

Strategic Action Plan to Engage Private Sector in Oromia Forest Landscape Program

Revised Document

Submitted to

OFECCA/ORU

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Acronyms

1. Introduction

1.1 Context of the strategic action plan

In Ethiopia, in general, and in Oromia Regional State, in particular, deforestation and forest degradation remain a main challenge to sustainable development. Deforestation and degradation of forests is driven by a variety of direct and indirect factors. The direct drivers include human activities such as expansion of agricultural activities (small-holder farming and large scale commercial agriculture including plantation coffee), illegal spontaneous settlement, and incidence of forest fires. Among agricultural activities expansion of farm plot and thinning trees and undergrowth in coffee and other farmlands are the main drivers of deforestation and forest degradation. Some of the livestock production activities of the country mainly free grazing and extensive livestock rearing are drivers of deforestation and forest degradation. Similarly, in the forest sector illegal logging, fuelwood extraction and charcoal production are also among activities that result in deforestation and forest degradation in Ethiopia. The indirect drivers and triggers of deforestation and forest degradation are economic, technological, cultural, demographic, institutional and political factors (Tennigkeit, et al. 2013).

Deforestation and forest degradation, and extensive crop and livestock production practices, and biomass energy such fuelwood, charcoal, dung, residues remain the major sources of GHGs emission in Ethiopia (Moges et al., 2010; CRGE, 2011). Government of Ethiopia is committed to reduce the Green House Gases (GHG) emission mainly through renewable energy development, participatory and community-based natural resource conservation, and basin development. In line with this, the Oromia National Regional State Forested Landscape Program (OFLP), a national REDD+ pilot, is under implementation for the coming five years to reduce net GHGs emissions from the land use sectors in the region with a grant from the World Bank's BioCarbon Fund Initiative for Sustainable Forest Landscapes Program. The grant seeks to foster equitable and sustainable low carbon development in the Oromia region through on-the-ground "enabling investments" that address deforestation, reduce land-use based emissions, and enhance forest carbon stocks, and developing an "enabling environment" through statewide and local enhancements to institutions, incentives, information, and safeguards management to scale up investment. In particular, the grant will support community-centered activities

that reduce deforestation and land-use based emissions, as well as enhances forest carbon stocks in deforestation hotspots in selected sites in 49 districts of Oromia region. It will set the stage for improving land use management in the rest of the state. The grant will lay-ground to unlocking a BioCarbon Fund commitment to purchase up to 10 million tons of carbon dioxide emission reductions. The Emission Reduction Purchase Agreement (ERPA) is expected to be implemented up to 10 years based on verifiable results in slowing state-wide deforestation and expanding new forests.

OFLP's implementation arrangements involve a range of institutions at the national, state, and sub-state levels with discrete accountabilities and decision-making roles. Within the regional state of Oromia, OFLP is led by Oromia Environment, Forest and Climate Change Authority (OEFCCA), with Oromia REDD+ Coordination Unit (ORCU) serving as the OFLP implementing unit. Given the drivers of deforestation and forest degradation are often linked to other sectors, OFLP implementation requires an extensive cross-sectoral policy and investment coordination with sectors such as agriculture, livestock, energy and land use planning and enforcement.

Private sector and market development are critical to reduce deforestation and forest degradation and to increase carbon stock objectives of the OFLP. Both could play a vital role to drive economic growth and poverty reduction through enhancing productivity, provision of employment opportunities. Particularly, engaging private sector in climate smart agriculture, sustainable forestry and energy sectors would contribute towards integrated landscape management (ILM) vision of the OFLP. Private sector refers to profit oriented organizations engaged in the production of goods and provision of services that includes financial institutions, small and medium-sized enterprises (SMEs), individual entrepreneurs, farmers, cooperatives, and corporations (Di Bella et al., 2013).

Private sector being involved in agriculture, livestock, energy and forest products or commodities supply chains can play vital role in reducing emission from deforestation and forest degradation that arise from land use change. Private sector can be involved along value chains of agricultural and livestock production activities, forest products harvesting, and renewable or efficient energy supply that can mitigate or halt deforestation and degradation. private sector can also help in providing incentives to reduce deforestation and forest degradation, and in turn enhance afforestation and reforestation in the forest landscape. Particularly, private companies located at the origin

of a supply chain have a more direct impact on deforestation, although all actors along the value chain can play role in reducing deforestation and forest degradation.

However, the involvement of the private sector to support ILM activities across forested landscapes in Oromia has been limited. In general, private sector is not usually interested to invest in activities with long gestation period and activities that demand heavy investment but with small profit margin. Private sectors tend to concentrate in area with certain natural advantages such as availability of raw materials, skilled labor, and closeness to market. In particular, private sectors engagement forest development is hampered by limited access to land, limited access to affordable capital, limited access long term credit, lack of insurance system for the forest development and high risk involving the sector, among other things. Hence, to create an enabling environment for active participation of private sector in the development and sustainable utilization of forest resources, government, and development partners and donors should be able to address these challenges. Private sector engagement in the development, conservation and sustainable management of forests, and in promoting forest smart agriculture and livestock and energy value chains include firms' active quest for the desired outcomes in these perspectives. Therefore, it is critical to have clear goals and strategies to enhance engagement of private sector in OFLP.

This document presents the value chain analysis of key commodities and products that can contribute to reducing deforestation and forest degradation, reduce carbon emission or increase carbon stock through enhancing engagement of private sector along the value chain, and identifying the point of entry of private sector along the value chain, and providing strategic action plan for enhanced private sector engagement. The strategic action plan discusses strategic objectives and activities to be considered in Oromia forest landscape program to reduce GHG in agriculture, livestock, forest and energy sectors, and elaborates the strategies on how it is going to be achieved and how private sector could contribute to its achievement and includes also the list of strategic action plans.

1.2 Purpose of Development of the Strategic Action Plan

The purpose of developing this strategic action plan is to enhance engagement of the private sector in forest-smart agriculture and livestock production, in the production and supply of renewable and efficient household energy, and in the development of forest

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sector. Particularly in the forest sectors, private actors can invest along value chains forest-smart commodities/products including non-timber forest products (NTFPs) that can help to halt deforestation and forest degradation and thereby enhance forest carbon stock. It can also reduce poverty by creating diversified livelihoods and employment opportunities among rural population in Oromia. The specific objectives preparation of this document are to:

- Indicate approach to increase the scope and scale of effective private sector involvement in the OFLP;
- Strengthen private sector involvement in forestry, climate smart agriculture, livestock, and energy sectors through identification and promotion of public private partnership models/approaches for forest compatible sustainable livelihoods development;
- Design a system to involve the private sector in commercial forestry, management of existing forests and woodlands through promoting NTFPs such as coffee, honey, spices, etc., climate smart agriculture and livestock, particularly dairy, beef, crops, fruits & vegetable production, and alternative energy;
- Identify and recommend policies to ensure an enabling environment for robust private sector involvement in the OFLP;
- Identify supply chain models that can be integrated into the OFLP, and specify how small farmers, especially female farmers, and communities can improve their livelihoods linked to the private sector under that program;
- Identify potential development and private sector partners and supply chain risks and related impacts for the commodities, generate information on potential entry points and identify opportunities consistent with the companies' interests and commitments; and
- Identify international and national trends on the types of motivations, form and extent of private sector involvement along value chains in the Oromia forested landscapes.

1.3 The strategic action plan development process

Development of the strategic action plan began by assessing key commodities/products and value chains of agricultural, livestock, forest and energy sectors that can help reduce deforestation and forest degradation, improve carbon stock. The value chain analyses

discuss key players, present current level of engagement of private and opportunities, and challenges to private sectors engagement along identified value chains. The consultant has also assessed opportunities to reduce deforestation and forest degradation, and tools to be employed. Based on information generated from the value chain analysis, and results of assessment of deforestation and forest degradation opportunities and tools, the consultant has developed the strategic action plan.

Preparation of the strategic action plan began with stakeholders' consultations organized on 25 May 2018 in Bishoftu, Oromia. The consultation workshop was attended by various stakeholders from Federal and regional Bureaus. List of participants is given in Annex.... The purpose of the workshop was to collect firsthand information used to set objective criteria to identify key commodities/products to be considered for value chain analysis; to select the sites to be considered for in-depth field study for each of the identified commodities/products; and to develop complete list of stakeholders (development cooperation/donors, international and local NGOs, community-based organizations, and private sector) with their roles in the forest, agriculture, livestock and energy sectors for preparing the strategic action plan to engage private sector in Oromia forest landscape program.

