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The Effect of Urban Poverty on the Scale of Deforestation: A Case from Dendi District, Ethiopia.

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Acronyms

CBO - Community- Based Organization

CMR - Cooperative Management Regime

EFAP- Ethiopian Forestry Action Program

EPLF- Eritrean People's Liberation Front

EPM - Environmental Planning and Management

FAO- Food and Agriculture Organization

FRC - Forestry Research Centre

FUGs- Forest User groups

NGO - Non-Governmental Organization

PFM - Participatory Forestry Management

PFMU- Participatory Forestry Management User-Groups

WRM - World Rainforest Movement

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Declaration

I, Geremew Gomoro Kitil, declare that the thesis is my original work and has not been presented for a degree in any other university, and that all sources of material used for the thesis have been duly acknowledged.

Name of candidate Geremew Gomoro Kitil

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This is to confirm that the thesis work is complete and the candidate is ready for examination.

The Advisor – Professor Gerhard Albert

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Abstract

This paper examines the relationship between urban poverty and deforestation in the peri-urban region of Ginchi, Ethiopia. This analysis is carried out through the examination of Participatory Forestry Management (PFM) using the Five Dimensions of Urban Sustainability and incorporating them into the stages of Environmental Planning and Management. Primary research reveals that the high level of dependency of the urban poor has a direct effect on deforestation and thus any attempt to address the one problem will impact the other. However, I also found that the environmental problem was not exclusive to urban poverty but a result of weakness in all Five Dimensions. Therefore, Participatory Forestry Management is dependent on strong macro-level or other lobbying, whose success would be subject to the given context. In situations where this is not apparent, a flexible or alternate program must be implemented to address the environmental problem.

1. Introduction

1. 1 Background of the Study

According to the World Development Indicators 2003, with gross national income per capita of USD 100 in year 2001, Ethiopia was ranked 206th exceeding Democratic Republic of Congo (with gross national income per capita of USD of 80) (World Bank, 2003). This is a very low figure even compared with other developing countries. Using the conventional measure of poverty (1 USD a day), about 44 percent of Ethiopia's population falls under the poverty line, which is close to the African average but very low by LDCs standards. According to World Bank Development Indicators (2004), if one uses the 2 USD a day measure, the percent of population that falls under the poverty line exceeds 80 percent.

In Ethiopian case, although it is intense in urban areas, the fact that 85 percent of the population is residing in rural areas makes poverty mainly a rural phenomenon. The agricultural sector, which is dominated by small holding peasant farmers practicing traditional farming system, is the key sector to the economy. It generates more than 90 percent of the total export earning and employs about 85 percent of the population.

The fact that majority of the population earn their livelihood from agriculture sector, and that it is highly dependent on nature, makes sustainable agriculture and natural resources management at the heart of overall poverty reduction program. More importantly, the very poor, landless laborers, small farmers and female-headed households in both rural and urban areas are highly dependent on natural resources for income generation. Women fuel wool carriers in Addis Ababa and charcoal traders in rural Ethiopia are good examples. This

is consistent with the general statement that the very poor are highly dependent on nature and natural resources for their survival.

Rapid population growth (of 3 percent annual average) together with widespread poverty in the country has led to unsustainable uses of natural resources. Forest resources are one of the resources depleted quickly over the last three or four decades. Lack of awareness on the consequences of misuse of natural resources, traditional farming practice together with poverty driven human activates have contributed to the rapid loss of natural forests over this short period. As a result, the country has experienced problems such as severe changes in microclimatic conditions, recurrent drought, serious soil erosion, desertification, and loss of biodiversity. The irreversible loss of fertile topsoil and biodiversity and change in climatic conditions has an implication for poverty reduction and sustainable development effort of the nation.

Certainly, the causal relationship between poverty and environment is not quite clear, as whether poverty causes environmental degradation or environmental degradation causes poverty. However, most of the environmental degradations in developing countries are due to poverty driven human activities. In Ethiopia, also hopeless poverty induced the poor to become both agents and victims of environmental degradations (Sisay and Adguna, 2001).

To survive in this subsistence economy, the poor uses natural resources in unsustainable manner, which could even affect their future life adversely, creating a vicious cycle of poverty and environmental degradation. That is why in the Sustainable Development and Poverty Reduction Program of the country, conserving the environment (natural resources) was seen as part and parcel of the overall Agricultural Development Led Industrialization policy which is designed for poverty alleviation and sustainable development (MOFED, 2002)

Although deforestation is common in tropical areas, Ethiopia has lost its forest resources over short period. This can be verified by percent of forest cover of the country, which has showed big change over the last few decades. The country's forest cover, which was more than 16 percent of the total area in 1950s, is now less than 3 percent (FAO, 1995).

Causes of rapid deforestation may vary from country to country and from time to time. Hassan and Hertzler, 2000, and Benhin and Barber, 2001) argued that in many development countries; expansion of agricultural lands comes through clearing of forest resources. Cultivated land in Ethiopia over the last five or five decades has increased. Urban poverty together with the dependant of the poor people on forest resource has also contributed a critical role for loss of forest resources in the country. This causes deforestation which causes soil erosion and then the loss of biodiversity.

Therefore, to address the dependence of the poor and sustain the forest, identifying the effect of urban poverty on the scale of deforestation is crucial to solve the problem.

1.2. Statement of the Problem

Environmental degradation can occur naturally or through human processes and often it is a result of multiple forces of mismanagement. Such degradation has severe implications on all those who use environmental resources on a regular basis and in particular the poor, who have the highest exposure to environment related risks.

The link between the livelihoods of the poor and environmental resources is evident in both urban and rural contexts of third world countries. For most of the poor living in these areas, short -term survival is the main concern and therefore, there is a dependency on natural resources. Livelihood activities would include the exploitation of forests and rivers, with products either being consumed directly or sold (Bryant, 1997).

Chilimo state forest is a dry afro-Montane forest which is the source of several rivers including the nationally important Awash River. Expansions of agricultural land, cattle grazing and illegal timber extraction have been the major causes of forest loss in chilimo. Chilimo national forest is also used for fuel wood, charcoal and timber for the surrounding villages and the near by Ginchi town. In this forest, the sale of fuel wood and charcoal is carried out by the poorest households to supplement their livelihoods. This dependence of the poor people on the forest resource can cause deforestation.

Therefore, to minimize the dependence of the poor people on forest resources and to advance the environmental sustainability, identifying the root causes of the problem is essential.

To this end, I posed the following leading research questions to be answered at the end of the research:

- What is the effect of urban poverty on deforestation in Ginchi/Dendi (towards community forest management plans and decision-making)?
- What are the strengths and weaknesses of the strategies pursued by the different actors involved to provide a solution to the trend of deforestation (i.e. government stakeholders)
- How does the local population perceive the role of the participatory forest management?
- What measures should be taken to minimize the effect of urban poverty on deforestation levels?

1.3 Objectives

1.3.1 General objective of the study:

The main objective of this study is to examine the effect of urban poverty in the peri- urban region of Ginchi on Chilimo forest in order to contribute to development sound community forest management plans and rational decision making.

1.3.2 Specific Objectives of the Study:

1. To develop a theoretical framework to account for true contributions of forest resources.
2. To explore the economic, social, physical and environmental outcomes experienced and/or anticipated by urban poor (women and men, girls and boys) due to deforestation.
3. To identify and assess the strengths and weaknesses of the strategies pursued by the different actors involved to provide a solution to the issue (i.e. government stakeholders).

1.4 Hypothesis

Forest management that attempts to address the dependency of the poor on forests for subsistence is likely to result in a lower deforestation rate.

1.5 Scope and limitation of the study

Deforestation can be caused by many factors: by urbanization, the construction of infrastructure, logging, mining, the construction of hydroelectric dams, the clear cutting of native forests, unsustainable agricultural practices, and so on which occurs in many countries in the world. This study is restricted only on a single part of it that is the Effect of Urban Poverty on Deforestation. The area is chosen because of the high dependence of the poor people on forest products which less contributes to environmental sustainability. Therefore, the scope of this study concentrates on establishing the relationship between urban poverty and deforestation in this region.

1.6 Relevance of the research

The study will serve the following major purposes:

- The study will inform the problems associated with urban poverty and Deforestation.
- It will assist the local government in the design and making of policy issues.
- This study may initiate others to take up further study.

1.7 Organization of the thesis report

The thesis report is divided into five sections. The first one begin the background part, followed by the literature review section which is intended to explore the wider arguments on environmental degradation and its link to poverty, background information of Ethiopia on forest management , the potential of participatory forest management as a means to analyze this study. This is then explored through the analysis of a particular intervention as a means of understanding the link between poverty and deforestation. The research methodology is discussed under section three. Results and discussion on the wider implications of the intervention in relation to the original arguments were carried out in section four. Finally, conclusions and recommendations are put forward in regards to the specific context.

2. Literature Review

Deforestation has national implications not only for the supply of forest products but also for watershed conservation and rain fall, especially important in country region where food security is so vulnerable to small changes in rain fall patterns. At the local levels, these forests provide products for use and sale which are essential parts of the local livelihood systems, especially for the poorest house holds.

Destruction of forest clearly threatens those livelihoods which depend on forest products, but the sequent impoverishment of the soils and reduction in water supply also threaten the livelihoods based on cultivating cleared forest land.

Direct causes of deforestation include the conversion of forest lands for agriculture and cattle-rearing, urbanization, the construction of infrastructure, industrial logging, mining, the construction of hydroelectric dams and the clear cutting of native forests. These activities are not only linked to national issues but international macro-economic issues as well as countries in the South are often subject to global pressures for growth and engage persistently in these activities to meet these pressures. Most countries in the South also have debt from structural adjustment programs and thus require natural resources for short term profit. This inevitably leads to a lack of financial and human resources to address forest protection and management on a national level and results in a lack of incentive for seeking long term sustainability (World Rainforest Movement, 2002).

On the other hand, FAO statistics have revealed that 90% of deforestation is caused by unsustainable agricultural practices, which occurs in many countries in the world. It is argued that this is a result of the lack of knowledge of poor farmers and the lack of intensive

farming, which produces high yield on small areas of land. These statistics therefore speculate that it is in fact the poor that are causing the highest rates of deforestation and not higher powers.

However, the poor do not commonly leave their native land to clear forest areas without other factors encouraging them to do so. Consumption and production patterns also impact deforestation; despite the belief that this consumption is largely due to the poor. This is mostly due to the large scale production of cash crops. Cash crops are produced mostly by state or private farms for export, which again implicates national and global forces, including globalization and the rising demand for cheap raw material from the South (World Rainforest Movement, 2002).

A link has been identified between community impoverishment and the appropriation of land and forest resources that had previously been a common property. It is reasoned that because of their limited access to resources, the poor are often blamed for the degradation of non-renewable natural resources including forest degradation (Satterthwaite, 2001).

It has, thus, been established that the emergence of deforestation in Africa, Asia and Latin America has a link with human development. Although a causal effect relationship has yet to be established.

According to studies conducted in the urban/peri-urban fringe of Ginchi, however, the poor do have a greater impact on deforestation. The studies suggest this is a unique case because of Ginchi demographic profile. Ginchi is, among others, characterized by a number of lower income households, with a small number of elite. These lower income households are dependent on traditional fuel; both for household use (i.e. cooking) and as a source of income. FAO statistics also show that over 70% fuel-wood is consumed within the

household. These statistics compared with the consumption levels and demographic nature of Ginchi allows us to conclude that the urban poor have the greater impact on forests.

Theoretical predictions linking poverty and deforestation show how changing incomes and macroeconomic growth can affect forest clearing. For example, review of evidence concludes that income levels have unclear link to land degradation (Wunder, 2001). In some countries, higher incomes are associated with higher deforestation and in others; low incomes are associated with deforestation. Wunder concludes that as income growth occurs, forest outcomes will depend upon the strength of capital-endowment growth relative to the change in incentives. This means that if engaging in other activities becomes more lucrative, forest clearing becomes less attractive and therefore deforestation rates decrease. At the individual scale, theoretical predictions concerning income and deforestation are again unclear. Increased wealth may relax economic constraints thereby raising the capacity to clear; however a rising wage, which decreases poverty, will discourage labor-intensive forest clearing (Kerr, 2004).

Wunder's theoretical prediction is macroeconomic because he suggests that if other activities became lucrative, the poor would not rely on forests for subsistence therefore clearing rates will drop.

Theoretical predictions suggest that without controls for location, we find no effect of poverty upon the rate of deforestation. However when considering the dimension of land location/allocation, we find that the poor are often marginalized – they are on land that of worst quality. This lower quality of land tends to be cleared of trees more rapidly because its value as a resource is low. Therefore, poorer areas are seen to be cleared more rapidly than richer areas (Kerr, 2004).

This theoretical prediction is again somewhat observable within the context of Dendi/Ginchi. Recent policy in Ethiopia has allowed land around the city and all over the country to be given free of charge to Ethiopian Diasporas and elite – with somewhat less evidence of consideration for the original owners of the land. Although time restrictions apply, this marginalization would force lower income households, who have little power and representation, to occupy land of lower quality, as there would be no demand for it. This marginalization and redistribution of land also feeds into the issue of rural-urban migration into the city. Those who have lost their land would have incentive to migrate in search of better livelihoods and thus rely on whatever resources are found.

Grassroots actors can be disaggregated as they are not equally affected by environmental burden or the results of resource marginalization. Poor women have been identified as being forced to endure unequal cost of these problems because they have a closer relationship to the environment than poor men (Bryant, 1997). This is because of the multiple roles played by the women within the household. Women's responsibilities within the family unit demand that they care for the home and each family member as well as perform outside duties in terms of food and fuel collection. Women also have a tendency to assist men in agricultural and income generating activities, which means that they already endure a greater proportion of responsibilities within the home. As a result women rely heavily on the exploitation of resources to provide food, fuel and forms of income for themselves as well as other family members. For example, in Sierra Leone the men of the Mended tribe are responsible for growing the staple crop (rice), and are in control of key income generating activities(cash crop farms). Meanwhile the women must provide alternative staples from the forest before harvest as well as meat and vegetables all year. They also only ever gain meager incomes compared to the men of the tribe and often earn an income out of

handicraft production (Leach, 1993).This combination would result in heavy dependency on natural resources by women over men.

Women also endure greater consequences in regards to environmental degradation because it affects the amount of resources gathered and it impacts their working day. It is often the case that poor women in the South are responsible for collecting resources, and therefore any degradation would require them to work for longer hours to obtain the necessary resources. For example, mangrove depletion in India has caused women to walk for longer hours to obtain fuel wood.

Women's health is also affected by environmental degradation, as it would have a direct implication on their diet. Any food made would most likely be offered to their spouse and children first, resulting in under-nourishment; the greater the state of degradation the worse their health.

In the Ethiopian case it is again women who are mostly responsible for obtaining fuel; however they endure more health problems than those highlighted above. They are often engaged in the transportation of fuel wood, carrying extreme loads on their backs to the sell in the market. They are also exposed to the environmental hazard of cooking within the home, tolerating lung problems due to smoke.

2.1 Urban-Rural Migrations

The urban-rural link is crucial when considering issues of deforestation because the demand for resources in the city may limit availability for rural households. In cities where fuel wood are widely used by lower-income households, city based demand may deplete supplies formerly used by rural inhabitants. Agricultural production is also a problem, becoming an incentive for land owners to clear forests,

thus destroying rural inhabitants' livelihoods. This results in migration to the cities (Satterthwaite, 2001).

The migration of the poor is an issue because those who have left their home towns to live in the cities do not have a connection to their new environment and therefore do not feel obligated to conserve it. This is further aggravated by the fact that the city rejects their presence and they are denied land/tenure security, causing constant displacement.

Migration also causes direct stress on forest resources in the peri-urban areas as the increase in population means that higher numbers of low income households are now dependent on them for subsistence. Migration also leads to land and city expansion which causes trees to be felled for building and other purposes.

Low income households lack assets and capital and therefore do not have the means to compete effectively for profitable land. Consequently these households own less productive land; migrate farther from market areas; and squat on land with low tenure security. This increases the area of forest Cleared (Rudely and Roper, 1997). For example, low yield due to poor land quality could raise the area cleared to meet the minimum consumption requirement. Poor quality land also has a tendency to degrade rapidly, increasing the incentive for further forest clearing. In cases where households are forced to migrate, there is a tendency to shift to outputs such as cattle herding; which results in extensive land degradation. Finally, there are fewer non-agricultural opportunities in areas located far from markets. (Kerr, 2004)

2.2 Deforestation and Urban governance

Urban governance in Ethiopia was highly centralized during the Marxist dictatorship There were high levels of corruption therefore socio-economic affairs were seriously affected and overall urban

governance was weak. This previous system is now being restructured by the current government.

However, there is still evidence of policy from higher levels of power that have a tendency to hide or ignore the needs of poorer groups. For example if we take the Addis Ababa Development Plan for the years 2001-2010, it admits that institutional reform is necessary for current land management to be improved. It also claims that various participatory planning activities, including workshops, have been undertaken in order to resolve the issue in a fair and democratic manner. However, there are no details of such planning and workshops to validate the extent of consultation. This makes current land management practice questionable, especially when considering the allowance of Diasporas and elite to claim land.

There are also plans to manage informal settlements through relocation and the demolishing of unsustainable locations. This would have particular implications on migrants and displaced people as it would further disconnect them from the land; thus eliminating any feeling of responsibility to conserve. If relocation is also to take place and not managed properly livelihoods will be lost and there will be a greater need to exhaust resources for subsistence.

