



## *IMPROVING LIVELIHOODS AND CONSERVING NATURE: THE CHILIMO FOREST IN FOCUS*

**The Goal of PFMP is to ensure environmental sustainability through Community based natural resource management systems**



**A PRIVATE RURAL DEVELOPMENT & AGRICULTURAL EXTENSION AGENCY**

**A Public-Private-Rural Community partnership**

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# **1. Introduction and Background**

## **1.1. Location & Size of the Chilimo Forest Reserve**

The **Chilimo Forest (including Gaji)**, located in Dendi Woreda of Western Shoa Administrative Zone (one of the 14 Woredas) - Oromiya Region, is the focus of the FARM Africa-led Participatory Forest Management (PFM) Project. Dendi Woreda is reported to have population in excess of 300,000, according to Ormia Bureau of Agriculture. The negative forces on the Chilimo Forest are many, according to finding by a recent Gender and NRM Training workshop (2004). There were 11 negative forces identified, the most important being; (insecure) land tenure, cultural beliefs (vis-a-vis forest), lack of employment/job opportunity, lack of alternative livelihoods, high population pressure on natural resources, low capacity and awareness, weak legal conflict resolution instruments, early and double marriages resulting in high ratio of under age population. Fewer positive forces were identified including; regional land use policy being formulated, birth control/family planning programs underway, FARM Africa-led extension and training and forestry support services (including micro credit).

In the face of unprecedented encroachment of the forest for agricultural expansion (due to increased human and livestock population) and the resultant land degradation from the exploitative resource (land and trees) use, the area designated as Protected Priority Forest Area has declined from 22,000 ha (some put it as originally 28,000 ha) to only 3,800 ha today. There is no guarantee that all of it will stay unless some action is taken to help the settled urban communities in and around the forest, and empower them to protect the remaining forest area.

## **1.2. Participatory Forest Management**

The scheme to accomplish the task of protecting the Chilimo Forest Area is through Participatory Forest Management where the community and the government through the facilitation of FARM Africa and other partners jointly develop Forest Management Plans. This displaces the traditional Forest Guards System where forest guards were employed by the government. Despite the large number of guards employed (compared to the physical size of the forest area), the system was not able

to prevent forest encroachment for agricultural expansion and human settlement. Illegal timber harvesting and fuelwood/charcoal trade from the Chilima Forest continued unabated through a coalition of interest groups from within and outside the Forest Area. The crew of forest guards may have been party to this tragic outcome as low salary of EtB. 150/month may have been supplemented by sale of forest products

To date, there are 9 PFM groups identified and organized. Two additional groups are under formation. While there is an expressed interest from the Department of Cooperatives to limit the number of PFMs to two, maintaining the preset number greatly facilitates effective implementation as each small group will remain more cohesive and be manageable. Services like extension, credit, input supply and training can also easily and effectively be provided to smaller groups than larger ones. The government position of limiting the number of cooperatives to three has more recently been dropped and the project is allowed to proceed as planned, according to the Project Management.

### **1.3 Agroclimate & Land Use**

The Chilimo Forest Area and the surrounding area are made up of two major agro-ecologies (AEZs), namely: (i) **Dega** and (ii) the **Woina Dega**. The type and range of crops grown in these two AEZs are different and in most cases the agronomic practices are not the same. Hence, FARM Africa and partners need to recognize the element of agro-ecology as an effective factor and tool to use in packaging technologies and delivering inputs.

Within the Chilimo Forest Area, there are some PFMs or FGUs that are entirely in the Dega zone, representing the higher elevation and steeper landscapes. These same PFMs or FGUs are generally poor economically. The Management Agreements need to reflect these two aspects. The Worobo and Gallessa FGUs fall within the Dega AEZ. The following sections briefly describe the two AEZs impacting on the population living in and around the Chilimo Forest.

#### ***1.3.1. The Dega AEZ of Chilimo Area***

Because of cold temperature in the Dega zone (2500-3200 m.a.s.l), the range of crops grown and potential tree species are fewer compared to the Woina Dega AEZ. In addition to cold temperature slowing down growth, rainfall tends to concentrate in only three months, which results in long dry and cold 9 months (mostly early mornings). A third constraint, as related to the Chilimo Forest Area, is the

case of steep slopes susceptible to soil erosion and water run off if no conservation measures are not applied (both physical and biological). There are often cases where the whole crop field freshly cultivated and sown in crops gets washed down leaving bare land and rocky outcrops. The sum effect of the dega climate is that all biological activities, especially rock weathering and decomposition of plants into soil organic matter are extremely low.

One of the key constraints of the agricultural land use of the zone is the traditional practice of fallowing croplands ever other year giving a land use efficiency of only 50%. This is to say only half of the agricultural land is in use every growing season to maintain land productivity. A system must be found to minimize or remove the need to fallow croplands.

The opportunity and practice of Belg crop production (mostly barley) helps farmers to produce some food to shorten the hunger season. The moisture-laden clouds and residual soil moisture along with few showers of rain make this practice possible. This situation could also be used to plant trees and establish tree-cropping systems in the Dega AEZ which has not been a common practice. Tree planting is normally done in the Meher season (the 3-month long rainy season).

Household fuelwood shortage for cooking and space heating in the Dega Zone is also acute as deforestation is nearly complete. This creates the need to enter into the Chilimo forest for gathering firewood and making charcoal. Families living in the Dega zone have very little or no surplus produce for sale to generate cash income. Firewood and timber from the forest have therefore tended to bridge this shortfall, along with sale of sheep and equines (donkeys and horses). Many families have planted eucalyptus in the homesteads and on farms as mini woodlots mainly for sale to generate the much needed cash income for the family. Unfortunately, a good part of this cash proceed is mostly used by the husband for personal entertainment including consumption of local alcoholic drinks such as *tela*, *tej* and *areki*.