The participants of the workshop had also discussed thoroughly on current challenges that hindered engagement of private sectors to invest in forest activities; identified any ongoing private sector, community-based or private-public investment in forest, and indicated the strategic direction and options that are important to increase private sector investment in Oromia forest landscape. This information was used to develop the strategic action plan. Accordingly, the participants have identified a list of commodities/products to be considered for private sector engagement to reduce deforestation and forest degradation, reduce greenhouse gas emission and increase carbon stock, enhance livelihoods and income of the communities: coffee and mango from agricultural sector; poultry, honey, forage, dairy and fattening for livestock sector; bamboo, and spices from forest sector; and improved cooking stoves, fuel-wood plantation, improved charcoal making and solar energy from household energy sector (Annex table...). The criteria used in identification of commodities/products were: role of the products/commodities focus on deforestation reduction, improving livelihoods of the local people, create job opportunities along the value chain, and market availability for the products, etc. The

participants also underlined the importance of access to technology, infrastructure, services and facilities.

Based on the outcome of this meeting the consultant has conducted a desk review, and gathered secondary and primary data to prepare this document. Secondary data was gathered from various sources such as FAO's website, from CSA, MOT and other sources. Primary data was collected through group discussion, and informal interviews with market actors and service providers (Figure 1). Tables and graphs are used to present results of value chain analysis and information gathered from secondary sources.



Figure 1. Focus group discussion held with farmers in Belete-Gera area

1.4 Structure of the document

This document is organized as follows. The next section present results of the value chain analysis for commodities of agriculture, livestock, forest, and energy. This is followed by the analysis of the trend of private sectors engagement in the forest landscape. The third section presents the findings of assessment of opportunities to reduce deforestation and the instruments to be employed. The final section of the document presents the strategic

action plan to be implemented to enhance engagement of private sector in OFLP to reduce deforestation and forest degradation.

2: Analysis of trend of engagement of private sector

2.1 Agricultural sector

The agricultural sector has been central to Ethiopia's remarkable economic growth over the past decade. The sector remains a primary source of livelihood and income to more than 85 percent of the population. To this end, the government of the country has been supporting the Agriculture Development Led Industrialization (ADLI) strategy adopted in 1991 and launched a series of development programs since the last two decades. These include the Agricultural Growth and Rural Development Strategy and Program (2004), the Food Security Program (2004) and the Plan for Accelerated and Sustainable Development to End Poverty (PASDEP, in 2006), Growth and Transformation Plan (GTP I, 2010).

During the implementation period of GTP I (2011-2015), the government planned to start the structural transformation of the economy from agriculture-led to industry-led economic development. The aim was to gradually reduce the role of agriculture in the economy and to promote industrialization that builds on the agricultural production potentials of the country. This shift has resulted in positive implications for the forestry sector. For instance, the Ethiopia Forest Sector Review (2015) demonstrated the significant potential for the forest sector to expand and improve its industry base. The second Growth and Transformation Plan (NPC, 2016), which is under implementation has also given due attention to participation and engagement of the private sector to enhance productivity and production of smallholder farmers and pastoralists; and to strengthen the marketing systems.

Ethiopia also remains committed to the Comprehensive Africa Agriculture Development Program (CAADP) and formulated Agricultural Sector Policy Investment Framework (ASPIF) to identifying priority areas of investment in the agricultural sector, and to align the nation's agricultural sector investment priorities with higher level development goals and to mobilize multi-institutional and multi-sectoral interest and financing requirement for agriculture development from both Government and development partners. ASPIF also serves as a framework for aligning support from donor organizations and to promote investment in the agricultural sector. One to the strategic objectives of the ASPIF is to reduce degradation and improve productivity of natural resources.

However, the Ethiopian agricultural sector still remains subsistence, highly dependent on rain-fed production system, and dominated by traditional mode of production regardless of the effort to transform the sector into commercial system. Some of the characteristics of agricultural production system includes shifting cultivation and expansion of farm land. Such agricultural practices are identified as the underlying cause of deforestation and forest degradation that leads to raising GHG emission. In addition, the use of fertilizer and crop residues are among source of GHG emissions of the agricultural sector. According to the green economy strategy, the agricultural crop production accounts for about 12 Mt of carbon dioxide emission in year 2010, which was estimated to reach 60 Mt per year by 2030. The strategy suggests mitigating deforestation and adopting higher yielding techniques to address the problem (CRGE, 2010). The following section discusses the value chain of coffee and mango, trend of private sectors engagement, and the entry point for private sectors to contribute to reducing deforestation and to increase carbon stock.

2.1.1 Coffee value chain

2.1.2.1 Production

Ethiopia is the birthplace of coffee arabica and coffee is one of the commercial crops produced mainly by smallholder farmers who account for about 95% of the total production. It is estimated that about 25% of the population depend directly or indirectly on coffee for their livelihood. In recent years, perhaps with climate change, coffee production is expanding to areas that were previously not known for their coffee production. For instance, farmers in West Shoa and East Wollega zones of the Oromia regional state is found to be among the areas where farmers have started to grow coffee widely. In the past this area was known for its commercial maize production.

Scholars broadly categorized coffee production systems of the country into four: plantation coffee, garden coffee, semi-forest coffee, and wild (forest) coffee-based on level of intensity of management, and agronomic practices (Gole, 2003). The level of forest management ranges from little or none in the wild (forest) coffee production system, to intensive management in the home-garden and plantation systems. The wild (forest), semi-forest and garden coffee production systems are also considered as 'traditional' coffee production systems. It has been practiced for centuries as part of smallholder

farming system. Plantation coffee refers to coffee planted both on smallholders' farm or a large scale coffee farm usually owned private investors. In the plantation coffee production systems farmers are applying agronomic practices such as improved coffee varieties (usually selected for desired characteristics from material collected across the country) with limited chemical applications such as fertilizer and pesticide, unlike other production systems. Some of the smallholder farmers have also started applying organic manure to garden and plantation coffee to increase productivity.

Forest coffee is usually harvested from *de facto* state owned area, sometimes freely accessible by the local community and usually harvested by resource poor farmers, without any production management. There are also cases in which forest coffee is produced from natural forest owned by individual farmers or forest cooperatives and Participatory Forest Management(PFM) without any intensification management. For instance, Sabaka forest coffee producers' cooperatives in Jimma area consists of 14 forest user groups (Walda Egumsa Bosona), which is similar to WAJIB), produces forest coffee from the natural forest under their concession. In some cases, farmers may tempt to increase productivity by shade thinning and under growth slashing. This may exacerbate degradation of the ecosystem and loss of biodiversity.

As this is coffee in dense forest, it is mostly thin and tall which make it difficult for the farmers to pick the red coffee cherry. Usually the farmers either shake the coffee tree to collect coffee cherry from the ground or bend the tree down to pick coffee cherry. Key informants also noted that theft is a problem with coffee farms in the forest. As a result, usually farmers prompt to collect the green coffee cherry. Promoting sustainable wild (forest) coffee collection and marketing system can improve the livelihoods of the resource poor farmers, particularly in the face of growing number of landless local people. Figure 2 show that both production and exportable quality coffee of the country is in rising trend.

