainly to the seed center at FRC and to multi-location species trials. The limited research activities of the FRC focused on establishment of species and provenance trials, seed physiology, development of nursery techniques, trials on tree spacing, planting techniques, etc. and development of an appropriate silvicultural system. At the termination of this FAO support, IDRC (Canada) began supporting the field research program of FRC focusing on agro-forestry research for the first time.

In 1977 SFoDA was amalgamated with the Wildlife Conservation Organization to form Forestry and Wildlife Conservation and Development Authority (FAWCDA). In 1978, the then Wondo Genet Forestry Resources Institute, now Wondo Genet College of Forestry and Natural Resources was established. In 1985, FAWCDA was restructured as the Natural Resources Conservation and Development Main Department (NRCDMD) within the Ministry of Agriculture. In 1991, NRCDMD gave way to the establishment of the Ministry of Natural Resources Conservation and Development and Environmental Protection (MNRCDEP). In 1992, a National Tree Seed Project (NTSP) was established, on the basis of collaboration between the Government of Ethiopia and United Nations Sudano-Sahelian Office (UNSO)/United Nations Development Program (UNDP). In this epoch frequent institutional changes occurred.

III- Forestry research after 1998

Realizing the need to undertake systematic and coordinated research in the country, the federal government of Ethiopia recognized the national agricultural research system and established the then Ethiopian Agricultural Research Organization (EARO) in June 1997 by proclamation (Federal Negarit Gazeta, 1997). Because of this Forestry Research Center (FRC) and Wood Utilization and Research Center (WUARC) had been transferred to EARO by the proclamation. This is the epoch in which organized forestry research began with a relatively good setup of two centers, i.e. Forestry Research Center (FRC) and Wood Utilization and Research Center (WUARC), exclusively mandated to undertake forestry research. In the same year, Forestry Research Center (FRC) and Wood Utilization and Research Center (WUARC) merged to function under the umbrella of Forestry Research Center.

Although FRC and the then WUARC have been exclusively dedicated to forestry research in Ethiopia, research and/or higher learning institutions and several agricultural research centers that used to be administered by the then Institute of Agricultural Research (IAR) have also been actively engaged in forestry research. In addition, other international institutes such as the International Livestock Research Institute have been involved in forestry research in the country. At present forestry research is being undertaken in FRC under the umbrella of the Ethiopian Institute of Agricultural Research (EIAR). FRC has now two core research programs. Research activities within programs were categorized into working groups. The categories are:

a. Forest resources and tree improvement research program

Plantation forest research project

Farm forestry (agro-forestry) research project

Natural forest research project

Tree seed technology and tree improvement research project

b. Forest product utilization research program

Two projects under this program are: Timber, panel and fiber product research project and non-timber forest product research project.

The overriding aim of our research is to make forest management more predictable, profitable and sustainable by providing the knowledge and tools to select and manipulate site, species and silviculture to achieve desired outcomes and needs of the country. This aim encompasses a wide range of research activities/focus areas. In light of this the center addresses the multifaceted issues of forestry in the country to meet the demand for fuel wood, to contribute to the protection and environmental rehabilitation of the rapidly degrading forest resources and increase the production of forest products for the rural and industrial development needs of the country. Major activities set forward under the research project are as follows.

i. Plantation development

This includes:

- Choice of species and provenances for different AEZ.
- Selection and improvement of the genetic bases tree/shrubs species for different purposes.
- Studies on planting techniques (ground preparation, spacing), silvicultural treatments, tending option
- Growth rates of trees and development of yield and volume table, site index
- Diseases and insect pest that attack planted trees and control mechanism
- Seedling propagation and nursery techniques; Choice of species and provenances for different AEZ.
- Selection and improvement of the genetic bases tree/shrubs species for different purposes.
- Studies on planting techniques (ground preparation, spacing), silvicultural treatments, tending option
- Growth rates of trees and development of yield and volume table, site index
- Diseases and insect pest that attack planted trees and control mechanism
- Seedling propagation and nursery techniques

ii. Natural forest

- Biology and growth characteristics of indigenous tree and shrub species.
- Phenology of indigenous and exotic trees.
- Species composition, diversity and regeneration studies
- Utilization of natural forest

iii. Farm forestry

- Introduction and selection of multipurpose tree species (MPTS).
- Study and promote indigenous agro-forestry practices.
- Alignment, management and utilization of trees on farm
- Impact of integrating tree on land productivity and crop yield

iv. Tree seed biology and tree seed technology

- Phenology and seed biology (different seed characteristics, seed handling and storage behavior).
- Requirement of pre-sawing seed treatment to enhance seed germination.
- Determination of appropriate growth media for the production of seedlings.
- Identification, selection and management of seed stands.
- Seed collection and distribution

v. Forest product utilization

- Identification, selection and management of seed stands; Harvesting, processing and protection
- Characterization of timber properties and determination of potential uses.
- Durability, seasoning and wood treatments
- Wood engineering and board manufacturing

vi. Non-timber forest product utilization

- Non-timber forest products
- Effective and diversified use of bamboo, reeds and palms
- Research on trees/shrubs with medicinal values
- Gum and resin production and processing
- Research on alternative bio-energy source

3. Linkage, manpower and research facilities

Any research organization will make no contribution to a nation's development goals or in solving social, economic and environmental problems if research results are not successfully communicated to the users. Based on these principles FRC developed links with different stakeholders. Currently, FRC collaborates closely with various regional, national and international organizations that are involved in forestry research and development. Stronger links will continue to be maintained with MoARD, federal and regional research centers, local NGOs and farmers. Existing linkages will be strengthened with regional and sub-regional networks such as RPSUD, AFORNET, FORNESSA and ASARECA and also with international bodies such as ICRAF and CIFOR. FRC, including two branch offices at Awassa and Bedele, has a total of 67 technical staff. The following table depicts skilled manpower of FRC including the branch offices.

Table 1. Technical staff at FRC since 1990

Year	Education level			
	PhD	**MSc**	**BSc**	**Diploma**
1990	-	6	11	10
1998	1	11	6	15
2007	7	30	15	15

Forestry research center has the following research facilities:

- Tree seed laboratory, cold store, seed processing facilities
- Green houses, nursery
- Tree ring laboratory
- Plant protection laboratory (under construction)
- Chemical property analysis laboratory
- Wood property testing labs
- Wood seasoning and preservation labs

4. Conclusions

A lot of concerted effort needs to be taken to deal with all forestry and forest related issues. The designation by the government of land as forest land is an act of policy, usually with legal implications under forest legislation. Outside the forests, however, are many smaller woodlands, hedges, rows and clumps of tree or even single trees which often play an important role in the country and should therefore also have the full attention of forest policy. Important research issues being addressed by forestry and forest products scientists include ensuring the sustainability of forest resources, understanding the complex structure and function of forest systems, ensuring that forest operations and wood products manufacturing are environmentally and socially acceptable and economically feasible and understanding the complex mechanical and chemical characteristics of wood.

Even if the past findings by FRC and other local and international research institutes are fragmented, they can contribute to the implementation of forest policy and the integration of forestry into an overall land use policy of the country. Concerned bodies that have stake in forestry should try to accommodate the view of all Ethiopians by organizing similar consultative meetings for the public. The civil society is also creating awareness on forest policy issues. And definitely research institutes have a responsibility to pave the way when it comes to modification and amendment of the policy with valid scientific justification.

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Wondo Genet College of Forestry and Natural Resources
Melaku Bekele[♣]

1. Background

The idea of establishing a forestry-training institute in Ethiopia was seriously considered not long after the terrible experience of the 1973 famine. The tragedy might have brought the urgent need of conserving, developing and appropriately utilizing of the forest resource of the country into the attention of policy-makers and donors. In October 1977 a week long seminar was organized in Nazareth/Adama, by the then Forest and Wildlife Development Authority (FaWDA) in collaboration with Orgut–Swedforest Consortium as consultant. As indicated in the report of one of the working groups in the seminar, the need for an institution that would cater for forestry education was keenly presented.

At the end of this historic seminar in Nazereth/Adama the participants ended their deliberation with a momentous recommendation of starting forestry education in Ethiopia. Then and there, the agricultural and handicraft school run by Norwegian Lutheran Mission at Wondo Genet was chosen to be a convenient site for starting forestry training. With hundreds of hectares of natural forests inside the compound, and such field schools like Shashemene-Munessa natural and man-made plantations, Abiyata-shalla, Bale Mountains, and Awash national parks, and various wood-based factories within a reasonable distance, Wondo Genet was in fact found to be an ideal location for forestry training. It was named, Wondo Genet Forestry Institute.

The first diploma level forestry training was then commenced in 1978. Financial and technical assistance came from Swedish International Development Authority (SIDA). At the time of commencement of the program there was general shortfall of time to make the necessary preparations that would normally be required to establish such an institution. The limited buildings and facilities that were available from the time of the Norwegian missionaries served the purpose, nevertheless. A course

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syllabus was adopted from similar level of Forestry College in Tanzania and Uganda. Teaching and management staff were soon recruited comprising an Ethiopian principal, a head of Academic Affairs from Great Britain, expatriate lecturers from Sweden and Norway, and a few guest lecturers from FaWCDA and elsewhere in the country. With this limited facilities, but reasonably efficient, the first 21 forestry trainees started the program on 23 January 1978.

2. Successes

From diploma to MSc education

Wondo Genet College of Forestry has been offering training at diploma level uninterruptedly for over two decades. In 1996/97 the program was raised to BSc level i.e. after the transfer of the Forestry Faculty at Alamaya University. Prior to this a two-year Degree program was initiated for diploma holders in forestry and agriculture in 1986. This program was supported by SIDA, and run in collaboration with the Swedish University of Agricultural Sciences (SLU), the responsibility of issuance of the Degrees being that of SLU. This program lasted for four years and resulted in 44 Forestry graduates. Following this, Wondo Genet was accredited in 1988 and re-named, Wondo Genet College of Forestry (WGCF). At the establishment of Debub University in the year 2000, the College was re-organized as one of the constituents of the University.

Starting from 1994 a joint Master of Science (M.Sc.) program in forestry was operating in the college through collaboration of WGCF, SLU and AUA. Forty-five graduates in three batches have obtained their M.Sc. degrees in three areas of specialization: Farm Forestry, Natural Forest Management and Plantation Forestry. After 2004 the college took the full responsibility to run the M.Sc. program in Farm Forestry and Production Forestry. Following the policy change by the Ministry of education in 2003 the Diploma program was terminated.

Currently, the College runs undergraduate programs in General Forestry, Farm Forestry, Production Forestry, Natural Resource management, Wildlife and Ecotourism, and Soil Resources and Watershed Management. Farm and Production Forestry are also provided at graduate level.

International co-operation

Besides its extensive working relation with many national institutions, the College has also built a cordial practical relations with Swedish Agricultural University (SLU), African Parks, CIFOR, Oregon State University (USA), Dresden University of Technology (Germany), University of Helsinki (Finland), Moi University (Kenya), Kordofan University (Sudan), Sokoine University of Agriculture and Mwuka Wildlife College (Tanzania), Gembloux University (Belgium) and ICRAF based in Kenya.

Infrastructure and other facilities

The Swedish International Development Agency (Sida) has been providing vital and continuous assistance for the development of the College through technical, material and financial support. Sida assistance has made possible the development of WGCF into a centre of excellence in forestry in the country and as a competent institute in Eastern Africa; and now the College has put in place all the essential ingredients that would enable it to mature into prominence in areas of natural resources training and research.

a) From a single one room small reading room, a big library with a capacity of over 300 students has been built with a considerable extension recently finished. The library is rich in recent publications in forestry and natural resources with annual supply of new books and journals.

b) The College started without a laboratory; it then built one general lab in 1985/86. Now one general, three specialized laboratories (for soils, pathology and wood science) are built and are being furnished with essential equipments.

c) A center for Geographic Information System (GIS) is being furnished with the necessary instruments and softwares to serve extended customers beside its basic aim of providing training to students as well as staff.

d) Classrooms, dormitories, cafeteria, staff houses and student lounges, are more or less in a satisfactory condition, if not sufficient in quantity. The construction of sport fields that includes football, basket and volley ball fields, and a tennis court are completed.

3. Human resource development

At the start, except for a couple of Ethiopians, all teaching staff were expatriates. Now, Wondo Genet has 9 PhD, 16 MSc, and 13 BSc holders; a total of 28 teaching staff members are on their study leave abroad – out of which 14 are working for their PhDs.

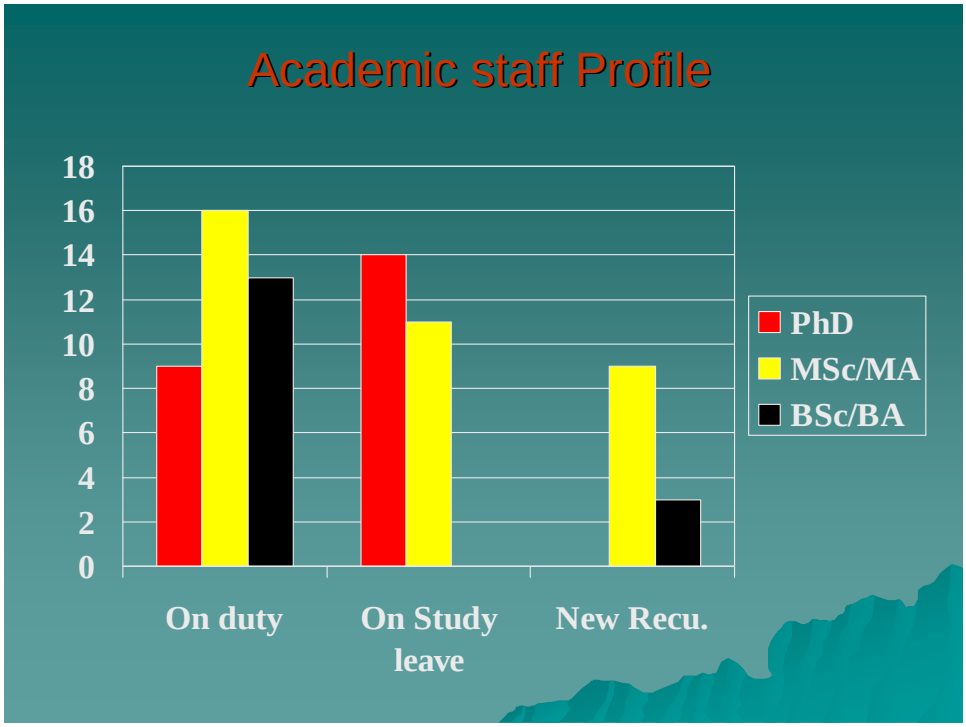


Figure 1. Academic staff profile

The diversity of specialization among the teaching staff is also on the rise. We have now staff in areas of various forestry fields (sericulture, management, wood science, seeds and nursery, surveying, economics, etc.), soils, agro-forestry, ecology, environmental science, rural development, and sociology. A number of staff on study leave doing their PhD deals with aspects of development issues of Ethiopia. Their

return will enrich the staff providing a missing link between education, research and development. Our strength in GIS, both in terms of trained human power, equipment and software has come to an excellent stage that we are now preparing a program to extend our services to all in need of our assistance. With the help of the DIF fund the capacities of the GIS centre, the Computer Unit, the library as well as the laboratories will be further enhanced.

4. Research

There are about 15 on-going disciplinary research projects focusing on different aspects of forest, soils, biodiversity and ecology and are funded by SIDA/SAREC, EIAR, AFRONET, ESTC, and HU. Together with SLU, the College initiated what is called Development Oriented Interdisciplinary Thematic Action Research (DOIT-AR) with Sida fund. DOIT-AR aims to work together with communities and households to achieve a management system that enables sustainable use of natural resources to bring livelihood improvement. This goal is to be the critical point of departure in our education and research undertakings. Currently about 18 projects in three sites (Wondo Genet, Langano and Ashoka) are run by 45 researchers from the College and other departments of Hawassa University. In these projects about 350 households are directly attached. The technical/expertise input of CIFOR in the program is found to be very critical.

5. Income Generating Unit

The Income Generation Unit (IGU) is an important part of the College. These include: Forest products (poles, lumber, fuel wood and construction), Wood and Metal Workshop (Furniture), Farm (cereals, sugar cane and Coffee), Bee unit and dairy farm. An all purpose conference hall & bungalows were built, and will be ready for service in a couple of months. Connected to the wildlife and ecotourism training, design work is going on to build eco-lodges in the middle of the College's forest. A project document constituting plans to reorganize and transform the Unit to a business enterprise is presented to the University management for approval.

6. Plan in education and research

In line with the strategic plan of the Hawassa University and the higher education sector capacity building strategy of the government, WGCF-NR is diversifying its programs at BSc and MSc level. Accordingly, at the BSc level, Natural Resource Economics and Policy and Environment Information Science will be opened in the next two years. At MSc level the following programs will be started within the next three years: Dry-land Forestry, Forest Biology, Agro-forestry and Soil Fertility Management, Natural Resources Economics, Watershed management, Wildlife Management and Rural Development Studies. The curricula for these programs are ready for external review that is planned for December 2007. The opening of these new programs in the college is expected to increase student's annual intake substantially. The college also gives due consideration for the expansion of different physical, educational and sport facilities that can accommodate the increasing number of students. DOIT-AR implementation was not without problems. Beside the longer time needed to re-orient the researchers in the new approach with only conventional experience, staff time, staff turnover, and poor incentive system remained some of the major constraints. In order to overcome such limitations, the College found it necessary to institutionalize DOIT-AR. To this end, the College has prepared a project document to build a centre to run such research on more permanent basis continuing with the already accumulated experience.