The Degas zone farmers are generally far away from the main market and are less accessible because of the prevalent steep slopes. This group is generally poorer and is poorly served in terms of schools and health services. They tend to be more dependent on the Chilimo Forest for fuel, construction and household materials. The landless and the food insecure, estimated to make up 30% of the population, depend more on the forest directly to take out wood (timber and firewood) to sell for income.

Unfortunately, even in the current PFM agreement, a provision has been made for this group to take out 4 loads of wood from the forest per week, per household. While this provision seems justified in the face of abject poverty, other means of poverty alleviation must be considered including IGAs such as small scale irrigated horticulture growing, sheep rearing, bulk trading, small scale processing and packaging. If supported by the project in terms of improved skills and the provision of micro finance services, resource-poor households in the Dega as well as in the Woina Dega Zone can benefit from the activities indicated in the development and management activities of each PFM group including: forest guarding, enrichment tree planting, seedling (nursery) production/sale, seed collection and sale, eco-tourism, growing apple tree, beekeeping, poultry, livestock fattening and handcraft making.

The actual Chilimo forest lying in this AEZ in principle should be conserved as a watershed/catchment and as a nature reserve because it forms the roof of the watershed. Natural regeneration of the forest is reported to be high in the disturbed forest areas but only if animal grazing is kept out (ETHIO-Forest Report). Therefore, no animals should be allowed to graze on this part of the forest. Exploitation of this part of the forest by the community should be kept to the very minimum possible.

Improved production systems and scaling up of existing land use practices have been detailed in this document. All of these suggested production systems point towards improved land management and livelihoods. When implemented as integrated approaches, an ecologically sound land use and integrated land resource management will be achieved. Therefore the Dega zone must have an overall eco-friendly livelihoods including eco-tourism with economic livelihoods that re-enforce each other. Growing of more perennial crops including tree farming must be introduced for sustaining the system of production. Thus the scaling up of enset and bamboo farming, the production of deciduous fruits (i.e. apple, pears, etc.) and sheep production on cut-and-carry or zero system has been suggested. Improved and planted fallows that help achieve SWC and enhanced fodder/fuelwood production have been recommended to do away with the present traditional fallow system of land use for agriculture. Some of the more innovative agro forestry-based land use systems developed and tested with high promise for the Dega and Woina-Dega zones include:

1. Under-sowing legumes (i.e. Vetches, clovers, etc) in cereal crops
2. Use and application of BNF (Biological Nitrogen fixation using proper inoculums)
3. Growing of Nitrogen fixing species (such as woody legume species including Tree lucerne, highland Sesbanias) as planted fallows or and on SWC structures.
4. The growing of fruit orchards in association with the homesteads and on farms

5. Small ruminants production and poultry as well as beekeeping and silk farming
6. Production systems in support of local and traditional crafts (bamboo, reeds, palms, etc)

### ***1.3.2. The Woina Dega AEZ of Chilimo Area***

The Woina-Dega AEZ, lying below the Dega AEZ, (1500-2400 m.a.s.l) on the other hand, has more ideal climate for growing diverse food crops and horticultural products. Ginchi town lays in the zone. The zone is relatively well serviced by development infrastructure including roads, health, rural credit and markets. There is more water resource available, both from rivers and from ground water for increased and all-year production. Potentials for agroforestry-based land use are high, including increased livestock production, based on zero-grazing where animals are kept in confinement (i.e. dairy and sheep production for the market) and feed brought to them. Forest grazing is allowed in the Forest Management Agreement and this is likely to continue to negatively impact on natural forest regeneration as shown on the Report of the ETHIO-FOREST. But here too, the Forest Management Arrangements allow this to take place. There are more alternative livelihood opportunities in the zone to enable and make communities not to depend on resources of the Chilimo forest. This zone is suitable for horticulture farming using small-scale irrigation including growing cut flowers (i.e. carnation, chrysanthemum, birds of paradise, statis and baby breath flower).

These flowers, especially statis, baby breath, carnation and the common rose are already common in the Addis Ababa market. Smallholder farmers in and around the Chilimo forest area could begin to grow more of these flowers for the growing flower market in Addis Ababa. But farmers need to be organized and form Associations to enable them to have access to the market and receive technical assistance and extension services, including credit. Operating as associations and/or cooperatives, farmers can also work as contract farmers and out growers to commercial flower companies located in the Holeta-Addis Alem-Ambo axis.

Smallholder farmers in the area can also grow strawberries, fruit trees and high value trees and a range of vegetables as the agro-climatic condition suits the growing of such products. For instance, Kenyan farmers, in areas with similar agro-climate, grow avocado, macadamia nut, French beans, passion fruits, and green apple for the market and derive good and reliable income. These are gradually replacing the traditional crops of the area such as the growing of maize and beans. This suggestion and recommendation is not different from what is observed in the growing of *eucalyptus*, *chat* and *gesho*. When a certain locality concentrates and specializes on producing some selected

products, the market comes to them than the producers looking for a market. Currently, nearly all productions are for local markets in nearby cities and towns. But over time one can expect export markets to emerge. Farmers and their local organizations can run all of these interventions with technical support from the Project and the government departments. When farmers are organized to produce for a targeted market, they will collectively become commercial group producers.

The team recommends that FARM Africa/SOS Sahel recruit horticulture specialist who can provide technical assistance and training on the production-marketing of small scale horticulture enterprise. The specialist will also coordinate acquisition of improved germplasm of adoptable, productive and marketable species including the support of commercial flower growers newly established in Holetta and Addis Alem.