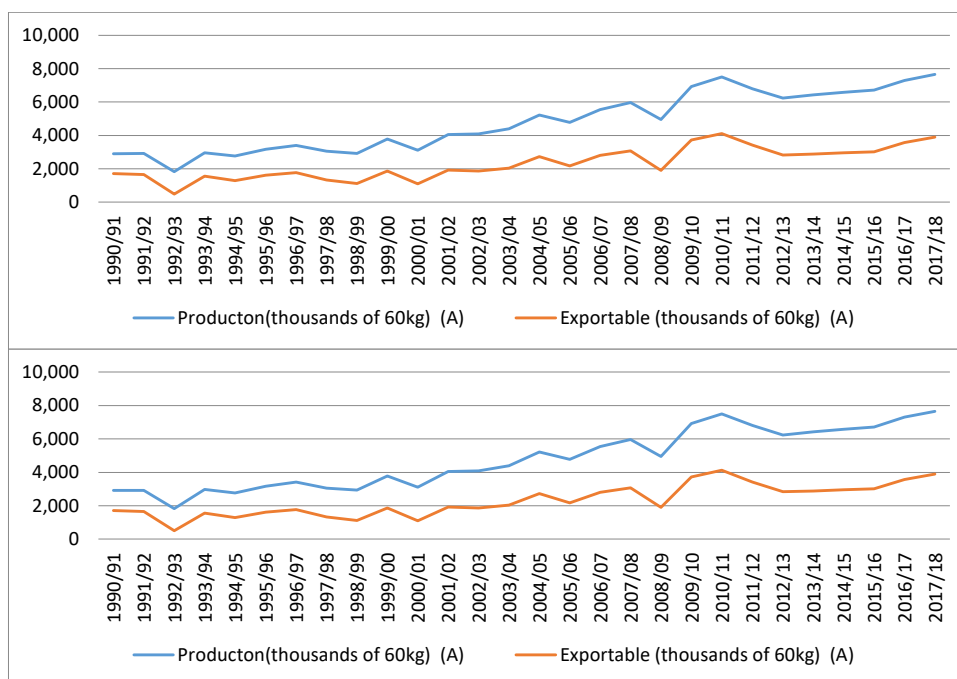


Figure 2. Coffee production and supply trend
Source: ICO

2.1.2.2 Assemble, storage and transporting

Coffee bulking begins at farmers' level soon after harvesting as the farmers put what is harvesting together for drying. At this initial stage of bulking, usually farmers mix coffee from different production system, and coffee of different moisture level together that might negatively affect the quality coffee they harvest. The second level of bulking happens at the primary market level by local traders or suppliers (*akrabi*). Local coffee traders operate in large number and they directly buy coffee from farmers. For instance, in Ilu Abba Bora zone, there are 318 licensed suppliers (*akirabi*). Local traders buy coffee from many farmers, from different production systems and of different levels of quality and they bulk different coffee types together.

The way farmers manage their farms, whether they pick the red cherries_(when it matures)_or before it matures, whether they use the appropriate sacks or plastic, and on how they dry and store it matters on coffee quality . Farmers commonly store dried coffee (*jenfel*) for few months if they want to sell at a better price or they sell soon after the coffee has been dried to the primary market. The key informants noted that dried coffee berries can be stored for several months but their quality deteriorates if stored for long period of time. The smallholder farmers usually transport coffee to the primary market on horseback and sell it to cooperatives or suppliers (*akrabi*). The wet coffee or sundried coffee that is purchased in the primary market is transferred to a recommended sacks and transported, usually with vehicle, to respective processing plants (Figure 3).

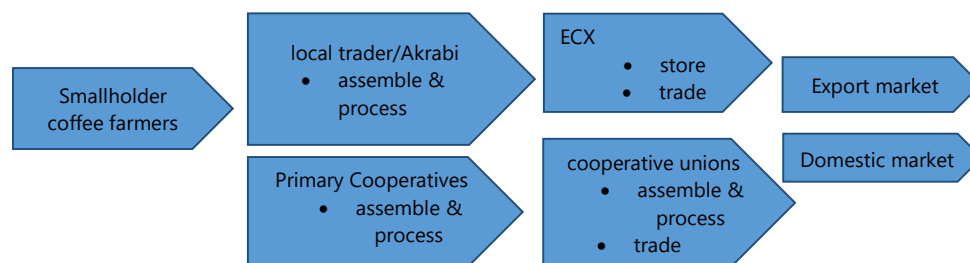


Figure 3. Coffee transaction channels

Coffee movement along the value chain is highly regulated and controlled by Coffee, Tea and Spices Department of *Woreda* Agricultural Office. The suppliers (*akrabi*) needs pass permit to be issued by *Woreda* office to transport coffee purchased at primary market to their store. Commonly the store is located in the coffee processing area, if not the *akrabi* need pass permit to transport from store to coffee processing site and also to bring it back to store. Once again, the *Akrabi* need to get pass permit to transport coffee to ECX. In each of the case the pass permit usually indicates the name of owner, amount of coffee and routes from loading to destination.

One of a challenge in the coffee value chain is limited supply of jute bags (*jonnie*). Farmers use used for transporting and storing coffee beans. Key informants mentioned that the price of the jute bag has been steadily increasing to the extent that a large number of coffee farmers cannot afford it any more. In most of the cases, the sacks are supplied by the coffee unions and cooperatives. Another alternative is the case where the local traders

(akrabi) and the farmers enter agreement to exchange sacks and coffee (i.e. traders sell sacks to farmers on condition that the farmers sell their harvest to them). Due to limited availability of sacks smallholder farmers usually use plastic bags (*madaberia*) to transport as well as to store coffee. However, the key informants noted that transporting and storing coffee in plastic bags negatively affect the quality of coffee. Key informant suggested the need to improve coffee farmers access to jute bags (*jonnia*) for better handling of coffee from harvest to the final point of sale, which is critical to improve coffee quality. The country has a regulation that require farmers and traders to transport and store coffee brand new jute bags (*jonnia*) alone to maintain its quality. However, this has been seen compromised at various level along coffee supply chain due to limited supply of jute bags (*jonnia*).

2.1.2.3 Processing

The key actors who engage in coffee processing are suppliers (*Akrabi*), primary cooperatives and unions. The suppliers (*akrabi*) are licensed local traders that own either washing or pulping machines, or both. Cooperatives and unions also have coffee washing or pulping machines. The key informants mentioned that although it is illegal there are also cases in which collectors and cooperatives (those who do not have coffee washing machine) buy the red cherry in their neighborhood and along roadsides, and resell it to the suppliers (*akrabi*).

Coffee is processed in two ways: sun dried, or wet cherry processing. In the latter case, farmers sell red cherry in the primary markets or supply fresh red cherry to the washing station. In this case, the red cherry need to be processed within 24 hours after it is picked. Farmers sell the coffee cherry each day after harvesting. Therefore, during harvesting season, the suppliers (*akrabi*) buy coffee at primary markets, almost each day, in the afternoon usually after 4pm.

For instance, in and around Ilu Aba Bora zone of Oromia regional State, there are a total of 78 coffee processing plants (36 red cherry processing and 42 dry cherry processing plants). Sixty-two of the processing plants are owned by private entrepreneurs, while 14 belong to primary cooperatives and the remaining 2 are owned by Sor-Geba multipurpose Cooperatives Union. The suppliers commonly own coffee processing mills. Cooperatives or unions process coffee purchased from members.



Figure 1. Red coffee cherry processing mills in Shebe area, Jimma.

In the case of sundried coffee, processing starts on farmers' fields or backyards. The farmers begin coffee drying by putting harvested coffee on bed made of locally available materials such as bamboo culms or mesh wire. In some cases, farmers use concrete ground made of cement for coffee drying. There are few farmers still drying their coffee on soil ground. The farmers construct drying bed or drying ground mostly in their backyard, but sometimes in their coffee farm as well. The key informants believe that farmers are not using wire mesh or other better drying techniques because market price fails to cover the cost. Farmers supply sundried coffee at local primary markets, then it goes through hulling and cleaning before suppliers (*akrabi*) deliver it to central market.



Figure 2.Dried coffee processing mill

2.1.2.4 Marketing

Ethiopia's domestic and export coffee marketing is dominated with green coffee beans trading. Key actors engaged in the coffee marketing are smallholder coffee farmers, suppliers (akrabi) that purchase coffee from farmers, process and sell at ECX (Ethiopian Commodity Exchange), cooperatives, and exporters are the key actors along coffee value chains (Figure5).