The College also plans to:

- Improve its national contribution by developing clearer role in the areas of forestry and natural resource management.

- Develop a shared vision among foresters (WG Alumni has been legally established through the assistance of the College).

- Document and sharing forestry information/data for researchers, extension and development agents as well as educators (Forest Data Centre work started).

- Help create enabling policy environment and knowledge pool to develop the forestry/NR sector; familiarize existing NR policies and laws (seminars, workshops, training)

Part IV

Experiences of Participatory Forest Management

Participatory Forest Management in Oromia Region of Ethiopia: A review of experiences, constraints and implications for forest policy

Martin Neumann[♣]

1. Background and challenges in forest management in Ethiopia

In the early 1900s, the forest cover was about 40 percent of the country's total land area. By the 1950s, the forest cover had shrunk to nearly 16 percent. Currently, only 3 – 5 % high forest covers the total land in Ethiopia. There is about 3 percent annual loss of the forest resources of the country due to deforestation and degradation through heavy exploitation resulting from a high demand for forest products for fuel wood and land for cropping and grazing (EFAP, 1994). The other reasons causing accelerated natural forest losses are high population growth and hence pressure on forest resources for expansion of farmland and new settlement areas; unregulated access to forest and tree resources (i.e., lack of clearly defined property rights and ownership) and much attention is not given to other tree plantings.

There are other problems in the forest sector of the country including afforestation which is often not successful (only nursery/tree plantings) and poor facilities and less staff (mainly due to high staff turnover, poor equipment, no transport, poor management). Moreover, there have been changing responsibilities and institutions of forest resources. Over the last three decades, the country had changed policies, strategies, programs and institutions regarding conservation and management of natural resources (like forests and wildlife). For instance, by 1980, Forest and Wildlife Conservation and Development Authority (FAWCDA) was established by the virtue of proclamation No. 192/1980. In 1984, FAWCDA was dissolved and Forestry and Wildlife Conservation was included into the Natural Resources Conservation and Development Main Department (NRCDMD) in the Ministry of Agriculture. The Ministry of Agriculture was separated and Ministry of Natural

[♣] GTZ –Ethiopia, Doddola SUN Project

Resource Conservation and Environmental Protection established in 1992. Again the Ministry of Natural Resource Conservation and Environmental Protection was dissolved and forest and wildlife and other natural resource protection and conservation departments were put under the Ministry of Agriculture (Seyoum and Negussu 2004). There has been over regulation by government which makes use of forest products illegal and regulations are not implemented/cannot be implemented properly. During the socialist, Derge, era, the government followed the protectionist approach, believing that excluding the local people from the forest conserves forests. However, local communities, who mainly depend on natural resources particularly forests, have no other income generating options. Thus, most forest conservation, development and protection policies, strategies and programs were unsuccessful during the military government of Ethiopia.

2. The Doddola forest situation and the WAJIB approach

The area is among the degraded parts of the country with over 83,000 hectares of degraded natural forests due to unregulated access to the forests for various activities including long time logging and grazing. The deforestation rate was 3 percent or1600ha/year in the area. The efforts taken before the project include establishing protection committees, area enclosure and seedlings plantations. However, these and related efforts were unsuccessful for they did not ensure local community participation.

GTZ SUN Doddola Project in the Bale and Arsi Zones of Oromia Regional State started as an Ethio-German bilateral cooperation project in 1995 with the objective of developing a feasible forest conservation approach. The implementation is with the help of OARDB and GTZ. The first phase focused on implementation of IGS and conventional approach with no impact on forest cover.

WAJIB started in 2000 as the first forest user group in the country. WAJIB is the abbreviation for Forest Dwellers Association in Afaan Oromoo. The project tries to conserve the forest through community forest management that creates Forest Dwellers Association up to 30 households in a group on about 400 hectares of forest

block. The idea emerged from the local communities. The approach creates sense of ownership and responsibility in the local communities. The regional council approved the approach

3. Basic steps to WAJIB implementation in Doddola

Step 1: Identification

In WAJIB approach, preconditions are that local communities, government and other bodies are concerned about the current situation of forests. Second, unregulated accesses to forest resources have resulted in over exploitation and unsustainable uses of these resources. Third, willingness of local government to hand over use rights of forest resources to local communities.

Given the preconditions, potential forest areas identification for community based forest management has been made through meetings with local leaders/elders and community members. The importance of meeting with elders and local communities is to explain objectives of participatory forestry, national or regional forest policy, legislation and strategies. Forest experts have also taken part in the selection of forest areas.

After selecting potential forest areas, the next activity is identifying primary stakeholders to participate in the WAJIB. The stakeholders may include a community, a public entity or a group that is more related to the forest and depends on it for livelihood; has some customary rights of forest use that has gained social recognition and willing to assume some task and responsibility for a given forest management unit in partnership with the government. Since there are many potential stakeholders, primary stakeholders that will become partners in forest conservation and implement WAJIB should be carefully identified.

In a given village, there are forest dwellers and non-forest dwellers. As a result, it is important to reach consensus with the whole village community on WAJIB implementation. This helps to increase understanding of the concept and to agree that the major responsibility of forest conservation and hence the direct benefits go to the forest dwellers.

Step 2: Familiarization

Under this step, gathering information about present status of the forest resources, impacts of forests on livelihood of dwellers and new ways to transform the existing situation of forests is important.

In assessing the existing forest conditions, deterioration of forest resources does not necessarily imply that the causes of forest degradation are activities of the local community. Rather the reasons are often complex and may revolve around particular situations and the forest service's procedures or other external factors.

Identifying forest uses includes multiple uses of the forest (both direct and indirect uses of forests), the major forest products collection areas, relative importance of different forest products and gender and age categories of the forest users. In such activities, forest experts help the local communities in preparing local forest use maps in order to identify which products are collected and from where.

Analyzing livelihood strategies of rural communities is not limited to uses of forest products. It includes capabilities, assets and activities required to support lives. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both in the present and in the future, without undermining the natural resource base. In analyzing livelihood strategies of local communities, it is a key to understand the role forest plays in the general coping mechanisms of the local community particularly the relationship between forests, crop production and livestock rearing.

Examining existing local institutions and power relations help to identify relative power strengths of groups in controlling access to the forest, establishing rules and sanctions and solving forest related problems. Local formal and informal institutions may play vital role in sustainable and effective management of forest resources.

In identifying the major forestry problems like unregulated access, overgrazing, illegal logging and negative influence from outsiders, the concerned bodies mainly forest experts can play a significant role. Similarly, these bodies can help the local

communities in tackling these and related problems through different mechanisms such as new rules on forest use, local management plans, sanctions and benefits sharing.

As the number of inhabitants increases in a WAJIB, the risk of forest degradation also increases. Thus, determining carrying capacity of the forest areas in WAJIB managed areas is very important. According to WAJIB guidelines, the estimation of carrying capacity is done by calculating the approximate forest area that would provide one forest dwelling household with the same cash income (through the sale of wood products and utilization of the forest pasture on a sustainable basis, including food crops grown on a small farm plot in the forest, if any) equivalent to a farmer household outside of the forest that makes a living through crops grown on an average area of farmland around the area (Oromia Bureau of Agriculture and Rural Development and GTZ, 2005).

Step 3: Negotiation and planning

Committee from both forest and non-forest dwellers involve in defining forest boundaries. The committee and the representatives of the district forest service are responsible to demarcate the peripheral forest boundary in the village to decide which areas are in forests and hence will be under WAJIB. Boundary demarcation is important due to one or more of the following reasons. First, the forest boundary has been demarcated long ago and the boundary has physically changed due to the introduction of other land use types. Second, the community does not acknowledge or recognize the existing boundary. Third, the forest service has no strong hold over the forestland.

After delineating the peripheral forest boundary, it is a key to demarcate the forest and village boundary as both village administration and community do not exactly know their common boundaries with forests. Representatives from the district Forest Service keep records and prepare a boundary description so that the records can be used for mapping purposes later on.

In order to get the figure on the size of forest dwellers and information regarding the settlement patterns in the forest areas, conducting a settlement census is important. This is useful in the process of forest management block formation.

Once information is available on the size of forest area, human population, settlement patterns and carrying capacity of the forest area, it is possible to identify forest management blocks like a forest patch and a watershed area. The WAJIB management blocks are not large (about 500 ha or less) to create convenient forest management systems.

After formation of forest management blocks, all forest dwellers meet to discuss about WAJIB in detail and to conduct the election of an initiation team, which is an initiation team of a small group of people (up to 5 individuals) that are elected in a meeting of forest dwellers. This team is responsible to launch WAJIB in their respective blocks.

Forest experts facilitate meetings among the groups of adjacent blocks and the groups of initiation team walk along the boundaries of the block and make their final agreements. After all concerned parties reach consensus, preparation of a forest block map takes place. This enables to determine the actual size of the block and the carrying capacity of the forest areas. The initiation team will obtain the information about the size of the block and the carrying capacity to help them develop eligibility criteria for selection of members.

The initiation team sets eligibility criteria to select WAJIB members from among the forest dwellers. The selection criteria are the same for many forest management blocks. However, the selection criteria are not required if the number of dwellers is less than the carrying capacity of the forest areas. The eligibility criteria include a homestead is permanently occupied by a family; a homestead was established before a specified date; the member has interest in the establishment of WAJIB and an individual must be a member of the village. Once the eligibility criteria are developed, the initiation team selects eligible members from among the inhabitants of the forest block based on these criteria. Non-eligible individuals prepare to leave the forest block.

Before handing the forest management to the WAJIB, it is important to make initial forest resources assessment, which can serve as a baseline for future monitoring and valuation of the impact of community forest management on the stock of forest resources. Representatives of both the forest service and the WAJIB groups can do the assessments.

All WAJIB groups pay annual fees in the form of rent for natural forests or in the form of revenue sharing in the case of plantations. These fees are collected by the district Forest Service in exchange for the exclusive use rights it was granted.

Step 4: Institutionalization

All WAJIB of forest blocks democratically select executive committee of five members: Head, Deputy Head, Secretary, Cashier, and one additional Member. The committee is responsible for various activities such as formulation of a management plan (together with the forest service), dealing with cases involving violation of bylaws by individual members, developing measures of protecting and developing the forest.

At the stage of preparing a Draft Forest Management Plan, all the information needed for the plan has been collected and agreed. The management plan contains a detailed written consensus on the future management of the forest and the duration of the plan, which is normally 3 – 5 years. This helps to ensure that no individual or individuals can take arbitrary decisions about the forest.

Since WAJIB is implemented on the state forests with exclusive use rights to the organized groups, arrangements require clearly specified rights, duties and obligations in the form of signed agreement between the government and the organized groups.

Forest Block Allocation Agreement is the binding legal document between the government and WAJIB group to confirm the terms and conditions of forest use and to create a sense of ownership. The representatives of both parties and the village

administration sign the agreement. The date on which the signing is done is taken as the date of the agreement and the establishment of WAJIB is effective beginning from this date.

With assistance from the district forest service, WAJIB groups develop the internal bylaws, which contains objectives of the bylaw, organizational procedures, the executive committee, the functions and powers of the various committees, rules (general, on forest management, on forest use, etc.) and penalties and procedures for handling offences.

Step 5: Implementation

Successful implementation of WAJIB requires real commitment and political will from all concerned bodies. At the stage of implementation, forest experts need to support a WAJIB in a number of ways. First, local communities need technical support and skills development in some areas like silvicultural options for a range of objectives and for different forest types, determination of sustainable yield (allowable harvest) for a range of forest products and marketing of forest products. Second, forest experts can support a new WAJIB group in developing skills and knowledge to run meetings effectively, organize the management of the forest (development, protection and harvesting activities), maintain good records, manage revenues from selling of forest products, fines and other sources and solve problems. Third, local communities may require assistance from forest experts in assessing market development (like product studies and promotional activities) and identifying income-generating activities. Fourth, conflicts may arise among various groups. A WAJIB committee is responsible in addressing conflicts through negotiation, mediation and facilitation. However, such activities may require external neutral bodies and hence forest experts can play a significant role in this regard.

Step 6: Follow up and monitoring

After implementation, the last step is monitoring, which is important to get feedback on the ongoing activities to assess whether or not the terms of the agreement have been fulfilled, and to take corrective action whenever necessary. Moreover, monitoring helps to build managerial capacity of WAJIB groups and the forest services. Oromia Bureau of Agriculture and Rural Development and GTZ (2005) argued that:

Following the learning by doing approach, it is useful to reflect on the experience gained through monitoring and to see if there is anything that should be done differently. For example, the indicators chosen at first may not be very helpful, they may be too difficult to measure or they may not show clearly whether there is movement towards achievement of objectives. It is always useful to reflect the improved understanding that has resulted over time.

Monitoring is the responsibility of the WAJIB management using the annual activity plan as a basis for its monitoring activities. At the end of each monitoring activity, the WAJIB group should be able to judge whether there has been progress or not. Some of the indicators for monitoring include incomes of fuel wood sellers do not decrease, sufficient regeneration of important species, regeneration counts indicate an increase in their number, less number of livestock in the forest and less felling of trees.

4. Results and uses of experiences of Participatory Forest Management in Doddola

After the implementation of WAJIB approach in the Doddola areas in 2000, around 77 forest WAJIB groups in 77 forest management blocks are using the forest on 35,000 hectares in a sustainable manner. In addition, more natural regeneration of forests (up to 15.6% increment in forest cover though community management), healthy seedlings, less number of livestock in the forest areas, diversification of income, more legal selling of forest products, enhancement of eco-tourism and significant reduction in the number of intruders have been observed. The implementation of Forest Dwellers' Association influences the direction of regional

policies in the sense that they take into account the role of local communities in natural resources management. The WAJIB approach in the Doddola areas is the foundation for most PFM projects in the country. This implies that the project has been contributing in conserving natural forests through community based forest management and improving livelihoods of the local communities.

The WAJIB approach is scaling up and has been used in other areas including PFM in the Mojo fuelwood plantation; PFM in Chilimo Forest; PFM in Belete Gera; PFM in coffee Forests (Bonga); PFM in West Hararge and PFM in Chilalo Galema, Arsi. The guidelines prepared by WAJIB are the basis for the manual guidelines preparation of Farm Africa and JICA. There was experience-sharing workshop on international PFM in Addis Ababa in 2006. There are PFM courses at Wondo Genet College of Forestry and Natural Resources, which is part of the success story of WAJIB approach in Ethiopia.

5. Challenges in WAJIB implementation

There are a number of challenges in WAJIB implementation. First, there are poor facilities and less staff in number and quality (mainly due to high staff turnover, poor equipment, no transport, and poor management). Second, there are problems in WAJIB approach monitoring system due to lack of experiences and low level of education of the WAJIB committee members. Third, there are problems of collection of rent payments from forest dwellers and limited carrying capacity of a given WAJIB area. Fourth, there is grazing of livestock in the forest areas and less capacity of self-control within WAJIBs.

6. WAJIB and its implications for forest policy and ownership

The implication of WAJIB approach for forest policies is indicated by a simple formula:

Ownership + Internal Organization+ Technical Support

= Sustainable Forest Development

Regarding ownership, inside Forest Priority Areas (FPA) there is forest block allocation agreement. According to the agreement, state owns the forest areas and resources and the state provides exclusive use rights to the forest dwellers. The agreement is signed between the government and the organized groups. Outside of FPA, the regional government provides group certification for hillsides and certification for individuals' ownership.

7. Measures to strengthen WAJIB groups

The first measure is improving internal organization of WAJIB groups through empowering user groups, clearly identifying responsibilities of stakeholders, setting well-defined by-laws for user groups and institutionalization of the WAJIB groups by creating relations with various government bodies at different levels. The other measure is incorporating participatory forest management practices into regional as well as national forest policy of the country.