### ***1.3.3. The Dega and Woina Dega Continuum***

While the need to recognize the existence of agronomic and cropping differences in the two climatic zones affecting development and protection efforts has been presented above, both AEZs are affected commonly by rural poverty and shortage of fuelwood. In addition, the population living in the two zones uses the forest to generate dry season activities (harvesting and sale of wood, beekeeping, etc.). As long as poverty is not removed from the life of the people, and unless the current land use system is not altered to more intensive and permanent agriculture, the pressure on the Chilimo Forest will remain high and be detrimental to livelihoods –present and future. The present draft PFM Agreements and Management Plans allow too much benefit to be derived from the forest in return to forest guarding services that communities provide. All forest areas except very small hilly sites are open for grazing and for taking out wood. Such plans will only be sustainable if only poverty alleviation programs and eco-tourism activities do create new and alternative livelihoods, which in turn should allow much of the forest to be permanently closed for public and community recreation including nature walk, hiking, horse trekking, camping and bird watch sites.

## ***1.4 Ginchi Township and Peri-urban Areas***

Ginchi Township and the Addis Abeba-Ginchi/Ambo highway has exerted and continues to negatively impact the Chilimo-Gaji Forest Area. Firewood, charcoal and timber coming out of the forest enters Ginchi and some of it goes to the Addis Ababa market. This demand and market continues to exist giving rise to opportunity for the rural community to continue deforesting and take out wood to the town for sale. Urban dwellers are also using the forest area for grazing.

At present, FARM Africa is confronted by natural resource use conflict between the Ginchi urban dwellers and rural Chilimo communities. Therefore, FARM Africa may need to also target some activities to the urban centers especially Ginchi township. These activities can include: urban credit, enterprise training, eco-tourism, energy conservation and fuel substitution programs. The current level of urban -rural divide and conflict should not be allowed to escalate and continue.

## **2. Programs Linking the Forest with Improved Livelihoods**

Settlements and agriculture (including livestock) pose the greatest harm on the Chilimo Forest Area. Added to poverty and limited knowledge base, such settlements and encroachment do aggravate the damage done to the forest. An incentive-based PFM program, supported by collaborative public-private-community partnerships will establish the necessary conditions for institutionalizing sustainable management and protection of the forest. FARM Africa should play a catalyst and coordination role to bring about such collaborative partnership, and initiating incentive-oriented sustainable programs. The Consultancy team suggests that FARM Africa organizes its interventions following agro-physical characteristics of the forest (i.e. the relatively higher altitude area (Dega), and lower area (Woina Dega areas).

### ***2.1 Agroforestry Interventions In The Dega Zone***

As stated above, the pressure from the Dega AEZ on the Chilimo Protected Forest Area is more severe and more difficult to contain because of the generalized poverty and high-level dependence on the forest for their livelihood of the very poor and landless. In order to reduce the pressure on the Chilimo forest, the team is recommending the following agroforestry practices and farming systems to serve as sources of alternative income and employment generating activities:

### **2.1.1 Increased Bamboo growing, utilization and enterprise development with the participation of the private sector**

Bamboo forests were common in the Dega zone but this was completely removed in the last few decades to give way to crop farming. Farmers burned down and uprooted the bamboo thicket. Farmers now say that they need the bamboo back and have started to establish (plant) bamboo lines in their homesteads. Farmers reported that they use bamboo stems to make utensils, construct homes and grain stores. The bamboo sheath is used for making beehives, make hats and umbrella and for roof construction. This initiative of the farmers needs to be supported by increasing availability of bamboo planting material and introducing proper and suitable cultivars from East Africa (Kenya) and from Southeast Asia (see Bamboo Report from Bonga for more detail and the "How to establish, manage and use Bamboo Booklet). With proper training and bamboo product-making skills, Ginchi would attract markets from Addis for bamboo-made products. Such training can be provided in conjunction with the Bonga skills development scheme.

Discussing the draft report with FARM Africa's Chilimo staff, it was recommended that a small project be initiated to implement a pilot program on Bamboo production and processing in selected homesteads and forest sites. The proximity of Ginchi to Addis (less than 2-hr drive) makes the bamboo enterprise more competitive comparing to existing supply of Bamboo coming from the Southern part of Ethiopia taking more than a day trip.

### **2.1.2 Small-scale irrigation from rivers, springs and drainage for temperate and sub-temperate fruit and cash crop production**

In looking at topographic maps of the Dendi Woreda, especially the area bordering the Chilimo forest (north and northeast), one notes the existence of large area under seasonal and permanent swamp. The source of the annual recharge for these swamps is the Chilimo forest catchment. The area to the south and southwest of Chilimo Forest has also many rivers that feed the Awash and other rivers. Therefore, both the Dega zone (from swamp drainage and irrigation) and the Woina Dega zone (from springs, river and ground water) can move into intensive and permanent agriculture. Such developments can expand to accommodate many farmers since access to the Addis Ababa and Ambo markets is already there. With the completion of the newly renovated Addis-Ambo road (in 2 years), fruits and vegetables grown in Chilimos BZ and FOTA areas would be easily marketed at reasonable prices. Even now, commodity prices in Ginchi (Chilimo) and Ambo are nearly equal to those in Addis Ababa. Farmers in the area are active participants of the market especially during the dry season. The current efforts of introduction of temperate fruits such as apples in the Dega Zone and diverse fruits

and vegetables in the Woina Daga needs to be scaled up using improved cultivars, better growing techniques, and efficient farm management practices preceded by hands-on practical training.

A strong horticultural development program suggested here can be illustrated by current success stories in far away Chenchha highlands and Arba Minch area where farmers (supported by an NGO) have been enriched by fruit nursery activities. Currently national demand for apple and other deciduous temperate and sub-temperate fruits outstrips production and supply. Apple seedling supply and sale is being rationed out and is selling at Birr 38/seedling. Demand for seed of fruit trees and other trees are also high. Demand for kai apple (koshim) seed and seedling goes unmet each year. Such seeds and seedlings can be produced and sold by individual and organized farmers and communities of the project area. One central tree nursery for the Dega zone and another of the Woina Dega zone needs to be established (new or upgrading existing ones if any). This nursery center will serve as training and demonstration site. Additional decentralized and satellite (temporary seasonal seedling holding sites) centers need to be established under individual or community ownership and management with extension service given to them, including finding market outlets to dispose excess production of seedlings and seed.