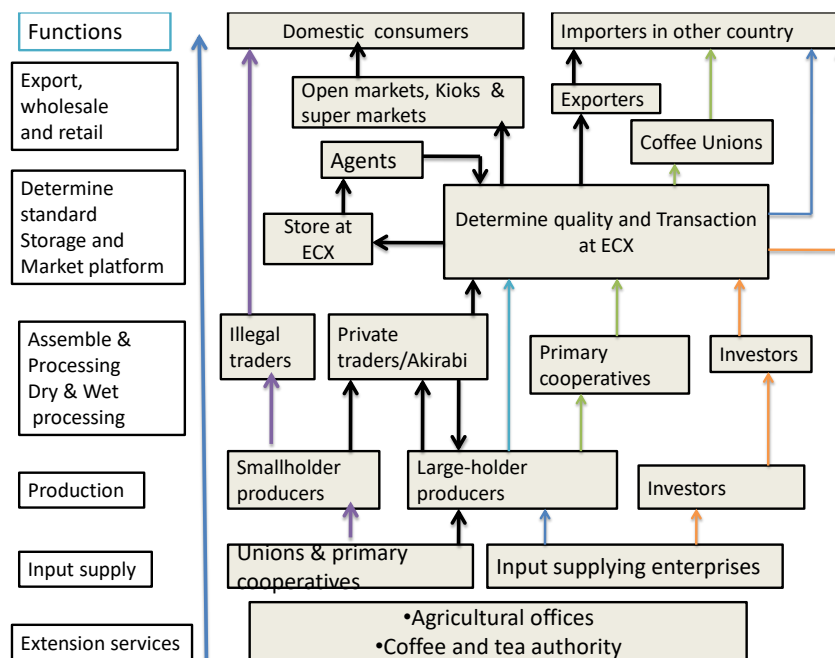


Figure 5. Coffee value chain

Coffee trading begin at primary coffee market center (Figure 6). The primary coffee market is the only place where coffee farmers are allowed to sell wet or dry coffee cherry to suppliers (akrabi). In most of the coffee growing *woredas*, there are at least one primary coffee markets per *kebele*. The key informants noted the need for more number of primary coffee market centers in order to increase markets access so that the farmer can easily supply fresh coffee cherry to the primary market each day after harvest. Supplier (*akrabi*) are local coffee traders who purchase coffee charray at the primary market, processing and supply to ECX. Suppliers (Akrabi) are in most cases relatively more educated individuals or coffee farmers from the area engaged in coffee trading. Suppliers (akrabi) are required to have coffee washing or hulking machine to get license. For instance, in Ilu Aba Bora, there are about 446 licensed coffee suppliers engaged in coffee trading.

Coffee enters national and international market through ECX. ECX is a market venues established by federal government of Ethiopia in 2008 where buyers and sellers of a commodity meet to trade. Coffee is one of the commodities that is traded in ECX. They

are designed to mitigate counterparty risk and ensure that payments are made through reliable financial service providers. Exchanges provide a framework for market actors, financial institutions, and commodity operators to interact based on rules that provide legal protections. ECX is established to reduce information asymmetry faced in the coffee market value chain and facilitates a more beneficial integration and it enhances competition.

ECX owns warehouses and laboratories to determine quality of coffee based on location at which is coffee grown. At the ECX the first thing to do is to determine the quality of the coffee. This is done based on observation such as count of defected coffee bean which makes 40% of the grade and roasting and testing makes 60% of the grade. To avoid identifiers, the testing is done based on code given to coffee from each *akrabi*. Testing is done by three experts and at least 2 of them should agree on the level of the quality. Once, coffee is graded the supplier gets Good Received Note (GRN) and unload its coffee at ECX warehouse for trading. The supplier is expected to present Good Received Note (GRN) up on return to its woreda agricultural office that gave pass permit.



Figure 3. Primary coffee market center

Coffee price at the primary market is set based on price information received from ECX via text message on cell phone or through communication with representative at ECX. For primary cooperatives, the executive committee meets to set the coffee purchasing prices in the primary market based on the information from ECX, while the supplier (*akrabi*) set the price on spot at the primary markets in reference to price set by cooperatives in addition to price information they received from ECX. Cooperatives set purchasing price at executive committee level. The key informants also indicated the problem related to maintaining coffee quality is that the primary market is not paying for quality. An effort to promote export of good quality coffee requires designing of a mechanism in which standards and differential price are used in the primary market for the red cherry and dry (*Jenfel*) coffee.

There are cases in which suppliers (*akrabi*) provide farmers with interest free pre-finance and jute bags (*jonnia*) based on agreement that the farmers will pay the money in terms of coffee valued at negotiated price or prevailing market prices. Farmers usually use this finance to pay for wage to do under-slashing and also for harvesting as the smallholder farmers face cash shorted. A farmer that has received pre-finance from a supplier (*akrabi*) is expected to sell all his/her coffee harvest to this particular supplier. A key informant noted that in many cases this can be a quality problem since the farmers harvest coffee not to get best price but to fulfill his commitment to repay pre-financed money. It was also noted that the possibility of supplying poor quality coffee be to the supplier (*akrabi*) depends on the farmer wants to keep smooth relationship with the supplier. Hence, social connection such as kinship play important role in primary coffee market.

Suppliers (*akrabi*) usually buy coffee at upfront payment. There is a new development in which the farmers sell their coffee to supplier on delayed payment at maximum price revealed during the season. The key informants noted that has sometimes resulted in conflicts between farmers and local traders. Cooperatives also buy coffee from members either on upfront payment or on arrangement to pay later upon sale of coffee at central market. Sometimes, cooperatives purchase coffee upon later payment as a strategy to overcome either lack of access to credit or to avoid interest expense. Particularly, newly established cooperatives commonly use this approach as they don't have a credit history to get a bank loan. Some mentioned that they don't want cooperative to borrow and pay interest to banks because of religion. Muslims neither borrow nor pay interest. There are cases when farmers who are members of a primary cooperative sell pulped coffee to private traders. For instance, cooperatives may buy coffee cherry from members and sell to private traders who own washing machines.

Figure 7 demonstrates that average coffee price paid to producers have not increased in a rate of increase in consumer paid price, taking consumers paid price in Germany which is a major importer of Ethiopia coffee.

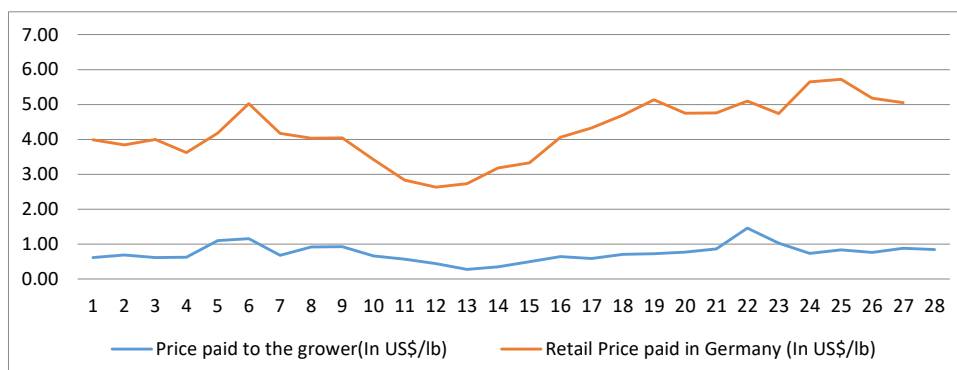


Figure 6. Trend of farm gate and retail prices
Source: ICO

In the current coffee marketing system, primary cooperatives, unions, investors, and large-holder (more than 2 ha) coffee producer farmers can export directly if they have export license. Suppliers (*akirabi*) sell coffee to exporting companies at ECX through their representatives. Cooperatives and investors or large scale commercial producers sell coffee directly through negotiation with end buyers (importer in the other country) but cannot sell in domestic market. Most of the coffee traded in the domestic market is either under-graded coffee or smuggled.

In the Oromia regional state, currently, most of the primary cooperatives in the region export their coffee through Oromia Coffee Farmer Cooperatives Union (OCFCU) while coffee farmers sell to suppliers (*akrabi*). Primary cooperatives deliver their coffee to OCFCU, at Galan town, for further cleaning, packing and export. Then, the exporter transports purchased coffee from the regional ECX warehouse to Addis Ababa for further cleaning, packing and transport to Djibouti-port for export. Coffee beans supplied to ECX, a central market in a package of 85kgs. Then, coffee exporters clean and re-pack it in 60Kg for export. Figure 8 shows the increasing trends of country's coffee export. It also depicts that in recent years the country has been able to export more of its exportable coffee. It is also clear from this figure that the gap between total production and exportable quantity has been increasing. This implies that the country has not able to increase its

export as much as it is increasing its coffee production. This indicated that the country needs to work more on coffee quality improvement.