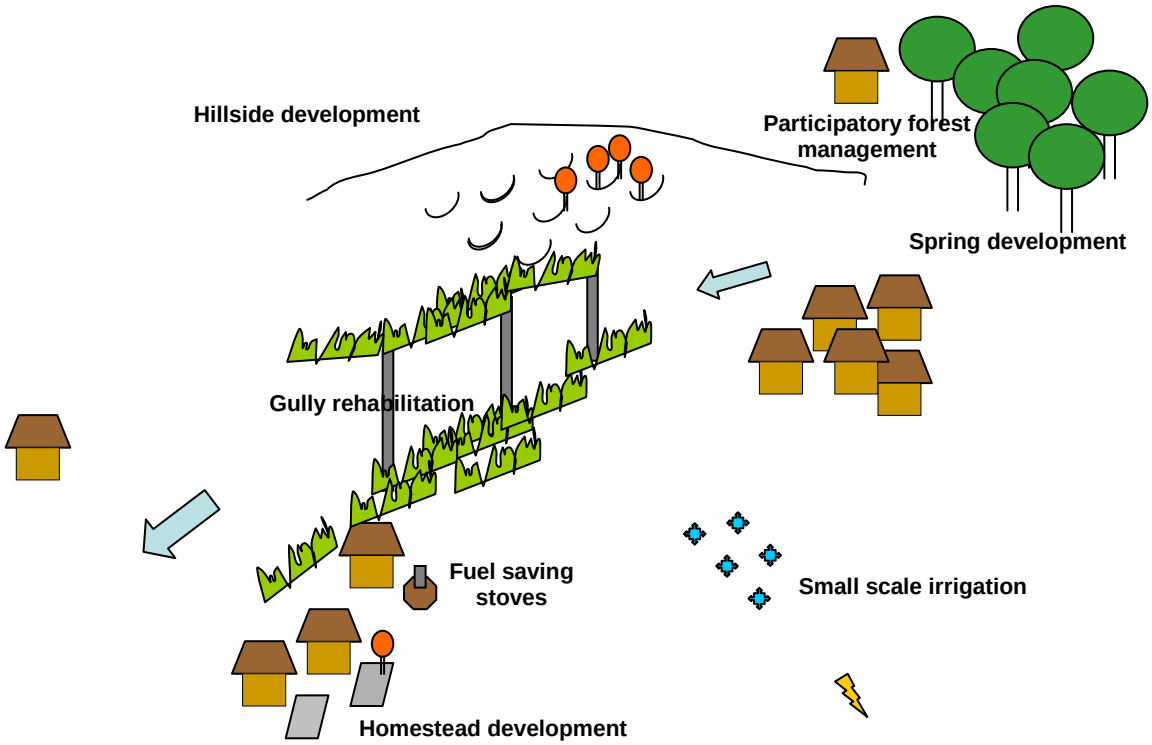
The second important measure to strengthen WAJIB groups is providing technical support. The important technical support is building capacity of the WAJIB groups through training and materials supply from the Forest Department within Ministry of Agriculture and Rural Development. However, such supports are not often enough. Developing extension system for forestry and improving working facilities including transport, equipment and offices is the other key aspect of technical support. It is also important to create conducive environment to implement laws, policies and regulations. Lastly, ensuring institutional stability including government institutions, experts, laws and responsibilities and coordinating support by external donors/agencies/NGOs is also an important technical support.

8. Measures to be taken to increase forest cover

There are a number of measures to be taken to increase forest cover in the country in general and Doddola area in particular. First, encouraging homestead plantations through various mechanisms, increasing woodlots in different parts of the country and facilitating the activities of agroforestry. Second, creating awareness and incentives among local communities about gully rehabilitation and nursery management. Third,

considering the uses of royalties, which is about 45 percent in Oromia. Lastly, improving watershed management.

Watershed Development



9. Some concluding remarks

Generally speaking, there are different challenges to the forest resources of the country including more demand for forest products (energy and construction); large livestock population in the forests and hence over grazing; expansion of agricultural activities and settlement areas from high population pressure; unregulated access to forest resources (lack of clear ownership); changing responsibilities of forests and over regulation by the government.

In Doddola area of Oromia Regional State of Ethiopia, the WAJIB groups (i.e., Forest Dwellers' Associations) have been formed through six steps. The success stories of the WAJIB groups in the Doddola area are more natural regeneration of forests (up to 15.6% increment in forest cover through community management); serving as the

basis for the creation of PFM in different parts of the country like PFM in Chilimo and PFM in the Mojo fuel wood plantation and changing the directions of regional forest policies. Policy implication of WAJIB approach is indicated by a simple formula:

Ownership + Organization + Technical Support = Sustainable Forest Development

Although WAJIB approach has been successful, there are challenges in implementing the approach. Some of the challenges are limited facilities and less quality of staff at *Woreda* level, lack of experience in monitoring activities, difficulties in implementing rent payment systems, limited carrying capacity of a given WAJIB area and large livestock population in the forest areas.

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PFM in Oromia and SNNP regions of Ethiopia: A review of experiences, constraints and implications for forest policy

Teklearegay Jirane, Tsegaye Tadesse and Zelalem Temesgen[♣]

1. Contributions/potentials of Ethiopian forests

Forests offer a wide range of both material and intangible benefits. In addition, forests often have cultural or spiritual values attached to them. Some major roles and contributions of forests to the economy and the environment are highlighted below.

Fuel wood: Fuel wood is the major energy source in Ethiopia. Over 90% of the country's total energy for household cooking is derived from biomass fuels, of which wood provides 78%. For example, in 2002 fuel wood production was more than 90 million m^3 (FAO, 2004).

Wild foods: Wild plants are also important as a food supplement and as a means of survival during times of drought and famine. Guinand and Dechassa (2001) noted that in parts of southern Ethiopia, the consumption of wild food plants appears to be one of the most important local survival strategies and to have intensified due to the repeated climatic shocks hampering agricultural production, thus leading to food shortages.

The wild plant foods are of special nutritional importance as sources of vitamins, minerals, trace elements, dietary fiber and protein. They contribute to improved local food security, augment farmers' income and help overcome some health problems associated with nutrient deficiency (Zemede Asfaw, 1992). The collection of wild plants is basically done in woodlands/bush lands and forest areas. In the more densely populated areas, some of these indigenous plants have been domesticated for home consumption.

Medicinal plants: For over 85% of the population (rural and urban), medicinal plants derived from plant and animal products are the primary source of health care (Girma Deffar, 1998). Among the illnesses that are most often treated with medicinal plants are tuberculosis, haemorrhage, tapeworm, snake and dog bites, and skin and liver diseases.

♣ FARM-Africa/SOS Sahel

Oleo-gum resins: Natural gum and resin producing trees are mainly found in the drier low lying arid to semi-arid lands of Ethiopia, predominantly in the Afar, Amhara, Benishangul-Gumuz, Gambella, Oromia, Somali and Tigray Regional States, with an estimated total area coverage of about 2.7 million ha and an approximate potential production of over 2.5 million quintals (Mulugeta Limenih and Demil Teketay, 2004). Exploitation of olibanum is one of the top employment generating activities in the remotest parts of Ethiopia. At the national level, the number of seasonal workers engaged in tapping and grading is estimated to range between 20 000 and 30 000 per year. In addition, it is also a very important source of income for many rural households (FAO, 1999).

Honey source plants: Studies indicate that there are an estimated 10 million bee colonies in Ethiopia, out of which about 7.5 million are confined in hives (making the density of hives in Ethiopia perhaps the highest in the African continent) and the remaining exist in the forests and crevices. With this high number of bee colonies and surplus honey sources of flora (over 400 honey source plants identified), Ethiopia is the leading producer of honey and beeswax in Africa. On a world level, Ethiopia is tenth in honey production (FAO, 1998).

Spices: Spices are economically very important indigenous cash crops. They grow wild predominantly in the southwest montane moist evergreen forests of Ethiopia. Some of the common spices for domestic use as well as export include cardamon, ginger, coriander, cumin, capsicum and turmeric. Spices have a considerable income generating potential especially for the smallholder farmers.

Bamboo: The Ethiopian natural bamboo forest is about 1 million ha, which is about 7% of the world total and 67% of the African bamboo forest area. The low natural bamboo forest covers more than 800,000 ha and the highland natural bamboo forest, more than 300,000 ha. The bamboo forests are found mainly in the south-west, south and central part of the country (Kasahun Embaye, 2003). Bamboo is a preferred material for various uses due to its straightness, high strength, light weight, easiness to work with, suitable fiber for pulp production and absence of bark.

Forests as coffee shade: Coffee accounts for 60% of the country's exports and it is estimated that 25 % of the Ethiopian population either directly or indirectly depend on coffee for their livelihoods (GoE, 1998). Ninety-four percent of Ethiopia's coffee is produced by 700,000 smallholders, who grow it either in their garden or in the forest as semi-forest coffee (Oxfam, 2002). Four types of coffee production systems can be distinguished in Ethiopia: forest coffee, semi-forest coffee, garden coffee and plantation coffee. The first two types, forest coffee (grows completely wild and unmanaged deep inside the less accessible parts of the forest) and semi-forest coffee (grown and produced in the forest under the canopy of shade trees) account for 10% and 35% of Ethiopia's total coffee production respectively (Steve Sepp, et al. 2002).

Forests as inputs for crop and livestock production: The substantial and widespread role of forests, woodlands and trees as inputs to crop and livestock production is also widely acknowledged even though few studies have quantified those contributions. In shifting cultivation systems involving fallow systems, the natural regeneration of trees and other plants helps to restore soil fertility and reduce competition from weeds. In agro-forestry systems, woody species 'mine' up nutrients through their roots and release them to the surface soils through their leaves. Crop production increases due to improvements in soil fertility contributed from agro-forestry species. Some 35% (175,000 km^2) of the Ethiopian rangelands are found under forest cover (mainly bush and shrub). Trees and shrubs constitute a major source of fodder for Ethiopia's 35 million livestock heads. Particularly for 90% of the country's cattle and sheep, fodder deriving from forest resources is 10% and 60% of the required feed in wet and dry seasons respectively.

Wildlife: Forests are habitats of wildlife. Tourism based on wildlife resources (as in the Semien and Bale mountains, for instance) or scenic forest areas (such as Adaba-Dodola and Wenchi) brings considerable foreign revenue to the country.

Various income types: Forests tend to offer possibilities for income generation in rural areas where few other opportunities may be available. Enterprises based on forest products are the source of considerable income and employment. Forestry employment, collection and sale of forest products, production and selling of seedlings and small forest-based enterprises provide incomes that contribute to meeting household needs and are important for rural investment. Exports of forest

products (wood and non-wood) generate significant foreign exchange. Forest products produced or collected for family use or sale are very important for the household economy. At local community level, the economic importance of forest products is most evident when these products are scarce and prices are high. For example, in some urban areas, families are already spending a significant proportion of their income on fuel wood and charcoal. In addition, forest resources also play a key role in protecting watersheds, buffering against climate change and conservation of biodiversity.

2. Forest management issues

According to Reusing (1998), the deforestation rate in Ethiopia is 163,600 ha per year. This figure is consistent with previous estimates of annual deforestation rates of 150,000-200,000 ha (MONREP, 1994). The process is going on unabated. Unsustainable human activities in forest lands lead to not only true deforestation but also forest degradation. The situation with woodland and shrub land resources is very similar. The acacia woodland in the Rift Valley, for example, is a clear and recent living example.

Decreases in forest cover in Ethiopia have been linked to degradation of fertile land, declining land productivity, loss of biological diversity, shortage of fuel wood, construction materials and other goods and services provided by forest resources. Expansion of desertification particularly in the dry land areas of Ethiopia is another consequence of forest destruction, and is followed by frequent drought and famine. Such natural calamities have already claimed the lives of too many people in many places in Ethiopia. The overexploitation of Ethiopia's forests in order to meet the ever increasing demands (wood, non-wood, forest land, etc.) leads to a further decline in the potential of these resources to provide economic and environmental services.

A number of factors such as poverty, high human and livestock population pressure, poorly developed farming systems, etc. act as driving forces (or causes) of deforestation and forest degradation as they cause massive removal of the vegetation cover to meet increasing demands for crops, grazing and fuel wood. Some of the major factors responsible for the current trends of the forest situation in Ethiopia are briefly explained hereunder.

2.1 Population growth leading to expansion of farmlands

The current population is estimated at 75 million and has doubled within the last 30 years. The growing population has led to shrinkage of land per capita available for agriculture. This is further exacerbated by the loss of farmland due to land degradation.

This leads to an increasing demand for agricultural land, which usually ends up in converting more forest land into farmland/grazing land. Many farmers (probably the poorest) use areas that are highly susceptible to degradation (and should not be used for agriculture). Once the productivity of their land falls below acceptable levels, they move to new, mostly forestland that is marginal for agriculture – until they have to move again.

According to FAO (1994), more than 80% of deforestation or forest degradation is attributable to agricultural expansion. The processes differ from place to place but in most cases, forestland is converted to cropland and/or pasture.

2.2 Livestock

With 35 million tropical livestock units (TLU), equivalent to 80 million livestock heads, Ethiopia has one of the largest livestock populations in Africa (FAO, 2003). It is estimated that over 80% of the livestock are found in the highlands (with an estimated stocking rate of 160 TLU per km^2), causing widespread overgrazing and land degradation on both arable and grazing lands. The low survival rates of planted seedlings in re-afforestation programs are partly attributed to the free roaming dense livestock populations. In the lowland areas, overgrazing by livestock leads to soil compaction and damage to natural regeneration.

2.3 The widening gap between demand and supply of forest products

There is a huge gap between demand and supply of forest products and services in Ethiopia. For example, according to MONREP (1994), the demand for fuel wood in 2020 will reach 100 million m^3 against a supply projection of only 7.7 million m^3. The source of energy in Ethiopia is generally based on biomass for which wood fuel is the major source. As indicated in the previous section, when wood becomes scarce,

rural households switch to the use of crop residues and animal dung for fuel, thereby significantly reducing the amount of nutrients returning to the soil. This in turn has negative effect on crop productivity and ultimately on food security.

2.4 Who owns the forests?

Most of the forests and woodlands of Ethiopia are in a "fatherless" status. One can clearly see that the current management set-up is unable to safeguard the forest resources. Farmers tend to refrain from investing in forest development unless they are certain that ownership of the resources is clear and secure. Lack of clarity in forests and woodlands ownership together with an inability on the part of government structures to protect the forests has resulted in 'the tragedy of the commons'.

2.5 Organizational issues related to the Forest Service

The organizational tradition of the Forest Service in Ethiopia is characterized by frequent restructuring. This has led to a fast turn-over of staff, low morale of employees, discontinuation of programs and projects, confusion of responsibilities and mandates, misplacement of documents and files resulting in loss of institutional memories, and progressive weakening of operations (Demel Teketay and Tesfaye Bekele, 2005). The good intentions for a better integration of forestry and agriculture so as to create synergy, has resulted in less attention to forestry due to sectoral competition for scarce resources.

2.6. Poor implementation capacity

Proper management of the forest resources of our country has always been constrained by insufficient budget allocations, staffing and facilities. This situation has in fact created an authority vacuum, sometimes making forests susceptible to invasion by immigrants from non-forested areas.

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.

Clear objectives for forest management undertakings are also missing. Access to available technical knowledge is very limited. There is a lack of even the most basic

databases to base decisions on in relation to forest management policies and regulations.

The low adoption of some practices, for example agro-forestry technologies, is an indication of inadequate forest extension services among rural communities stemming from poor structure and operations of the responsible institution. This is further aggravated by inadequate availability of suitable technologies for the various agro-ecologies and farming systems.

The inability of professionals to come forward with the real contributions and values of Ethiopia's forests and vegetation resources (in economic, environmental, social, spiritual terms) has contributed to the low level of attention to the sub-sector by policy-makers.

3. The FARM-Africa/SOS Sahel joint Participatory Forest Management Program (PFMP)

FARM-Africa and SOS Sahel Ethiopia commenced the Participatory Forest Management Program (PFMP) in Ethiopia and Tanzania in 2002. In Ethiopia, the program includes FARM-Africa's Bonga Participatory Forest Management and Reproductive Health Project (BPFMRHP) and Chilimo Participatory Forest Management Project sites and a similar SOS Sahel Borana Collaborative Forest Management Project (BCFMP) site in Liben *woreda* of Gujji Zone and Arero and Yabello *woredas* of Borana zone, Oromiya Region. In Tanzania, the program operates the Nou Joint Forest Management Project in the Nou Catchment Forest Reserve in Babati.

The two NGOs are working to catalyze PNRM within policy and practice. They both have strong partnerships among each other and with relevant government agencies. Based on experiences from ongoing programs, a large scale community based natural resource management program has been launched end of 2006. The program covers 14 *woredas* of the Bale mountains.

4. How PFM works

The implementation of PFM involves allocation of forest units to forest user groups (FUGs). Using participatory techniques, boundary definitions, forest resource assessments, mappings, etc. are made by consensus. Once the forest block boundary is defined, the local community forest managers and government forestry department sign an agreement specifying rights, obligations and duties of both parties. The agreements contain sanctions in cases of non-compliance. There are current and future use rights for the local communities including revenue sharing from any sale of forest products. In PFM, there is a partnership between Forest Department (the government) and Community Forest Management Groups. This is manifested through participatory decision making.

5. PFM processes

According to FARM/SOS experiences, PFM involves three basic processes. The first is the investigation process which includes gathering of forest use/ user information, participatory resource assessment (to produce baseline information) and stakeholder analysis. Stakeholder analysis is a key to identify the different stakeholders in terms of direct and indirect resource uses. Based on this, the forest management institutions are set up and this is followed by working out the rights and responsibilities of the various interest groups. The success of PFM depends on the existence and establishment of well-functioning community-based institutions. During this process, it is worth considering the availability of existing local institutions, such as the *Gada* system in Borana that could contribute to the success of PFM.

The second process is about negotiation in the areas of forest management planning and management agreement formulation. Forest Management Plan incorporates key actions such as forest protection, utilization, development and monitoring. The local communities fully participate in the preparation of the plan and include their decisions of how to manage the resources. This is to reduce the impositions of rules and regulations from top to down- the traditional approach, which has been unsuccessful in most cases. Forest management agreement clearly specifies benefit-sharing arrangements between the government and local communities, rights and responsibilities of both parties. The government and local communities negotiate about the rules, regulations, rights and responsibilities.

The last process is implementation of PFM in which the local community acts as forest managers. As forest managers, they undertake various activities such as assessing forest stock through participatory forest resources assessment, resolving conflict among forest management group members and other groups, making by-laws and internal regulations, implementing forest management plans, protecting and controlling forest resources, forest development and monitoring and evaluating participatory forest management systems.