Major change in environmental policy in Addis Ababa includes the relocation of fuel wood production from the northern region of the city to the southern region. Among the entire urban/peri-urban region, this northern woodland area is where deforestation rates are highest; therefore this shift of production could have great positive impact on the region. However this shift of production will also cause those who depend on these northern forests to be forced to migrate, or find other means of survival –putting them in a situation of further deprivation.

Individual forest areas in peri-urban Addis Ababa do not have an established legal status because demarcation and mapping work proceeded without publication. This resulted in on-going land disputes with local communities as there is no clarity on the legality of tree felling within specific areas. Thus there is tension and lack of resolve, rendering protective legislation ineffective (EFAP, 1991). Other related environmental policy attempts include development of parks and enforced tree planting regulations. However most reform is on an institutional level and there is nothing that particularly addresses the issue of poverty in relation to deforestation. These situations are also seen in local areas of the country.

2.3 Extension and Land Management

Extension is "any program or activity that assists the local people to be willingly involved in forestry activities from which they will get some recognizable benefit within a reasonable period of time"(EFAP, 1991).

Land management is the way in which the rules of land tenure are applied and made operational. Land administration, whether formal or informal, comprises of an extensive range of systems and processes to administer:

- Land rights*:* the allocation of rights in land; the delimitation of boundaries of parcels for which the rights are allocated; the transfer from one party to another through sale, lease, loan, gift or inheritance; and the settlement of doubts and disputes regarding rights and parcel boundaries.
- Land-use regulation: land-use planning and enforcement and the mediation of land use conflicts.
- Land valuation and taxation: the gathering of revenues through forms of land valuation and taxation, and the negotiation of land valuation and taxation disputes.

Land administration is implemented through sets of procedures to manage information on rights and their protection, such as:

- Procedures for land rights include defining how rights can be transferred from one party to another through sale, lease, loan, gift and inheritance.
- Procedures for land use regulation include defining the way in which land use controls are to be planned and enforced.
- Procedures for land valuation and taxation include defining methodologies for valuing and taxing land.

People gain access to land in different way. These include:

- Purchase
- Adverse possession or prescription (the acquisition of rights through possession for a prescribed period of time).
- Leasing, or gaining access to land by paying rent to the owner.
- Inheritance or gaining access to land as an heir.
- Squatting illegally on land.

There is an institutional and functional overlap between programs that attempt to address extension. This type of institutional fragmentation renders these various programs ineffective because there is not a single collective power, or clear format by which extension can be carried out. For example, this institutional fragmentation is a problem in the peri-urban region of Addis Ababa because of the lack of clear policy regarding extension procedure. For example, the government would appropriate land in order to establish tree plantations and the lack of standard/agreed compensation policy during this procedure resulted in the destruction of project resources. This was due to the negative response by the urban poor who were displaced as a result of the procedure. Therefore strategies of fuel wood projects have had to be redesigned; however there is an urgent need for institutional change so that these projects have reinforcement/support from higher levels of power.

There is a historic tendency to farm in the highlands of Ethiopia and this has lead to the clearing of up to 1,410 km² of major forest area per year (FAO, 2007). This clearing has resulted in huge levels of soil erosion, loss of biodiversity and landslide issues. However, the state still encourages farming in the highlands; this is reflected in the local areas (Ginchi- the town located below highlands that are farmed causing simultaneously destroying the soil.

In 1975-1983, state bodies such as the forestry department, were created to secure the state and the elite with the ownership of forests. This action came at a time of political instability between Ethiopia and Eritrea (when Eritrea was fighting for independence). Despite peace talks between the Ethiopian government and the Eritrean People's Liberation Front (EPLF), Eritrean rebel forces gained strength and eventually control over 90% of the entire region of Eritrea and Tigray. The repeatedly failing campaigns by the Ethiopian government to regain this lost land caused a huge financial strain on the national treasury. This inevitably resulted in a government attempt to control Ethiopia's entire resource base. This was carried out by slowly withdrawing the rights of local communities of their forest/land resources with the intent of generating revenue for the state treasury. However, upon realization of the importance of forestry in regards to rural development, the state changed its tactics to be more rights based. Yet the land appropriation of the past has caused confusion in regards to the ownership of resources; this combined with the mistrust of civil society, has stalled forestry initiative (FRC, 2002).

In 1995 the new government of Ethiopia placed all land under state ownership, releasing "Land Holding Certificates" for farmers to harvest family owned land (The Times, 2008). This law is still active today, with any other land being leased out to the public depending on the intended use. Agricultural land is given a 30 year lease and land used for residential purposes is allowed a 99 year lease. Despite this leasing

system, land is un-exchangeable asset that if unwanted must be returned to the government; it cannot be sold. The value of leases differ according to location, leases taken out for agricultural purposes are often cheaper to obtain as they are outside the city ; whereas residential leases are often sold at high rates as they are mostly within the cities/towns.

This poses a problem for lower income households in the peri-urban region because leases would be valued at high rates due to their proximity. This could result in families squatting in the city to avoid such costs. This current land management scheme would add to the feeling of rejection felt by the poor, as lack of land rights implies lack of visibility and has an immediate effect on the lives of the poor. Therefore they engage in activities such as the active felling of forests with the simple intention of survival, sometimes with the recognition of the environmental implications.

2.4 The role of poverty in deforestation

Poverty plays a major role in deforestation. The people who live in and around forests rely on these ecosystems for their survival. They collect fruit and wood, hunt wildlife to put meat on the table that extracts resources from forest lands.

Most rural poor never have the options that no one can take for granted. These people almost never have a choice to go to college or become a doctor, factory worker, or secretary. They must live off the land that surrounds them and make use of whatever resources they can find. Their poverty costs the entire world through the loss of the forests and wildlife. Without providing for these people forests cannot be saved.

2.5 Causes of Deforestation:

2.5.1 Direct Causes

People have been deforesting the Earth for thousands of years, primarily to clear land for crops or livestock. Although tropical forests are largely confined to developing countries, they aren't just meeting local or national needs; economic globalization means that the needs and wants of the global population are bearing down on them as well.

Direct causes of deforestation are agricultural expansion, wood extraction (e.g., logging or wood harvest for domestic fuel or charcoal), and infrastructure expansion such as road building and urbanization. Rarely is there a single direct cause for deforestation. Most often, multiple processes work simultaneously or sequentially to cause deforestation.

The single biggest direct cause of tropical deforestation is conversion to cropland and pasture, mostly for subsistence, which is growing crops or raising livestock to meet daily needs. The conversion to agricultural land usually results from multiple direct factors. For example, countries build roads into remote areas to improve overland transportation of goods. The road development itself causes a limited amount of deforestation. But roads also provide entry to previously inaccessible and often unclaimed—land. Logging, both legal and illegal, often follows road expansion (and in some cases is the reason for the road expansion). When loggers have harvested an area's valuable timber, they move on. The roads and the logged areas become a magnet for settlers—farmers and ranchers who slash and burn the remaining forest for cropland or cattle pasture, completing the deforestation chain that began with road building. In other cases, forests that have been degraded by logging become fire-prone and are eventually deforested by repeated accidental fires from adjacent farms or pastures.

Although subsistence activities have dominated agriculture-driven deforestation in the tropics to date, large-scale commercial activities are playing an increasingly significant role. In the Amazon, industrial-scale cattle ranching and soybean production for world markets are increasingly important causes of deforestation, and in Indonesia, the conversion of tropical forest to commercial palm tree plantations to produce bio-fuels for export is a major cause of deforestation on Borneo and Sumatra.

2.5.2 Underlying Causes

Although poverty is often cited as *the* underlying cause of tropical deforestation, analyses of multiple scientific studies indicate that that explanation is an oversimplification. Poverty does drive people to migrate to forest frontiers, where they engage in slash and burn forest clearing for subsistence. But rarely does one factor alone bear the sole responsibility for tropical deforestation.

State policies to encourage economic development, such as road and railway expansion projects; have caused significant, unintentional deforestation in the Amazon and Central America. Agricultural subsidies and tax breaks, as well as timber concessions, have encouraged forest clearing as well. Global economic factors such as a country's foreign debt, expanding global markets for rainforest timber and pulpwood, or low domestic costs of land, labor, and fuel can encourage deforestation over more sustainable land use.

2.6 Effects of Deforestation

The United Nations Conference on Environment and Development (UNCED) in 1992 defines deforestation as "land degradation in arid, semi-arid, and sub-humid areas resulting from various factors including climatic variations and human activities." The effects of deforestation can be categorized in three ways. They are:

environmental effects, local social effects, and global social effects. Many of the environmental effects contribute to the severity of the social problems. That is why it is important to understand the environmental effects of deforestation and how they contribute to the social effects of deforestation.

2.6.1 Effects on Biodiversity

The World Wildlife Fund (WWF) defines biodiversity as "the wealth of life on Earth, the millions of plants, animals, and micro-organisms, the genes they contain and the complex ecosystems they build into the living environment." Rainforest are one of the most biologically diverse regions of the world. Over a million species of plants and animals are known to live in the forests and millions more are not classified. The unique environment of the rainforest allows for such biodiversity existing.

The process of deforestation in various geographical regions is destroying this unique environment. Consequently, many animals and plants that live in the rainforests face the spirit of destruction. The loss of the plants and animals leads to diminished gene pool. The lack of biodiversity and a reduced planetary gene pool could have many unexpected ramifications, some of which could be serious to the future of humanity. In addition, there are ethical, aesthetic and philosophical question regarding mankind's responsibility for other life. This issue concerns more industrialized countries in the North more than it concerns lesser developed countries in the South. This is especially true in developing countries such as Brazil.

Another issue that probably concerns the North more than the South is the advancement of humanity. As the earthly gene pool continues to diminish, there are fewer opportunities for advancements in many fields. In particular, medicine may benefit from the cultivation of certain plants that grow only in rainforests. The medicines that come from them could cure cancer, AIDS, or other terminal diseases. Of

course, that claim can easily be dismissed as speculative, given that there is little or no evidence to support it. However, it is too early to dismiss the possibility. Furthermore, if the rainforests are completely destroyed, the opportunity to explore that possibility would be lost forever. The effect that would have on future generations is immeasurable. Preserving the rainforest would leave many opportunities in medicine and many other fields open for future generations to explore and further advance humanity.

There is at least an issue that would concern both North and South equally. That is preservation and is compatibility with forest use and management. Different people have different uses of rainforests. Indigenous people who live in the forests, as well as the non-indigenous people who live in the forests, the forest is their home, source of food, shelter, nourishment, recreation, culture, and livelihood. The forest provides the materials for their homes, wood for their fires, the fish, the edible plants, and many more necessities as well as amenities. Some of the non-indigenous people sell some of the forest resources for money. They do not exploit the forest because they sell commodities in limited numbers to preserve the forest resources for the future. This ensures that they can continue to make their livelihoods by selling products from the forest.

There are people that see the forest as sources of money. These people exploit of the forest. They cut down trees for rare, exotic timber that sell at high prices. Their primary concern is profits. In the short term, they can make huge profits selling exotic timber. If this is continued for some time, eventually, there will be no more trees to cut down. People who make their living from cutting and selling trees will go bankrupt. The same thing applies to gold mining and raising cash crops. In the case of cash crops, what happens is the soil, which is usually poor to begin with, further degrades until the soil is no longer good for agriculture. People who make their living of raising cash

crops are forced to move to other areas until all the soil goes bad. Then the cash crop farmer goes broke.

Can all of the diverse interests, the needs of forest dwellers and the wants of big business people, be resigned with? Is it possible to preserve enough of a rainforest while allowing parts of it to be used for commercial purposes? Are the needs of the animals living in the forest a factor in this debate? Any successful policy of action regarding the management of rainforest must address of these questions. The matter is further complicated when the various effects a single action can have are considered. For example, if too much timber is cut, the soil that once had sufficient cover to keep from going dry now gets baked in the sun, that same soil is subject to erosion, the forest becomes less capable of surviving big storms, and the whole forest begins to degrade and eventually die. That does not even consider how these effects will affect the animals living in the forest. Another example is mining for gold. The mercury that is used gets into the food chain, ultimately giving forest dwellers a case of mercury poisoning. How does mercury poisoning affect other animals or plants in the food chain? A third and a final example is cash crop agriculture. First of all, clearing the timber exposes the soil to the sun and makes the soil susceptible to erosion. The soil itself is not really good for agriculture, and the soil becomes totally useless in a matter of years so the cycle is started again. This rapid destruction of rainforest has various effects on forest dwellers and animals. None of which are good. The indigenous people and the forest dwellers do not benefit from the exploitation of the forest. Exploitation, through the destruction of the forest, destroys the source of life of the indigenous people, forest dwellers and animals that live in the forest. On the same token, the rich business man can not get what he wants if he must consider the needs of the people and animals that live in the rainforests. If he considers the need of the people and the animals, then he can not cut down all the trees he wants. He might not even be able to cut trees in

certain areas. That means his profits will not be as big as he can get. It is a real dilemma. Unfortunately, the trend is in favor of the rich business man.

Image 1.An Image *showing effects of deforestation on biodiversity*

2.6.2 Climate Change

When an area of rainforest is either cut down or destroyed, there are various climate changes that happen as a result. The following is a list of the various climate changes with a brief description of why they come about.

2.6.2.1 Desiccation of previously moist forest soil

What happens is because of the exposure to the sun, the soil gets baked and the lack of canopy leaves nothing to prevent the moisture from quickly evaporating into the atmosphere. Thus, previously moist soil becomes dry and cracked.

2.6.2. 2 Dramatic Increase in Temperature Extremes

Trees provide shade and the shaded area has a moderated temperature. With shade, the temperature may be 98 degrees

Fahrenheit during the day and 60 degrees at night. With out the shade, temperatures would be much colder during the night and around 130 degrees during the day.

2.6.2.3 Moist Humid Region Changes to Desert

This is related to the waterlessness of previously moist forest soil. Primarily because of the lack of moisture and the inability to keep moisture, soil that is exposed to the sun will dry and turn into desert sand. Even before that happens, when the soil becomes dry, dust storms become more frequent. At that point, the soil becomes useless.

2.6.2.4 No Recycling of Water

Moisture from the oceans fall as rain on adjacent coastal regions. The moisture is soon sent up to the atmosphere through the transpiration of foliage to fall again on inland forest areas. This cycle repeats several times to rain on all forest regions.

2.6.2.5 Less Carbon Dioxide and Nitrogen Exchange

The rainforests are important in the carbon dioxide exchange process. They are second only to oceans as the most important "sink" for atmospheric carbon dioxide. The most recent survey on deforestation and greenhouse gas emissions reports that deforestation may account for as much as 10% of current greenhouse gas emissions. Greenhouse gases are gases in the atmosphere that literally trap heat. There is a theory that as more greenhouse gasses are released into the atmosphere, more heat gets trapped. Thus, there is a global warming trend in which the average temperature becomes progressively higher.

2.6.2.6 More Desertification

According to the United Nations Environmental Programme (UNEP) in 1977, deforestation is an important factor contributing to desertification. What is unclear is how fast deserts are expanding is controversial. According to UNEP, between 1958 and 1975, the Saharan Desert expanded southward by about 100km. In 1980 UNEP

estimated that desertification threatened 35 per cent of the world's land surface and 20 per cent of the world's population. Recently, groups challenged those conclusions. Some scientists claim that the conclusion was based on insufficient data. Nevertheless, desertification still threatens more and more dry lands.

2.6.2.7 Soil Erosion

Deforestation is known to contribute to run-off of rainfall and intensified soil erosion. The seriousness of the problem depends much on soil characteristics and topography.

2.6.2.8 Other Effects

There are many rewards such as clean air and clean water, perhaps the two most important, that forests provide. Rainforests also provide many aesthetic, recreational and cultural rewards. If the rainforests are destroyed, then these rewards disappear. This has major social repercussions for the entire world.

2.7 Deforestation and its social implications

The consumption rates of fuel wood in peri-urban Ginchi have related economic and social implications.

2.7.1 Macro-level implications

Deforestation causes soil erosion which causes the loss of biodiversity. This loss will have an impact on agricultural yield which will inevitably lead to the rise of food prices. This rise of prices will have the greatest impact on the poor as they are the ones that are most vulnerable to economic shocks. In the worst case, less agricultural yield could lead to food shortage. If deforestation levels reach a point that they will cause a food shortage, it would again be the poor that would be worst affected, being at the greatest resource disadvantage.

Other consequences of deforestation and thus fuel wood scarcity are people may be forced to substitute fuel wood with other sources of fuel. If these sources include dung or animal wastes which are normally used on the field for fertilizer then this would have implications on soil fertility, and thus result in desertification. However, if people replace fuel wood with kerosene or electricity then there will be less stress on remaining forest coverage; this could be an opportunity for forestry management schemes (FRC, 2002).

2.7.2 Micro-level implications

Deforestation would have a direct impact on urban poor households. If prices of fuel wood were to increase due to a resource shortage then urban poor households would be worst effected (FRC, 2002). In relation to the increase in prices is that the urban poor will be encouraged to use alternative fuels such as electricity which would reduce the risk of environmental hazard caused by fuel wood fumes.