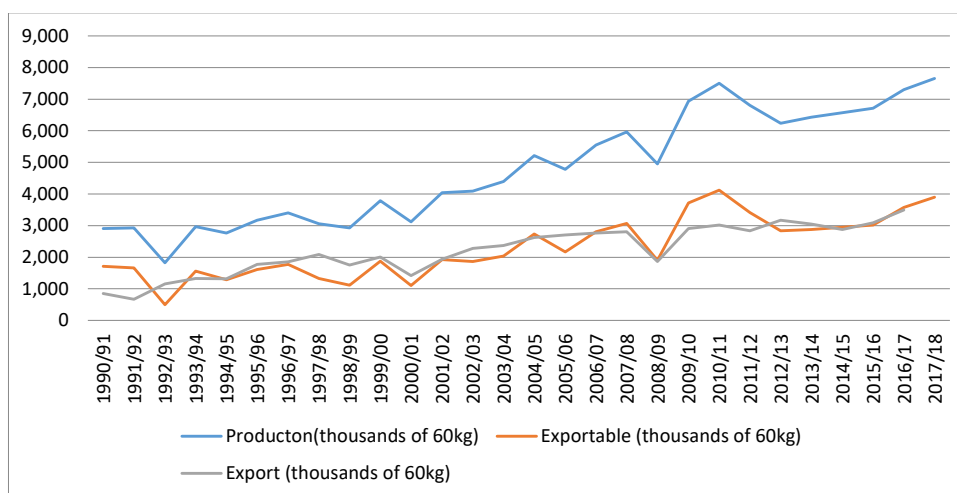


Figure 9. Trend of export and exportable coffee
Source: ISO

2.1.2.5 Private sectors in coffee value chain

There are a large number of private companies, cooperatives, investors, individual farmers engaged in coffee production, and processing and marketing, as compared to other sectors. According to data obtained from Oromia Investment Commission, there are about 120 investors engaged in medium and large-scale coffee farms, 164 private companies engaged in dry processing and 262 private companies engaged in wet coffee pulping. Relatively less number, about 60 private companies, are identified to be engaged in export of coffee from the region. With the recent policy change that allow large-holder coffee farmers to export coffee, this number is expected to rise. The key informants from Ilu Aba Bora zone noted that growing number of investors seek to invest in coffee farm such that currently about 40 investors are engaged in coffee production who can export their produce. Only very few of these companies are involved in coffee roasting in Ethiopia. Therefore, the country exports most of its coffee as green beans.

2.1.2.6. Challenges in the coffee value chain

The country is working hard to increase its foreign earning from sector by improving both quality and quantity of its coffee export. Nevertheless, only 10% of coffee is exported as high quality or “specialty” while there is a potential to export 50% of its coffee as high quality coffee by improving production practices.

Some of the challenges to coffee quality improvement includes 1) lack of cash during to pay wage during harvesting season; 2) limited supply of ware mesh used for drying coffee and jute bags used to be used for transporting and storing coffee; 3) Suppliers (akrabi) or primary cooperatives stated that if they supply quality coffee graded as “specialty coffee”, they may not be able to sell at better price since exporter are less likely to enter into contract with importers in the other country. The exporters do not usually enter in to contract with importers in the other country to supply a high quality or specialty coffee since they may not find it in sufficient amount in the central market.

The problem can be addressed if exporter can enter into contractual market having coffee producers as an out-grower and provide support including pre-finance to ensure consistent supply of high quality coffee. The best lesson can be drawn from the Bale zone in which primary cooperative export high quality coffee to Italy and Spain. In other areas like in Belete-Gera the cooperatives sell their coffee to a company from Japan through OFWE.

Limited number of primary market centers, suppliers (akrabi), and processing plants in emerging coffee producer areas such as in Gololcha, Haran-Bulluk, East Wellega. In this areas farmers use traditional coffee processing techniques (pounding) to remove coffee from its husk. The local traders in this areas are likely to engage in illegal coffee marketing due to limited access to formal coffee marketing system.

The other challenge is to ensure environmental commitment of the various actors engaged in the coffee value chain. For instance, at the production level it is vital to ensure higher price will not lead to unsustainable intensification of coffee farm (deforestation, forest degradation, canopy reduction, etc.). Similar at the coffee processing stage, it is important to avoid environmental pollution. Otherwise, wet coffee processing is known

to have negative environmental effect as it takes more water and releases chemicals to the environment. Yet, most of the private companies and cooperatives engaged in coffee production and processing is found not to have environmental commitment and environmental plan.

2.1.2.7. Development partners in the coffee value chain

Development partners currently working towards addresses some of the challenges that are prevalent in the coffee value chain. For instance, Japan Development Cooperation (JAICA) is supporting forest management and coffee certification in order to mitigate deforestation and forest degradation induced as a result of coffee farm expansion and intensification.

Technoserve, with the financial support from Netspresso, is trying to address environmental concerns related to coffee processing and also working to contribute to coffee quality improvement through better processing. To make wet coffee processing eco-friendly, Technoserve has introduced a machine uses less water and time to process coffee. The newly introduced machine uses only 1 liter of water to process a kilogram coffee while the machines that was in use before needs about 15 liters of water to process 1 kilogram of coffee. Besides, Technoserve is providing training and technical support how to treat chemicals wastes released from washing stations.

There are other development partners such as GIZ and UNIDO supporting on coffee quality improvement. GIZ-Biodiversity and Forest Program has various projects supporting for instance forest coffee quality improvement in South Western Oromia and in SNNPS. Similar, UINDO is working on forest coffee quality improvement in Bale zone with the funding obtained from Italian Cooperation.

2.1.2.7 Entry point in the coffee value chain

There are diverse opportunities for private sector to be engaged in the coffee value chain to contribute to reduction in deforestation and forest degradation while generating economic benefits for the local communities and other stockholders.

- Promoting shade-coffee by supporting tree planning in garden and plantation coffee or supporting expansion of shade coffee to farm land

- provision pre-financing, supporting post-harvest handling of coffee (improve availability of jute bags for transporting and storage, and wire mesh or bamboo nets for drying),
- supporting certification, access to niche market and price premium are identified as some of the interventions along coffee value chain.

2.1.2.8 *Indicative business plan for shade-coffee*

Activities

- Support shade-tree planting in garden and plantation coffee. It is expected that shade-tree will be planted in about 1500 ha of plantation coffee and garden coffee in Jimma, Buno-Bedele, Ilu Aba Bore, and East Wollega. A farm household is estimated to plant shade trees on about 0.5 ha of plantation or garden coffee each year. Following a guideline of Ethiopia Coffee and Tea Authority (ECTA) a farmer is expected to plant each permanent shade-trees an 8m by 8m and temporary shade-trees 5m by 5m. Accordingly, about 78 permanent shade-trees will be planted on a half hectare coffee plot of a farmers. It is estimated that 117,000 permanent shade-trees and will be planted on a total of 1500 ha of plantation and garden coffee each year. In 10 years 15,000ha of plantation and garden coffee will be brought under shade-coffee with the participation of 30,000 households.
- Support the on-ongoing expansion of coffee to farm land and to complement it with shade-tree planting. Each year about 2000 ha of farm land will be covered with coffee agroforestry (planting coffee as well as shed trees together) in West Shoa, East Wollega, Bale, and Arsi. It is expected that on average a farmer supported with this intervention will convert 0.5ha of his farm to shade-coffee. 4000 farm households will be engaged each year. With the expansion of shade coffee to farm land, coffee seedling will be planted in 2m by 2m spacing. Farmers will plant about 400 fast growing shade trees per ha (5m by 5m spacing), and 78 permanent shade trees per ha. The temporary shade trees will be partly or totally removed as the permanent shades grow.
- Support seedling development and distributions. Support a total of 120 nursery sites (10-20 nurseries in each zone of West Shoa, East Wollega, Bale, and Arsi, Jimma, Buno-Bedele, and Ilu Aba Bore) during the first three years of the project life. Cost of establishment of a nursery site is estimated to be about USD 25,000 per year. It will create employment for about 24 individuals.