The whole process involves the changing of the traditional roles of forest professionals to facilitators, capacity builders, advisors, analysts and generators of new technologies.

6. Achievements gained so far

Forest areas under community management (facilitated by FARM-SOS) in the two regions are over 90,000 ha. In Oromia, there are two sites with 4,944 hectares in Chilimo (with eight cooperatives and one union) and 80, 066 hectares in three sites of the Borana zone. In SNNPR state the forest areas under PFM is located in Bonga, Kafa zone covering about 8,950 hectares with three cooperatives.

Achievements and benefits gained from the establishment of PFM can be seen from environmental, economic and social perspectives. Environmental benefits of PFM include that four Forest Priority Areas are under community management and in better condition, PFM improves the outlooks of local communities and hence they start investing in planting tree seedlings and nursery management, serving as a seed source for many indigenous tree species (community collecting seed and selling) and minimizing pressures on forest resources.

Some of the economic benefits include that the forest user groups get more revenues from sell of forest products (for instance in Chilimo, over Birr 600,000 revenue was generated and shared between the local communities and the government in 70:30 ratio respectively). The share of the communities will be used for community development activities. Forestry's contribution to the rural economy and livelihood has increased over time. About 85 percent of community members are involved in

livelihood diversification such as irrigation, beekeeping, forage development, poultry and vegetables. Thus, there is an ongoing asset building within the community using benefits from forest resources and livelihood diversifications.

PFM provides different social benefits to the local communities and Government staff in terms of several capacity building trainings provided in the areas of PFM, PRA, conflict resolution, institutional and financial management, monitoring and evaluation and gender related issues. Villagers developed participatory planning skills and started soliciting other funding sources; strong social cohesion for collective action formed; communities are being empowered to run their institution and manage forest resources and change of attitude towards natural resources (PFM getting wider acceptance at different levels).

7. Opportunities for PFM in Ethiopia

There are enabling policy environments for PFM in the country. The fundamental one is the Constitution of the Federal Democratic Republic of Ethiopia (Proclamation No.1/1995). It provides the basic and comprehensive principles and guidelines for environmental protection and management. Among other things the Constitution states that everyone has the right to live in a clean and healthy environment (Article 92) and the government will make every effort to provide such an environment. There is strong government support for participation in all enacted policies like Environmental Policy of Ethiopia, Conservation Strategy of Ethiopia, Biodiversity, and ARDS strongly support community participation.

There is already over 10 years of practical experience in applying PFM in various parts of the country, which helps to build upon a good experience for scaling up. Over the past years, there are encouraging results achieved particularly in the areas of forest development and livelihood improvement.

For the first time in the history of the country, there is now a Federal Forest Policy and a revised Forest Proclamation. Such actions taken by the government will create opportunities for strong PFM initiatives in different regions of the country. Regional government forest proclamations (for example Oromia and SNNP) are also supportive for the implementation of PFM. In addition, local communities are

enthusiastic about PFM. Emerging markets through Clean Development Mechanism, forest certification, etc. are also promising and encouraging

8. Challenges to PFM implementation and scaling up

In implementing and scaling up PFM, there are a number of problems. First, regardless of the introduction of PFM, there is a continued forest loss (some 163,000 ha annually according to Reusing 1998). In some instances, it may be too late to save the forests. Second, the Federal Forest Policy and Proclamation are not explicit regarding PFM and hence there may be no ground to initiate scaling up. In terms of both administrative and technical support, linkages between federal and regional bodies are weak. There is absence of regularization in the sense that there are no PFM Job positions (and no clear Job descriptions for existing forestry positions) at different levels.

It is challenging to implement PFM under government regular program as PFM development thus far is only limited to projects (i.e., it depends on donor support). There are differences in the thinking of professionals and rural people and hence there is the need for *facilitating* instead of *policing* roles from the side of professionals. In many cases, the number of forest users is beyond the carrying capacity of the resources resulting in conflicts among forest users. FUGs are unable to get recognition as CBOs (except in the form of cooperatives). The difficulty is in maintaining the establishment criteria of cooperatives for such a conservation group. There is a need for proper institutionalizing of Forest User Groups.

9. Lessons learned

PFM is a viable option for forest conservation. In implementing PFM, consideration should be given to existing traditional institutions. The experience of PFM indicates that local communities are capable of conserving and managing forests. Regional governments provide courage and they are also flexible in facilitating the creation and implementation of community-based forest management. PFM should not be regarded as a quick fix and a panacea. Lessons were also drawn that PFM contributes to local governance and democratization processes. The key challenge is putting in place a system of forest management that works in the context of increasing resource demand and land use competition.

10. Recommendations for strengthening PFM

The following are some measures to be taken to encourage and enhance the implementation of PFM:

- There should be development of implementation guidelines and decrees for the policies and proclamations.
- It is important to institutionalize PFM through creation/revision of job positions and descriptions to promote PFM/community participation.
- Legal recognition for conservation based community organizations
- Provide for the formulation of long term Federal and Regional Forest Programs in the direction of community participation for sustainable rural livelihood development.
- Harmonization of other relevant policies to ensure consistency.
- Ownership rights and certificates/titles for collectively managed/owned forests (communal ownership)

Additional recommendations for increasing forest cover in Ethiopia

- Allocation of hillsides and degraded lands for private/group tree planting (with clear use rights)
- Promotion of PFM approaches
- Capturing opportunities (CDM, Forest Certification)
- Forestry can contribute to food security (promote tree planting where appropriate)
- Multi-purpose management of forests
- Adjust and implement existing strategies (EFAP, NCS)
- A reasonable level of decentralization in forest governance
- Private sector investment

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A review of some forest management experiences from Ethiopia and Tanzania

Håkan Sjöholm[♣]

1. Background on forest cover

Historically, forestry in Ethiopia is characterized by two extremes: the extensive deforestation that has taken place in the natural forests, and the extensive planting of Eucalyptus that farmers have undertaken, the latter no doubt a result of the first one.

In historical terms, the capital of Ethiopia has moved many times, from Axum to Lalibela, then to Gondar and Ankober and ended up in Addis Ababa, as the surrounding landscapes became treeless (Pankhurst, 2003). Menelik even had a plan to move the capital westwards from Addis Ababa, but the introduction of Eucalyptus prevented that. In order to address the diminishing forest cover of Ethiopia, there is therefore every reason to look at the various formations in which trees and forests can appear in the landscape.

Traditionally, forest management has taken place in closed natural forests, set aside as government forest reserves, often many years ago, usually with the purpose of protecting important watersheds. Later this concept was also adopted when governments or private timber companies established fast growing forest plantations of exotics. Community forestry and village forestry is in comparison a recent development to provide rural communities with much needed forestry products and to address poverty issues.

This reveals that forests and tree resources do not only appear in closed block formations, the traditional way for governments to manage forest resources. It is from such forests that we usually can get data over forest covers. However, huge amounts of woody biomass exist in tree resources planted by farmers, outside of these forests. A study conducted in Kenya in the mid-1990s revealed that what farmers had planted, volume wise, was four times what was found in the government owned natural forests

[♣] Swedish Amhara Rural Development Program (SARDP)

Table 1. Traditional closed block formations and other formations of trees in the landscape

Traditional Closed Block Formations	**Other Formations of trees in the landscape**
NATURAL FORESTS **Purpose: Protective and productive** Ownership: Government/Private Species: Indigenous species Management: Difficult	**COMMUNITY WOODLOTS** **Purpose: Productive** Ownership: Often unclear Species: Suitable for fuel wood Management: Often neglected
FOREST PLANTATIONS **Purpose: Productive** Ownership: Government/Private Species: Exotics Management: Intensive	**TREES OUTSIDE THE FOREST** **Purpose: Making marginal land productive** Ownership: Individual Species: Mixtures Management: Ad hoc

and plantations. If a similar study is to be conducted in Ethiopia, the outcome can be expected to be very similar, because anybody travelling through the countryside will see the frequent occurrence of Eucalyptus trees, virtually everywhere, in most parts of the country. This means that from a demand-supply situation it is not the forest cover as such that is all that important, rather it is the occurrence of trees in the landscape and the volumes that they represent.

2. Background on traditional forest management

Management by government of forest reserves is a complicated undertaking. The management area is legally speaking a protected area, which restricts access. It is obvious that this type of management becomes problematic, particularly in heavily populated areas where access to forest products outside the forest reserve is limited. This puts a pressure on the forest resources inside protected areas. It is not only illegal

collection of fuel wood and grazing that takes place in the forest reserves, it is the felling of valuable timber trees that is most damaging.

In many African countries, large forest areas have been set aside as forest reserves, going back to colonial days. In Tanzania there is as much as 15 million ha of forest reserves and in Ethiopia there are 'state forests', out of which 58 have been declared as priority areas, i.e. being especially important (Sjöholm and Getahun 2000). Those areas were set aside many years ago, in areas of limited population pressure. Today, it will be difficult to expand these areas, as a new gazettment process would then be required, to follow the following steps:

- the area is to be demarcated with beacons on the ground, by a survey team
- a survey of the demarcated area is then to be done
- based on the survey, a map over the areas is to be prepared
- a demarcation report is to be written up and agreed upon
- a comprehensive management plan is to be compiled
- a guard force, paid for by government, is to be put in place.

It is usual for the above steps to require years of preparations to complete. This means that a lot of money is being spent on demarcation and various studies, efforts that in no way contribute to any improvement in management. Moreover, once the management plan is finalized, the experiences from the field are not being used.

The guard force is supposed to protect the forest. However, the guards are often living far away from the forest. The guards are members of the local communities and will find it difficult to prevent their fellow villagers from entering the forest. There is little to indicate that a traditional guard force of illiterate and untrained villagers dispersed randomly in the vicinity of the forest has been able to prevent forest destruction.

It is time to admit that this traditional way of protecting forest resources is no longer working, largely because of the increasing population pressure. As local communities are becoming increasingly important as stakeholders, it is obvious that they must take

on a major role and become actively involved in management, and not be excluded from a forest resource on which they depend.

3. Background on the management of trees outside the forest

Trees do not only occur in "forests" but also outside traditional forest areas, around houses and homesteads, at the corner of fields, in grazing lands etc. These tree resources are hardly ever recorded as forests although they do provide community members with direct access to woody products.

Throughout Africa, trees do play an important role in the life of people, providing essential and necessary contributions to day-to-day life. Trees provide fuel for cooking and warmth, construction materials for housing, forage for cattle and indirectly, permanent water and protection from erosion. These types of products have all been taken for granted, as something that one could just go out and collect, at no cost. However, due to an ever increasing population pressure there is now acute shortage of these products in many places.

In Ethiopia, there is a long tradition of protecting and cultivating trees. In cultivated lands, this can be witnessed by the occurrence of Acacia albida, a unique tree that fixes nitrogen and therefore is valued by local populations. Indigenous tree species have always been protected around churches in landscapes otherwise largely treeless (Teklehaimanot no date). Most important, however, is the widespread planting of Eucalyptus by farmers, a practice that has virtually transformed the landscape, as it is difficult to imagine rural Ethiopia today without this tree, occurring everywhere. Farmers by tradition collect the small seeds from the Eucalyptus tree and raise seedlings in small nurseries, then planting them extremely densely, to produce poles of small sizes. Based on the above practices, a nationwide community forestry program was started early.

4. The Tanzania case

In Tanzania, the Tropical Forestry Action Plan (TFAP) of 1989 had established some unrealistic goals to increase the area of forest reserves in the country (Ministry of

Natural Resources and Tourism 1989). This was in a situation when the forest administration was unable to manage the already existing forest reserves of 15 million ha. Still, the forest administration had gone ahead, desperately wanting to meet the set goals of TFAP.

Therefore, in three specific areas, traditional forest inventories, targeting timber trees only, had been done and borderlines to the planned reserve had started to be cut in the forest even with beacons placed on the ground in some locations to mark the area to be gazetted. However, no survey of socio-economic conditions had been done, nor had any serious consultations with the local people been held. If such information had been sought, it would quickly have revealed that established villages, with cultivated fields, settlements etc. were well established inside the targeted areas. In reality, it was impossible to establish a forest reserve here, as there was no support from the local people, nor political support from the local leaders, nor funds available to pay for compensation.

At this critical stage, with foresters running around in the forest not talking to the local people, things were set-up for a major confrontation. A donor funded forest project operating in the concerned districts, financed by Sida and implemented by ORGUT Consulting AB of Sweden, was prepared to support forest management, but not in the above way (Sjöholm, 2001; Wily, 1966). After initial consultations with the local people in the form of simple village meetings, it was quickly revealed that they were fully prepared to take on forest management themselves.

This was the turning point, the simple fact that traditional forest reserves would take away all local access to the forest. Over time, extensive logging operations, performed in the form of pit sawing, had targeted and removed all bigger timber trees. Large land areas have been opened up to agriculture much on a commercial scale. In addition, the local people had in the past witnessed government staff exploiting forest resources, by harvesting, not doing any management. The local people felt they could do a better job protecting and utilizing the forest in a sustainable way not simply cutting it down for short-term gains.

As a result, the following village forest reserves were created:

- Duru-Haitemba Village Forest, Babati District, 9 000 ha, 8 villages
- Mgori Village Forest, Singida District, 40 000 ha, 5 villages
- Suledo Village Forest, Kiteto District, 170 000 ha, 9 villages

Overall management approach

Village Based Forest Management of these three forests were thus initiated and had a flying start in 1994. No extensive inventories of forest covers were conducted, as such surveys would not produce data that could support any management, as the main purpose was to bring in control. From the beginning, it was just straightforward, common sense participatory planning, village by village, of how the forest should best be protected, utilized and developed.

The starting point was a simple and participatory land use planning exercise that took place in each village whereby the village land was divided into specific management zones. For each zone, a set of local use rules was established, which in turn made up the management plan. This is legally manifested by Village Bye-Laws, issued individually for each of the participating villages.

Management Committees

In each village, a management committee was established, named Environmental Management Committees. These Committees meet regularly and take minutes. The roles and duties of the Environmental Committees are well defined, including detailed TORs for the Chairman, Secretary and Treasurer.

Forest zoning

There are two main and dominant areas in each village; one Settlement Area and one Forest Area. Agriculture is practiced in the Settlement Area and this is where the settlements are also found, where forest products can be collected freely and where agriculture is allowed to expand. The Forest Area is legally speaking a Village Forest Reserve. No settlements are allowed in the Village Forest Reserve and the use of the forest is regulated by a set of forest use rules.

Forest use rules

The basis for the management of the area is the division of the forest cover into the above-mentioned zones. The borders to the zones have been marked with yellow paint, on trees and stones, to make them fully visible on the ground. The villagers have mapped the zones on simple sketch maps.

Based on the zonation of the forest and its condition, a set of simple Forest Use Rules has been worked out village by village. The rules stipulate very clearly how the forest can and cannot be used:

- no use at all (prohibited)
- free use
- free use against a permit issued by the Village Environmental Committee
- use against a permit and the payment of a fee

It is the above rules, applied to the zonation system of the forest that makes up the Management Plan, which therefore is specific to each village. This Management Plan in turn becomes a legal instrument in that it will be passed as a Village Bye-Law. There is in practice no difference between the Management Plan and the Village Bye-Law.

Forest grazing

A special case is found in the forest in Kiteto District in that a major land use there is forest grazing. Grazing zones have therefore been established in the forest, which safeguards the basic interest of the Masaai population, who are cattle herders. For centuries, these pastoralists have developed and followed a grazing system that allows grazing to take place over large areas and in a most flexible way depending on where water and grasses are available at any given time. The system allows continuous grazing throughout the year and divides the grazing zone into specific areas. In the process of establishing the management plan for the Suledo forest, this traditional grazing pattern was taken into account. Although many scientists would argue that forest grazing limits forest growth and damages regeneration, the fact remains that the forest is still intact in spite of years of heavy grazing. It is not the grazing that threatens the condition of the forest, but uncontrolled logging and land grabbing.

Patrolling

Patrolling remains an important component of management, particularly at the early stages when a presence in the forest is essential to prevent uncontrolled exploitation. Young men from the villages are usually responsible for Patrolling.

Reporting

The patrolmen are reporting what they see and experience on a simple reporting format. Similarly, permits issued and fines issued and collected should also be recorded as part of the process of monitoring what goes on in the forests. It is particularly important that all money matters and the handling of funds become fully transparent in the villages.

Observations

There has been a major change in that forest as forest covers have improved and regrowth is taking place in the forest. The overall situations have gone from one of open access to one of control making way for planned management. The management approach taken is quite protective in that the village looks after and controls its own village land and cutting off access from outsiders.

This development has been almost total success. The initiative contains important components of participation, sustainability, empowerment, involvement of women and even poverty reduction not to mention environmental conservation (even biodiversity conservation) (Iddi and Sjöholm, 1997).

It was particularly encouraging, for all stakeholders, that the prestigious UNDP Equator Prize of 2002 was awarded to the Suledo forest inhabitants, for "their innovative approaches to poverty reduction and sustainable use of biodiversity". The prize was presented to community members at the Summit in Johannesburg consisting of 30,000 USD in cash, a certificate and a trophy (Sjöholm and Shabani, 2002).

4.1. Why it succeeded?

This was possible because the management approach is simple that makes common sense. It builds on the existing institutional framework in Tanzania, which after a number of policy reforms has put the village in the centre. It is quite democratic in that the villagers in Village Assembly Meetings can decide on which type of land use is best for their village and a process that provides the village with legal protection through Village Bye-Laws.