The key fruit tree that will promote the development of nurseries and the establishment of horticultural farms in the Dega zone is apple and related sub-temperate fruits. In the Woina-Dega zone the choice of fruit trees to be raised both in the nursery to be established in horticultural farm enterprises is wide. But emphasis should be given to the growing of avocado as this has good market, is easy to grow and handle, and will greatly fortify household nutrition and health. (See the special bulleting on growing and benefits of Avocado by TAM Agribusiness). Although the need to introduce apple growing in Ethiopian highlands is being promoted by the government and NGOs, there has not been any specific recommendation on the origin, propagation methods and type of species to be adopted in different localities. For Chilimo, the team recommends to carry out adaption and verification trials for 3 or 4 types of species (coming from within the country, Kenya and other Mediterranean countries such as Spain) before disseminating to farmers.

Beekeeping, supported by increased fruit tree farming, and the initiation of silk farming using mulberry (*Morus alba*) and the common castor bean (*Recinus communis*) can be promoted and supported by the project largely through a) hands-on training, b) subsidizing the equipment and tools for beekeeping and c) processing facility for silk farming. ICIPE and the Holeta Research Center are institutions that can support both beekeeping and sericulture development. ICIPE has Ethiopia/country

Office and field programs. There is also a consultancy report on sericulture available from the Bonga Project of FARM Africa done by ICIPE.

### **2.1.3 Scaling up Production of Small Ruminants (sheep) under Zero Grazing *vis-à-vis* SWC**

Sheep production is already significant in the Dega Zone but has been based on open grazing system. The market for sheep is unlimited and the Thursday Ginchi market is known for its livestock market. Farmers have been introduced to fodder production and are interested to adopt zero grazing, or at least a mix of open grazing (seasonal) and zero grazing by growing fodder crops in the homesteads and on farm boundaries, Scaling up the adoption of zero grazing schemes for sheep and other small animals must be attempted soon to reduce forest grazing. Holeta research station has already identified appropriate fodder crops for the Dega zone in the region. Joint R&D activities can be arranged in partnership with EARO/Holeta. Because of its proximity to Addis, Ginchi market for sheep is very favorable bringing good income to farmers. PFM groups should be encouraged to set up a zero grazing facility within their households and be allocated open land for growing fodder crops combined with SWC practices.

With regard to choice of species for use in Agroforestry (for Soil and water conservation, fodder and wood production), both ILRI and EARO have identified several suitable species for the area - the Dega and Woina Dega zones. The choice for the warm\_highlands (Woina Dega AEZ) is considerably wide and includes the following species, namely;

- ✓ Napier or elephant grass mixed with forage legumes, i.e. Stylos
- ✓ Alfalfa (*Medicago sativa*)
- ✓ *Calliandra calothyrsus*
- ✓ *Leucaena spp* (highland and psyllid resistant cultivars)
- ✓ *Sesbania sesban* (ie. *S. sesban*, *S. goetzi*)
- ✓ Lemon grass (*Cymbopogon spp.*)

The choice of recommended and suitable species to use in the cold highlands (the Dega AEZs) is limited to just a few, namely:

- ✓ Tree lucerne
- ✓ Mulberry (*Morus alba*)
- ✓ Poplas (*Populus delitoides* or hybrids)

The consultancy team recommends that some farm households be selected to grow fodder crops in 2 locations: 1) on their farm yards close to their houses, and 2) on common land along side rivers/streams.

#### **2.1 4 Scaling up of Enset (*Worke*) and Potato Production for Home Consumption and the Market**

In the Dega Zone Enset (locally known as *Worke*) is a very important crop, and is grown in association with homestead/compound crops. It is the staple food along with potato and wheat. Potato is also growing in importance and is grown twice, using the *belg* rains. Both crops are ecologically suitable for the zone. High yielding and disease resistant Enset cultivars need to be introduced and planting material made available. Similarly, there are high yielding and disease resistant potato varieties and cultivars that need to be introduced widely. Suggested irrigation agriculture should make potato growing more profitable. Potato is important contributing significantly to household food consumption and cash income. Farmers can be pulled out from forest-led activities easily if intensive Enset and potato growing is expanded in the outer transition area of the forest. The center of growth and development of this program should, by design be as far away from the forest area proper as this will gradually depopulate the forest area and at least reduce future homesteads from being established.

The scaling up of enset growing is essentially to improve the already productive system of intensive farming in the homesteads and adjacent fields. This farming system is well studied from the southern highlands such the Sidamo, Wollayta and Hadiya-Gurage highlands. The entry point of improved homestead gardening system, as it is popularly referred to, is to introduce high yielding and disease resistant cultivars and the use of combined chemical fertilizer and organic matter (compost and farm yard manure). Other cultural practices developed and field-tested will then fallow in time. The same procedure applies to potato growing in the area.

#### **2.1.5 Scaling up Beekeeping and Starting up Sericulture**

Beekeeping is included in all of the PFM Agreement documents. A good start has been made in introducing the modified Kenyan Top Bar beehive, using local reed, bamboo, eucalyptus wood and wire mesh sold at 40-45 ETB. But there is more to making beekeeping profitable as in the past when farmers reported that they used to harvest three times a year. Now, both the frequency of harvest and yield has drastically reduced as the forest has been shrinking. The Holeta National Beekeeping

Research Center is not too far and the working relations established already need to be further strengthened. All farmers are ready to participate in beekeeping as stated during the meeting sessions we had with the PFM groups. The honey coming from the area is so popular that a kilogram is sold for 18-20 ETB in Ginchi market. This price is so appreciated by farmers that the majority of them would like to venture on.