- Pre-financing for coffee farm management, harvesting and post-harvest management such as for purchase of jute bags (*jonna*), wire mesh or bamboo net. The impact of pre-finance for coffee production and post-harvest management will be reflected on productivity and quality of coffee. Coffee quality depends on intrinsic quality, processing method and storage (Gole, 2016). For instance, coffee yield loss due to weeds can reach up to 65% (Eshetu and Zeleke 2008) The pre-financing induced coffee quality improvement can increase average price from 3 USD per kg to 3.7 USD per kg.
- Certification of the shade-coffee is another intervention to ensure sustainable production. Some of the certification scheme common in Ethiopia include Fair Trade, Rainforest Alliance, Starbucks' C.A.F.E. practices, 4Cs, bird friendly, and UTZ Certified. some of the price premium that have been provided so far include 0.10 USD under fair trade certification, 0.65 USD under organic certification, 0.50 USD per kg under bird friendly, negotiated up to 0.20 USD under rainforest alliance, and UTZ pay up to 0.12 USD per kg of green coffee bean. It is estimated that certified coffee can fetch up to 15% price premium over conventional coffee (ibid). Each certification has different criteria although a particular coffee production are commonly certified under more than one certification schemes. The shade coffee production system can be certified under organic coffee, and bird friendly or under rain forest alliance as appropriate for sustainable production while providing other ecosystem services including carbon sequestration. The certification schemes is expected to increase coffee price from 3.7 USD per kg to 4.3 USD per kg, at a price premium of 0.60 per kg. Each year 4 cooperative will be certified.
- Capacity building training on shade-forest production
- Support market linkage by organizing bazars and arranging contract farming

Benefits

The density of shade trees in garden and plantation coffee production system is usually low (Gole, 2015). Therefore, shade-tree planting in plantation and garden coffee, as well as expansion of shade-coffee to farm land will have the benefits of reducing carbon emission, increase carbon stock, and improve livelihood of stakeholders at different levels. The shade trees to be promoted are mainly leguminous trees. Prior studies show that coffee trees planted under *Acacia abyssinica*, *Albizia schimperiana*, *Acacia abyssinica* and *Cordia Africana* have showed increased productivity and stable coffee yield performances. Carbon stock in the coffee and other agroforestry systems is attribute to the high

proportion of trees and ages trees in the systems (Negash and Starr, 2015). The study is estimated that the carbon stock of coffee agroforestry system is about 77 tons per ha.

Quality coffee production in Ethiopia needs up to 50% shade. The shade-tree planting intervention in the existing plantation and garden coffee farm from current average canopy coverage of 30% (Gole, 2015) to 50% which will have a shade level of semi-forest coffee production system. The shade tree planting to increase canopy coverage to 50% is estimated to increase carbon stock by about 51 tons per ha. The carbon stock benefit of expansion shade-coffee plantation on farm land is estimated at 70 Mt per ha, based on Megos *et al.*, (2010) estimate of carbon stock of shade coffee production system. At a unit price of USD 5 per tCO₂e, the carbon stock benefit in the coming 10 years is estimated to be about 17.7 Million USD.

Increase in coffee productivity and production: Average coffee productivity in Oromia is about 6.3 quintals per ha (CSA, 2018). Shade coffee is at least 150 % more productive than coffee with open sun light, others remain the same. The coffee bush with shade remain in production for longer years than coffee without shade. If on average a farmer allocate 0.5 ha of his land to shade-coffee produce about 1,000kg of green coffee beans from a half-hectare.

- With the shade trees planting intervention it is possible to increase coffee production by 945kg per ha. Over the 1500ha intervention area, coffee production will be increased by about 14,000 quintals per year. At the price of 3.7 USD per kg, benefits of the shade tree planting intervention from improved coffee production is estimated to be **5,180,000 USD per year**.
- With the expansion of shade-coffee to farm land, taking average 1000kg per ha after year 3 of the project life, coffee production will increase 20,000 quintals per year during the last 7 years of the project life. The benefit of coffee production increment from expansion of shade coffee to farm land is estimated to be 7,400,000 USD per year

Coffee quality improvement and certification: Shade-tree planting in coffee production improved not only productivity but also coffee quality. [CoffeeCoffee](#) grown under 66% shade promoted slower and more balanced filling and uniform ripening of berries, thus yielding a better raw quality product than the one which were grown under

25% shade. Coffee beans obtained from shade-coffee has more weight and better liquor taste than those obtained from coffee developed under open sun light. It is also estimated that certification will fetch price premium of 0.60 USD per kg. Let's assume only 50% of the shade coffee will be exported under certification schemes is estimated to be 1,190,000 USD each year which will increase as more farmers engaged in shade coffee production.

Per-finance for purchase of jute bags purchase for 7000 households (300 shade-tree planting households, and 400 shade-coffee target households) is estimated for be 224,000. This is based on estimated 1000kg of coffee productivity, 10 jute bags per target household every three years at a price of 3.20 USD per jute bag, 32 USD per target household. In addition, to pre -finance coffee management (under slashing and harvesting) for the target households need capital 1,500,000 USD per year. This can be made available through OSCCA free of interest. This should be free of interest to engage Muslim farmers in the program. The cost of pre-financing is 7% interest rate per year.

Other economic benefits: rural employment creation at nursery sites, seedling sales revenue: Seedlings could be distributed among farmers at reasonably low price of 0.035 USD (or 1 birr) per seedlings to crease sense of ownership and to be used to run the nursery afterward.

Cost

- Cost per ha is estimated to be 1 USD per ha, while the unit cost for restoration degraded forest is about 10 USD per ha.
- Certification cost about 7,000 USD per cooperative for first year, and annual auditing cost of 2,500 per year cooperative.
- Cost of 1,500, 000 USD pre-financing which will be made available for coffee management, is estimated to be 105,000 USD per year. Pre-finance of 32 USD per target household every three years for purchase of jute bags (jonnie) for transporting and storage, and wire-mesh or bamboo nets for drying. The material can be used for 3 years. The pre-finance will be repaid at the end of each production year. The cost to this pre-finance in interest rate.
- Project running cost including costs of monitoring and evaluation is estimated be around 5 USD per ha per year based on CRGE document.

Table 1. Indicative estimates of required investment and potential revenue from shade-coffee

Commented [u2]: The investments period is beyond the project life-time?

Shade-coffee		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Benefits												
Target household	number /year	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	70000
Shade-tree planting in plantation and garden coffee	carbon stock (USD/Year)			382500	765000	1147500	1530000	1912500	2295000	2677500	3060000	13,770,000
	Improve livelihood (USD/Year)			504000	1008000	1512000	2016000	2520000	3024000	3528000	4032000	18144000
Expansion of shade-coffee to farm land	Carbon stock				140000	280000	420000	560000	700000	840000	980000	3,920,000
	Improve livelihood (USD/Year)			360000	1080000	1440000	1800000	2160000	2520000	2880000	3240000	15480000
Certification	USD per year				1190000	2380000	3570000	4760000	5950000	7140000	8330000	33320000
Total revenue	USD/year			1246500	4183000	6759500	9336000	11912500	14489000	17065500	19642000	84634000
Cost												
Coffee and shade-tree seedlings development and distribution	USD	25000	25000	25000	5000	5000	5000	5000	5000	5000	5000	110000
Pre-financing for jute bags and for coffee farm management	USD		15680	15680	15680	31360	31360	31360	47040	47040	47040	282240
		105000	105000	105000	105000	105000	105000	105000	105000	105000	105000	1050000
Capacity building training	USD	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	100000
certification	USD per year			21,000	28,500	36,000	43500	51000	58500	66000	45000	349,500
facilitate market linkage		12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	125000
Project running cost	USD	17500	35000	52500	70000	87500	105000	122500	140000	157500	175000	962500
total cost	USD per year	170000	203180	241,680	246,680	287,360	312,360	337,360	378,040	403,040	399,540	2,979,240
Net revenue	USD	-170000	-203180	1,004,820	3,936,320	6,472,140	9023640	11575140	14110960	16662460	19242460	81,654,760

Commented [u3]: Is it possible to get the return within this period?

Commented [u4]: Is it possible to get the return within this period?

2.1.2.7 Take-off companies

Forest user cooperatives and most of the community-based organizations working in activities related to forest resource. They have environmental commitment policy in their bylaw. During focus group discussion we learned that Chala forest protection cooperative and Sabaka forest cooperative is making a lot of effort to ensure sustainable utilization of forest resources while improving livelihoods of the local communities in general, and that of members in particular. Therefore, important local players to be considered as take off-companies.

2.1.2 Mango Value Chain

2.1.2.1 Production

Mango (*Mangifera indica* L.) is one of the perennial crop less vulnerable to drought, and it grows under lowland agro-ecology with a minimum moisture requirement. Mango is mainly produced in most parts of eastern and south-western Ethiopia. In these areas mango is a fundamental source of nutrition and play important role in supplementing income of the household. Apart from its economic importance, it is forest and environmentally friendly to fight against drought, used as shade and for fuelwood.