Figure 1 illustrates the success of the village based forest management. It shows that the introduction of improved forest management rests on and requires policy reforms and the strengthening of implementing institutions.

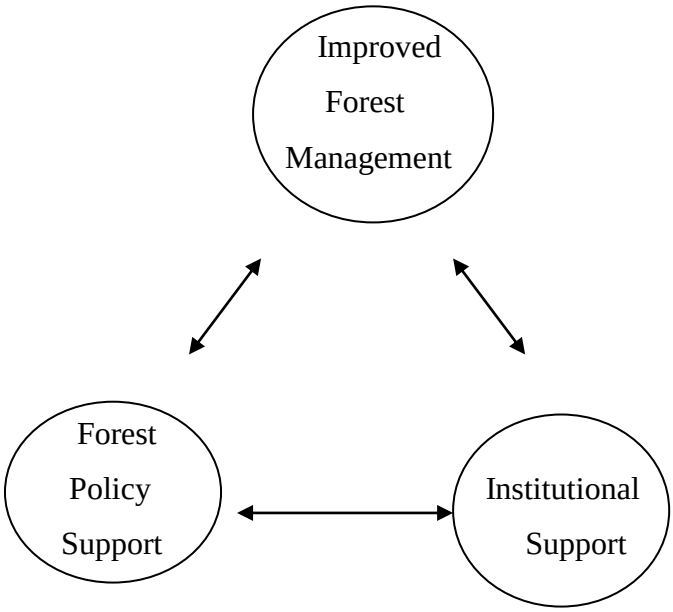

Figure 1. The enabling environment

Looking at figure 1, the operational framework is quite clear: for local communities to be able to improve forest conditions through better management and effective protection, an enabling environment is required, something which in turn is to be provided through support from strong policies and operational institutions.

The policy framework

The overall policy in Tanzania is today very clear. The Forest Policy is from 1988 (United Republic of Tanzania, 1998) and the Forest Act from 2002 (United Republic of Tanzania, 2002). In Tanzania, there is a good connection between the macro- and the micro-levels as the responsible bodies have identified and developed the present policies based on actual field experiences including these three very cases.

The institutional framework

The village is the basic unit in that the management approach builds on the unique and favorable situation that exists in Tanzania with decentralized government. As part of local government, the village is a corporate entity that is able to make village Bye-laws recognized in a court of law and to own property in its own right (Wily 1966).

Institutional support provided the on-the-spot facilitation and encouragement required putting in place forest management at the village level. Facilitation was needed to convince villagers that they actually have strong policy support in undertaking forest management. Facilitators accompanied villagers to the forest to determine the condition of the forest and to identify management zones to assist with drafting forest use rules leading up to a management plan and ultimately the village bye-laws to ensure legal protection (Sjöholm and Shabani, 2002).

Lessons learnt

Based on the policy framework, the procedures for establishing community based forest management are today well defined in Tanzania. The forest administration, i.e. the Forest and Beekeeping Division has prepared and issued an excellent manual based on practical field experiences (Ministry of Natural Resources and Tourism, 2001), which provides practical guidelines and all the little details for "how to do it". This is the framework for scaling-up and expansion (see: www.nfp.co.tz).

5. The Ethiopia case

In late 1990s, the Bureau of Agriculture in the Amhara Region of Ethiopia took an initiative to bring several government owned and protected forest reserves covered by plantations as well as natural forests under joint management through participatory efforts. At the time, it was realized that managing natural resources was no longer the duty of the government alone. Since performance of the government as a forest manager had not been successful over the years, it has been convincing to invite local communities to take on the management of areas previously managed by the government. In addition, the government did not have access to the financial resources required to carry out proper management of forest areas including mobility into remote places.

In order to assist government owning and community managing under a joint agreement, a team of two consultants were brought in. The idea was to assist forestry experts of the Bureau to prepare forest management plans over 13 specific forest priority areas that also were to be assessed as to their importance. Those management plans would be prepared in a participatory manner with the two recruited consultants acting as facilitators, guiding and assisting the process of bringing the concerned areas under active management (Sjöholm and Getahun, 2000).

The consultancy input would therefore not concentrate on or end with the write-up of technical plans in isolation but to get some initial and very concrete and practical management going on the ground to be based on participatory processes. This would require the establishment of active collaboration between government and the concerned local communities, which in turn would require a cadre of well prepared and trained facilitators who could go out and work with the communities.

Under the above spirit, the consultancy inputs came to focus on three very specific areas, first to run a training program for the concerned staff, then assess the Priority Areas and end up with introducing Joint Forest Management. Below these three specific areas will be reported with emphasis on the last part, i.e., how participatory approaches can best be used to identify and introduce cost effective and useful Joint Management.

The training program

The purpose of the training component was to prepare and equip a group of participants for a non-traditional management planning exercise in the form of a pilot operation, which was to be participatory and to be done together with the local communities. The idea was to start small and to gain experience. There were 28 participants from different parts of the Amhara Region.

During the training, an actual management plan format was outlined as a participatory approach. Then the various components of the plan were covered in a step-by-step exercise, to make the participants fully familiar with the various parts of the plan and how the required data best was to be collected and analyzed. As part of the training session, field visits were undertaken and practical work sessions took place.

After the completion of the training, the exercise itself continued in that the participants returned to their duty stations to proceed to outline management approaches and plans for the protected areas found in their respective home zones using the identified format. The two facilitators then came to visit the participants to check on progress.

Assessing the thirteen Regional Forest Priority Areas

The Ethiopian Government had identified and classified 58 important forest areas as National Forest Priority Areas, thirteen of which were in the Amhara Region. These 13 forests/woodlands were thus considered as being of outstanding Regional importance (see table 1). However, how these ones were selected was unclear.

For the purpose of making the required assessment and identify key issues for management of these priority areas, the criteria that were used include the legal status, resource values, condition of the tree cover, threats on the resource from outside, potential of the area, attitudes of local communities, key issues to be addressed, proposed management arrangement. By making sweeping field reconnaissance, the 13 areas were thus described. In summary, this overview was quite depressing when it came to the state of the 13 sites:

Table 1: List of the Regional Forest Priority Areas

Location/Zone	Name of Forest	Size (ha)
1. South Wollo	Yegof	1 526
2. South Wollo	Denkoro	2 300
3. South Gondar	Guna	2 175
4. East Gojam	Yeraba	551
5. East Gojam	Abafelasse	434
6. West Gojam	Sekalla Mariam	1 111
7. Awi	Kahtasa	17 000
8. Awi	Ilala Gwangwa	14 000
9. Oromia	Yerke	6 000
10. North Gondar	Western Lowlands	419 246
11. North Gondar	Angereb	110 000
12. North Wollo	Woinye	1 200
13. North Shoa	Yewof Washa	16 927

- Every site, without exception, was under threat and being exploited for fuel wood collection and grazing

- Every site had been encroached to some extent by cultivation with parts of some areas having been almost totally cleared

- Illegal pit-sawing were targeting all sites that contain valuable timber species. Fire had caused damage in most sites

- In all places, a number of forest guards were employed to protect the forest. However, this traditional system was just not working.

- There were only few well prepared, approved and up-to-date management plans in existence

- Infrastructure for the management of all areas was based far away from the forest areas, in towns etc.

- Management responsibilities are not always pronounced. There are for instance no forest managers appointed to the individual sites.

- Most surprising was may be the fact that there was so little documentation over these important areas. Many were recognized as state forest reservoirs since many years, but it proved difficult to find the supporting legal documentation.

After the assessment, it was found that only four forest areas (Denkoro, Erike, Ilala Gangwa, and Western Highlands) could be classified as important for catchment values, timber production and/or biodiversity conservation. Of the rest, many were small insignificant plantations; others were important area closures to prevent soil erosion on steep slopes. The two huge areas in North Gondar could not possibly come under any management without active community involvement.

Introducing management

After completing the training course, the participants went back to their duty stations to initiate actual management of selected forest areas. For this purpose, management teams were formed at the *woreda* levels in nine specific locations. The management approach taken for this pilot operation had been identified by the participants to consist of ten specific steps to be followed during the planning process, as follows:

Step 0: Inform DAs about the approach
Step 1: Inform community and *woredas* of the approach and Government policy
Step 2: Determine interest and ability to manage
Step 3: Select planning team (committee)
Step 4: With committee, undertake "forest walks" to determine use of the forest and to identify management zones
Step 5: Identify "forest use rules"
Step 6: Start protection
Step 7: Write management plan
Step 8: Formalize the management plan
Step 9: Signing of Joint Forest Management Agreement and approval of Bye-laws

Each of the above steps was budgeted for each location and the funds were released. The idea was to allow six months for each team to arrive at a plan. It was fully understood that this was not going to be an easy task.

When the planning teams began their work, an immediate problem occurred already under Step 1. The policy framework was not clearly understood, above all not by the *woreda* administrations. Because of the lack of information from the centre to the field, the planning operations stopped.

Later on another problem occurred as the teams were approaching Step 9: Who was going to sign the Joint Management Agreement on behalf of the landowner, the government? This decision is no doubt still outstanding!

The planning teams encountered a number of constraints in the field, the most important one being the absence of a strong written statement by the Bureau of Agriculture to clarify the whole thing. *Woreda* administrations were therefore unsure of what was going on and therefore reluctant to provide support. Similarly, communities needed to know that they in the future would be able to receive benefits from their efforts in protecting the forest resource.

In spite of these difficulties in getting joint management going, progress was seen and the following was learnt:

The individual community members have a deep knowledge and understanding of the environment in which they live. The communities do value the products coming from the forest, including water and do see the implications of deforestation, causing floods in the rainy season and the drying up of springs in the dry season. Solutions and improvements in land use practices can be found amongst the community. Building on the knowledge it was easy for the planning teams to identify together with the communities simple rules for how the forest is to be used for the benefit of the community. Based on that, management plans were indeed outlined.

The planning teams were dedicated in their work. Government and community working together like this in teams is an ideal way of building capacity. The extent to which communities can undertake actual management might seem limited, but there is great preparedness to take on protection activities. The communities usually wanted the Government to maintain a presence, at least initially, to provide basic nursery equipment, to maintain part of the guard force, to provide technical advice etc. Management should be at the community level as each site is unique and requires an individual management approach to consider the condition of the forest resource and the overall socio-economic situation in the surrounding area.

To arrive at Joint forest Management Agreements and to undertake management under a new framework will require time and adjustment by all concerned. The communities undertaking joint management need to feel secure in what they are doing. Therefore, a legal study should be done to make sure that joint agreements are legally correct and upheldable in court. The nine management steps that were identified proved to be workable.

As most of the forest areas today stand wide open to exploitation, it must make more sense to bring in control today than to plan for a traditional survey tomorrow. The danger is that while a time-consuming data collection takes places, the forest is losing even more of its value.

Management of an area under threat cannot be done in isolation; it requires an understanding of the socio-economic conditions in the surrounding area. A participatory management plan does not have to be complicated. It should simply tell how things are to be done. It will focus on organizational structure and who is going to do what. Above all, it must spell out in detail how the community is going to manage. In addition, once there is control in place, additional data can be collected, for instance by involving local community members. This is a most sustainable and cost effective way of gathering management information.

Overall, valuable experiences were gained but the pilot exercise as a whole failed in getting joint management established.

5.1 Why it failed!

Although the starting point was a review of policies and proclamations to ensure that it was legally possible to introduce joint forest management, this exercise failed to introduce such practical management on the ground. The planning teams were well prepared and could handle all upcoming questions. Still, there was failure because the whole approach was not well understood by all stakeholders. In retrospect, written guidelines should have been prepared and distributed by the Bureau of Agriculture and staff from the Bureau should have taken a more active role during implementation in the field.

In summary, not all stakeholders were ready. At the same time, it is never easy for government organizations to introduce major changes quickly. There is often doubt, sometimes even resistance, in traditional organizations to accept new ideas and to adjust accordingly. The fact that a local community can become an efficient forest manager might not be easy to accept for a traditional forester, who might see his job threatened. This is therefore a process of change that must be clearly and strongly supported from the very top if there is to be any lasting impact. That support was simply lacking.

The policy framework

This pilot exercise was based largely on the Federal Government's Draft Forest Policy document of February 1998, where a number of statements show the commitment of the government to involving local communities in forest management as well as in benefit sharing. For instance

"Forest development packages will be formulated with the communities living in the vicinity of the state forest to assist them to participate directly in the forest development and protection activities"

"Arrangements will be made for the people living around forests to accrue benefits from the forestry development activities and out of forest products"

"All natural forests and plantations to be designated as production forests will be developed and managed according to the principles of joint forest management"

The above statements are a bit vague. However, when the training course opened on 29 November 1999, a speech by the then Bureau Head, Belay Demise, contained the following strong message:

"The issue at hand and the purpose of this workshop is how we can make forest and natural resources management participatory where people and government can work together. The traditional forest management system is unable to cope with the problem of effectively protecting our few natural forest/woodlands and forest plantations. Foresters and District-level Development Officers need to be equipped with modern tools such as preparing management plans through participatory methods and the use of PRA and RRA tools. The general expectation of this workshop is that forestry experts will learn how to enable local communities and their leaders to fully participate in the development process".

When it comes to policies and policy formulation, it is worth noting that when a senior government official makes a public statement like the one above, it immediately becomes policy.

The legal framework

In the Forestry Conservation, Development and Utilization Proclamation No. 94 of 28 March 1984, it is further stated:

“The Ministry shall designate, demarcate and register state and protected forests.”

“The Ministry shall establish and administer a central forestry registry.”

“Every region shall designate and demarcate its regional and protected forests.”

"If the designation of state forest, regional forest or protected forest is likely to result in eviction of the peasantry, this can be effected only after the consultation and consent of the peasantry".

"State and regional forests are to be utilized in accordance with management plans approved by the Ministry or the appropriate regional body."

One obvious implication of the above is that state forests and protected forests should be demarcated and forest boundaries should be kept clearly visible on the ground. There should be well kept files with information on the state forests as well as of the priority areas including management plans. Unfortunately, this has been very difficult for the administration to follow.

Legal and political support to community management of forest resources can also be found in the above document. For instance

"the sustainable utilization of the country's forest resources is possible through the participation of the people and benefit sharing by the concerned communities."

Adopting policies

Although the policy framework in place at the time invited the involvement of local communities in the management of natural resources, it had not been clearly defined, written down or been issued to the field level in order to facilitate joint management. In consequence, the intention of this exercise was not well understood at the field level. The direct result of this was that when the participants in the training course returned to their duty stations to start working with local communities, confusion occurred at the *woreda* level and the work stopped.

As all civil servants do have a duty to implement government policy, these policies must be clearly and well communicated to all parties. That was not the case in 1999.

Most recent policies

Until this day, the existing policy framework is the same as it was in 1999/2000. A new forest policy has been approved and a revised proclamation drafted.

Looking at the drafted proclamation, which has been approved but not yet printed, I can see no real improvement over the old one from 1994, when it comes to the involvement of local communities in the management of forest resources. In the new one, the word joint forest management is for instance not even mentioned.

The proclamation is far from adequate when it comes to the provision of directions for how local communities can become involved in forest management. Clear guidelines are here required, guidelines that must be based on practical experiences. Unfortunately, there are few experiences to build on.

Conclusion

The foundation to build on is the ability of local communities to manage the environment on which they depend. A small group of foresters in the Amhara Region were in 1999/2000 provided with the basic know-how for how to assist and support local communities in the management of forest resources. Although a start was good, it is not enough. Reportedly, there have been similar experiences since, in other places, but the information about these initiatives has not been well spread.

Considering the long tradition of community forestry in Ethiopia, the existence after all of a clear policy on the involvement of local communities in the management of natural resources in combination with the limited management resource that exists within the government sector, participatory and joint forest management emerges as the viable way forward. This is therefore something that must be explored and be developed into an institutionalized approach to sustainable management.

6. Forestry outlook for Ethiopia

The question is what is going to happen to the forestry sector and the forest resources of Ethiopia considering the heavy land pressure that is there from a growing population in constant search of land to cultivate. In this situation, it will be extremely difficult to find land to establish traditional patches of forests in the form of larger blocks.

The state of the forest resources of Ethiopia is not very well known in the absence of any recent forest inventories or even rough estimates or overviews. The following technical interventions are required at least to improve the existing situation and to secure a better raw material base.

An overview of the state forests, mainly consisting of indigenous forests, is urgently required in order to have a basic knowledge of the condition of this resource and what it can contribute to the demand of forest products as well as to the protection of sensitive areas. An Action Plan is required, to spell out needed management interventions, which ought to include efforts to introduce joint management of this resource.

There are large areas of government owned plantations often located away from markets, which also need to be better utilized and managed. In addition, an overview is required and an Action Plan is needed to improve management. It would make sense to privatize these areas. A very special case is the large areas of fuel wood plantations that were established in the late 1980s with donor support.

There are also many plantation areas, some small, some big, established under community forestry, where ownership is far from clear. This should be looked at and to ensure low cost and efficient management the aim should be to hand those over to local communities.

Community forestry is nothing new in Ethiopia. Farmers have been planting trees on land allocated to them for centuries, as witnessed by the presence of eucalyptus trees virtually everywhere in the landscape. It would be an advantage to diversify and to encourage the cultivation of species other than Eucalyptus.