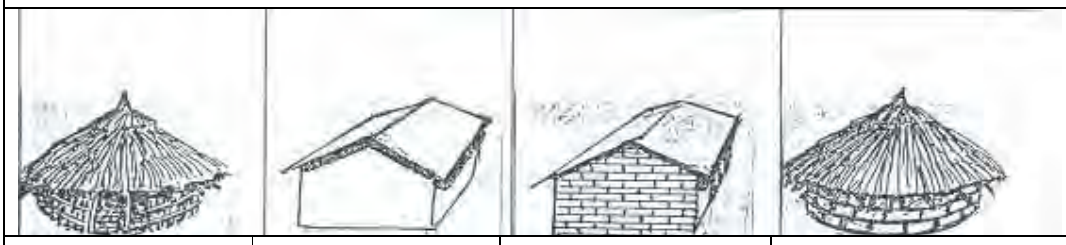
Within the household itself, it is most likely that female members would suffer the greatest consequences, being the members of the family responsible for the collection of fuel wood for household consumption. They would have to travel farther to fell trees, and the time taken would have a knock effect on other activities they could take part in. For example, young girls would have to help their mothers either by collecting fuel wood or by taking over the chores of the household. This often results in education being compromised. Since the women in the household also chop trees to sell, the lack of fuel wood would decrease household income and has implications on food consumption.

Image 2. Timber being loaded by locals for market sales

Taking into account the financial, organizational and socio-economic problems of Ethiopia, as well as the rate of penetration of technological advancement there seems to be little possibility of a speedy change to more advanced fuel forms (FRC, 2002). If conservation schemes were to be launched that considered their needs, resulting in sustainable levels of felling, they would undoubtedly give their support.

Wood in Ethiopia is accessible to the point that it is used widely in the construction industry for scaffolding, despite health and safety implications. The vast majority of low income houses still use high levels of wood as a main building material; this is done in scattered quantities in the city, but is common practice in the peri-urban and rural areas of Ethiopia. This is because wood is an accessible resource, and cheaper to obtain than brick, metal, or concrete.

Table 1. Dominant materials used in the construction of homes in Ethiopia.

Types of Houses			
			
"Sar- bet" Grass – House	"Cheka-bet" Mud-House	"Bet" Building	"Tukul" Mud-Brick House
Materials (approx. %)			
Wood = 50	Wood = 70	Stone = 80	Mud = 70
Mud = 30	Mud = 25	Wood = 15	Grass = 20
Grass = 20	Iron = < 5	Iron =< 5	Wood =< 10

Source (Jiru, 2007)

The information detailed in Table 1 illustrates the importance of forest management because it shows those low income households are dependent on forests in almost every aspect. If forest management is conducted in an inclusive and sensitive manner it has a chance of success because it will take all these issues into consideration when formulating strategies. The literature review has allowed some insight into the challenges faced by the urban poor in regards to deforestation. Given the history of poor land management and marginalization, I feel there is an opportunity within participatory forestry management (PFM) to address the dependency of the poor and sustain the forest. Therefore, in order to fulfill my objectives I will do an analysis of a PFM project in the urban periphery of Ginchi.

2.8 Participatory Forest Management Framework.

2.8.1 Political History of Chilimo- Gaji forest

Until the end of 19th century, as in most parts of Africa, most natural resources, including water, forests, and grazing lands had been managed as a common resource among the native study area communities: the Oromo's (Mirgissa, 1994). Different historical sources indicate that the Oromo people have had an egalitarian culture and an indigenous democratic form of governance and resource management systems (the Gada system) until the introduction of Feudal monarchy by Menelik II, a century ago (Legesse, 2000).

Minlik's intrusion into the area in 1889 not only extinguished the pre-existing political structures and property relations but also introduced faulty political structures and resource tenure like Gult- lordship systems that eventually alienated the local people from their land and produce (Melaku, 2003). Several hectares of forests, agricultural and grazing land were brutally snatched from the indigenous community and 'generously' offered to war- leaders, royal families and churches.

Melaku (2003) indicates that severe coercive forces were the main tool to alienate the locals from natural resource and to extract their produce throughout the successive periods of monarch (1889-1974).

Moreover, the Ethiopian landed gentry and 'great lords.' Unlike their true counterparts in some other feudal societies, did not sponsor public works designed to maintain and enhance the long-term productivity of the land, and rather primarily oriented to increased extraction, not investment (Hoben, 1995). For instance, large proportions of Chilimo-Gaji forests had become the private property of royal families from the beginning of 20th century and the customary rights of local communities were curtailed. Though successive

inheritance, of the forest remained in the hands of the landlords (Melaku, 2003).

Empress Menen introduced her own private saw- mills and heavily exploited the forests, during her tenure, especially after the Italian occupation. Melaku (2003) wrote "at the end of the Italian occupation, the Imperial court and its portages returned from exile destitute. The only readily available resources were agricultural lands and forests.

Chilimo went to Etege Mennen and was put under the administration of the empres's "bete-rist" Accordingly, Chilmo-Gaji forests had become one of the main sources of timbers for Addis Ababa from 1934-1976. In general, the royal families and their political allies irresponsibly overexploited Chilimo-Gaji forest for more than four decades without any significant maintenance to the natural stocks.

Following the forest proclamation of 1980, which was taken as a legal extension of the 1975 Derg land reform, Chilimo-Gaji forests were officially demarcated and declared as state forests. The demarcation processes confiscated and included all former landlords' forests land, community's grazing and agricultural lands without any consent from the local communities. The aim was to establish large- scale state forest plantations under a better management system. However, most scholars agreed that it was the most terrible steps taken by the state, especially in destroying state- community relations. The state's impulsive expansion into individual holdings to establish state-owned forest obviously dragged the villagers away from their holding and alienated them from the very natural resource on which their lives depend. This, together with the ill-defined community rights over forest and the top-down bureaucratic approach, created a remarkable hostility between villagers and state initiatives (Melaku, 2003), Generally, the totalitarian systems of the Derg created the widespread impression that trees, in some cases including privately planted trees

around homesteads, belonged to the state and could not be harvested without the permission of the authorities (Hoben, 1995).

Following the fall down of the Derg regime in 1991, until the establishment and consolidation of transitional government, a power vacuum was created in the formal institutions for the first couple of years. During this period all state owned forest reserves including the Chilimo-Gaji forests were recklessly exploited by rural and urban unemployed and war returnees as nearly as an open –access situation' (Melaku, 2003).

Some authors also explained this massive and random destruction of the forests as a reaction to Derg compulsion where the community released their unexpressed feelings. Melaku reported on over 49% forest area reduction immediately after the down fall of the Derg and he related the uphill struggle to exploit the former state property with and 'open- access' situation in which there was no institution of authorities to protect all state properties, including the state forests.

In the aim to stop this declining and denudation of the Chilimo-Gaji forests and to take steps to recover some forest cover and quality, FARM-Africa and the government of Ethiopia (Forestry department) initiated joint forest management schemes in 1996. The scheme recruited local communities living in and around the forest as partners in the joint management. This shift in standard was triggered by the wider global policy discourses toward grass-root development, and facilitated by the enabling policy environment created in the country since the early 1990s.

The forest Proclamation No. 94/1994 which recognizes, at least on its preamble, the need to involve the communities residing within and around the state forests in development and benefit sharing, was one of those remarkable policy changes. It states:" the sustainable

utilization of the country's forest resources is possible through the participation of the people and benefit sharing by the concerned communities". The weaknesses of the state to police forest areas effectively and the ever growth of deforestation was another immediate reason to seek the partnership of local communities. The NGOs who took the initiatives also aimed to demonstrate to the government that forest management plans can be made with local communities and that locals are willing to take responsibilities to manage resource when the government guarantees forest use- right.

The Chilimo participatory forest management project implementation was divided in to two phases. The first phase, which was conceived as an experiment to develop the modalities and conditions for the participatory forest management, was run form1996 to 1998. In this phase buffer zone development and providing alternative sources of income for the forest dependent community was intended to relive pressure on the forests and to stop destructive forest use. The phase was reviewed in June 1998, and the welfare- based approach was found out to be unsustainable and the reviewers recommended shifting the approach toward building the capacity of the locals to plan and to use the forest sustainable (from a kind of benefit- sharing to power-sharing) (Anonyms,1999).

With this shift in emphases, phase II commenced in 2002 with the primary purpose to ensure community participation so that their responsibility of conserving and developing the forests will be shared between the state (forestry department) and the local communities. Building institutions that can handle this responsibility has been the primary task of phase two.

2.8.2 History of participatory development in Ethiopia

In Ethiopia, participation has had a long history as a community forestry program, particularly participation based on material

incentives, where locals sell their labor for food or cash, commonly called 'food for work', has been practiced since the late 1970s. Since then, as elsewhere in the world, participation has become very fashionable and catchword for politicians and development practitioners.

Despite the naming, however, communities were forced and dragged in to "participatory" project or campaign without any interest and knowledge, simply in the very name of participation. In such a case 'participation' is equated with 'Work campaign', locally called "sira zemecha". Moreover, the ill-defined community rights over forest and the dictatorial and top-down bureaucratic approach of the Derg regime created a remarkable hostility between local community and state initiatives (Azene Bekele, 1997; Melaku, 2003).

Within this historical context, the Ethiopian government initiated new participatory forest management approach in the late 1990s with the aim to test a new forest conservation approach that ensures sustainable management of forests while improving the livelihoods of forest-local communities. The internal weaknesses of the state to police forest areas effectively and enforce its own rules, together with the wider global moves toward grassroots development, triggered the shift in paradigm toward participatory resource management. The inception of participatory forest management in Ethiopia can also be envisaged within the broader context of the country's decentralized policy and liberalization of economy, initiated since the fall of the socialist military regime in 1991.

2.8.3 History of participatory forest management in Ethiopia

In Ethiopia, the idea of community participation in forestry goes back to 1975; numerous massive reforestation programmes were undertaken based on the principle of 'labor exchange for wage'. In most' participatory' projects, plans were drown in the capital city by

small groups of experts, and participants were forced to contribute free labor to achieve a target figure fixed and given by their external supervisors. As a consequence, local participation was more forced than voluntary (Azene bekele, 1997)

A second major constraint in the initial participatory community forestry programmes in Ethiopia was the ill- defined community rights over forests. Consequently, most community forest, established through such a participatory programme, was later appropriated by the government without any compensation to or benefits sharing with the local community. This created hostility between the local community and state initiatives. Moreover, within the last three to four decades, the country underwent three radically deferent political regimes involving in each regime, economic, legal and administrative reorganization. Concurrently, the forest property regimes were repeatedly and drastically remodeled to fit the prevailing political ideology of the time (see Table 2 below).

Table 2. Forest property right shifts over the period 1936-2002

Regime	property regime	Dominant Regime	property rights enforcement	Attached difficulty
Italian (1936-41)	state private	shift to state	strict	Discriminatory
Imperial (1942-74)	State, private and communal	private	Very weak	Absolute private property right; Alienation of local users; near open-access
Military regime (1974-91)	state, community	state	Weak	Absolute private property rights; Alienationof local users;
EPRDF (1991 to 2002)	State/Regional Private	State /Regional	Very weak	Near open access; Institutional Stagnation?

Source: (Melaku Bekele, 2003)

To stop this resource degradation and to recover the forest cover and quality, new initiatives have since been stimulated in Ethiopia. One

typical example is the participatory forest management programme initiated in three national forest priority areas (Chilimo, Bonga and Adaba Dodola forests) by FARM-Africa and the Government of Ethiopia.

The Chilimo participatory forest management scheme is one of the pilot projects that have been tested as a new forest conservation approach since 1996.

The major objectives of Chilimo participatory forest management are:-

- ☞ To develop, conserve and manage Chilimo forest through community participation.
- ☞ Empowering the community by organizing them as FMG (Forest Management Group) to protect and develop the forest resources.
- ☞ To enhance agricultural productivity as a complementary non forest product activities by introducing different verified technologies.
- ☞ To build the capacities of the communities and line departments through training and experience sharing tours.
- ☞ To ensure sustainable forest management while improving the livelihood of forest- local communities.

Currently; this programme offers a good opportunity to evaluate the feasibility of the new approaches towards participatory forest management in Ethiopia and to assess whether the limitations of the former participatory forestry schemes have been overcome.

A Participatory Forestry Management scheme is a type of Co-operative Management Regime (CMR).

Participatory forest management is:

- ❖ A new model of forest management and conservation that involves all stakeholders
- ❖ It is a system by which communities and Government work together, to define rights of forest users and ways of sharing forest resources management.

- Featuring decentralized decision -making.
- It is a means to create a common resource management method.
- A commitment to make unmanaged forest land a productive asset

A CMR is a form of social regulation which includes participants from each sector and provides a forum for negotiation to achieve a common solution to an environmental problem. They are not a replacement for the entire institutional framework on environmental regulation but are rather a response to a particular environmental problem. Such regimes are often long term and attempt to collaboratively manage a resource beyond traditional forms of governance. These practically oriented regimes, however, emphasize the public/private link as a tool to enhance potential for environmental problem mediation (Meadow croft, 1998).

A CMR also has unique structural circumstances than other forms of governance as it works through direct negotiation among concerned interests and does not involve political or electoral procedures. The varied and overlapping interests of the many groups will also insure that no one group or interest will gain dominant political authority or control over another.

This kind of structure demands open access and transparency, with a level of interaction that not only fuels the formulation of policy but also emphasizes joint implementation strategies (Meadow croft, 1998). If a CMR is implemented at the earlier stages of an environmental problem it has the possibility to deter polarized conflict because all stakeholders will already be engaged in a dialogue. However, this is dependent on the reliability of each actor; it would require a level of commitment to instigate long term change.

Although CMRs are alternate forms of intervention they are dependent on the wider legal and financial policy frameworks within a given

context. This is because implementation would rely on economic tools such as financial incentive, trade tariffs or penalties but cannot be carried out without complementing laws and regulations (Meadow croft, 1998). Therefore, setting up a CMR would require supporting macro structural enhancement despite being a flexible form of governance.

Advantages of CMRs include the following:

- They provide a framework for participatory environmental policy making.
- They can be adapted to different circumstances and contexts: CMRs are flexible because they are created to be collaborative; all functioning can be changed and enhanced according to specific needs over different periods of time.
- They have the potential to generate more appropriate and fair policy: As each action is negotiated and agreed between actors there is greater potential to meet each need and interest.
- They provide a context in which scientific advice can directly influence decision making: Due to their forum-like nature there is the potential for direct involvement from interest environmental groups and specialists who will be able to discuss issues without bureaucratic or administrative hindrance.
- They encourage environmental learning: Each stakeholder can learn from the other and so there is potential to spread knowledge and awareness of environmental concerns and their implications.

An example of a successful CMR would be in Canada and USA, concerning the management of fisheries. This collaboration included the state, specialists (biologists), fisheries, and tribal leaders. The successes and failures of their CMR arrangement have resolved that such alternate governance was an important means of regulating the resources as demand within the nation increases. Discovered benefits of their set up include reduced conflict between the state and fishermen, more efficient and equitable management, and improved co-operation between fishing groups (Pinkerton, 2001). This proves

that CMRs have potential to be successful; however there are speculations concerning the success rate of co-operative environmental management.

Firstly, CMRs will be operating in a world of unequal power relations, politics do not comprise of negotiations among equals (Meadow croft, 1998). Therefore supposed "co-operative" management will really be subject to those with the most resources and influence; meaning that the state for example would already become a dominant body. This will ultimately result in the marginalization of the weaker stakeholders, such as poor members of civil society, and thus an alternate form of governance becomes yet another authority in which there is little input from the grassroots level.

Linking to this is the issue of democracy, the CMR will have to be a democratic forum and therefore each actor would have to be democratic within their own set up, if not there would already be inaccurate representation. If a state is also not within the habit of consensus building or democratic decision making it would significantly degrade the value of collaborative action and undermine the goal of environmental management. There are also questions about the level of efficiency of CMR, certain conditions may be agreed among the different stakeholders but there would be no guarantee that the appropriate environmental action would be taken (Meadow croft, 1998).

Collaboration in decision-making also takes time which will cause problems in cases where there is a necessity for immediate action. It might be a better solution to enhance existing institutional structures where the state takes stewardship over the environment and creates regulation in accordance to the necessary requirements. Returning to the norm, however, requires a reliable state body and this is completely subject to context.

The intentions of CMRs are favorable because they consider the potential of pooling resources and resolving conflicting interests in a constructive manner. The potential disadvantages of such schemes lay within details of the context and the nature of the actors involved. However, collaborative management is meant to be a supportive system to a state, not an entire institutional structure within itself, and in this there is greater strength in achieving environmental goals.

If I am to analyze PFM in particular as a form of collaborative management I must also consider its differences from the overall framework. PFM is intended to be more grassroots based, emphasizing the link between civil/public, and civil/private partnerships.
This deliberate strategy will directly address issues concerning power relations within the alternate framework, and also directly impacts the livelihoods of the poor. This level of empowerment could cause polarization as higher powers would not be willing to engage with poorer groups if there is a possibility of hindering long term economic plans.

In addition to this, both CMRs and PFM schemes are similar in that they both have an ambiguous legal status due to their problem-specific and collaborative nature. This poses a problem when it comes to enforcing any policies as they would be completely subject to the reliability of each stakeholder involved. If the state and private sector are already unwilling to compromise their interests than any unsatisfactory course of action still has the possibility of being carried out. Yet the potential advantages within PFM are high because they confront environmental problems, this may be a difficult strategy to assume but it provides an alternative to “command and control” regulation.