The science and practice of beekeeping and the processing of honey and beeswax is well known. There are Journals dedicated to this science and as well as an International Society. The key limitations in the area, as in other parts of Ethiopia, are that wild bee species are still in use and commercial bee types have not been introduced. The relatively high cost of modern or even intermediate beehive is a key constraint. Some NGOs/Projects have made some progress in designing and producing beehives from locally available material and local skills, making the unit relatively cheap. Honey harvesting is also quite rudimentary and harmful to the operator and the bee colony alike and modern protective cloth and other appropriate tools are not available. The harvesting techniques also reduce the honey quality and taste thereby reducing the market value compared to imported honey.

Thus this program, with technical support from the national Beekeeping program at Holeta should work to improve honey yield through the introduction and use of modern bees, increased bee forage supply through out the year, the use of modern beehives and honey harvesting techniques and after harvest care and processing of pure honey for table and for other uses.

Sericulture (silk farming) is not known but can be introduced. Mulberry (*Morus alba*), the main and sole feed for the silkworms is highly adapted to the Woina Dega and the Dega zone. It is popularly planted in the homesteads in Ginchi and other towns along the Addis-Ambo town. Governments including the Government of Japan are pledging support to create this industry. ICIPE, an international, Research and Development Center based in Nairobi but with a country program in Ethiopia can assist. Already a consultancy Report has been made to FARM Africa-Bonga. Kenya has made great strides in this line and both farmers and garment industry are benefiting from Silk farming and enterprises.

### 2.1.6 Scaling up Homestead Tree Planting and Eucalyptus Woodlots

**Woodlots:** There are at least three sites where woodlots are commonly established, namely (a) in homesteads, (b) on farms, and (c) farm and homestead boundary trees. The growing of non-fruit trees in the homesteads is also gaining significance. In addition to trees grown as mini-woodlots economic and shade trees are commonly planted randomly in the homesteads. Some of these may be retained from original native trees that were standing on the site here the homestead is now established.

The drawback of the system in the case of planted trees is the excessive use of Eucalyptus (blue gum for the Dega and red gum for the woina dega AEZ). Other species observed planted in these sites include: (a) *Cupressus lusitanica* (yeferenji tid), (b) *Juniper* (*Juniperus procera*), and (c) black wattle and other Australian Acacia species. There is also an increasing trend of *Grevillea* growing. These latter group should be increasingly be promoted and planted to supply the fulwood, fencing and construction pole market of Addis Ababa and other towns in the Western Shoa Administrative Zone.

Indeed, increased tree growing to meet fuelwood and construction wood and timber is high. The market continues to be reliable and returns have a ratio of 1: 125 (Crop: eucalyptus wood lot) when woodlots are established using agricultural lands. The location of the project areas *vis-a-vis* the Addis Abeba market is excellent. The returns from the maiden harvest of a 10-year *Grevillea* are five fold to that of similar age of Eucalyptus construction wood. A Draft Bulletin on Growing of *Grevillea* is available in a form from FARM Africa/SOS Sahel and TAM Agribusiness Plc. which details how to grow and manage *Grevillea* and the end use and economic benefits to land labor and capital used.

The growth rate of Poplar (*Populus hybrid*) has been observed to be high and biomass yeild (timber for ox plough) good based on the experiences of GTZ in Debre Tabor and Bahir Dar. The use of cuttings and its spread from root suckers naturally makes the growing of this species quite attractive to farmers and rural communities. The wood is somewhat light but with excellent tensile strength making it suitable for farm implements. A Bulletin on the species is available in a draft form also from the above two sources. Poplar is suitable for both the dega and wona dega zones.

In addition to meet household/domestic needs, trees (especially eucalyptus) are becoming good cash earners for many households trying to feed their household members. Fuel and construction wood is a severe constraint in the Dega zone. There is some eucalyptus growing but nearly all of it is sold in the market leaving housewives in crisis to cook food and brew coffee for the husband and children as was

expressed by the women participating in the field meeting. While the priority of tree planting should be fruit trees to re-enforce nutrition of the family and, as a source of cash income, growing fuel wood and timber is equally important. The growing of fruit trees is well covered in the Bonga Technical Report to FARM Africa by TAM Agribusiness. For Chilimo, PFM groups should be encouraged to allocate fixed plots to grow eucalyptus woodlots to satisfy their domestic needs and to generate some cash to be used for increasing household food security. This effort can greatly reduce the exploitation of the forest mainly the gathering of firewood and timber for construction.

Fruit tree growing is not common in both the Dega and woina Dega zone except some peach grown in the towns. But the area has great potential because of its good climate, soils, water and the Addis Ababa market. This activity and program needs to be given the attention it deserves soon.

## ***2.2 Scaling Up Agroforestry In The Woina Dega AEZ***

Agroforestry-based land uses and practices in Dendi woreda, including the Chilimo forest site, are limited. Traditional mixed cereals farming with some livestock continued to be the dominant system in the land use. On the other hand, natural resource base including fertile soils, good rainfall, and ample ground water can make agroforestry systems work effectively. The relatively mild climate (temperature and rainfall) and good soils also allows the production of diverse tree species and crops under agroforestry systems.