Diversifying farming and land use systems and to insert trees more widely into the landscape has a great potential. To plant trees along farm boundaries, around homesteads, at the corner of fields etc. is a good way of making pockets of land productive. Similarly, agro-forestry, which means trees on farms, offers many opportunities of combined production (Sjöholm, 1989).

7. Moving forward

As forestry is only one way of using the land, the place of forestry in the landscape becomes important in order not to conflict with other demanding land uses like agriculture and grazing. Therefore, trees need to be inserted where no conflicts will arise, i.e. on lands marginal to agriculture. Various measures for introducing trees on different land use types have already been identified and described (Ministry of Agriculture and Rural Development, 2005).

The forest administration of Ethiopia remains weak particularly when compared with staffing levels at educational institutions like the Wondo Genet College of Forestry and Natural Resources or the Forestry Research Centre. Strengthening and building the capacity of the Forest, Land Use and Soils Development and Conservation Department in the Ministry of Agriculture and Rural Development is the key in order to meet the demands outlined above. The same applies to the Regional and Zonal Administrations that are equally understaffed and short of resources.

A new Forest Proclamation is in the pipeline but to promote joint forest management very specific and detailed guidelines are required. Such guidelines can only be prepared based on practical experiences, something that could be gained under pilot operations. In this area, Ethiopia is well behind, for instance, Tanzania when it comes to actual areas that are being managed by communities.

In the sector, the knowledge to raise seedlings in nurseries and to plant them in the field is well established. There is knowledge that is not being used or scaled up. No serious research gaps exist that can hamper the expansion of forest covers. In the past, forestry research has had a very detailed technical and narrow focus, instead of taking on an interdisciplinary approach, considering that forestry after all involves a number

of sectors. The basic aim of forestry research should be to support national development. It could prove useful to establish some "think tanks" to promote forest development.

Looking ahead, in the future we will no doubt see an increasing number of trees outside of the forest being established, i.e. a very clear trend of replacing slow growing indigenous trees in block formations with exotics that will occur in different shapes and formation in the rural landscape even inside urban areas. Although not being regarded as pure forests, these tree resources will contribute most directly to the demand-supply situation for forest products, although such tree resources might not always contribute to an increased forest cover as such.

8. Summary

The paper tries to highlight my personal experiences from working with government staff and villagers in Tanzania as well as in Ethiopia to bring forest areas under threat into a situation of sustainable and low cost management with the active participation of local communities. While the mid 90s efforts in Tanzania were most successful, this was unfortunately not the case in Ethiopia in 1999/2000.

In both cases, pilot operations were run and communities were found to be eager and proved capable to undertake management in situations where governments had failed to protect and manage the forest resource.

In Tanzania, the overall environment was most favorable in that policies were clear and supportive, making progress immediate. The efforts undertaken spread quickly to other areas, also having a direct impact on legislation, which was revised in line with the experiences gained.

In Ethiopia, policies were not exactly encouraging, but on the other hand not preventive. This created some uncertainty. In retrospect, the pilot operations started in a few different places should have been better explained to all stakeholders from the outset.

In Tanzania, villagers managing forests is now a well established and expanding practice that ensures sustainability. In Ethiopia, however, there is a long way to go compared to experiences in Tanzania. This is because existing experiences are few and policies have not been clear and supportive.

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Participatory forest management in Tanzania: A review of legislation, experiences, constraints and implications for forest policy

Razack B Lokina[♣]

1. Background

Decentralized forest management was introduced in Tanzania to correct poor incentives for local communities to protect forests and trees (URT, 1998). Under the 1959 Forest Ordinance, local communities had no official rights to adjacent forest resources or trees on farmland and central government could issue harvesting licenses without consulting or informing the affected communities. The resulting poor incentives for local communities to protect forest and tree resources probably played an important role in the past 50 years' degradation of Tanzanian forests and woodlands (Petersen and Sandhövel, 2001; Wily and Dewees, 2001).

In the early 1990s, decentralized forest management was piloted on unreserved land where village communities gained jurisdiction over forest resources through declaration of village land forest reserves (Wily and Dewees, 2001). Assisted by the governments of Denmark, Finland, the Netherlands, Norway, and Sweden these few catalytic cases sparked-off a large number of government and NGO supported decentralized forest management projects in various parts of the country. Following these pilot projects, a massive body of policies and legislation was enacted from 1995 to 2003, including the 1995 Land Policy, the 1998 Forest Policy, the 1999 Land Acts, the 2001 Forest Program, and finally the 2002 Forest Act (URT, 1995; 1998; 1999a; 1999b; 2001; 2002). From 2003 onwards, the implementation of decentralized forest management has progressed under a national program, and it is estimated that 3 million ha are under some form of decentralized forest management by 2006 (Blomley and Ramadhani, 2006). The National Forest Policy (URT, 1998) provides incentives for the sustainable management of unreserved and unprotected forests by village governments, which number over 10,500 in Tanzania.

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2. Forest policy and legislation

Though the 1998 forest policy did not mention the word PFM and the current broad approach to PFM is not clearly defined in national forest policy, it is, however, broadly implied by several policy statements. This is mainly because the terms and concepts are rapidly evolving and clarifying in Tanzania, and PFM is seen as a process. One component of PFM, Joint Forest Management (JFM), is however specifically mentioned in the policy and defined as:

"involvement of local communities or non-government organizations in the management and conservation of forests and forest land with appropriate user rights as incentives."

Given current usage, this now would be taken to embrace PFM. Policy Statement (5) relates to forestry on public lands. It states that:

"to enable sustainable management of forests on public lands, clear ownership for all forests and trees on those lands will be defined. The allocation of forests and their management responsibility to villages, private individuals or to the government will be promoted. Central, local and village governments may demarcate and establish new forest reserves"

Similarly policy statements (6) and (7) relate to village forest and community forest respectively. They state that

"village forest reserves will be managed by the village governments or other entities designed by village governments for this purpose. They will be managed for production and/or protection based on sustainable management objectives defined for each forest reserve. The management will be based on forest management plans"

"private and community forest activities will be supported through harmonized extension services and financial incentives. The extension package and incentives will be designed in gender sensitive manner".

These provide the policy basis for participatory forest management on village land. The policy goes on to state that "the primary policy instrument in this regard is the

establishment of village forest reserves." Sections of the policy, however, remain ambiguous between the options of communities' outright rights to ownership and only permission to manage and to harvest forest resources and retain revenues. This is the critical difference between JFM and CBFM.

Policies that support secure access to forest resources are central to sustainable livelihoods. The absence of secure tenure for forests and other natural resources creates a "discouraging" environment for community involvement in their management. On the other hand, clear tenure rights enable local communities to protect forests from outside encroachment, to increase their benefits and to enter into business contracts. Where access to forests has been relatively unrestricted, forest foods and income from forest products are often particularly important for poorer groups within the community. They usually derive a greater share of their overall needs from forest products and activities.

The land policy (1995) and land legislation (1999) have reconstructed the tenure environment of the United Republic of Tanzania and, with it, the nature and expression of rights at the local level. The village remains central in the land policy and legal framework and is in fact strengthened. The land law not only allows local communities to demarcate parts of their local environment for common use and/or natural resource management, but also provides two mechanisms through which local-level jurisdiction may be reinforced. These are: (1) legal mandates to declare a forest or woodland inside the village areas as common property, thereby protecting it from encroachment; and (2) provision in the land law for the ownership of rights in this land to be titled to the appropriate group within the community, or even to the community as a whole.

PFM was introduced into law with the passing of the Forest Act of 2002, which provides a clear legal basis for communities, groups or individuals across mainland Tanzania to own, manage or co-manage forest under a wide range of conditions. The law recognizes two different types of PFM-which are Joint Forest Management (JFM) and Community Based Forest Management (CBFM).

In 2006, FBD undertook a detailed survey of PFM in the country. Table 1 shows the results of this survey and shows how far PFM has spread in mainland Tanzania to date[31].

Table 6: Overview of PFM on mainland Tanzania

Description	Amount
Total areas of forest covered by PFM arrangements	3,672,854 hectares
Percentage of total forest area under PFM	10.8%
Number of villages involved in PFM	1,821
Percentage of total villages involved in PFM	17.5%
Number of villages with approved management plans or signed Joint Management Agreements	531
Number of districts with ongoing PFM processes	57

Source: URT, (2006) Facts and Figures

While many villages are participating in PFM across the country, relatively few have formalized their forest management in line with Forest Act of 2002. This requires that villagers have an approved management plan or signed Joint Management Agreement for their forest land. This is, however, seen as a stumbling block and try to penalize the villagers.

3. Joint Forest Management (JFM)

Joint Forest Management (JFM) is a collaborative management approach, which divides forest management responsibility and return between the forest owner (usually central or local government but occasionally the private sector) and forest adjacent communities. It takes place on land reserved for forest management such as National Forest Reserves (NFRs) (for catchments, mangroves or private forest reserves (PFRs)). It is formalized through the signing of a Joint Management Agreement (JMA) between village representatives and government (either the District Council or Ministry of Natural Resources and Tourism).

[31] This data includes area/villages with signed agreements and plans and those who are working towards this.

This initiative has been reinforced by national and international NGOs promoting forest conservation such as Tanzania Forest Conservation Group, Wildlife Conservation Society of Tanzania, WWF and CARE. As can be seen from Table 2, only a small number of agreements have been signed (149 out of 719), this is approximately 21% of villages with JFM. This is largely due to the uncertainties regarding benefit sharing mechanisms and how much of the forestry royalties (central government revenue) from timber harvesting can be shared with local communities.

Table 2: Overview of JFM on mainland Tanzania

Description	Amount
Area of forest covered by JFM management plans	1,612,246 hectares
Percentage of total area reserved by national or local government under some form of Joint Management Agreement	11.6%
Primary forest types where JFM has been promoted	Montane and mangrove
Number of Local Authority Forest Reserves with JFM	150
Primary Regions where JFM implemented	60
Number of villages with JFM has been established or in process	Morogoro, Iringa, Pwani, Tanga, Kilimanjaro
Number of villages that have signed JMAs	719

While the implementation of CBFM has moved forward relatively rapidly, JFM appears to face a number of key challenges and consequently few JMAs have been signed. One of the underlying reasons for this is the absence of any nationally agreed guidelines for defining and sharing forest management costs and benefits. There is therefore an urgent need to define the exact mechanism for sharing forest management costs and benefits as well as how ratios for benefits sharing can be negotiated and agreed. Furthermore, protection forests which in most cases fall under JFM offer few concrete benefits for forest edge communities due to their high protection status. This means that any final agreement may be relatively unattractive to local communities who often perceive management costs to exceed benefits. Creative strategies are therefore urgently required to deliver forest benefits to communities involved in JFM in protection forests.

4. Community Based Forest Management (CBFM)

Community Based Forest Management (CBFM) takes place in forests on "village land" (land which has been surveyed and registered under the provisions of the village land Act (1999) and managed by the village council). Under CBFM, villagers take full ownership and management responsibility for an area of forest within their jurisdiction and it is "declared" by village and district government as a Village Land Forest Reserves. Following this legal transfer of rights and responsibilities to village government, villagers can harvest timber and forest products, collect and retain forest royalties and undertake patrols (including arresting and fining offenders). They are also exempt from regulations for harvesting "reserved tree" species, and are not obliged to share their royalties with either central or local government. The underlying policy goal for CBFM is to progressively bring large areas of unprotected woodlands and forests under village management and protection.

Community participation in forest management has existed in the United Republic of Tanzania for a long time, but on a small scale. It is common to find trees of certain species are being protected and managed for traditional reasons. It has been observed that forests and woodlands that are managed using traditional knowledge and practices are accorded high respect by concerned communities. Thus, fires or encroachment does not affect them. While the strategy of setting aside forests and woodlands for protection remains the centerpiece of management of these resources in the United Republic of Tanzania, this has been the result of evolutionary process from a conventional to a participatory approach of forest management. Table 3 gives an overview of CBFM on mainland Tanzania.

Table 3 reveals that few villages have been gazetted, only 53 (16%) of those declared. The reason for this is not very clear but perhaps the extra cost to villagers and the relatively small differences in terms of powers that this gives, has meant that few villagers have opted to follow this course. To have fully legalized forest it requires the village to have demarcated their village land boundaries, to have forest management plan, to have elected Village Natural Resource Committees. In most cases you find that villagers may have by-laws, without management plan or vice versa, in other cases, villagers declare a village land forest reserves, but they have yet

to identify and demarcate their village land boundaries. All these may explain very few have fully gazetted their forest lands.

Table 3: Overview of CBFM on mainland Tanzania

Description	Amount
Number of villages with CBFM established or in process	1,102
Area of forest covered by CBFM arrangements	2,060, 608 hectares
Number of declared Village Land Forest Reserves	329
Number of Gazetted Village Land Forest Reserves	53
Number of districts where CBFM is implemented	50
Primary forest types where CBFM has been promoted	Miombo, coastal and acacia woodlands
Percentage of public land forests now under CBFM arrangements	10.2%
Percentage of villages on mainland Tanzania that are engaged in CBFM activities	10.5%

5. Changing roles

Matching institutional mandates with appropriate roles

As in many countries, the institutional architecture of forest management in Tanzania is changing rapidly. Previously, the forestry division had primary responsibility for all forest in Tanzania and worked through its staff posted within different levels of local government, whilst retaining vertical reporting line to the parent ministry. Since the adoption of the Local Government Act (1982), however, forest offices have been decentralized and are now entirely answerable to locally elected councils through the District Executive Directors. This is complicated, however, by the presence in many districts of forest reserves administered by central government due to their regional, national or even global biodiversity or water catchments values. Such areas fall outside the domain of local government and their management is vested in District Catchments Forest Officers who work alongside District Forest Officers but are answerable to central government.

FDB staff at national level no longer implements PFM directly in the field. Their role is now to provide policy guidance, ensure policy compliance and quality control, offer training and capacity building, raise awareness, monitor and channel funds. FDB is still responsible for monitoring overall progress of forest policy and law implementation; therefore impact and output monitoring takes place from local governments to FBD directly. Currently, the degree of coordination at local level between representatives of forestry and beekeeping Division and local government staff rests largely upon the relationship between the two officers; there is no institutionalized mechanism to ensure co-ordination on planning national or regional data on the progress of Participatory Forest Management.

Mismatches between administrative and ecological boundaries

The forest Act delegates responsibility for the management of forest resources to "the lowest possible level of local management consistent with national policies" (URT, 2001). Over 10,500 village governments constitute the lowest level of government in Tanzania, with significant powers to receive, raise and disburse funds based on local plans, enact bylaws, elect councillors and defend local interest. Following these provisions, PFM is largely a process that is driven and implemented by committees established under the village Council and therefore firmly embedded within village government structures. Where forest resources are entirely contained within the village land and are not contiguous with other forest areas outside the village, all forest planning and management decision-making can be driven by local considerations and interests.

However, when a continuous piece of forest cuts across a number of village jurisdictions, there is clearly a need to go to a higher level to ensure that management activities and plans are harmonized across the forest and that mechanisms for inter-village conflict are addressed. Where all villages are within a single ward, the next highest administrative structure, the ward is a suitable institutional home for such discussions. However, more often than not villagers from different wards share common forest. In such cases, it is becoming increasingly common for villages to associate across the forest through an informal management system. Decisions

relating to harvesting, licensing, fees and royalties and the sharing of benefits are often referred to such higher associations to ensure harmonization and avoid conflict. The legal nature of such an institution, however, becomes questionable and often remains simply a co-ordinating body with no executive powers or financial resources.

For example, 13 villages in Liwale district of southern Tanzania collectively manage a single forest area of around 141,000 hectares called the Angai Forest. Management actions at the forest level are co-ordinated by the Mungano wa Hifadhi ya Misitu wa Angai – a "union" composed of representatives drawn from each village. A union of local governments is a recognized legal entity under the Local Government Act of 1982 and avoids the need for registration as an NGO.

Forest areas may not only cut across different villages or wards, but also two or more different districts (particularly large Montane forests with water catchment functions). This presents additional challenges for planning and implementation. Capacities and interest vary significantly between districts and have significant implications for the adoption and diffusion of PFM (Blomley and Ramadhani, 2006). Mechanisms for inter-district co-ordination and alignment of management activities can nominally be created at the regional level, but where forests cut across different regions, inter-district co-ordination is often limited.

Funding of the Forest Management under PFM

Funding issue is critical in the proper management and sustainability of the PFM. It is the basis under which participatory forest management can be considered to perform best (or to achieve its goals of sustainable management and sustainable rural livelihoods). Many questions may be asked regarding the funding mechanism for the management of PFM. The key questions are:

Should funds be allocated to areas with large areas of unreserved intact forest (where opportunities are greatest), or areas where deforestation levels are highest (where threats are strongest)?

Should funds be allocated to districts close to urban centers where markets for forest products are strongest, or areas far from urban centers where markets are still emerging?

Should fund be allocated to areas containing globally or nationally important forests (with potentially limited local use options), or to those areas with non-valuable woodlands (such as Miombo) with significantly higher potential for local revenue generation?

These deeper questions can only be answered through more focused research into the social, ecological, institutional and tenurial conditions which allow PFM to meet the policy objectives.

Until recently funding for district councils has operated on the basis of "ceilings" within which district councils are required to plan and budget. These ceilings have been standardized across all participating districts. The main problem with this is that flat rate ceilings masks the huge differences that exist among districts such as population wise and resources abundance as well as capacity to manage and plan. Following this a formula has been developed by the Ministry of Natural Resources and Tourism (MNRT) for allocating forestry funding based on the indicators in Box 1. It is proposed that these allocation criteria will be used to allocate PFM grants for the financial year beginning July 2007. Although the reliability of data on forest area is slightly questionable (coming from a survey conducted in 1996), this approach is more sensitive than the use of flat rates.