2.8.4 Forest Management in Ethiopia

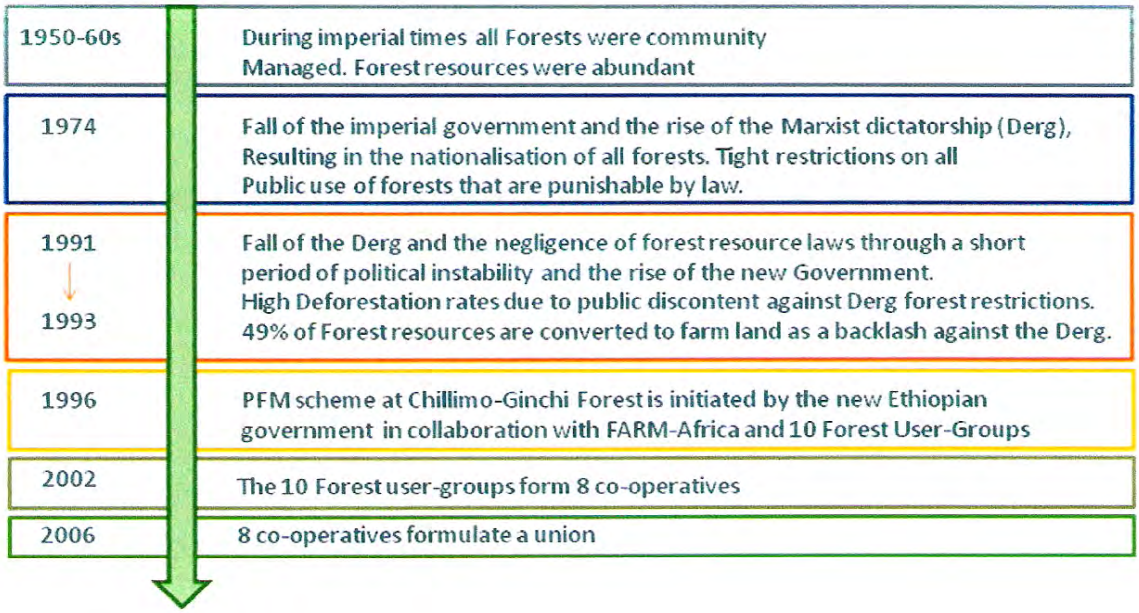


Table 3. Time line of the Historical Background of Forest Management in Ethiopia and Ginchi/Chilimo forest.

Forestry management in Ethiopia has changed according to the rise and fall of the different governments in power. Under the Imperial regime, Fifty years ago, forests were managed by communities; this had less stress on forest resources, and allowed locals to use the resource as necessary. In 1975-77, the rise of the Marxist dictatorship in Ethiopia changed forest management drastically as everything became state owned and controlled. The dictatorship put an end to the feudal system and proclaimed a "Land to the Tiller" policy which encouraged a huge sectoral migration, and thus an increase in agricultural production among the peasantry. However, this policy was purely for political reasons, as this came about during the "Red Terror" in the Ethiopian civil war; when the Marxist government was fighting opposition parties for complete control of the country. Two years after the policy came into place, agricultural production suddenly decreased due to the formulation of co-operatives.

Although the Derg government was widely engaged in the undertaking of large scale forestation programmes, local communities and households did not participate in the formulation of strategies. Often local communities were subject to the strictest conditions, even within so called "community forestry" programmes, causing a sense of resentment. However the government did allow NGOs and outside organizations to engage highly in forestation programmes and used peasant associations as a forum to control forestry on the community level. One such project is the "Community Forestry" project in the Dhera region that was done in the 1980s.

The FAO and the Ethiopian National Workshop on Fuel-wood researched the idea of community forestry along with the "peasant" cooperatives and associations that had been formed at the time. There were 41 peasant nurseries and 3 plantations which had been initiated and operated by the Dhera regions' respective Peasant Association. The idea was to raise awareness of the deforestation problem among the poor, while providing a sustainable means of producing fuel-wood. One of the particular plantations that were looked at had the strategy of setting aside marginal pieces of land every year to plant trees. Research concluded that Peasant Associations gained a high level of understanding from these projects (FAO, 1982). Although papers that were written at the time seemed to support the idea of community forestry, the fact that everything was state controlled has implications on the level of bias of the written papers as they would have had to conform to government strategy.

The Marxist dictatorship inflicted restrictions on forest resources even when there was a need to allow cattle to graze in forest lands; or when there was a need to convert forest to arable land. This fuelled great resentment amongst lower income communities; nevertheless tight control did have a positive impact on the ecological state of forests. When the Marxist dictatorship fell in 1991 there was a 2-3 year period

of political instability where there was a large backlash on forestry management. Projects that had been set up were no longer monitored and local communities' vengefully felled huge areas of forest. For example, the Chilimo forest located in Dendi District, Ethiopia suffered a loss of 49%, with part of the forest being converted to farm land (see different maps on appendix 5). This backlash reflects the importance of an inclusive solution to deforestation; a severe backlash would not have occurred if earlier government initiatives responded better to need. However, there was an opportunity to build upon past projects because when formulating new initiatives to address deforestation.

Unfortunately projects of past political regimes were not retained, therefore anything positive that might have come out of those earlier projects were ignored early on in the rise of any new ruling powers. This resulted in the fragmentation of higher institutions and a decline in the number of community forestry programmes until the Chilimo-Gaji PFM project employed.

2.8.5 Chilimo – Gaji PFM Project

2.8.5.1 Approaches and Procedures followed to Form FUGs and Forest cooperatives

2.8.5.1.1 The Underlying Principles of PFM and Community Empowerment

The fundamental assumption to introduce and institutionalize PFM in Chilimo rested on the potential of the approach to accommodate apparently confecting principles, i.e. conservation, and resource utilization by introducing congruency between the forest capacity and community's needs of forest products. PFM was preferred over State management because of the latter's failure to protect and develop the forest resource. Furthermore, PFM not only empower communities,

but also bring them more closely to the resource with the sense of confidence and certainty.

Improving of deprive people's livelihoods, one can understand, has been the central principle of Farm Africa's Chilimo project, not just the conservation of the forest resource. In this context, the Chilimo forest is to be seen as one of the available physical capitals to be used to enhance household income on sustainable basis. This principle situates people at the centre of development. At the same time forest resource base should be maintained and developed in order to contribute to the livelihood improvement of target groups.

Adopting PFM as a management tool in order to minimize the damage from conflicting interests over forest resources, ensure community rights and livelihood needs, and also enhance sustainable utilization. PFM has become more common in many Asian and some other African compared to the Ethiopian experience.

Participatory forest management cannot, nevertheless, be considered as an ultimate remedy to solving all problem created by conventional forest management. PFM shall not also be considered as a total replacement to the long established practice of forest management. In other words, PFM is not an alternative to state or private ownership, but an antidote to open access resources. Ethiopia has reached a situation where the only viable alternative to forest protection is to make neighboring villagers the guardians of the forest resource.

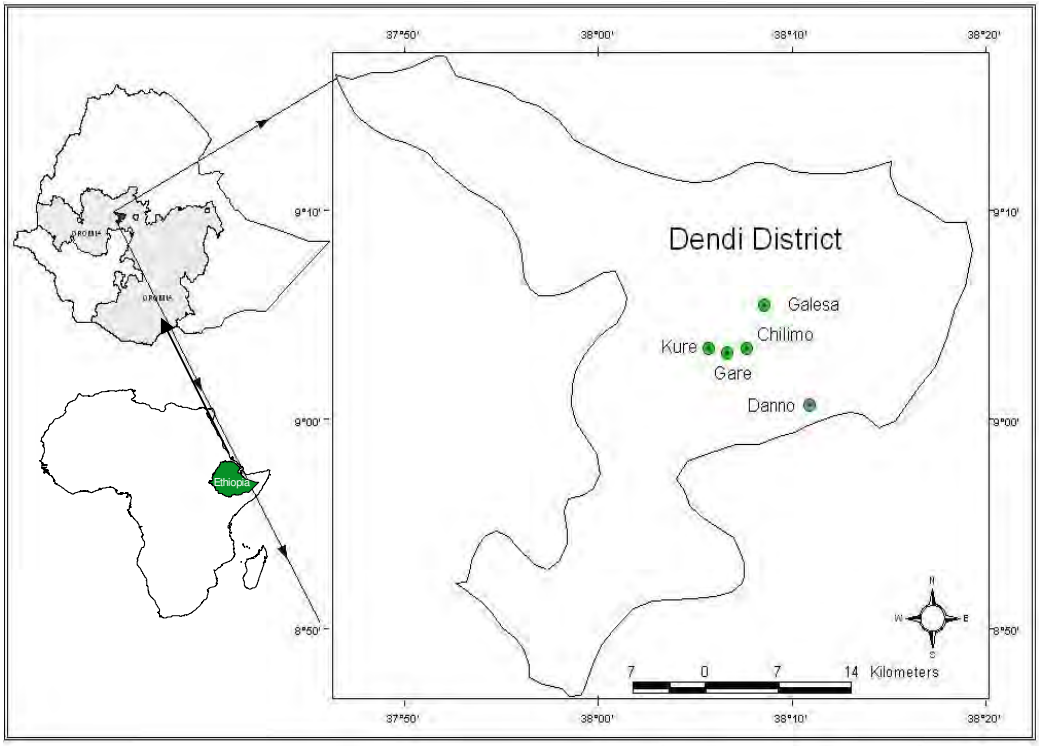


Figure 1. Location map of FARM Africa Chilimo PFM project

2.8.5.1.2 Procedures Followed to Form FUGs and Forest Cooperatives.

Farm Africa's experience gained under Chilimo Project Phase I seemed to have greatly contributed to the planning and execution of Phase II PFM scheme. The procedure ensured to start PFM and constitute forest user groups (FUG) in Chilimo, as learned during group discussion, were found to be participatory, conducted under open negotiations between communities, District agricultural experts and Farm Africa's staff. Community and individual devotions and the positive attitude towards PFM expressed during the interviews and informal discussion with farmers were evident of the process.

Before communities were organized into FUGs and became functional two conditions seemed to have been sought: These were: the existence of enabling policies and accommodative legal framework by which community's use rights over forest resources were recognized, provided and protected; and stakeholders institutional and technical capacity and mental readiness to accept PFM as a tool and implement it full heartedly. Probably the most difficult task (as noted by Farm Africa field staffs and District officials) was to convince the doubtful peasant to assume control over resources it had lost for a long time.

According to Farm Africa's field briefing the route-map pursued to establish and implement PFM in Chilimo had three stages:-

The first stage, the investigation period:-

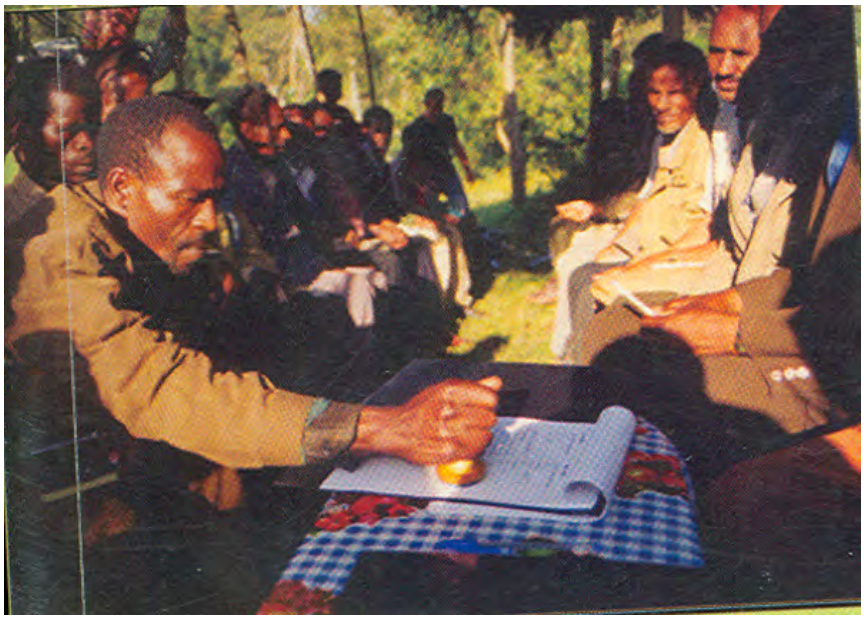
- The gathering of information about the resource in the forest
- The development of an understanding about the forest users and other stakeholders
- The establishment of an appropriate forest management group
- The assessment of and mapping of forest resource

The second stage, the negotiation stage:-

- The negotiation and signing of forest management plans(detailing forest management activities)
- The negotiation and signing of forest management agreements (specifying roles, responsibilities and rules)

The third stage, the implementing stage:-

- This Period constitute the implementation period where FUGs entered the practical stage of executing their newly assumed rights and responsibilities, and where experts began their monitoring duties together with communities.



Once the PFM process is complete, the system is legalized with in an official signed Forest Management Agreement.

It is the impression of me that the cautious approached adopted by Farm Africa to form and implement PFM in the area under discussion was imperative and prudent.

The size of a forest allocated of FUG is based mainly on the total number of households residing the village (see table 3). Not all households in a village, however, are accepted as members of the FUGs. In most cases elderly and disabled household heads are excluded owing to inability to participate in various forest protection and development work. In few cases competent household heads within FUG villages refused the membership as they were unconvinced of the real benefit and net return outweighing the burdens of regular protection and development activates. Member who joined FUGs did so through their own accord or choice. This has helped the group to act collectively and abided by the rules they themselves drew.

Once established with full participation of member households, relevant government institutions and F ARM Africa (as a facilitator) FUGs have gull recognition both by government administrative bodies and the surrounding communities and thus have full right to defend their forests from any illegal external interference. The FUGs thus deserve and can claim support of the line departments to guarantee effective protection and sustainable management of their forests.

The Agricultural Development Office at district and zonal levels take great pride in institutionalizing the FUG and halting further deterioration of a forest that was once coined as 'a dying forest'. They also boas the slight improvement in the livelihoods and of the FUG households through limited livelihood diversification and new employment opportunities for the most disadvantaged portion of the village communities.

The FUG communities' claim that started to reap the reward of forest protection at least in the form of environmental rehabilitation and reduced soil erosion. There is truly improved confidence to collect fuel wood for household use. Underprivileged women household heads were issued recognized to collect fuel wood on regular.

Image 3. Chilimo-Gaji Forest shot from the main local village

This project was initiated by three actors:

1. The state – which includes the pre-elected members of the Ministry of Agriculture and the Forestry Research Centre
2. NGOs – specifically FARM-Africa which is a UK based organization that initiated the project but has currently withdrawn
3. The community – specifically members of the 12 co-operatives that have formed within the local community (see map 06) i.e. 4 (four) cooperatives were formed recently.

The idea of PFM started around 1996 but has only begun to produce results within the last 4 years. The PFM user-groups (PFMU) have formulated a union and by-laws that define the role of the cooperatives within each stage of the EPM (Environmental Planning and Management) process. These by-laws define the strategies of the cooperatives in collaboration with the Ethiopian government.

The strategies of the co-operatives are defined in the by-laws as follows:

A. Decide on and collect registration fee and shares bought by members
B. Develop and expand the land that can be used for forest development.
C. Using modern technologies market forest product in the future.
D. Establish nurseries and raise seedling collectively plant and also distribute the seedlings to members.
E. Facilitate conditions to members on the provision of training concerned with forest protection, care and development.
F. Provide saving and credit services to members.
G. In cooperation with concerned bodies, present individuals/groups that destruct forest before law.
H. Increase participation of women.

I. Develop bee-keeping activities and other related agro forestry practices.

J. Make use of sustainable forest development and utilization of forest planning.

K. In collaboration with concerned bodies provide various services that meet interest members.

L. Accomplish other activities that help expand the cooperative. (By-Law of Forest Cooperative, 2008)

These strategies are meant to keep the co-operatives organized and build strength through collective action.

The project also involves the improvement of livelihoods within the community, making use of the forest without exhausting it. Strategies to address this include introducing tree species that have multiple uses. For example, the reason Eucalyptus tree species are used so extensively throughout the country is because it can be used for fuel wood; building construction; and the leaves have medicinal value. This makes the eucalyptus tree sell well in the city and useful within the household.

The latest initiative concerning tree species is the introduction of fruit trees within the local community. Fruit trees can be trimmed for fuel wood and the fruit can be sold at the capital which is within close proximity. Apple trees have been chosen in particular because apples are not indigenous to Ethiopia and so have a high market value; there is potential for substantially increasing household incomes.

Image 4. Apple tree grown in Chilimo village

The project also demands that the community nurture the forest along with their efforts to conserve.

Activities include:

- The logging of only dead or very mature trees
- Replanting the amount felled every season
- Encouraging new growth by discouraging the disturbance of seedlings by herders
- Encouraging natural water-shed processes
- Monitoring forest degradation levels with government specialists
- The maintenance of a tree nursery

Image 5. Tree nursery

The tree nursery is used to conserve the biodiversity of the forest as it includes all the known species the naturally grow there. After the seasonal felling, the community uses the trees and seedlings from the nursery to replant all that has been cleared, thereby restoring the natural balance of the forest and allowing it to maintain itself. The trees that are cleared by the community are used within the households and are also sold in the markets for a profit to contribute to the household income. According to the co-operative by-laws the community takes 70% of the profits and the government is entitled to 30% of the profits (being a key stakeholder).

3. The Research Methodology

I intended to support the validity of my proposal by assessing current theoretical forecast against my chosen context. This was carried out through the examination of Participatory Forestry Management (PFM) using the Five Dimensions of Urban Sustainability (Social, Political, Ecological, Economic, and physical aspects of deforestation within the urban/peri-urban region of Ginchi with the aid of a case study on forest management within Dendi district, Ethiopia) and incorporating them into the stages of Environmental Planning and Management (Appraisal, Action and implementation, Monitoring and evaluation and institutionalization and scaling up).

Forest management provides a solution to deforestation by the co-management of forests, allowing communities to gain relationship with the land and have more control over the 'commons'. I intended to see how micro/macro issues affect this kind of project including issues such as the rural-urban connection.

Data were collected through direct contact and in depth interview with the policy-makers, key informants, community groups and specialists using a checklist of semi-structured questionnaire.