Mango is the fruit tree most produced in Oromia region. Oromia is contributing about 40% of the national mango production CSA, 2018). According to CSA (2018), about 731,928 smallholder farmers are engaged in mango production on an estimated area of about 6,596 ha with an average productivity of 64 quintals per ha. About 418,067 quintals of mango fruit is produced in the region. Smallholder farmers commonly intercrop mango with other perennial crops and coffee. Regardless of its environmental and economic benefits the production of mango is to a large extent fragmented and has not received much attention (Wiersinga and Jager, 2009). From the discussion with key informant it noted that there is huge potential to promote mango in many part of the Region, such as along Awash River in the Rift Valley.

However, there are few companies engaged in mango production. Upper Awash has a plantation of mangos, mainly for export and produces mango seedlings for sale (Wiersinga and Jager, 2009). The company Raji Agro-industry plc, an Indian company, is investing in Loko Mango Farm (bought from Green Focus) in East Wollega. The farm is established to produce mango pulp and juice for domestic and export market. The company is working on 270 hectares for mango production and plans to increase its mango farm, and also build an agro-processing plant. In recent years, Agricultural Transformation Agency (ATA), a government institution is working to promote Mango. Smallholder farmers obtain mango planting materials from government nurseries, private nurseries, and their own nursery while commercial farms are using planting materials from their own nursery.

2.1.2.2 Assemble, storage and transport

Actors in mango value chain include local traders who collect mango from farmers in village markets for the purpose of reselling it, wholesalers, retailers, processors and consumers. The role of collection and bulking, mainly happens on roadsides or traders organize teams of 'brokers' to pick mangoes at the farms pack them onto trucks, and loaded on trucks to be transported to regional towns, and the central market in Addis Ababa. The large traders delivering mangoes in Addis Ababa know which varieties and what grade of mango is suitable, and this information is critical to giving them a strong position in the marketing chain.

2.1.2.3 Processing

In general, there are limited number of fruits and vegetables processing industries in Ethiopia (Wiersinga and Jager, 2009). Most of the private companies engaged in fruit processing are also not specialized only in Mango. The companies are usually engaged in processing more than one fruits and vegetables. This is mainly due to a lack of sufficient and regular supply of Fruits and vegetables for the industries to produce to its full capacity all year round.

There are about 20 private companies from other countries licensed between 2007 - 2017 by Ethiopian investment commission to invest in fruit farming and processing and related activities. For instance, Africa Juice Tibila Share Company a major new joint venture

between Africa JUICE BV, a Netherlands based company, and the Ethiopian Government. The Africa JUICE Tibila Share Company has ambitious targets to become one of the largest Fair Trade accredited tropical juice exporters in Africa by processing fruit in a newly constructed processing facility for export to Europe and the Middle East. Some of the other fruit and vegetable processing plants include:

- Merti Fruits and Vegetable Processing plant
- Frutopia Fruits PLC
- Yeshrun Horticulture PLC
- Raji Agro-industry plc is in a process to establish mango processing plant at loko mango farm.
- Some companies import mango concentrate and flesh parts from India to produce Mango Juice

2.1.2.4 Marketing

Actors in mango value chain include suppliers (smallholder farmers, and commercial farmers/large scale investors), collectors/local traders, primary cooperatives, processors, exporters, wholesalers, retailers, and consumers (Figure 10). The role of cooperatives in mango marketing is at an infant stage. The smallholder farmers sell their products to local traders in local market. The local traders buy bulk the products and send it to wholesalers elsewhere. It is the wholesalers that supply mango to processors (hotel, agro-industries), or sell it to retailers (e.g. kiosks and supermarkets).

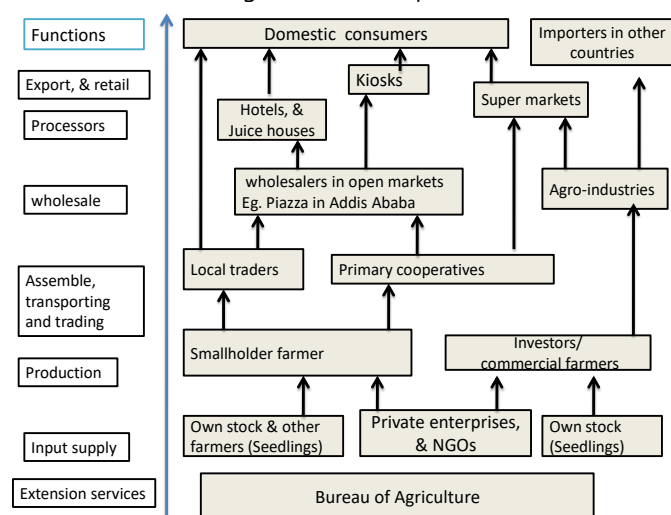


Figure 10. Mango value chain

There is considerable demand for mango in the domestic market. Like processors, supermarkets and retailers are also experiencing an unsustainable supply of fruits, which is true in the case of other agricultural and forest products. Contract farming or out-grower production techniques and incentivizing private companies to invest in fruits production could help to address the problem

Ethiopia exports fruit and vegetables to three destinations. First, high value perishable fruits and vegetables are exported to Europe. Second, conventional fruit and vegetable products cultivated predominantly in Eastern Ethiopia around Dire Dawa are exported to Djibouti, and produce from other part of the country to Sudan. Third, some processed and fresh produce of fruits are exported to Middle East countries (Wiersingaand Jager, 2009). There are also local traders and cooperatives sell the mango fruits to Ethfruit, which is a government enterprise. The enterprise also sells the product to retailers, super markets and exports it to Djiboutii. As mango is exported to Djibouti, most of the fruit juices in the Ethiopian super markets are imported. In addition to demanding foreign currency for importing these products, it discourages the development of local industry.

2.1.2.5 Private sectors in mango value chain

Growing foreign direct investment has contributed a lot to the introduction of fruits as business. There is an investment boom in the floriculture sector and also an increase in number of entrepreneurs in the fruit and vegetable sub-sectors for the development of export production for high quality markets in Europe, North America and the Middle East (Wiersingaand Jager, 2009).

There are domestic investors such as Great Abyssinia PLC engaged in fruit juice. Other investors such as Anro Agro-industry engaged in integrated farming including mango production. There are also others such as Raji-agro-industry engaged in mango production and planning to establish processing plant to supply mango pulp and juice for domestic and export market.

2.1.2.6. Challenges in ~~in~~-mango value chain

Challenges identified include:

- the perishable nature of the product, loss during transportation and storage (Figure 10).
- Limited access to market of producers
- Inflated consumer price due to high transaction cost



Figure 10. Loko Mango farm, East Wellega.

2.1.2.7 Development partners in mango value chain

- Mango value chain in Oromia has not received much attention from development partners except some efforts made by SNV to initiate processing of small scale mango.

2.1.2.8 Point of entry in mango value chain

- SMEs can establish partnership with private companies to provide extension services, establish seedlings nursery sites, and take part in distribution of seedlings.
- Unsuitable supply and its perishability remain problems that were identified in mango value chain. Smallholder producers and SMEs need to be organized as out-grower to guarantee regular supply of quality products, at lower transaction cost.
- Establishing agro-processing in mango producing areas helps to take advantage of agro-industry parks under establishment in the areas.

- In the case of large scale farm, use of pesticides is inevitable. The Ethiopian QSAE currently lacks facilities for residue testing and to ensure required food safety standards. Private sector may establish private quality assurance laboratory.

2.1.1.7 Indicative business plan for mango agro-forestry

Actions

- Promote Mango agro-forestry in selected five *Woredas* in East Shoa, Arsi, Jimma, Buno-Bedele, and East Wollega with a target to reach 2000 farmer households each year. If a farm household plant mango as agroforestry with other crops including coffee on an estimated of 0.5 ha. Each year 1000ha of farm will be planted with mango.
- Provide training for how to integrate fruit trees such as Mango in agricultural production, post-harvest handling, and access to markets to target farmers.
- Support five SMEs (one in each *Woredas*) to establish nursery or work on exiting survey area to develop and distribution of mango seedlings. The seedlings will be distributed to farmers at reasonably low price of 0.035 USD (or 1 birr) per seedlings to crease sense of ownership and to be used to run the nursery afterward.
- Support market linkage by organizing bazars and facilitate contract farming

Benefits

Carbons stock: Carbon stock in fruit tree agroforestry was estimated to be 77.5 Mt per ha (Negash and Starr, 2015). The study revealed that fruit tree was accounting for about 79% of the total biomass C stocks in the Fruit-Coffee system. Based on this study the mango agroforestry system is estimated to increase carbon stock of the area by about 61tons per ha. The carbon stock benefit of the mango agroforestry is estimated to be about 61000 tons per year. Taking the 5USD/tons of carbon stock, the revenues is estimated to be **305,000 USD per year**.