In conjunction with the proposed funding procedure by the MNRT and to increase accountability and efficiency, the funding to districts in support of PFM will follow the PMO-RALG procedure where a bonus is given to a district which performed better in key areas such as financial management, development planning, transparency, accountability and procurement, a low score results in a 20% reduction of the following financial year's disbursement (URT, 2004).

Box 1: Proposed Allocation criteria for District PFM block grants (FY 2007/08)

Population size (30% weighting)

Rural poverty index (20% weighting)

Area of forest reserved by local or central government (20% weighting)

Area of forest outside forest reserves (30% weighting)

Redirecting forest revenue from central and district government to village levels

Revenues from natural resources are an important source of income for local governments. Forest revenues come from two main sources:
Income from harvesting forest products (typically charcoal, timber, and firewood) from local authority forest reserves is retained by the local government authority in accordance with nationally prescribed rates.

Local authorities can charge a local tax on the transport of all forest products licensed at the local government level. These levies, while officially set, governments place a surcharge (which has been known to equal up to 50% of the royalty payment) on forest products harvested from general lands. Forest revenues are important in many forested districts as a local source of flexible funding for activities that are otherwise not covered from central government grants. One study conducted in Kilwa district in 2004 showed that forest revenue accounted for approximately 20% of all local revenue collected, and was second only to agricultural cess in terms of ranked income sources (Danida, 2004).

JFM poses additional challenges in that it requires the equitable sharing of both costs and benefits if it is to work effectively. Most JFM agreements negotiated to date have taken place in so called “protected forest” (typically high biodiversity, montane catchment forests) that have few legal benefits as the forest is strictly conserved. Consequently the issue of revenue sharing does not arise (and many have argued, is resulting in questionable agreements) (Blomley, 2006). To many, this is viewed as government is trying to shed its duty to the local community without compensating for their time and resources. However, in “production forests” where harvesting takes place (both natural forest and plantations), significant revenue is created from the use of timber, charcoal and firewood by commercial timber operators. This is the major

source of revenue for FBD and much of it is retained for operational costs at the ministerial level and field levels. Under such circumstances, resistance from some quarters within central government to share revenues in JFM agreements is evident and consequently no standardized JFM cost-benefit sharing ratios have been agreed and promulgated nationally.

Lesson learned

Although still at a relatively early stage, our experiences raise some general lessons which may have a wider application:

Devolving responsibility for implementing participatory forest management away from the ministry of Natural Resources and Tourism to local councils and institutionalizing these processes within emerging local structures takes time and considerable resources. It requires building regional and district capacity to ensure that functions and responsibilities are carried out. But it also requires a willingness to "let go" at the national level: to let go of control of the process itself, as well as of revenues generated from forest management.

With this comes the need to develop and to change roles such as policy guidance, monitoring, facilitation and securing finances. These same constraints exist at lower levels as district staff begins to question the wisdom of transferring forest management responsibilities (as well as forest revenues) down to elected village councils for the management of village land forest reserves and joint forest management agreements. Making the transition from implementers to "facilitators" and from enforcers to advisers is clearly not easy. Without building civic awareness among forest users and managers at the community level regarding new rights and responsibilities under recent forest legislation, there is little chance that downward accountability can be developed between villagers and their elected forest management committees, village councils and district staff.

Funding for forestry activities must be tailored to the needs of individual areas through the use of transparent funding allocation criteria such as forest cover, poverty index and size, as well as more generally aspects such as district capacity, good

governance and effectiveness. Forest revenues are an important source of "untied" income for local governments. This causes a potential conflict of interest as district councils hold the key to transferring forest management (and revenue collection responsibilities).

Mechanisms are needed for neighboring administrative units (village, wards or district council) which share common forest resources to harmonize forest management and use. These should not take decision-making power away from lower level management units, but should be tools for dealing with village to village conflicts, and for agreeing on resources-wide management actions.

Limited capacity at local government levels means incentives are needed for district councils to outsource forest services to competent local service providers. The users of these services should also, as much as possible, be involved in choosing the service providers. Without this, the pace of rolling out forest services will ultimately be hindered by the staffing and capacity of local government structures.

Raising the awareness of local forest users, managers and locally elected forest management committees about their rights and responsibilities is an effective investment for ensuring downward accountability of community-level forest management institutions. Corruption is connected to awareness. It is very difficult to root out corruption if it pervades the whole system. If people are ignorant, it is easier for illegal activities to be carried on. The more people who demand transparency from their leaders, the more difficult it is to carry on with illegal activities. Therefore a system of transparency and accountability needs to be established

Involve people - the UTUMI experience shows that involving people is more effective than bringing in outsiders to carry out tasks such as the forest inventory. Ownership is increased and more knowledge leads to better management. Even illiterate people have their strategies for learning things, so need not be excluded. And more effort is needed to make sure that women are actively involved in PFM. District staff need to be sensitized in practical gender issues.

Benefit sharing and benefit owning arrangements

Access to benefits is central to successful PFM. And while this process can be guided to a certain extent by by-laws, agreements and MoUs, there also needs to be effective measures to ensure that they are correctly implemented. So far, this has been a constraint in many areas trying to implement PFM. The ultimate benefits of the PFM are expected to be community empowerment to manage and benefit from their own resources. This is easier for CBFM than for JFM. Most communities, especially in resource rich areas, are aware of the value of the trees around them. They see others benefiting from their exploitation and, quite naturally, expect to reap forest-based benefits themselves. However, because of other interests, inadequate legal powers, and sometimes, sheer corruption by foresters and other government officials, communities do not always benefit from the resources. At best these forces will frustrate communities; at the worst it will turn them away from PFM.

In some areas part of the problem results from powerful and influential people illegally extracting forest resources. Part, but only a small part, of the problem results from communities not fully understanding their rights and privileges, and not knowing how to exercise them. A part also comes from inadequate mechanisms for oversight and control. By-laws that have not been approved by the District Council have no legal authority and agreements and MoUs depend more on intrinsic goodwill than on censure and penalties for non-compliance.

Third, the benefits of participating in the PFM are not always assured. In some cases, especially JFM, PFM is being implemented on the basis of perceived, rather than assured, expectations. For example, even where basic infrastructure does not exist, communities are encouraged to promote ecotourism as an income generating activity. In many cases this is an unrealistic expectation. In some JFM operations, communities believe that they will eventually be allocated ownership rights over state forests. This is very unlikely to happen in the immediate future.

6. Conclusions

What is emerging from the survey is that PFM have succeeded in restoring or maintaining forest quality under both CBFM and JFM arrangements. Encroachment is decreased, unregulated activities such as charcoal burning and timber harvesting decline and game numbers increase. However, it is clear that communities have yet to fully capture the potential social and economic benefits of local forest management and as such the contribution of PFM to poverty reduction remains limited, despite a clear commitment from the government to do so. The revenues generated by villages from sustainable forest management are still relatively low, given the high value and large areas of forest resources under village control. And this is where the big challenges lies with PFM, on their sustainability. The only important sources of revenue to villagers are fines and levies, by the village council on those found conducting illegal activities which will definitely decline as enforcement under PFM increases. Furthermore, it is evident that neighboring forests which are not under any PFM arrangement are threatened by over-utilization and extinction. This is more for those bordering the JFM forest which has a very limited direct use.

While a more detailed analysis is required of the different trajectories of village management committees over time, it is clear that the single greatest factor contributing to good or improving local governance is local residents' awareness of their roles, rights, responsibilities and returns under PFM, coupled with regular opportunities for reporting and public accountability.

Despite an enabling policy and political support for PFM there has been, and will continue to be, some resistance. Some foresters are still practicing PFM as "trials". This may enable them to avoid commitment to PFM. Sometimes it is poorly understood whether and when a community has an incentive to take on responsibilities for PFM. Also, having the village as the lowest locus for governance has its merits and challenges. Sometimes there are two factions competing for power at the village level: the "elite" and the "traditionalists" or "conservatives". Elite groups normally tend to cooperate with higher-level state apparatuses, such as foresters at the district level, in establishing externally sponsored institutional

structures, such as forest committees. On the other hand, the traditionalists (e.g. the custodians of ritual forests) seek to reconstruct the forest committees as entities performing predominantly ritual functions. Concerning the future of PFM in the United Republic of Tanzania, there is a need to intensify and harmonize extension to communities in order to promote their participation in forest and woodland management.

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Participatory forest management in Kenya

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1. Forest management regimes in Kenya

Indigenous and plantation forests are gazetted- forest reserves managed by the government under the Kenya Forest Service (KFS). Joint management: KFS and Kenya Wildlife Service (KWS) are under a MoU e.g. Kakamega, Arabuko Sokoke, and Shimba hills. Local authorities have managed trust lands forests. Individuals, companies and institutions have managed private farm forests without direct control of KFS.

In 2006, the Government through the Forest Department in the Ministry of Environment and Natural Resources continued to play the role of regulating the provision of forest products for domestic and industrial use. Since 2004, the area under forest plantation programme has remained unchanged at 132.3 thousand hectares as there have been no excisions or opening of new areas for forest plantation development as shown in Table 1.

The area under indigenous and exotic forests also remained unchanged at 12.3 and 98.7 thousand hectares respectively.

Table 1: Forest plantation area, 2002-2006 000 Hectares

Type of forest	2002	2003	2004	2005	2006
Indigenous trees	12.3	12.3	12.3	12.3	12.3
Exotic trees	89.4	92.5	98.7	98.7	98.7
Total	**101.7**	**104.8**	**111.0**	**111.0**	**111.0**
Fuel wood and Poles Exotic trees	19.3	20.3	21.3	21.3	21.3
TOTAL AREA	**121.0**	**125.1**	**132.3**	**132.3**	**132.3**

Source: Ministry of Environment and Natural Resources

♣ PhD, EfD-Kenya/ University of Nairobi and Kenya Institute for Public Policy Research and Analysis

As shown in Table 2, six thousand hectares were planted with trees while two thousand hectares were clear felled in 2006 mainly by companies that were exempted from the current timber harvesting moratorium. The forest plantation stocking increased by 3.4 per cent from 117.6 thousand hectares in 2005 to 121.6 thousand hectares in 2006.

Table 2: Changes in forest plantation stocking, 2002-2006 000 Hectares

	2002	2003	2004	2005	2006
Previous plantation area	95.2	100.9	107.2	114.5	117.6
Area planted	6.7	7.8	9.3	7.3	6.0
Total	101.9	108.7	116.5	121.8	123.6
Area clear felled	1.0	1.5	2.0	4.2	2.0
Total area	**100.9**	**107.2**	**114.5**	**117.6**	**121.6**

Source: Ministry of Environment and Natural Resources.

1.1. Forest state and uses in Kenya

About 2.57% is still below the UN recommended rate and still far below the government target of 10%. Forestry and logging account for 1.0% GDP contribution (Economic Survey 2007). Non-timber, indirect values, ecosystem services, option and existence values all contributing to the local livelihoods are not factored in. No significant changes to forest cover between the years 2004- 2006.

Threats and challenges in forest resources of Kenya

Excision and timber cutting

Greatest loss of forest land in Kenya has been through excisions. The largest was in 2001 where 67,000 hectares were excised. Excision continues to be sanctioned by political leaders as they solicit for political support. The logging ban in 1999 on gazetted forest lands has encouraged poaching to meet demands. This has also resulted in loss of government revenue.

Population expansion and squatter encroachment

There is clearing of land for agriculture and settlement resulting from high population pressure. The overall effect of Shamba system has been reduced forest cover.

High demand for forest products

An estimated 80% of households rely on wood fuel for heating and cooking. There is also demand for timber for construction, poles for electricity, medicinal and other cultural uses.

Large losses of plantations due to pests and damage by game and fire

Blue gum chalcid has caused serious threats to eucalyptus trees in Western Kenya. Elephants have contributed to wide-scale destruction. An estimated 3,000 ha of government forest is lost annually through fires.

Competing land uses

These are wildlife, tourism, mining, agriculture, pastoralism and settlements.

For instance, a 2002 aerial survey of the Aberdares revealed a total of 18,497 livestock.

Inconsistent and unclear policy and inappropriate legislation

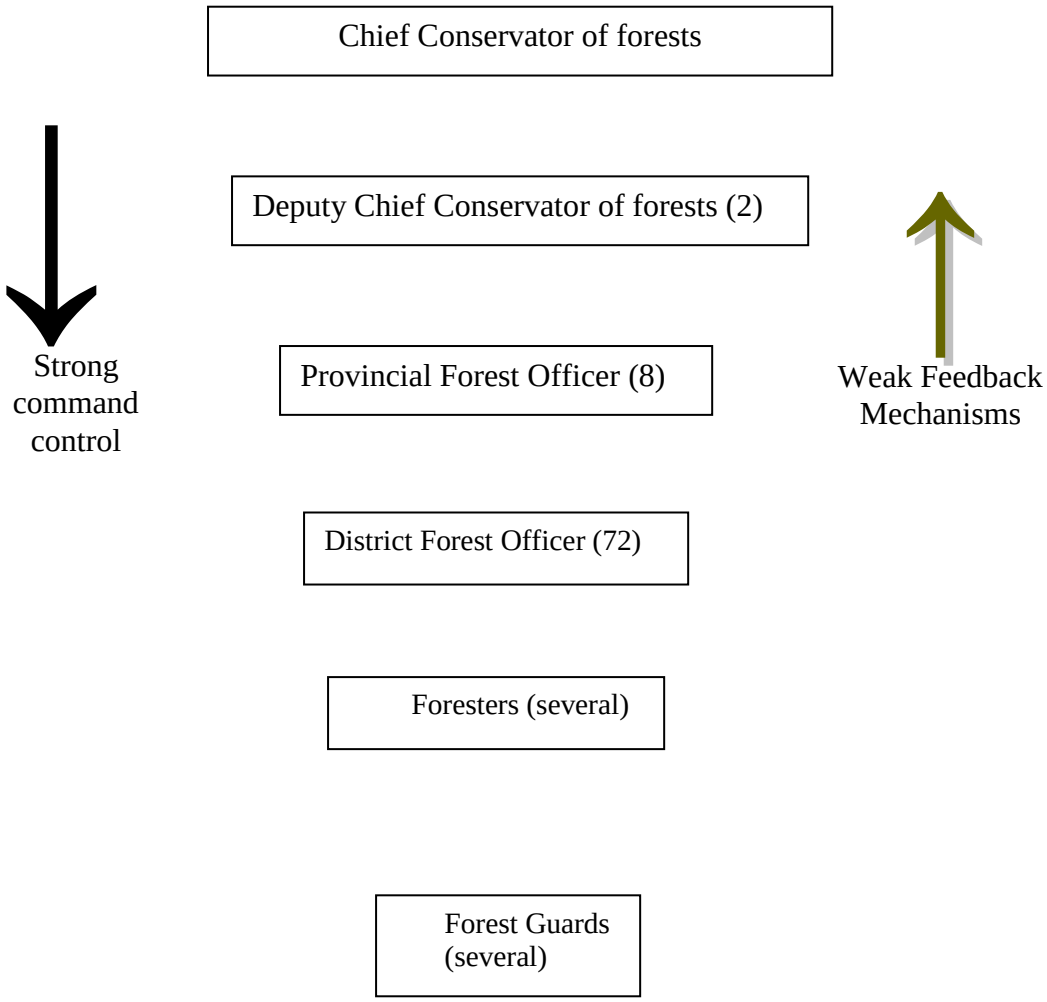
Unclear land policies, land tenure issues have led to unsustainable exploitation practices of forests. For instance, undefined property rights, biopiracy, undervaluation of forest resources.

2. Forest legislations in Kenya

2.1. Forest policy and forests Act Cap 385 of 1957

Historically, there was forest policy and forests Act Cap 385 of 1957 (rev in 1968). Forest management is in the control of the government.

Figure 1. Hierarchy in the historical forest management



Limitations for forest policy Cap 385

There are a number of limitations of forest policy Cap 385. First, over reliance on donors for technical and financial capacity is observed. Second, lack of measurable indicators for sustainably managed forests. Third, there is unclear legislation. Fourth, indigenous knowledge and practices are not well recognized. Fifth, there are underdeveloped marketing and utilization systems for farm forests. Sixth, inadequate technologies, supply of high quality propagation materials, and ineffective extension approaches. Seventh, lack of certification methods for natural forest products. And eighth, lack of mechanisms for evolving and dynamic populations influenced by a global culture.

2.2. Kenya Forestry Master Plan (KFMP) of 1994

In 1979, a Beijer Institute report predicted no tree left in Kenya in 2000. In response, the government of Kenya initiated the formulation of the Kenya Forestry Master plan (KFMP) which was adopted in 1994. The forest master plan was designed to guide the development of forestry sector in the next 25 years. It was based on a need to overhaul the existing forest policy and forests Act (Cap 385).