During the course of my time on-site, I managed to interview 72 male and 23 female members of the community co-operative groups and 15 key informants including one member of the forestry research centre. The membership registration list obtained from the FARM-Africa local office was used as sampling framework. As there was only one chance to interview members of the community directly, I focused on their experience of PFM and whether or not it has delivered positive results on social, economic and ecological levels. I also attempted to bring out any fundamental positives or fundamental weaknesses in the project that could deter locals from participating.

Qualitative analysis was conducted to gain in-depth information on the case. (See Appendix 2 for Interview questions used). Research questions and methodologies were set up for each dimension in order to identify the information specified within the criteria given (Appendix 1). This information was then sorted using matrices applying each criterion against the stages of EPM (Appendix 4).

4. Results and Discussion

Participation can take many forms ranging from the one in which the would-be participants are merely made to know what decisions are being taken, to the one in which people genuinely take part in decisions which affect their life.

According to Aronstein (1969) participation can be seen as the redistribution of power that enables the 'have-not citizens', presently excluded from the political and economic processes, to be deliberately included in the future. This perspective tries to uncover the difference between genuine participation and the embellished misleading rhetoric of participation.

"There is a critical difference between going through the empty ritual of participation and having the real power needed to affect the outcome of the process" Aronstein (1969). She used a typology of eight levels of participation to illustrate the often and still bewildering issue of participation.

Sherry Aronstein's Ladder of Participation (Figure,2), which was developed 37 years ago, is still serving as one of the most powerful models for thinking about how much influence people have in public programs.

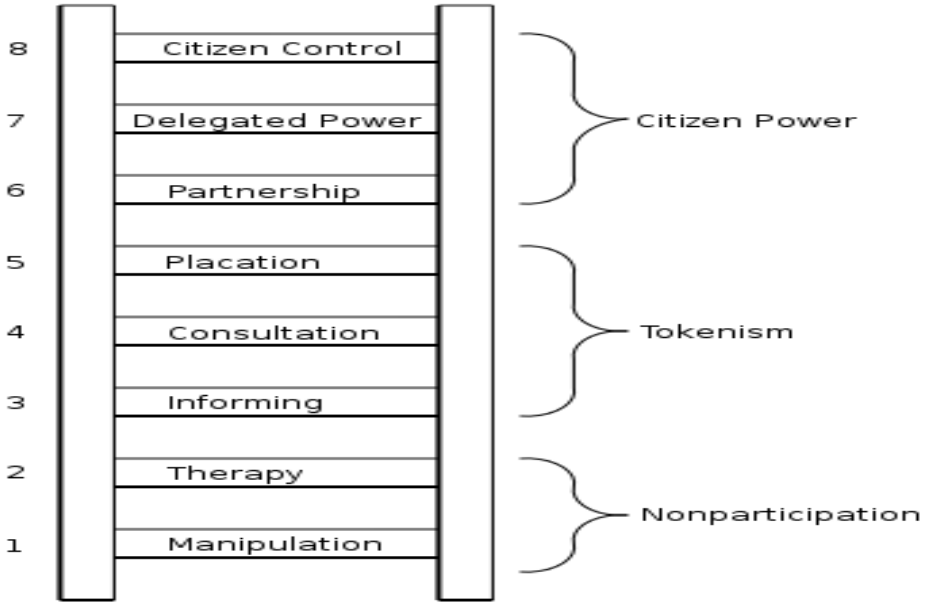


Figure 2. Eight rungs on the ladder of citizen participation (source: Aronstein, 1969)

The bottom rungs of the ladder, (1) Manipulation and (2) Therapy, are levels of "non-participation" that have been contrived by some to substitute for genuine participation. Their real objective is not to enable people to participate in planning or conducting programs, but to enable power-holders to "educate" or "cure" the participants. Rungs 3 and 4 progress to levels of "tokenism" that allow the have-nots to hear and to have a voice: (3) Informing and (4) Consultation. When they are proffered by power-holders as the total extent of participation, citizens may indeed hear and be heard. But under these conditions they lack the power to insure that their views will be heeded by the powerful. When participation is restricted to these levels, there is no follow-through, no "muscle," hence no assurance of changing the status quo. Rung (5) Placation is simply a higher level of tokenism because the ground rules allow have-nots to advice, but retain for the power-holders the continued right to decide.

Further up the ladder are levels of citizen power with increasing degrees of decision-making clout. Citizens can enter into a (6) partnership that enables them to negotiate and engage in trade-offs with traditional power holders. At the topmost rungs, (7) delegated power and (8) Citizen Control; have-not citizens obtain the majority of decision-making seats, or full managerial power.

The analysis criteria applied within this project is based on the Five Dimensions of Urban Sustainability. These dimensions are to be applied to the peri-urban context with the intention of assessing improvement.

These dimensions are understood as follows:

1. Social dimension – Considers fairness and inclusiveness within the intervention process.
2. Political dimension– Considers the quality of governance throughout the other dimensions.
3. Physical dimension– Considers the built environment (in this case I will be analyzing the use of land management in the intervention as the peri-urban region in question is not developed).
4. Ecological dimension– Considers the impact on the environmental health of the region.
5. Economic dimension– Considers the capacity to put the local resources to productive use. (Allen and You, 2002)

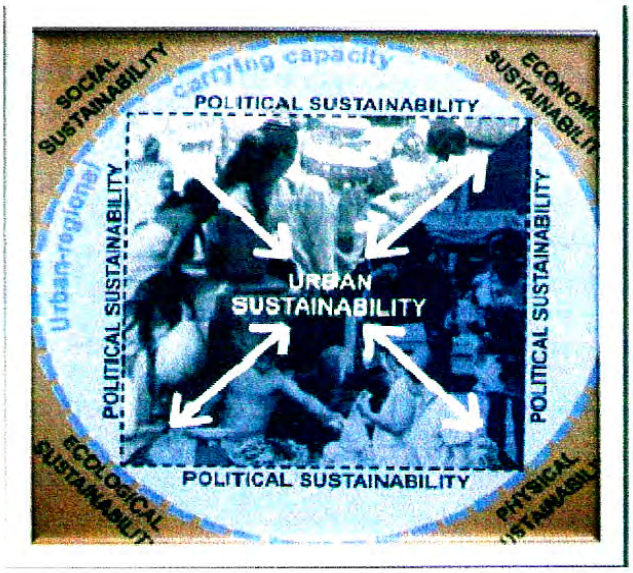


Diagram 1. The Five Dimensions of Urban Sustainability (Allen and You, 2002)

These five dimensions are then tested within the wider sphere of the natural carrying capacity of the location. When applied to a real development case the cube above often appears skewed or unbalanced with one dimension gaining more emphasis than another. However, the more balanced the cube appears the more successful the intervention is (Afework, 2008).

If the Chilimo-Ginchi PFM project fulfils the necessary criteria across all stages of Environmental Planning and Management, it could successfully alleviate the problem of deforestation.

I have identified the necessary criteria for this case as the following:

1. Social Dimension
    - Equitable access to forest resources.
    - Equitable gender participation.

- Sharing of forest management knowledge.

2. Political Dimension
   - Macro-level (state) support of PFM initiative.
3. Economic Dimension
   - Increased level of local commercialization from forestry activities.
   - Increase in income generating skills and opportunities.
4. Physical Dimension:
   - Equitable access to the required amount of arable land to discourage further forest clearing.
   - Maintenance of land to encourage sustainable forestry.
5. Ecological Dimension:
   - Decrease of deforestation rates.
   - Ecological awareness of the community.

Social Dimension

During the course of my time on-site, I managed to interview male and female members of the community co-operative groups as well as a member of the forestry research centre (a state research centre). As there was only one chance to interview members of the community directly, I focused on their experience of PFM and whether or not it has delivered positive results on social, economic and ecological levels. I also attempted to bring out any fundamental positives or fundamental weaknesses in the project that could deter locals from participating.

The interviewees were clear that the formulation of the co-operatives were useful to them for the following reasons:

- It gave the community a basis from which to communicate and spread knowledge.
- It increased the manpower available to each household.

- It provided opportunities for tenure security and for political visibility because it was organized as a collective.
- It allowed easy access to resources such as the tools for irrigation and seedlings from the government.
- It allowed the option of a credit service for agricultural imports, and made payment easier because of the pooling of resources.

Other questions about the co-operatives were in regards to gender relations and age groups. It was discovered that the age range of co-operative members was wide, ranging between 18-80 for both men and women. Work distribution is also according to strength; with the more able bodied being involved in the farming and felling process while others assist through discussion and the exchange of ideas.

Gender distribution within the Chilimo co-operative is 302 females to 1986(see Table 4) males, with two females in organizational positions; one being a member of the Executive Committee and a second female acting as Treasurer. It is often the case that women are actively involved with the tree nursery, preparation of farm land, planting and weeding; while men are actively involved in felling, selling, and communications with other stakeholders. Both men and women interviewed stated that men contribute much more than women because of their engagement in household duties. A gender participation analysis had been recently carried out on the collective reflecting the following results:

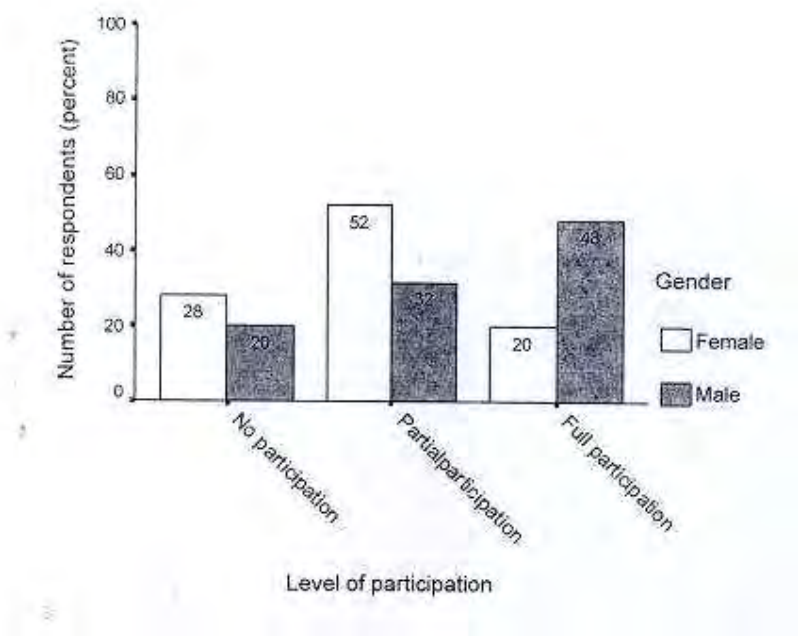


Figure 3. Gender vs. Levels of Participation in Chilimo PFM (Negassa, 2007)

It is clear from the results that there are more men that are fully participating in the PFM project than women. This could be because women have a lack of time to fully participate within the program, as they have multiple responsibilities within/around the home. The effects of cultural norms can also hinder female participation because there are expectations of women to be more active in domestic activities and hold fewer positions of leadership. Subsequently, within the PFM project, women have less administrative roles such as guarding the tree nursery. Similarly, if the men do not hold higher positions of power or are less engaged in the more demanding outdoor physical activities, they would be regarded as inadequate.

Although working relationships within the co-operatives are effective there are tensions between those who are within the co-operatives and citizens that are not. There are cases of illegal felling within the forest that executive members of the co-operatives extensively complained about. These activities are carried out by locals who originally refused

to be part of the scheme and do not follow new felling regulations. These groups claim that the forest is a common property and that they have a right to use it as they please. These tensions have aggravated deforestation rates, therefore, there are currently negotiations taking place between members and non-members of the co-operative.

The most fundamental issue stressed by the interviewees, however, was in regard to their sense of ownership over the forest. The forest had been previously state owned so community members felt no connection to the forest and emphasized the feeling of living in fear and without tenure security. The PFM project nurtured a connection between the people and the forest. A community member stated that: "I felt I got something that the government could not take away, I had gained tenure security because I was needed and part of the story."

Political

Informal interviews with the community were intended to reveal the level of engagement of the government and get clues on actor relations. These interviews revealed that the state was supportive of the project by providing fertilizers (sold on credit), improved seedlings (sold cheaply), and technical support. The state also sends specialists to check the quality of wood, the state of plantations, and organize the annual felling - making sure that felling is only of mature trees and follows the terms of the co-operative by-laws. Therefore, in the provision of technical support the state appears highly engaged.

However some negative and ambiguous actions from the state were revealed through the interviews. For example, it is agreed that 70% of forest profits is to be taken by the community, this percentage has thus far been taken in the form of credit from the state, and therefore the community have not actually received any cash for household

benefit. This has caused mistrust towards the state and raised questions to whether the profits will be issued unconditionally.

Negative feedback regarding the state was mainly regarding issues of legal protection. There is a weakness in the implementation of local policy, especially for non co-operative members and urban dwellers. Although the forest is not breached often, there are times when unauthorized users go into the forest and fell trees outside of written requirements – e.g. Felling immature or indigenous trees. The damage caused by such illegal activity is extensive as it affects forest growth rate and biodiversity. For example indigenous species like the Abesha Tsid, also known as the *Juniperus Procera*, can take up to 50 years to grow to maturity but is so valuable that it is targeted by illegal fellers. Since the community has taken on the role of 'environmental stewardship', executive members of the co-operative often take the initiative to make a complaint in the hope of gaining support from the state.

However, the long period required to process a legal complaint, along with a weak legal system, often forces people to abandon a suit. The co-operative members strongly stated that the forest would quickly return to its complete natural state if laws against illegal activity were properly followed up and enforced. The lack of response from the state implies a lack of commitment to the project, despite it being a pilot project with the state being one of the initiating actors.

Economic

The majority of feedback on economic criteria was negative, thus affecting the general opinion of the overall PFM experience. When asked how they would rate the PFM project, community members responded with "medium" for overall positive impact.

The main complaints were being unable to reap all the economic benefits of the forest and being cheated. For example, timber was

often under-valued by wholesalers but the project did not allow the community to act in the role of wholesaler to revert this. This would allow the community to gain new skills and the financial benefits of avoiding the middle man. They also stated that the organizational capacity of the co-operatives were weak because they are not autonomous enough to make economic decisions about the annual retail of wood.

Despite having the legal right to sell 10 hectares worth of wood per year, they have only sold their wood once within a period of 6 years because retail can only begin after an appraisal by the Ministry of Agriculture.

Table 4. Status of Current PFM institutions and wood sold

No	FUG/Coop	Year of Formation (E.C)	Members			Forest land holding (Ha)			Remark
			Male	Female	Total	Natural Forest	Man made Plantation	Total	
1	Chilimo	June 5,1994	114	24	138	596	99	695	Sold 9.6 ha
2	Galessa	Nov.1989	139	48	187	384	0	384	
3	Mesalemia	Mar.19 95	88	31	119	664	246	910	Sold 10 ha
4	Dano Sengota	Jan. 1996	115	16	131	316	11	327	Sold 3.3 ha
5	Goben	Feb. 19 95	69	14	83	188	0	188	
6	Gaji	Nov. 1989	221	51	272	836	48	887	Sold 2.3 ha
7	Kersa Alati	Mar.19 95	74	8	82	176	0	176	
8	Yibdo Keshena	Feb.1997	100	33	133	180.00	0	180	
9	Tiyo	Jan.1994	47	11	58	133	0	133	
10	Yibdo Gerarsa	Oct.1998	85	11	96	148	0	148	
11	Worebo	Dec.1993	179	37	216	664	11	675	
12	Togicha	Apr.1997	67	18	85	241	0	241	
	Total		1298	302	1600	4529	415	4944	25.2 ha

Source: Chilimo PFM Co-operative Office annual report

This also crosses over to the political sphere because it is the slow response from a government body that is causing a stall in annual sales. Co-operatives are distressed by the stall in sales because they

have ultimately caused cash flow stagnation and income per household is still low. Some of the 12 co-operatives are still waiting for their first annual sale but are still being charged high taxes by the government; now co-operatives are no longer pursuing the Ministry to evaluate their product.

Other concerns expressed by the community regarding sales are to do with the specialists sent by the state to evaluate the wood before clearing it for sales. The community claims that there is corruption and specialists have been caught falsifying figures so that the community gets less money and the specialists get paid off. Once this was discovered the community started evaluation themselves and raised questions whenever there were any figure differences. However, a community appointed evaluator was imprisoned after raising such questions being accused by the state of "inciting an up rise" within the community.

Executive members of the co-operative also mentioned the tourism opportunities using the forest. Policy makers had proposed to create a lodge, fix the paths, and set up a simple payment system for tourists. However, this was never implemented despite completion and approval of site evaluation.

This appears to the community as a wasted opportunity especially because there is a historical landmark on site that would be of interest to tourists. Overall the relationship between stakeholders has been highly compromised; the community argues that they now mistrust the state. One community member stated, "I suspect they only want us to guard the forest, not to benefit from it," which is a reflection of the people's frustration.

Image 6. Felled trees to be used within households or sent to markets

Physical

Only one issue was mentioned regarding land within the community that I visited. The Chilimo cooperative members complained of a shortage of land within that particular district; this coupled with low income benefits has caused the community to depend solely on the forest and the annual sell as alternative sources of income.

This overall situation is causing a demand for high yield production, which has the potential to exhaust the land. This could potentially lead to illegal forest clearing for farm land which would become polarized by political allegations. The current initiative involving apple trees is meant to address the economic implications of land shortage to avoid this exhaustion.