FARM Africa and its partners (i.e. GTZ, HUNDE, etc.) are introducing temperate fruits, fodder species, modern beekeeping along with improvements in cereal farming. But this effort should be scaled up including the introduction of improved agroforestry technologies and practices described below:

### **2.2.1 Scaling up Trees on Farms**

There is now a regional effort to assist farmers to increase trees on their farm. But such an interest is likely to suffer from the lack of adequate tree germplasm and the knowledge of tree management and utilization. As revealed by TAM agribusiness's recent study (Enhancing the Availability of Diversified Tree Germplasm for Farmers in ANRS), tree germplasm supply is by far the major

constraint further compounded by lack of technical knowledge on tree species (Seed and nursery technology and management) and product end use. Similar conditions and/or limitations do exist in Chilimo and the Woreda at large. In spite of such limitations, farmers are interested to plant trees on the farm and on homestead. Therefore, FARM Africa should reevaluate its current stand on reducing support to nurseries. If such support is not forthcoming, farmers are unable to plant more trees on farm. Hence, the pressure on Chilimo forest will continue. The opportunity for enhancing tree-based farming systems and increased supply of tree products and NTFPs would be missed. The program should be based on “**trees and markets**” theme that would encourage farmers to grow more trees even on their farm plots. Therefore a technical package on “**Trees on Farms**” should be prepared and field staff trained for effective implementation and sustainability of the program. The new TOFNET of ASARECA in which ICRAF can financially assist this program. The world Agroforestry is the technical host institution.

### **2.2.2. Scaling up Fodder Production for Zero Grazing**

Three meetings held with farmers and PFM leaders revealed that there is a severe fodder supply shortage as grazing area/per head of livestock and its carrying capacity has been reduced. Therefore, the need to grow fodder near the homesteads becomes more important as FARM Africa and its partners want to limit open grazing on the forest. Farmers are equally interested to grow fodder species such as tree lucerne, sesbania, elephant grass, alfalfa, vetch, Lupine and other tree and grass species that can be grown in association with SWC structures and/or around the homestead.

This enhanced forage production should be matched by adoption of improved animal breeds and the practice of zero grazing as expressed by farmers themselves. The Chilimo FARM Africa group are expected to do more in forage production as the need to limit open grazing becomes more urgent. The Holeta research station has done much on this subject and the team sees essential that the Chilimo technical team or group initiate joint R&D in forage production.

The setting up of FFS trials and experiments using Calliandra, perennial Sesbanias and lemon grass is provided in the Technical Reports from Bonga Forest Project. Additional guide is available in the new TAM Technical Field Guides/Bulletins for individual trees and woody perennials.

### **2.2.3 Scaling up Poultry Farming with the Participation of the Private Sector**

Keeping running native chickens is a common practice for the production of eggs and poultry meat for home consumption and for the market to generate cash income. The market both in the rural and urban markets is always good. Almost equally important and justification for scaling up poultry production using modern breeds and feed and good management is for the production of poultry manure (which is a mixture of urine and feces). Poultry manure is highly valued market commodity in East African countries such as Kenya to use in feed formulation and for making organic fertilizer (manure or compost preparation). The fertilizer value of poultry manure is high. The use of poultry derived manure is central to organic farming both in the urban agriculture and in rural agriculture. A mixture of poultry manure and chemical fertilizer boosts garden and farm yields.

The growing of alfalfa is also made necessary in poultry farming. Green alfalfa is fed to hens to increase egg production and quality especially by making the eggshell strong. Some commercial poultry farms in the country such as the poultry farms in Debre Zeit use alfalfa in poultry feed rations to great benefit. The relatively new Genesis Farm uses this practice with good results. Poultry manure becomes more significant and needed with the increased interest to increase the intensity of homestead farming. Thus, poultry production becomes central to agroforestry practices, which are designed to enhance diversified yield per unit of land over time.

Improved poultry breeds from Debrezeit have shown good results. Of the two breeds available (Rhodes Island Red and Fayoum), farmers prefer the later, which survives better and adapts well under their management. Modern poultry farm will benefit from enhanced forage production (alfalfa and maize). This activity is likely to positively impact (economic & nutrition) on women and children. Market price for eggs and chicken is also favorable bringing good cash income to individuals. Culturally, women and children have ownership of chicken and their proceeds. FARM Africa should support and help create marketing linkages with Ambo and Addis markets.

#### **2.2.4 Scaling up Horticulture (Tropical Fruit Trees, Vegetables and Floriculture)**

Considering good access to markets, farmers are enthusiastic in participating in horticultural ventures. In addition to favorable agro-climatic condition (of the WoinaDega zone), Chilimo's proximity to Addis Ababa is good reason on scaling up horticulture. The development of horticulture in the area should start with the establishment of a small-scale irrigation along the riverbanks and the swamp areas. In time, as irrigated agriculture and nurseries develop; it will be possible to have horticultural crops replacing cereals farms. However, an active training of trainers and aggressive extension system will be required. At the completion of the new road, the current travel time will be reduced by half and bring the market closer to Ginchi. Enhanced vegetable production along with tropical fruit farming should be encouraged. It is also possible to envision the expansion of the floriculture industry from Holeta axis to Ginchi, generating employment and income. Contacts can also be made to establish agreements with commercial farms for contract farming to supply selected flowers and vegetables such as carnation, strawberries, etc. It is also recommended that more investors from the private sector to work with the farming communities to commercialize the horticulture sector by injecting capital and inputs, and provide markets.

At the heart of this recommendation is the vision to transform the traditional cereal livestock mix with little market linkage, into market linked production system where horticulture farming (fruit and vegetables) dominates. The new trend in the Teji areas on the Jima road and in the upper Rift Valley of Meki and Awash dam as well as in the Wondo Genet-Shashamani area is a prime example. In these areas, the growing of fruits and vegetables including green maize and sugar cane for the Addis Ababa market is significant.

#### **2.2.5 Scaling up Gesho and Spice Growing**

Both Gesho and Azmud (Black and white) have strong presence in the local market indicating they are already being locally grown. Therefore, it is suggested that increased production be considered to supply other markets including Addis Ababa. Gesho growing is ecologically suitable and can be grown in association with SWC structures and on farm and homestead boundaries. But at present both Gesho and spice crops in general are not included in the development programs in the area. On the other hand, both are high value crops and do contribute for food security because of the increased cash income to the household. The health and moral issues of promoting the increased cultivation of Gesho to make intoxicating local and traditional drinks (tej and tella) needs to be discussed.