However, while the new forest legal and institutional framework began in 1996, it never quite took off partly due to 1997 and 2002-election years and 2005 referendum year. Kenya was faced with massive deforestation through excision of forests. For instance, Mt. Elgon and Mau forests were opened for settlement schemes. Kenya Indigenous Forests Conservation Program (KIFCON) failed due to lack of political will. In 1999, the forest bill was developed and in November of the same year the Government declared a 90-day suspension on timber harvesting. This was followed by an indefinite ban in 2000, which remains in force to date. The bill was later revised to Forests Bill 2000, which included a chapter on community participation. Several issues arose, the main one being the lack of political will, which delayed the entire process until 2005 when the new Forest Bill was formulated.

2.3. Forest Act of 2005

The Forestry Act 2005 was approved and came into force on 1 February 2007.

Table 3. Forest policy 2005

Elements of Policy	Thematic Areas	Guiding Principles	What It Seeks to do
Expanded mandate in the management of all types of forests Involvement of adjacent forest communities and other stakeholders in forest conservation and management Ecosystem approach to forest management planning. Provision of appropriate incentives to promote sustainable use and management of forest resources. Framework for a forest legislation Establishment of Kenya Forest Service.	Biodiversity, soil and water conservation Commercial purposes. Subsistence Use. Education and training. Extension services. Research and development Coordinating and harmonization of sectoral policies. Policy formulation and regulation	Intra and intergenerational equity, User pay principle Sustainable development Integrated management Community participation International cooperation Enhanced market value Cultural and traditional value. Precautionary Principle	Empower community involvement and support poverty alleviation policies. Promote sustainable forest management for various purposes Promote good governance in the forest sector Increase forest and tree cover and carry out inventories and valuation of forest resources and utilization to generate information for decision making. Protecting and managing soil and water conservation and preservation of habitats. Support the formulation of criteria and indicators for sustainable forest management To sustainably meet the needs of the local communities for wood and other forest products. Meet the demands for industrial wood products and provide linkages to industry. Promoting eco-tourism and other non-forest products.

Features of Forest Act of 2005

The 2005 Forest Act includes most of the provisions of the previous act with the following changes:

- Forest Board and KFS established under act
- It is inclusive and provides for stakeholder participation in forest management.
- It provides for the establishment of a new set of enforcement and institutional framework that stakeholders can identify with.
- It includes incentives for creation and management of private and farm forests.
- There is assignment of forest user rights
- There are enforcement mechanisms.
- It creates a forest service to formulate policy on the management and conservation of all forest types in the country
- There is application for community participation.

3. Experiences of Participatory Forest Management in Kenya

The new Forest Act in clause 46 indicates that communities could be involved in the management of public forests. Moreover, it has provided an impetus for the formation of community forest association (CFA) culminating from the PFM. In Kenya, there are pilot projects of PFM including Arabuko Sokoke, Kakamega and Shimba Hills.

3.1. Arabuko Sokoke Forest

It is located in coastal province and covers a total area of 41,600 hectares. Fifty-four villages surround the forest area with a population of 104,000. It is rich in biodiversity with 230 bird species, 52 mammals and over 600 plant species. The Arabuko Sokoke forest area is part of an expansive ecosystem that once stretched from Southern Somalia to northern Mozambique.

However, the forest area has since undergone degradation and forest loss due to illegal exploitation, lack of regulation and loss of biodiversity.

Socio-economic conditions of the area

The main occupation of the villagers is subsistence agriculture. About 20% of the households derive their income generating activities from wage employment in fuel wood licensees, wood carvers, herbalists and most recently through bee keeping and butterfly farming. Women continue to be marginalized in decision-making, and resource allocation. About 60-90% of the communities use the forests for heating, cooking and lighting fuel. There are no squatters in the area and shamba system was not successful due to crop raids by animals.

How does PFM work in Arabuko Sokoke Forest?

There is participatory stakeholder involvement like management team, local communities, other stakeholders, financial and technical assistance from EU and Birdlife International. They developed a strategic forest management plan (SFMP) to guide forest management operations for the next 25 years.

There are partnerships through MOUs by the forest department, Kenya Wildlife Service (KWS), Kenya Forestry Research Institute (KEFRI) and National museums of Kenya in order to enhance joint responsibility and ownership of actions. These and the advancement in ICT result in transparency and openness. PFM has adopted a precautionary principle approach due to the minimal knowledge of biodiversity in the area.

It is important to promote research and development especially on the needs of the communities. Priority is placed on conservation rather than extractive development. Strong institutional structures and human resource development are key aspects to facilitate linkages between reward and effort. Day to day activities are coordinated by four working groups: forest management, rural development, tourism and education, research and monitoring. This is overseen by a senior management committee (SMC).

Vision and objectives

The vision of Arabuko Sokoke PFM is to maintain a fully functional forest ecosystem that is sustainable for the future. The strategies are focused on forest zonation, ecotourism, environmental education, problem animal management, subsistence use of forests, infrastructure development, human resource development and monitoring and research. The objectives are defined by the national objectives for forest management and conservation of indigenous forests in Kenya.

Even without a legal status, much has been achieved through goodwill and cooperation of team members. This is mainly poverty alleviation strategies such as butterfly farming (KIPEPEO), bee keeping and ecotourism, empowerment of the communities, etc.

Threats

There are different threats to the Arabuko Sokoke Forests including:

- Lack of awareness by local communities of the important biodiversity as most have minimal local significance with no tangible benefits;

- A large proportion of the species mainly depend on a habitat of a certain structure, have a narrow distribution, often exhibiting single site endemism increasing their vulnerability; 50% of plant, 60% of bird and 65% of mammals are threatened;

- External economic pressures e.g. Titanium mining in the underlying sands;

- Forest excision to provide agricultural land and

- Lack of a legal status.

3.2. Kakamega forest management

The initial adoption of decentralization was concentrated on administrative matters which was government controlled. Recently a move to democratize forest management has popularized the formation of Participatory Farm Management (PFM). CFA's are preparing to enter into management agreement with forest service who reserve the right of ownership. The major roles of CFA entail lobbying and fundraising; conflict management; initiating activities on rural development and forest management and developing systems to deal with the issues of the poor and equity issues e.g. bee keeping, butterfly farming, and eco-tourism. The reasons for communities to participate in PFM are given in table 4.

Table 4. Reasons for community participation in PFM

Reasons communities participate in PFM by SANREM	**% frequency**	**Frequency**	**rank**
Access to other benefits	24.3	35	1
Better forest management and more benefits	21.5	31	2
Forest protection for the community and for the future	18.1	26	3
Increased forest products	16.7	24	4
Social aspects	13.9	20	5
Forced by government	0.7	1	8

Source: SANREM

4. Opportunities and constraints

Opportunities

Communities have the will as has been demonstrated by ASFADA (Arabuko Sokoke). They have since initiated projects like butterfly farming (KIPEPEO), honey production and eco-tourism. Build on existing social capital based on large numbers and heterogeneity of the communities. The system provides an avenue for resource allocation, technology transfer and capacity building. It is an opportunity to tap indigenous knowledge and experience. Empowers and enhances custodial attitudes among the communities.

Threats

Some of the threats are:

Conflict issues on individual rights vs corporate rights provided by the Forest Act

The forest Act provides for corporate rights and responsibilities to the CFAs participating in forest management while the communities are used to individual decision-making strategies on utilization of forests.

Short term benefits vs long-term benefits of forest products and services

At the initial involvement, communities are required to give more in terms of effort, finances etc. and returns are accrued later. This is a tough choice to make especially for impoverished communities.

Government management perceptions vs. community perceptions (especially on sharing of benefits and costs)

A lot of power is vested on the minister to formulate the rules and the new Act does not clearly state the extent of community involvement. The communities raised concerns that they were not involved in the establishment of guidelines for the formation of Community Forest Associations (CFA's).

Conservation vs exploitation of forest resources

The motivation for most communities was to utilize forests without government restrictions. This was ranked higher than the motivation for conservation purposes.

There are organizational dynamics in the following areas:

- Representation issues- CFA's composition may not be homogenous (have varying interests)
- Competition with other larger corporations
- Inconsistent legal framework and institutions
- Undervaluation of forest resources e.g. Market value for farm forests
- Is it pro-poor or elitist focused
- Governance issues- accountability, transparency, corruption
- Sustainability – unpredictable evolution of the group over time, can it be measured, monitored?
- Increasing resource demands, land use competition, population expansion
- Transboundary issues
- Lack of resources, incentives, and clear jurisprudence concerning their roles
- External interference- most funders do not let go and influence decision making a great deal.
- Liberalized markets and globalization

5. Broad PFM sustainability indicators

Sharing benefits and costs

Community participation is dependent on the benefits derived from the forests by the communities. It is important to include vulnerable and marginalized members of women and the youth as they provide the most labor, time and money.

Capacity building

Financial capacity is limited as most CFA's rely on their subscription fees to run their activities. Linkages between forests and livelihoods are solely on conservation and not community focused. Communities lack technical expertise. Accessing the legal system may be cumbersome and expensive.

Conflict resolution mechanisms

As there exists potential conflict areas from both internal and external sources, there is need to provide coping mechanisms and compromise strategies. CFA's should also aim at attaining a certain level of social and economic development to enhance their negotiation powers.

Institutional factors

The survival of PFM depends on an integrated approach in a broader context. It cannot operate solely as a single isolated entity. There is need to mainstream into rural development initiatives and incorporate community involvement in all national development policies.

Challenges facing KFS

Recent review with experts point to the following:

- Need for subsidiary legislation, rules and regulations, guidelines to implement the act. There are needs for guidelines for allocation processes, for plantations and PFM. Other legislations scattered in various government ministries and agencies, that, if not harmonized, might lead to conflicts and be counterproductive.

- NEMA that is mandated to coordinate environmental laws has remained elusive.

- KFS needs to identify legislation with potential for conflict e.g. water, wildlife, and agriculture.

- Training of law enforcement staff especially forest guards

- Local communities need to be sensitized on their roles and responsibilities.

- How can forest law and governance help in reducing poverty?

- Monitoring of forest offences not enough as logging and forest crimes have increased over the years.

- Self-sustenance of the KFS as a corporate body should not only rely on forest royalties.

- Rules for use on leased private/trust lands for resins, bio-fuels and timber.

Establishment of PFM is quite a noble idea in striving to achieve sustainable forest management in Kenya. However it is not without challenges. It should therefore be focused on continually meeting the changing needs of society and should incorporate the diverse interests and values which society attributes to the forest products both now and for the future.

The way forward

Since the Act is quite vague on issues of community participation, these should be dealt with by the rules and regulations governing CFA's.

To function effectively, communities need to be sensitized and educated in not only forest resources areas (e.g. silviculture) but also areas of business and financial management, conflict resolution, negotiation skills, leadership, legal affairs and so on. Governments having excluded communities in decision making, need to revise and reverse these exclusionary approaches to policy to a fully consultative, adaptive management strategy.

6. Recommendations

Establish participatory measurable criteria and indicators of PFM to be able to measure trends over time to inform policy and identify intervention areas and also to form an implementing task force to oversee the process.

Studies done have identified differing priorities between communities and the government. Governments should therefore consider some refocusing of their priority indicators to fit with the communities and likewise awareness raising should be done to sensitize the communities.

Develop a fund where money generated from forest management will be ploughed back to enhance the same.

To enhance the representation of the community members, there is need to adopt measures like social mapping (e.g. use of local language)

Need to agree on a realistic CFA composition, and level of involvements and to form a forum for sharing experiences and disseminating the information.

Mainstream PFM into rural development programs like the community development fund (CDF) and all other policies.

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Part V

Outcome of Breakout Session

Proceedings of the breakout session held as part of the workshop

This section presents the organization and outcome of the breakout session. Just before the breakout session organizers presented the proposed topic for discussion, group formation, chairperson and secretary identified for each group, reporting and discussion, and time allocation.

The topic identified for discussion was "Policies to increase forest cover in Ethiopia". The term "policy" was defined broadly to also include legislation, regulation, directives, guidelines and implementation. Under this broad topic specific issues discussed by each group are:

- Which forest types to focus on (state, community, commercial plantations, small scale individual plantations, farm forestry, co-management ….)?
- Which (aspects of) policies to focus on (property rights, marketing, energy consumption, biodiversity …)?
- What are the knowledge gaps in general and research issues in particular?
- What should be done (recommendation on the way forward)?

Formation of four groups was proposed. Groups were formed to make sure that each group has at least one person from each of the following organizations/institutions: federal government; regional government; non-governmental organizations and donors; research institutes and universities. It was agreed that chairpersons will present the outcomes of the group discussions at a plenary session.

A summary of the outcomes of the discussion of all groups put together is presented below. It is organized into four sections following the four specific issues that were discussed by each group (mentioned above).

Which forest types to focus on?

It was noted that all types of forests are important depending on the circumstances at hand. However, it was also agreed that private and community forests should be emphasized.

Potential improvements in efficiency associated with transfer of managerial responsibilities from the government to communities and the private sector was also stressed. Encouragement of small-holder and community forests was proposed also because of the greatest potential of land. Co-management of state forests and participatory forest management were mentioned as particularly important alternative management options available. Private commercial forestry should also be welcome and could make a positive impact particularly on dry lands.

The state has roles to play particularly in cases such as denuded watersheds and areas with significant role for biodiversity conservation. However, in cases where there remain state ownership of natural forests and commercial plantations there is a need to properly manage these resources as issues such as lack of enforcement and corruption could be important. While some of the problems may be associated with policies and their implementation, others may have to do with availability of the necessary material and human resources. These problems should be identified and resolved.

It was also noted that in addition to forests, woodlands are also in danger. Moreover, attention paid to forests and plantations away from urban areas should not imply neglect of urban forestry.

Which (aspects of) policies to focus on?

It was noted that property rights and ownership is the critical issue. There is a need to make a distinction between land policy and forest property rights and examine the appropriateness of existing land use policy and forest/tree tenure. Open access situation in state and community forests may discourage private sector involvement in addition to its negative effect on the efficient management of state and community forests. More should be done on certification of land use and forests beyond what is written on papers.

Implementation of policies should be in line with guidelines. Forest development based on concession and fuel wood production by individuals should be encouraged.

While there are problems with state forests, it is also important to carefully examine the alternatives. Given the high demand for land, if the forest land is given to communities or the private sector/individuals it may be changed to other land uses.

Particular constraints identified for community plantations are: lack of clear property rights; market constraints (market information, permit requirement to sell trees etc.); limited capacity associated with local level extension and professional support; institutional organization and capacity; and research capacity.

Constraints identified for state forestry are: Institutional organization and capacity; research capacity; implementation capacity; limited integration between and within sectors (forestry extension, research, but also energy etc).

It was also noted that in general marketing issues are very important.

Policies associated with energy consumption which could influence fuel efficiency and tree planting by individuals were also considered important.

The importance of biodiversity and the fact that forest priority areas are the main gene pool was also noted.

The need for better planning, monitoring and evaluation in order to identify more relevant outcome indicators was also stressed.

What are the knowledge gaps?

General knowledge gaps and limitations in the following areas were identified: standing stocks, deforestation rate, plantation rate and annual increment; management plans; economic contribution of forests to GDP (Natural Resource Accounting); international market information; propagation of indigenous trees (and seed availability); sharing of information and networking; impact of different policies and interventions; who is doing what and where?; biological and economic research on forest products (e.g. NTFPs) and case studies on different regions and different property right arrangements; situation of inaccessible forests; forest product market chain; impact of land use change on livelihoods of local community; relationship between community forestry and private forestry, e.g., does regulated access encourage tree planting?; evaluation of participatory forest management experiments– sustainability, efficiency, use right, equity, practicability; institutional set-up of forestry service.

Gaps identified in community based forests are: management of different kinds of forests under different environments; and relative profitability of various land uses and equity issues.

For state forests the following gaps were identified: proper management and planning; information about potential uses and management of natural forests for multiple purposes; propagation of indigenous trees and seed availability (on which there is a lot of information but it is not easy to disseminate this information and seeds).

Recommendations on the way forward

The following are recommended:

- Need to set up a national forest program
- Revisit the current institutional setup in order to promote communal and state forests. There is a need to carefully support the evolution of community

institutions for forest management and for effective management and use of state forests

- Clear property rights needed: there is a need to clarify land use in forest areas and forest property rights
- There is also a need to identify constraints associated with forest development and conservation such as marketing
- Institutionalized and periodic forest inventory system which includes proper management is needed; this may require assigning institutions and coordination. Possible institutions/organizations that could participate in this endeavor include Central Statistical Agency (CSA), Ministry of Finance and Economic Development (MoFED), and Ministry of Agriculture and Rural Development (MoARD)
- Need for an updated land use master plan
- Need for a more stable and strong institutional set-up and important to coordinate efforts. This requires vertical harmony (between federal and regional institutions) and horizontal harmony (across sectors both at Federal and regional levels) and also coordination with other institutions such as non-governmental organizations
- Need to strengthen institutional and human capacity at various levels in the forest sector
- Policies, laws and regulations should be in place together. Thus, there is a need to develop regulations, directives and detailed guidelines to follow the new forest policy. All stakeholders should participate both at federal and regional levels in the preparation of policies and guidelines. Policies should be reviewed continuously. Harmonization of different policies in the country is needed.
- Put in place a strong networking and information system among researchers, extension and policy makers (higher learning institutions are isolated). This could lead to a research program that can assist forest development.

- Research should focus on and address immediate forestry issues to meet the needs of people and extension.
- Proper valuation of forest resources necessary
- Socio-economic database on forest resources needed
- Study the impact of resettlement
- Integration with other farm activities necessary
- Political and administrative support needed
- Revenues collected from forestry activities should go back to forestry development and conservation