Image 7. Local community re-planting trees after annual felling

Ecological

When responding to questions about the value of the co-operatives, members of the community pointed out that they had greater ecological awareness – executive members of the local co-operative stated "we care for the tree more than before." People mentioned that in the past the state used to force agricultural practice on peri-urban and rural communities without their vested interest; this caused people to wrap immature trees in plastic to discourage growth. These practices have now been abandoned because of the ecological awareness being raised by the project. Every interview stated that PFM was helpful to the forest and that there is noticeable growth and improvement since its initiation.

Image 8. New growth on forest floor

I directed some research questions regarding the state of the forest to specialists that worked on-site and have been monitoring developments. These were mainly directed to the forestry research centre as it is often the state that sends specialists to check on the status of the forest per annum.
Observed changes include:

- The decrease of illegal forest harvesting
- The increase of regeneration
- A decrease in the illegal marketing of forest products
- An increase in Silivicultural activity (thinning, pruning and enrichment planting)
- A decrease in the overgrazing of cattle
- An increase in community participation

Chilimo forest is a watershed to the Awash River and one of its biggest suppliers, next to the Nile. The Awash is one of the most important rivers in Ethiopia; running hydro-electric power and the Koka dam was built across the Awash in 1960, making it one of the main sources of electricity for the country. This coupled with the extensive

dependence on the Awash River for irrigation links the Chilimo forest to 80% of Ethiopia's agricultural production.

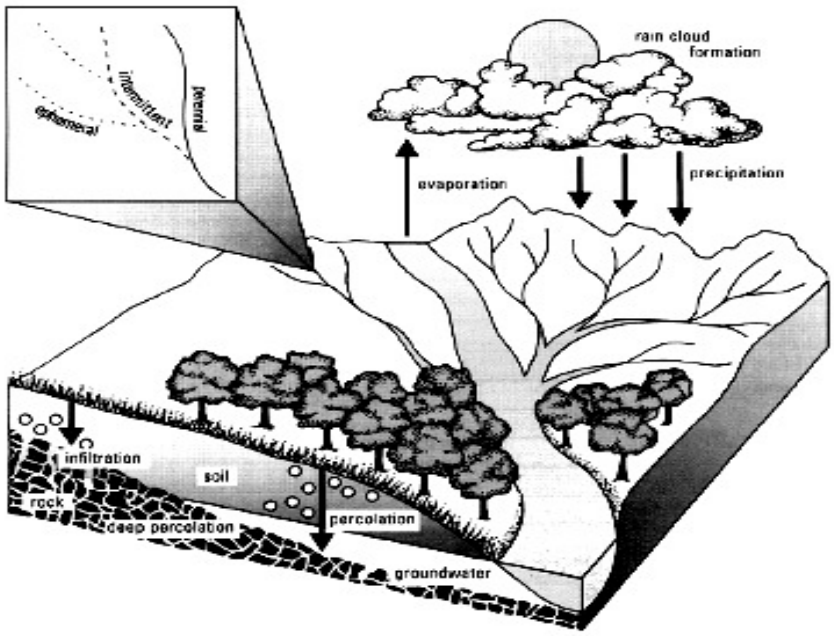


Diagram 2.Hydro cycle (Water Resource Library, 2008)

Image 9. The Awash River with Chilimo Forest behind it

According to the Forestry Research Centre the project has resulted in significant improvements to the wider hydro-cycle which proves that the forest development is gaining positive results. Chilimo forest is

contributing more water to underground streams and rivers that flow towards the Awash. I witnessed evidence of this process from the forest, with water being released extensively from tree roots and flowing over lower level rock face (Image 10).

Image 10. Tree roots releasing water

Overall the ecological dimension appears to be the most successful since the forest has had noticeable improvements, acknowledged both by the community and discussions with a specialist. There are signs of a healthy relationship between the community and the forest, which can prove that PFM is a successful way of addressing deforestation. Other comments that came out in the interviews included the improvements wanted by the community to make PFM a better experience.

The wanted improvements were sought as follows:

- Implementation of promises from the state regarding annual sales and project support
- Addressing the issue of corruption
- The use of eco-tourism for additional income
- Improved infrastructure (roads)

Generally, using all the information collected on the field, I attempted to assess how far each criterion was met during each stage of EPM. This was done by formulating matrices (Appendix 4), illustrating the extent to which each criterion was met and displaying it with a rating of good, medium or poor. Engagement was rated against all other stages of EPM, disaggregating the stakeholders and their level of engagement throughout the process. This will hopefully reveal the level of success of PFM and provide a forum for discussion on its implications. I split up the tables according to each dimension and applied engagement across all to allow in-depth analysis. Once I completed this I used the results of the matrices to illustrate the change caused by PFM and whether it has pushed Chilimo Forest into becoming more sustainable. Based on this, Results of the matrices are elaborated as follows:

Social

Assessment of the social criteria shows that overall all EPM stages have been reasonably well addressed as 2/3rds of the results are medium or good. There have also been high levels of engagement with most actors. All fields under institutionalization and scaling up have been marked as not applicable because the entire PFM project is a pilot-project and this part of the process is yet to be launched. All fields, after appraisal for Farm-Africa, have also been marked as not applicable because they were involved in the initial stage of the project

and withdrew soon after. According to interviewees, social criteria have generally been met, with engagement levels needing improvement from the side of the state.

Political

Since political criteria targets state bodies and their support of the PFM project, other actors were not considered as part of the political assessment. As reflected in the table, the level of government support is high in the earlier stages but becomes marginal during subsequent stages; this became evident from interviews with the community.

Economic

Economic criteria were highly considered during the appraisal stage of the project. However, initiatives are still in the process of being launched. The communities are yet to make a gain from the annual sales of timber and fruit trees, hence the lower matrix ratings. Engagement levels have been strong here for all the actors except the government; this is becoming a trend.

Physical

The issue of land is particularly polarized in this case because there is a shortage of land where the project is located. Equitable access was not considered in the earlier stages of the project, but this was included at a later date because there was a realization that excluding the wider community would encourage illegal felling; this is now being addressed via negotiations. Land management on the other hand was highly considered from the beginning and followed through, especially through the high level of engagement from the part of the co-operatives.

Ecological

The ecological criteria were of the highest concern in this project and were therefore carefully engaged through each stage. Awareness was not really monitored but there was evidence of all other stages for both criteria. There were high levels of engagement by most actors throughout the stages because of the emphasis on the ecological aspect of the project.

Overall, the changes resulting from the PFM project is illustrated using the five dimensions framework below:

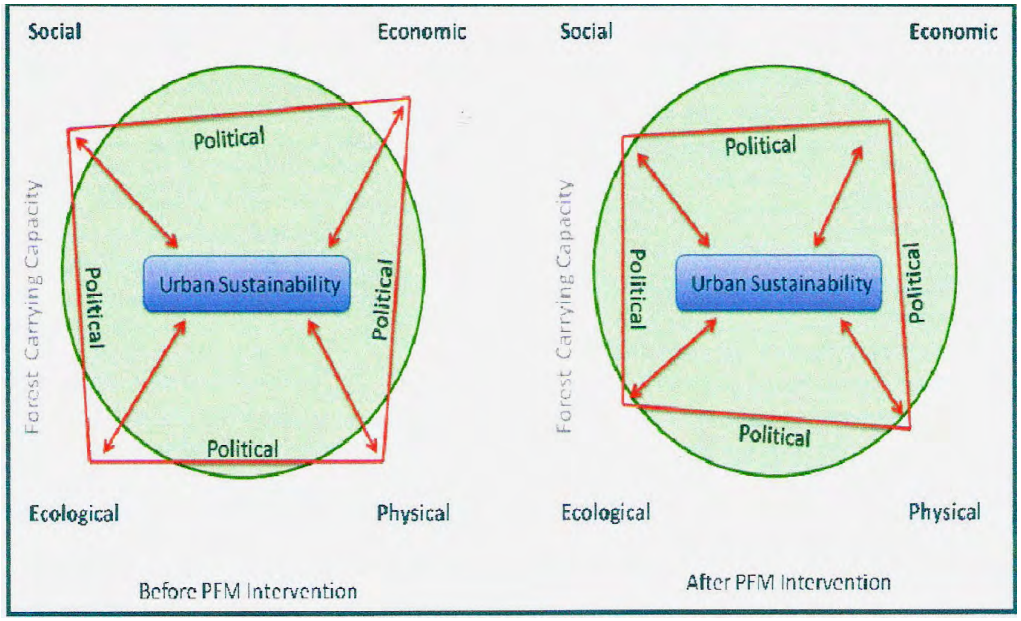


Diagram 3. Changes in the Sustainability of Chilimo Forest 2002-2009

As shown in the illustration, before the implementation of PFM, activities taking place under each dimension were beyond the carrying capacity of the forest, therefore there was a case of serious deforestation. After PFM, even though the cube is not completely balanced, it shows a great improvement in the way activities are practiced. This shows that overall PFM has met its main aims and has promoted sustainable forestry practices.

5. Conclusions and Recommendations

In summary, the trend found in the results concerns the level of engagement of the actors. Apart from FARM-Africa, who scored lower points because of their withdrawal from the project, the government seems to have the lowest scores. Although the state has scored highly in the early stages of the project in all dimensions, scores lowered once action on the project is initiated. An explanation could be that the government received pressure from FARM-Africa when first starting the project, but after their withdrawal did not see the need in following through with its commitments.

This was reflected in the interviews when the communities were complaining from lack of support and legal problems. A positive finding in the project has been the level of commitment from the community towards this project; without which deforestation issues would have not improved. The locals formulated the co-operatives and have kept to the by-laws, progress of which has been evident on site.

Interviews were conducted mostly with community co-operative members (72 male and 23 female) and15 key informants including one member from the Forestry Research Centre. Other information was found through discussions with various contacts on location, including those who worked with other NGOs. Although this did not assist in gaining direct insight on the PFM project, it did give me an understanding of the overall political and economic context; especially in regards to current laws and the limited rights of the people.

The PFM project still requires some development, especially with the economic and political aspect. The economic initiatives are still underway and have great potential for success but are yet to produce any results. The political problems, however, are related to the inadequacy of institutional structures and support. The potential for

change is limited to what can be achieved by pressure from political constituencies or supportive members within the institutional framework. Such change would be a difficult to initiate and sustain. However, it could be useful to re-engage outside forces such as FARM Africa to pressure the government into maintaining action. The commitment of the government was obtained in the initial stages of the project in this way and can be done so again, but this would be subject to the interest of the NGO.

If we look at the overall achievements and constraints of the PFM project, it has been successful in achieving its main aim of decreasing deforestation rates by taking a holistic view of the problem. Given the fact that the pilot-project is yet to be completed, there have already been clear improvements in the ecology of the forest as well as the lives of the people. The most emphasized point made by community members during every interview was the sense of security they gained by being engaged in the PFM project. They have gained a dignified living, and have unreservedly recommended PFM as a way forward. These facts have great implications on the future of PFM as a way of governing the forest.

The scaling up process would have to be done gradually, and would need an outside monitoring body to avoid bias or corruption during annual sales and felling; this could be done with local universities or NGOs. Scaling up would be successful subject to case; Chilimo Forest is unique in the motivation of the community to get involved and own the project.

Ethiopia is also a developing country and this often causes economic initiatives to take priority over environmental stewardship. Natural resources are often compromised in the name of development especially with areas in close proximity to the city/towns because there is extensive construction taking place to expand and reform.

This could be another reason for the lack of commitment on the part of the government in the latter stages of the PFM.

However, there are some unanswered questions when relating back to the original objectives of this project. The case location is within the peri-urban region, therefore there was not an opportunity to investigate a situation where the urban poor had to travel to the city to work. Most of the community on site only intended to go to the city/towns to make the most of their annual sales; it is unclear what would have been the case if the community were more dependent on the city /towns for their livelihood.

The proximity of the forest to the city /Urban areas does have implications on land security over the area but does not have the same issues with cost as those who live by the forests on the Entoto hills for example – which are located directly behind the Addis Ababa . There are also questions regarding time, as the PFM project would take years to produce significant results and if reproduced would demand that the forest area not be depleted beyond a point where it can recover. The prolonged legal system in Ethiopia (to organize community co-operatives and draft by-laws) will mean it will take a significant amount of time to produce results.

The fact that this project was successful in changing the state of the forest proves that there is a link between poverty and deforestation. However, deforestation is not solely the cause of poverty and poverty does not deplete resources without being aggravated by wider institutional and political barriers. What has changed from the original hypothesis is the discovery that ecological problems are a result of inadequacies in multiple dimensions, and can only be resolved by tackling each dimension separately. The project's social approach to forestry management was focusing on problems faced by the poor, but by involving stakeholders that are an influence in one of

the other four dimensions. This allowed a wider view of the problem and thus proved that the poor do have a significant impact on forests but only as a result of marginalization within other dimensions, particularly political.

To improve the current state of the PFM project, or for more successful reproduction, I have made the following suggestions:

- The immediate transformation of FUGs to cooperatives is probably one of the most important things that have been done in Chilimo. But, it has to be remembered in the face of socio-political and policy situation it would always be wise and prudent to take the first and available opportunity.

- More experience through various pilot projects has to be gained, however, to apply the strategy on a wider scale and to come to firm conclusion, increased local control and management of forest resources would be the solution for forest conservation and contributor to community livelihood.

- Giving communities the internal institutional strength they might need to defend their rights in case of any challenge from outside. External assistance (District office of Agriculture, FARM AFRICA, and others although still necessary), would not replace community's organizational and legal strength.
- The existing saving and credit scheme has played an important role in assisting to diversify the livelihood of some FUG members. There is an urgent need to increase the amount of seed money as a revolving fund in FUGs and also the amount of money to be distributed to the members on rational basis as a means alternative income generation and livelihood diversification.

- In order to maintain the already established cooperative in chilimo, the benefit sharing mechanism should be put in place through strictly implementing the various by- laws including forest development and protection cooperative.

- The restriction of membership especially those living adjacent to the forest area should be revisited in order to maintain the smooth conservation and management of the forest resources on sustainable basis.

- The participation of women in the leadership was seen to be minimal. Though it is not an easy task to involve women in the leadership due to traditional socio-cultural conditions, strategies should be designed and developed to involve women in various leadership position, for instance , in the revolving fund administration and management after the necessary training.
- The experiences and achievements so far obtained should be continued with the current momentum up until the community and line Government organizations are in a position to plan and implement the various activities on participatory basis.

- The livelihood diversification activities have to be continued in collaboration with the zone and Woreda Rural and Agricultural Development coordination Offices with the existing small community development revolving fund.

- Educational programme on conservation, tree plantation, and substitution, social & cultural problems related to this – both through the media on a wider basis and through cooperatives, seminars, and workshops to strength their knowledge.

- Economize fuel wood consumption – research into cheap alternative fuel, widening accessibility.
- Encouraging state involvement – pushing for implementation of policy, pushing for support with economic/livelihood schemes, and creating a monitoring scheme jointly with universities or nonbiased organizations to create pressure.
- Encouraging community involvement – community co-management.
- Universities to get involved for training and monitoring.

Fundamentally the most important strategy to apply is that involving the state. If there is an opportunity to fully engage the state, the improvements in the PFM project would be much greater.

PFM has high potential as a future forestry management strategy but is reliant on the engagement of its stakeholders, in particular one such as influential as the state. If attempted in a true holistic way, where all actors are engaged, the future of forests and everyone who relies on them is a bright one.

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7.Appendices

Appendix 1

Criteria per Dimension

Social Dimension:

Criteria

- Equitable access to forest resources
- Equitable gender participation
- Sharing of forest management knowledge

Research question

To what extent are local people involved in setting the priorities for forest management?

Methodology

1. Policy-makers and key informants:

• Grey and Secondary material: written strategies and policies relating to local involvement.

• **Interviews:**

- To determine the extent to which policies are implemented
- Opinions on effectiveness of policies and their implementation.

2. Community groups:

• Secondary information from recent thesis on the project that could reveal the thoughts of the community and change over time

• Semi - structured interviews or a questionnaire to find out extent of their involvement in PFM and whether it has catered to their needs.

• Use of existing community networks and meetings for individual interviews with community representatives and key members of the co-operatives These need to reveal any conflicts in the area of community involvement in forestry management.

Political Dimension:

Criteria

- Macro-level (state) support of PFM initiative

Research questions

To what extent are the government engaged throughout the EPM process of forestry management?

To what extent does policy reflect the social, economic and environmental interests of PFM?

Methodology

1. Policy-makers and key informants:

• Grey and Secondary material: written strategies and policies in relation to the role of the state in PFM.

• **Interviews:**

- To determine what the existing forestry management policies are and the extent to which they are implemented
- Opinions on effectiveness of policies and their implementation.
- To determine the extent to which existing policy reflects current need

2. Community groups:

• Semi - structured interviews or a questionnaire to cross check the information gained from policy makers

Economic Dimension:

Criteria

- Increased level of local commercialization from forestry activities
- Increase in income generating skills and opportunities

Research question

What are the possible income generating activities that could be taken up to make the most of PFM?

Methodology

1. Policy-makers and key informants:

• Grey and secondary material:

- To determine what the opportunities are for long term income generation

• **Interviews:**

- To test the level of commitment to income generating activities that benefits the community

2. Community groups:

• **Informal interviews:**

- To determine the economic needs of the locals
- To determine whether PFM caters to these economic needs

Physical Dimension:

Criteria

- Equitable access to the required amount of arable land to discourage further forest clearing
- Maintenance of land to encourage sustainable forestry

Research questions

Do locals have the required amount of farm land to subsist?

Is respect and promotion of biodiversity being increased?