## ***2.3 Cross-Cutting/Development-Support Programs***

### **2.3.1 Eco-tourism: A Public-Community-Private Sector Partnership**

The Consultancy Report on Community Based Tourism especially for Chilimo by Mark Chapman (December 2003) needs to be seriously considered and implemented. This consultancy team differs with Chapman in who should implement it. This team strongly believes that the private sector should play a leading role in putting the infrastructures and marketing of the tour package. It therefore needs to develop binding contracts and agreements that are fair both to the community and the private sector. It would be very difficult to attract private investors unless they are assured of management flexibility and non-interference in the management of the package agreed in advance with the government and the community.

In addition to the required infrastructures inside the forest, Hotel and Restaurant facilities in Ginchi township need to be upgraded and new investors need to be invited to erect and operate facilities that meet international standards. The opening of the **Chilimo Imperial Forest Lodge** and establishing those others recommended by Chapman will usher eco-tourism. The following activities are common activities in Eco-tourism, which can be applied directly in Chilimo forest (Horse trekking; Nature trail, Mountain Lodges, Camping, Craft Selling, Cultural Shows, Game viewing, Bird Watching, Hiking). But the PFM groups need the participation of the private sector. The two leading investors in the Zone - W/ro Abebech Metaferia and Ato Takele Tadesse, have already made a good start. The latter already is marketing Chilimo and other eco-tourism destinations in the Woreda and the Zone. Both the driving distance and time are expected to reduce significantly once the new highway under construction will be completed in 2 years. By then, tour operators can be invited to increase their interest in organizing a new tour package along the Addis-Ambo-Gedo road passing through beautiful temperate-cool landscapes, historical and scenic land marks. Domestic tourism is potentially high. Among the few that the program can develop tour package brochures for are:

- *The Gefersa water reserve dam and its surroundings*
- *The Menagesha-Suba Forest Park*
- *Addis Alem and its St. Mary Church built by Emperor Menelik*

- *The Chilimo Gaji Forest*
- *Crater Lake Wonchi – a picturesque Mountain Lake*
- *The Ambo town with its hot springs and gardens*
- *The Guder and Teltele Water Falls*
- *The Dendi Crater Lake*

The consultancy team recommends that a 3-person task team be established composed of FARM Africa, Bureau of Agriculture & Natural Resources, and the Tourism Commission to organize a meeting of stakeholders to develop action plan and mobilize resources to implement the recommendations of the eco-tourism study. The team also recommends to involve private tour operators to promote a tour package between Menagesha Forest and Ambo including the Chilimo Forest and Wonchi Lake resort.

### **2.3.2 Micro Credit Facility**

Both communities and the FARM Africa field team ranked Micro Credit Facility to be high priority. Farmers are more interested in private or individual credits once, they are organized as PFMs or FUGs. Therefore, provision of micro credit to farmer groups, including the youth and women, is one major input needed to operationally the other activities. While credit is a major incentive to farmers, it by no means is sustainable. The team, therefore, is recommending for each PFM group to start a savings and loan association in which each member will have a saving account making him/her eligible for a loan. The provision of micro credit is especially important to women-headed families and the youth who are mostly land less and food insecure. With the little credit they are provided with, these groups will create opportunities to be engaged in economic activities of their choice and expertise. Priority should be given to individuals and groups who mostly make their living on the forest (such as sale of firewood and sheep grazing in the forest).

### **2.3.3 Value Adding Processing**

Ginchi has the characteristics to be the center of agro-processing. Included in the value adding processing activity are: honey and beeswax, Enset processing, vegetable, fruits (Jam) and flower packaging, handcrafts & carpentry, animal feed, silk processing, energy saving stove making, etc. Organized communities can do some of the processing activities. The role of the private sector is also

key in some of the value adding processing that require considerable capital out lay to set up and operate the facilities. Skill training and re-training may be required.

### **3. Implication to FARM Africa And Partners**

The above recommendations will have some effect on the different components and/or activities with regard to staffing, budget allocation and timeframe. The following positions need to be reflected to strengthen the current staffing level and subject matter specialization of FARM Africa and Woreda technical Departments namely,

- Agroforestry
- Horticulture
- Eco-tourism
- Micro Finance
- Silk Farming and processing

All major programs, namely; (a) cross cutting/development-support programs (micro finance and eco-tourism development), (b) scaling up agroforestry and (c) small scale horticulture and small ruminants farming are important development areas that need to be implemented simultaneously.

The success in eco-tourism will definitely contribute to the conservation of Chilimo forest while the scaling up of agroforestry and implementation of agroforestry-horticulture based income-generating activities zone will enhance alternative livelihoods and remove poverty from the life of the rural community. These programs combined, will lead to the present FARM Africa efforts to become more successful and fruitful.

To implement the scaling up of agroforestry and small-scale horticulture enterprises, TAM agribusiness can develop and elaborate implementation plan if requested. TAM is also pleased to disclose its plan to buy tree seed from PFM groups through the FARM Africa Field Office for the

following species, *Afrocarpus falcatus* (*Podocarpus gracilior*), *Prunus africana*, *Juniperus procerea* and *Olea europaea*.

## 4. CONCLUSION

PFM as a participatory process of forest management plan and development, leading to a forest and natural resource management agreement between the communities around the forest area and the government has been accepted. Admittedly, the process takes much time and effort, but the process leaves a tradition of the government and the community working together for a common end where both the forest environment/habitat and the community gain. NGOs such as FARM Africa have become the glue to forge this partnership.

Many new ideas and program activities have been made in this report based of field interviews, examining the present condition of the forest and its history, meeting and reviewing many experts in the Woreda and at the Zone level and others working in the fields covered in the report (see appendix - for list). The Consultants have also brought to bear their wide international experiences of having worked in tropical Africa, India/Nepal and Southeast Asia. The work of The World Agro forestry Center (ICRAF), and its development partners have been consulted particularly agro forestry and water shade management success stories from Western Kenya and Eastern Zambia (planted fallows), the beekeeping success story of Baraka College of Agriculture in the Rift Valley province of Kenya, the climbing beans and *Calliandra/Gravellea robusta* stick of Rwanda, scaling up of agroforestry in South Africa and elsewhere in the tropics, the great water shade management and natural resource management program of Southwest China, the homestead agroforestry of Wondo Genet as well as the silkworm rearing and silk production work of ICIPE.

The recently completed field study and reports on agroforestry and NTFPs on Bonga Forest Area have contributed to this study and report. But there are more differences than similarity between Chilimo Forest Area and Bonga Forest Area. The role that NTFPs can play in the Chilimo Protected Forest Area is very limited. Even beekeeping using the forest as source of bee foraging has only limited scope and must be supplemented by planting of bee forage in the homesteads. There are no areas of natural bamboo forests and thickets left. Planting of bamboo as an NTFP will be restricted to homesteads and farm boundaries by those farmers with good size of farmlands. But growing of

bamboo for the lucrative Addis Ababa market needs to be promoted and supported by FARM Africa and partners.

The next step is now for FARM Africa to request its Chilimo field staff to study this document and get their feedback as to the follow up of this report and translates some of the recommendations into projects and field activities. The team had the opportunity to discuss the report with the Chilimo staff that agreed on the idea that further detailed design of projects is needed to implement some of the projects. Hence, additional resources (mainly consultancy time) are needed to come up with fundable project proposals. The Chilimo Staff should take the initiation to rank recommended activities and propose to senior management selected projects for design and implementation. Potential projects include: a) Bamboo Growing & Processing, b) Small-scale Horticulture, c) Improved Fodder & Livestock, d) Intercropping (Enset/Potato, etc), and e) On-farm SWC using multi-purpose agroforestry species. The Chilimo staff has the last say on this.

Using the Chilimo PFM experience, FARM Africa may also consider initiating similar programs in Jibat forest, Gedo and Menagesha-Suba forest.

The development protocol and investment program developed by TAM Agribusiness and endorsed by the recently held stakeholders workshop in Bonga and this general report on Chilimo together have implication for expanding the sphere and role of PFM. Therefore, the need arises for the synthesis of this technical information as necessary. Based on these strong databases and field experiences in Ethiopia, Tanzania and South Africa that FARM AFRICA and its partners have, it is possible to establish a technical and advisory unit as recommended by Gavin Jordan and Des Mohny (2003).

## 5. REFERENCES

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APPENDIX 1

SCHEDULE OF CONSULTANTS AND list of persons contacted

<b>Date</b>	<b>Place</b>	<b>Activity</b>	<b>Remarks</b>
14.04.04	ADDIS- GINCHI- CHILIMO- AMBO	<ul style="list-style-type: none"> <li>• Travel from Addis to Ginchi</li> <li>• Discussion and program setting with Farm Staff</li> <li>• Visit project area at Chilimo Area</li> <li>• Stay overnight at Ambo</li> <li>• Discussion with Ato Takle Tadesse owner of Ambo Ethiopia Hotel</li> <li>• Discussion with Ato Birehanu Mengesha</li> <li>• Brain storming session among consultants</li> </ul>	Discussion with Ehprem (Community development Office), Olika Belachew (Assistant Community development Office), and Daniel (Field assistant (Community development Office),
15.04.04	AMBO- GINCH- TIYO-AMBO	<ul style="list-style-type: none"> <li>• Discussion with Ato Hailu Gesesse (NR team leader</li> <li>• Discussion with Ato seifu (Acting head) and Gashaw (Livestock expert) of Dendi woreda agricultural development office</li> <li>• Travel to Tiyo and discuss with the community groups</li> <li>• Travel to Ambo and stay overnight</li> <li>• Brain storming session among consultants</li> </ul>	In Tiyo 28 community members are participated in the discussion out of which 5 are women
16.04.04	AMBO- GINCHI- CHILIMO- ADDIS ABABA	<ul style="list-style-type: none"> <li>• Discussion with Ato Tadesse Guta Natural Resources Disk officer at the West Shoa Zone Rural Development Department Ambo.</li> <li>• Discussion with Chilimo Forest User Group Committee memebers (11 people attended 2 are women)</li> <li>• Discussion with Ato Aklilu W/Micheal (Dendi Woreda OLNRAA Forester) and W/ro Bertikuan G/Mariam (Agroforester)</li> <li>• Ato Mengistu Mergia (Dendi Woreda Rural Development &amp; Agriculture Coordinator)</li> </ul>	In Chilimo 12 Forest Users Group committee members are participated in the discussion out of which 3 are women

		<ul style="list-style-type: none"> <li>• Travel to Addis &amp; stay overnight</li> </ul>	
17.04.04 -19.04.04	Addis Ababa	<ul style="list-style-type: none"> <li>• Data Analysis and report writing</li> </ul>	
20.04.04	Travel from Addis-Ginchi- Ambo	<ul style="list-style-type: none"> <li>• First stop at Burayu and discussion held with Dr. Azene Bekele who knows Chilimo very well and conducted study at chilimo forest</li> <li>• Discussion with project staff and Dendi Woreda OLNRAA staff.</li> <li>• Relevant Document Consultations</li> </ul>	
21.04.04	AMBO- GINCHI- MESALEMIA -ADDIS ABABA	<ul style="list-style-type: none"> <li>• Discussion with Mesalemia Forest User Group committee members.</li> <li>• Travel to Addis and report writing</li> </ul>	In mesalemia 15 community members are participated in the discussion out of which 6 are women
22.04.04 - 23.04.04	ADDIS ABABA	<ul style="list-style-type: none"> <li>• Report writing</li> </ul>	