Methodology

1. Community groups:

• Grey and Secondary material: written strategies on soil and biodiversity conservation

• **Interviews**:

- To determine what the existing policies on soil and biodiversity are and the extent to which they are implemented
- To determine the amount of arable land in use and whether it adequately meets the needs of the locals

Ecological Dimension:

Criteria

- Decrease of deforestation rates
- Ecological awareness of the community

Research questions

Are there evidence of decreasing deforestation rates and the restoration of the Chilimo forest ecosystem?

What are the initiatives being taken to support biodiversity?

To what extent is the community sharing information about the problem of deforestation?

Methodology

1. Specialists:

• Grey and Secondary material: research with evidence on the current ecological balance of the forest; written policies to address biodiversity and information distribution

• **Interviews:**

- To determine what strategies are being implemented
- To determine the success of the PFM project on an ecological scale
- Opinions on effectiveness of policies and their implementation.

2. Community groups:

• **Informal interviews:**

- To cross check the information gained from specialists
- To find out general opinion on effectiveness of policy and its implementation

Appendix 2

Interview Questions

1. Impact of the co-operatives

1.1. How has being part of a co-operative been useful to you?

1.2. Were you in this area before the formulation of the co-operatives?

1.3. What was different?

1.4. Can you detail what you feel are the positives of having co-operatives?

1.5. What has been the level of engagement from the government?

1.6. What initiatives have the government taken to support the community within the PFM project?

1.7. What is the role of women in PFM?

1.8. What is the level of contribution from women?

1.9. What is the age range within the co-operative?

1.10. What is the gender distribution within the co-operative?

2. Impact of Participatory Forest Management (PFM)

2.1. To what extent has PFM had a positive impact on the livelihood of people?

Good _____ Medium _____ Poor_____

2.2. What are its impacts?

2.3. How do you evaluate PFM in general from the aspect of its contributions for the people?

a) Very good b) Good c) Not bad d) Not good e) No idea

2.4. How do you evaluate PFM in general from the aspect of its contributions for the forest conservation and development?

a) Very good b) Good c) Not bad d) Not good e) No idea

2.5. What are some of the problems with PFM? (List)

2.6. Do you have any suggestion how to solve the problems you have mentioned regarding the PFM?

2.7. Generally, do you recommend PFM for other state forests of Ethiopia?

Yes _____ No _____

2.8. Your final remarks?

Appendix 3

Ecological Dimension

Chart showing changes observed on Chilimo forest since the inception of
PFM

Variables	Observed changes (↓ or ↑)
Illegal harvest from the forest	↓
Regeneration status	↑
Illegal marketing of forest products	↓
Overgrazing in the forest	↓
Silivicultural treatment to the forest (thinning, pruning, enrichment planting)	↑
Community participation	↑

Appendix 4

Criteria Matrices

Legend	
xxx	Good
xx	Medium
x	poor
oo	Not applicable

Matrices were created to evaluate each criterion under the different stage of EPM. As shown above, the ratings reflect to what extent each criterion was met, with one mark being the lowest and three marks being the highest. Where it says not applicable there is no evidence of activity either from the actor or the project. These were rated from the qualitative information gained from the interviews on site; lower point scores helped determine where there are specific weaknesses. Discussions, conclusions and recommendations were then formulated according to the findings of this exercise. This eventually helped formulate strategies to address any obvious weaknesses and possible connections between actors

Social Criteria	Appraisal	Action and Implementation	Monitoring and Evaluation	Institutionalization and Scaling up
Equitable access to forest resources	X	X	XX	OO
Sharing of forest management knowledge	XX	XXX	XX	OO
Equitable Gender participation	X	XX	XX	OO
Engagement				
Government	XXX	X	X	OO
Co-operatives	XXX	XXX	XXX	OO
Individuals	XX	XX	XX	OO
Forestry Research Centre	XXX	XX	XX	OO
FARM-Africa	XXX	OO	OO	OO

Economic Criteria	Appraisal	Action and Implementation	Monitoring and Evaluation	Institutionalization and Scaling up
Increased level of local commercialization from forestry activities	XXX	X	XXX	OO
Increase in income generating skills and opportunities	XX	X	XXX	OO
Engagement				
Government	XXX	X	X	OO
Co-operatives	XXX	XX	XX	OO
Individuals	XX	XXX	XXX	OO
Forestry Research Centre	XXX	XXX	XXX	OO
FARM-Africa	XXX	OO	OO	OO

Physical Criteria	Appraisal	Action and Implementation	Monitoring and Evaluation	Institutionalization and Scaling up
Equitable access to arable land	X	X	XX	OO
Maintenance of land to encourage sustainable forestry	XXX	XXX	XXX	OO
Engagement				
Government	XXX	X	X	OO
Co-operatives	XXX	XXX	XXX	OO
Individuals	XX	XX	XX	OO
Forestry Research Centre	XXX	XX	X	OO
FARM-Africa	XXX	OO	OO	OO

Ecological Criteria	Appraisal	Action and Implementation	Monitoring and Evaluation	Institutionalization and Scaling up
Decrease of deforestation rates	XXX	XXX	XXX	OO
Ecological awareness in the general community	XX	XXX	X	OO
Engagement				
Government	XXX	XX	X	OO
Co-operatives	XX	XXX	XXX	OO
Individuals	XX	XXX	XXX	OO
Forestry Research Centre	XXX	XX	XXX	OO
FARM-Africa	XXX	OO	OO	OO

Political Criteria	Appraisal	Action and Implementation	Monitoring and Evaluation	Institutionalization and Scaling up
Macro-level (state) support of PFM initiative	XX	X	X	OO
Engagement				
Government	XX	X	X	OO
Forestry Research Centre	XX	XX	XX	OO

Appendix 5

Different Maps of Chilimo PFM:

Map 1.Chilimo forest coverage area during 1980

Map 2. Chilimo current forest coverage

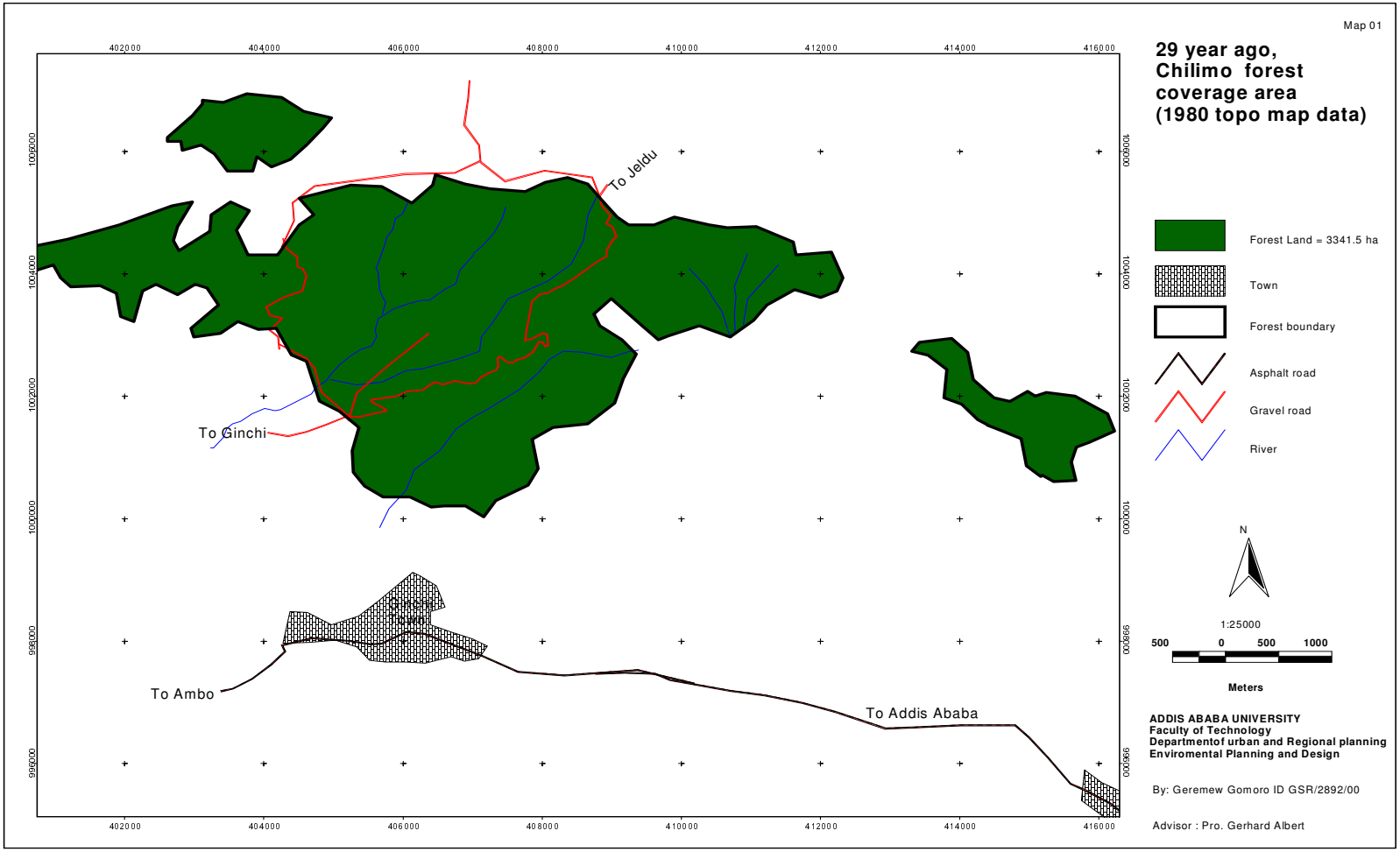
Map 3.Chilimo forest coverage change

Map 4. Density based distribution of Chilimo forest

Map 5.Current land use around Chilimo forest

Map 6. Current Chilimo forest management system

Map 7. Proposed land use around Chilimo forest


Map 01
29 year ago,
Chilimo forest
coverage area
(1980 topo map data)
To Jeldu
To Ginchi
To Ambo
To Addis Ababa
Forest Land = 3341.5 ha
Town
Forest boundary
Asphalt road
Gravel road
River
N
1:25000
500 0 500 1000
Meters
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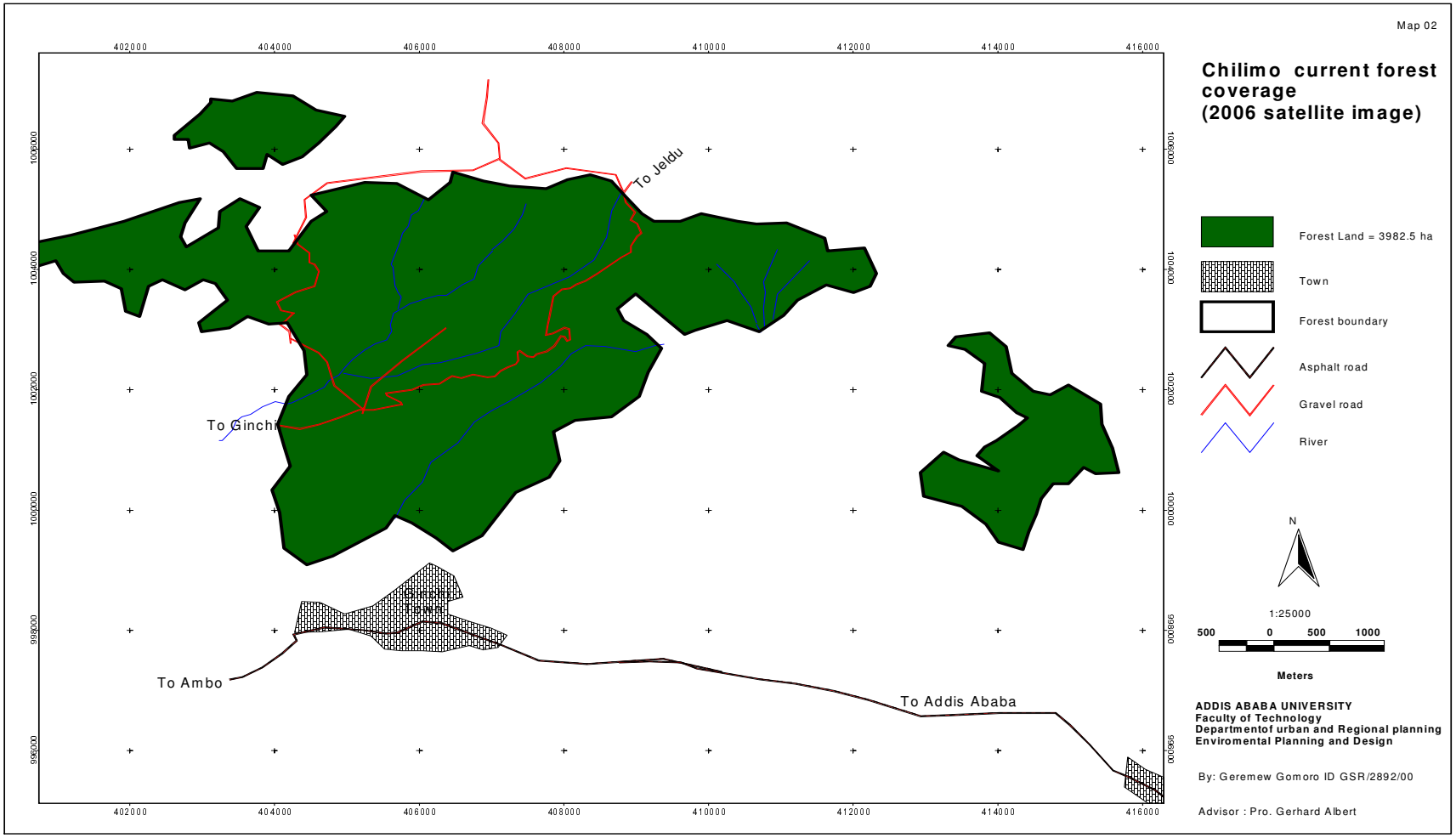
Departmentof urban and Regional planning
Enviromental Planning and Design
By: Geremew Gomoro ID GSR/2892/00
Advisor : Pro. Gerhard Albert


Map 02
Chilimo current forest coverage
(2006 satellite image)
402000
404000
406000
408000
410000
412000
414000
416000
1006000
1004000
1002000
1000000
998000
996000
To Jeldu
To Ginchi
Ginchi Town
To Ambo
To Addis Ababa
Forest Land = 3982.5 ha
Town
Forest boundary
Asphalt road
Gravel road
River
N
1:25000
500 0 500 1000
Meters
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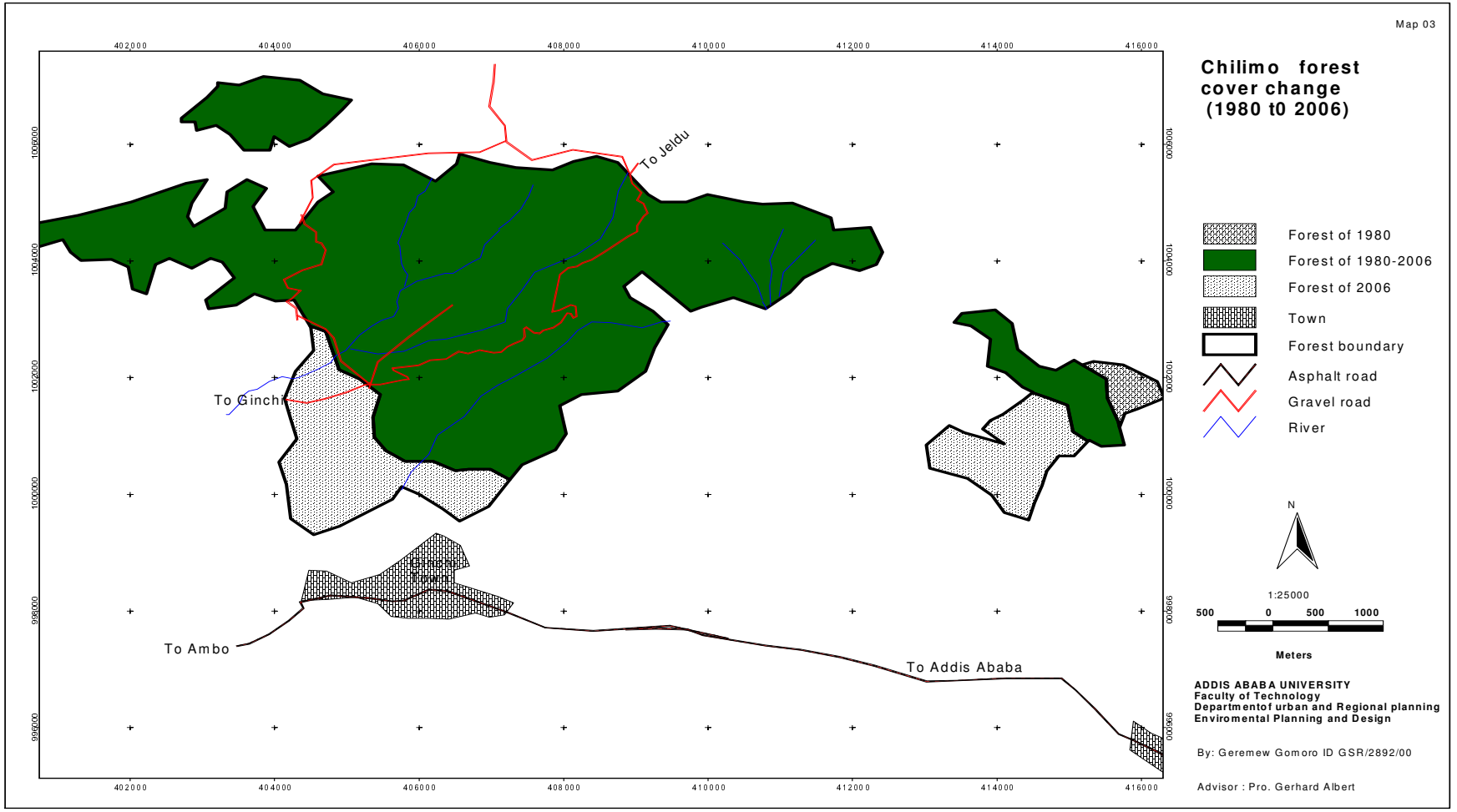
Map 03
Chilimo forest cover change (1980 t0 2006)
Forest of 1980
Forest of 1980-2006
Forest of 2006
Town
Forest boundary
Asphalt road
Gravel road
River
N
1:25000
500 0 500 1000
Meters
To Jeldu
To Ginchi
To Ambo
To Addis Ababa
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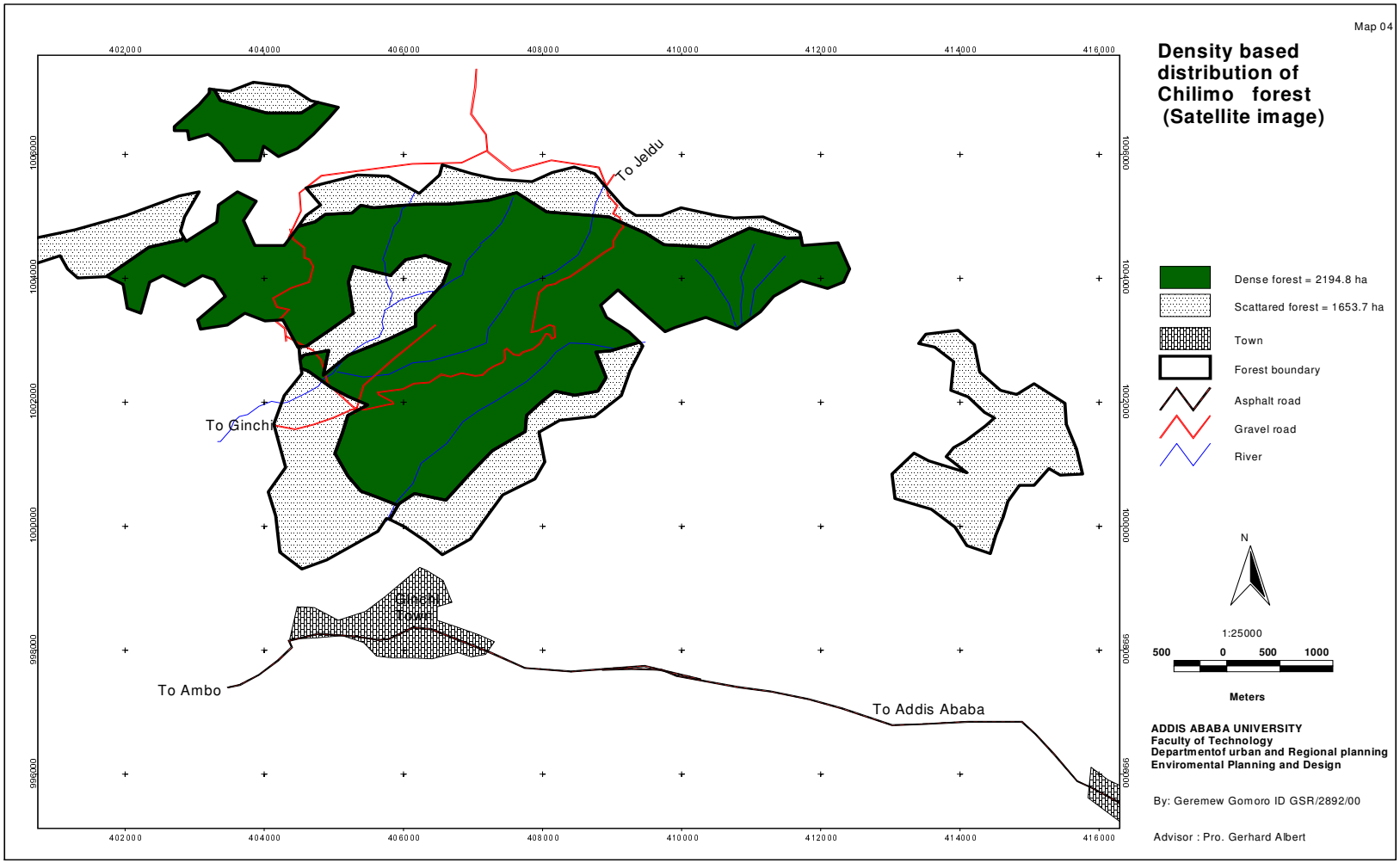
Map 04
Density based distribution of Chilimo forest (Satellite image)
402000
404000
406000
408000
410000
412000
414000
416000
1006000
1004000
1002000
1000000
998000
996000
To Jeldu
To Ginchi
Ginchi Town
To Ambo
To Addis Ababa
Dense forest = 2194.8 ha
Scattared forest = 1653.7 ha
Town
Forest boundary
Asphalt road
Gravel road
River
N
1:25000
500 0 500 1000
Meters
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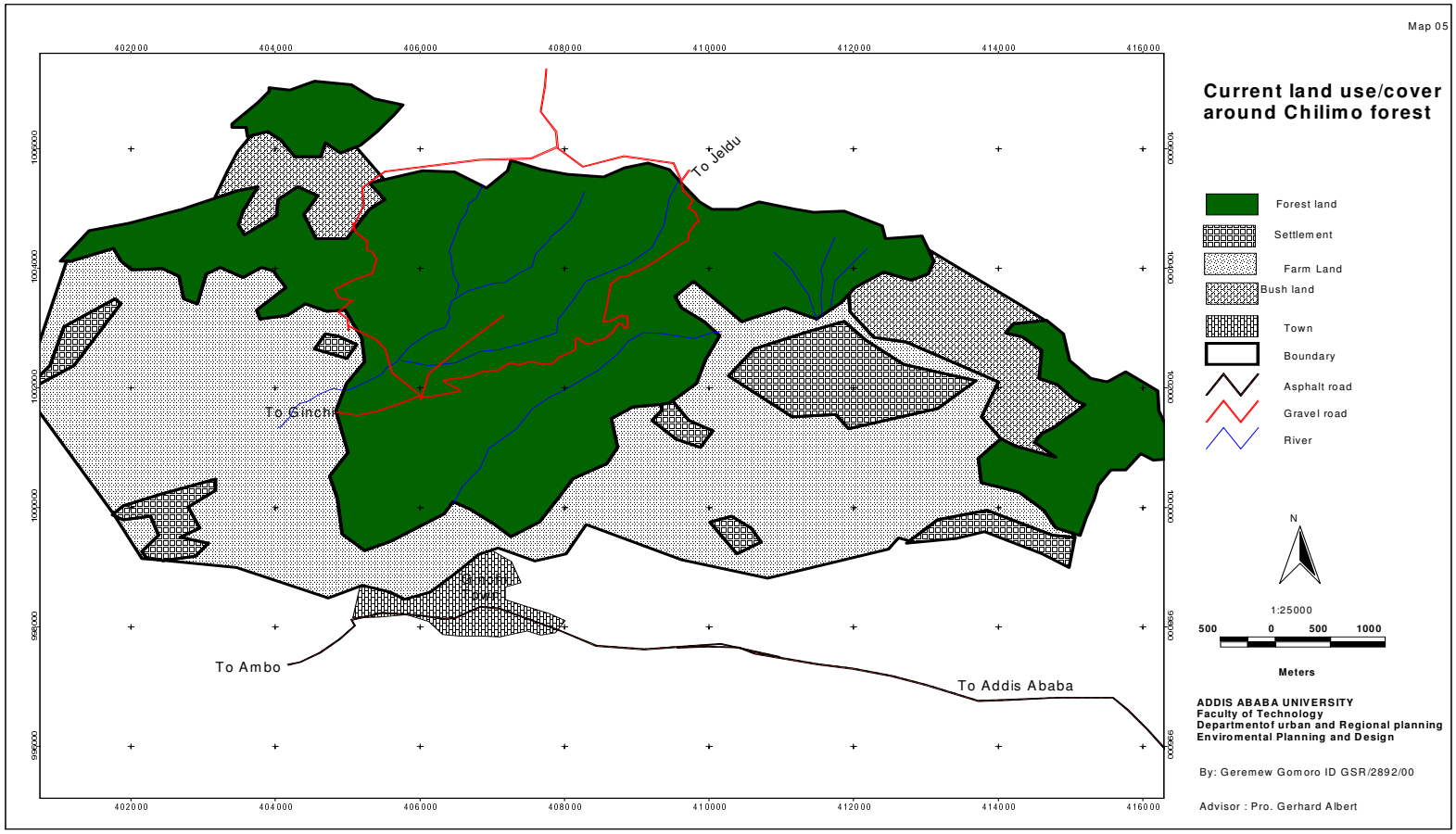
Map 05
Current land use/cover around Chilimo forest
To Jeldu
To Ginchi
To Ambo
To Addis Ababa
Forest land
Settlement
Farm Land
Bush land
Town
Boundary
Asphalt road
Gravel road
River
N
1:25000
500 0 500 1000
Meters
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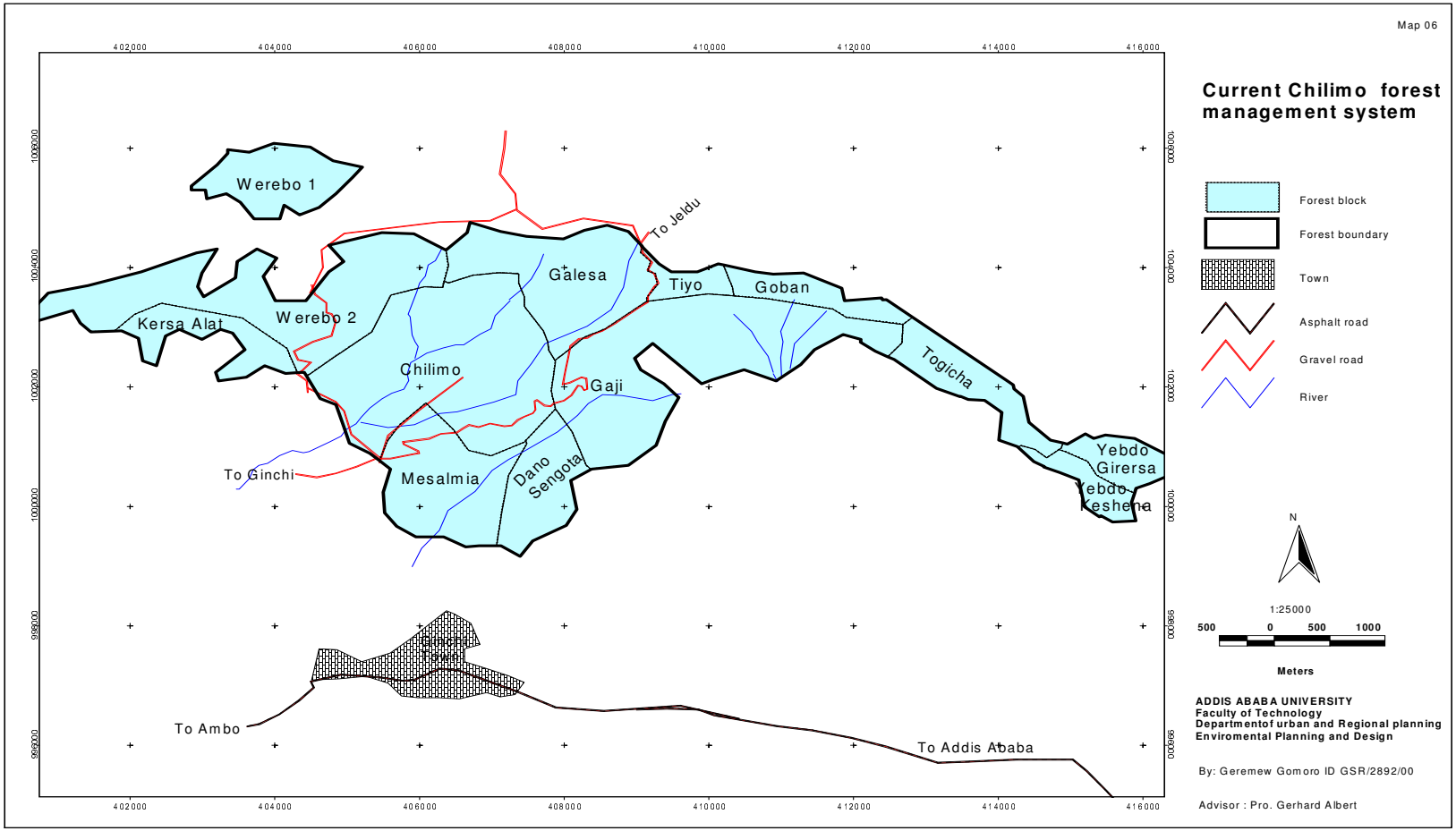
Map 06
Current Chilimo forest management system
Forest block
Forest boundary
Town
Asphalt road
Gravel road
River
Werebo 1
Werebo 2
Kersa Alat
Galesa
Tiyo
Goban
Togicha
Chilimo
Gaji
Mesalmia
Dano Sengota
Yebdo Girersa
Yebdo Keshena
To Jeldu
To Ginchi
To Ambo
To Addis Ababa
Ginchi Town
N
1:25000
500 0 500 1000
Meters
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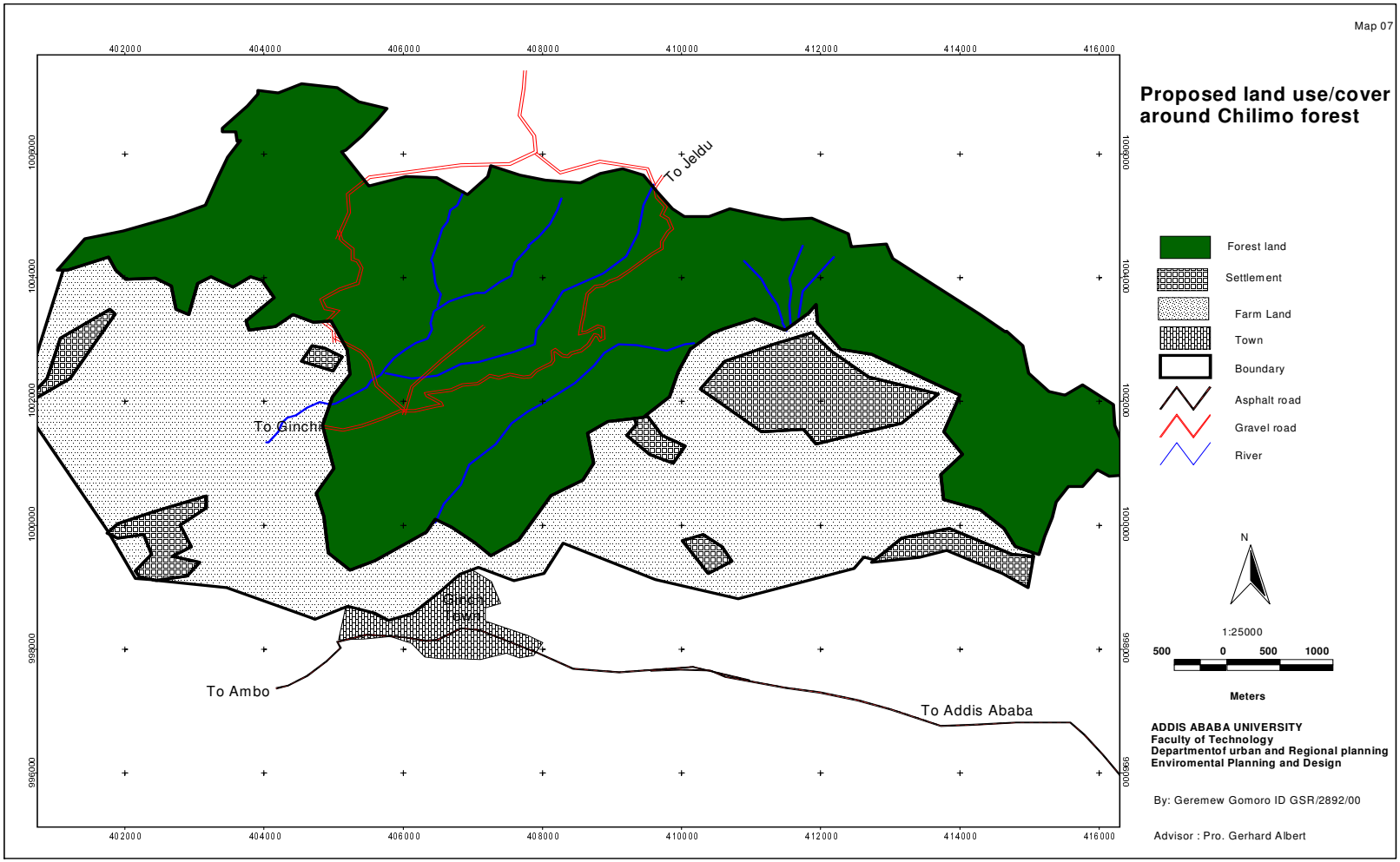
Map 07
Proposed land use/cover around Chilimo forest
To Jeldu
To Ginchi
Ginchi Town
To Ambo
To Addis Ababa
Forest land
Settlement
Farm Land
Town
Boundary
Asphalt road
Gravel road
River
N
1:25000
500 0 500 1000
Meters
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