Improve livelihood smallholder farmers: Mango average productivity of 64 quintals /ha (CSA, 2018). Consumers price of mango fruit is about 1.05 USD per kg. Sales

revenue from mango fruit sales from the fruit agro-forestry is estimated to be **6, 720 USD per ha.**

Other benefits: employment, income from sales of seedlings. The seedlings will be distributed to farmers at reasonably low price of 0.035 USD (equivalent to 1 birr) per seedlings to increase sense of ownership and to be used to run the nursery afterward.

Cost

- Seedling development and distribution cost is estimated to be 25,000USD per nursery
- Training cost is estimated to be 25 USD per trainees; 50,000 USD per year.
- Cost of organizing platform to create market linkage such as through bazars, and field visit for producers' processors and other market actors is estimated to be 10,000 USD per year.
- Program cost including monitoring and evaluation 5 USD per ha, 25,000USD per year.

Table 2. indicative estimated of required investment and potential revenue from Mango agro-forestry

Mango Agro forestry	Unit	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Benefits												
Target household	Number /year	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	20000
CO ₂ e emission reduction	(USD/year)				305000	610000	915000	1220000	1525000	1830000	2135000	8540000
Improve livelihood	⌘				6720	13440	20160	26880	33600	40320	47040	188160
Sales of seedlings												0
Total revenue		2000	2000	2000	313720	625440	937160	1248880	1560600	1872320	2184040	8748160
Cost												
Development and distribution of mango seedlings	USD	125000	125000	125000	125000	125000	125000	125000	125000	125000	125000	1250000
Capacity building training	USD	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	500000
Support market linkage	USD	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	100000
project running cost	USD	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	250000
total cost	USD	210000	210000	210000	210000	210000	210000	210000	210000	210000	210000	2100000
Net revenue	USD	-208000	-208000	-208000	103720	415440	727160	1038880	1350600	1662320	1974040	6,648,160

Commented [u5]: How about the sale from mango fruit?

Commented [u6]: Unit?

2.1.2.7 Take-off Companies

Raji-agro-industry, Loko mango farm, located in East Wellega Zone has plan to cultivate more mango and to plant processing plant. The company is willing also to have local farmers as out-growers. The company has environmental commitment policies such as prohibition to plant mango within 20 meter distance to river side, it has allocated about 2% of the farmland to grow trees, avoiding pesticides from getting into river and it is also undertaking soil conservation.

2.2 Livestock sector

2.2.1 Overview

In Ethiopia, animals contribute to household incomes and food security in many ways such as draught animals and through milk production. The country has the tenth largest livestock inventory in the world (USAID, 2013). At the household level, livestock contributes to livelihood of over 70% of the population in various forms. Nevertheless, livestock, especially cattle, are the largest important source of GHG emissions in Ethiopia. Currently GHG emissions from livestock sector accounts for about 40% of total current national emissions. Moreover, cattle population is estimated to increase by about 30% by 2030 which is expected to result in increase in emissions (CRGE, 2010).

Various livestock production types emit different level of GHG. For instance, while dairy and non- dairy cattle 1 kg CH₄/head, 0.0032 kg N₂O-N/kg N, chicken emits only 0.02 kg CH₄/head, 0.005 kg N₂O-N/kg N. If we look at small ruminants Goat 0.17 kg CH₄/head, 0.0025 kg N₂O-N/kg N while Sheep 0.15 kg CH₄/head, 0.009 kg N₂O-N/kg N. This implies that the livestock sector needs to be climate smart, to reduce contribution of livestock sector to climate change in the region. It appears vital to consider change in livestock species composition and management. Some of the GHG emission reduction activities include dairy and meat value chain, small ruminant and manure management. Particularly, it seems important to promote animals such as poultry, sheep, and goat that are low GHG emitters as compared to large ruminants. For instance, according to CRGE

(2011) shifting about 30% animal protein consumption to poultry is estimated to reduce 17.7 Mt CO₂e in 2030.

Provision of high-quality feed improves livestock productivity which in turn contributes to value chain efficiency and emission reduction. Nevertheless, stockholders have reported that feed and forage shortage is the challenge of the sector. The trend of number of private sector in livestock sector mainly fattening, dairy, and poultry (Figure 12).

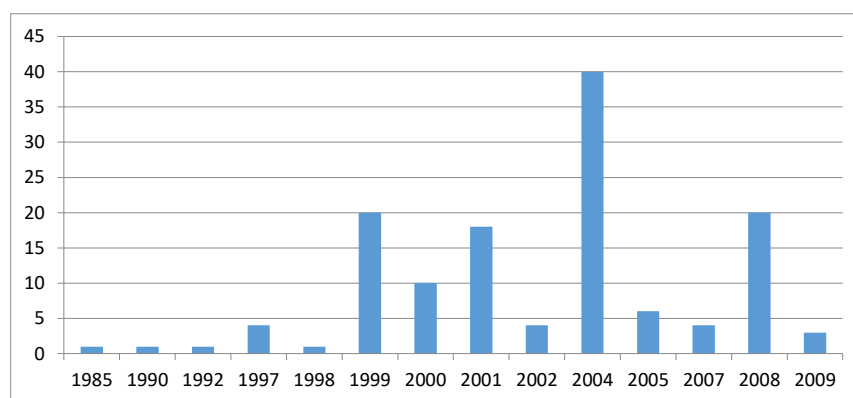


Figure 12. Trend of private investment in livestock sector in rural Oromia .

Source: Oromia Investment Bureau, 2018;

Note: the years indicated in the Graph is in Ethiopian calendar

Some of the regular activities of Bureau of Livestock and Fishery to address these problems include: Improve productivity per unit of animals through improved breeding program

- Reduce heard size and change herd composition
- Manure management-increase digestibility and reduce GHG emission
- Improve forage availability and quality including promotion of cut and carry system livestock of feeding
- Intensification of crop production
- Improve agricultural land management
- Improve agricultural practices

2.2.1 Honey value chain

2.2.1.1 Production

Community based organizations including cooperatives are working towards reducing deforestation and forest degradation through sustainable management of natural forests, by establishing area closure and integrating production of forest-smart high-value commodities in their conservation activities. For instance, a multipurpose agricultural cooperative in Gasera area of Bale Zone designated enclosure of 103 ha and managed by 112 members. To enhance return to participation in management of the enclosure, the cooperative is using the enclosure for beekeeping. Member of the cooperatives get grasses and also share income from the apicultural activities taking place in the area of enclosure.

Smallholder producers and primary honey cooperatives are key actors engaged in honey production systems. The smallholder farmers produce honey with traditional, transitional and modern beehives while the honey producer cooperatives use modern beehives. Honey is produced in the Oromia region mostly using traditional beehive and traditional management practices. The traditional beehives are usually hanged on trees in the backyard, on the farm or in the forest. Farmers keep the transitional or modern beehives mostly in the backyard. There are also forest honey hunting activities among farmers in some parts of the region.

Farmers noted that the profit margin of beekeeping is getting better than that of coffee production due to increased labor wages. Beekeeping is an activity that demands relatively small plots of land, less capital investment and less of other production inputs. However, the key informants noted that the use of modern beehives requires more skilled labor input, more accessories such as foundation sheets and honey extractor. Yet, studies show that farmers can generate more return by adopting modern beehives.

There are areas where enclosure is currently used for beekeeping. Promoting keeping in the area enclosure in different part of the region increase return from the area, improve sustainable management and emission reduction, while improving the livelihood of local

communities. There are a number of private investors engaged in apiculture although most of them are limited to the afro-montane rainforest parts of the region. More work needs to be done to promote apicultural activities in the pastoral and agro-pastoral area of the region. One of the challenges identified in promoting apicultural activities among agro-pastoral and pastoral communities is drought and high temperature. It was noted that apicultural activities can be promoted in irrigated areas. It was also noted that farmers are not willing to invest on apiculture in areas enclosed as they are prone to theft if not guarded.

One of the challenges in honey production is moisture content. Wildfire is also another threat in promoting wild/forest honey production. Nevertheless, beekeeping in the forest remains a main source of honey for smallholder farmers in the region. Therefore, it will be vital to develop guidelines for forest honey production strategies and promote organic, forest/ wild forest honey in natural forests of Oromia. On the other hand, it is noted from the key informant interview that climate change is a big challenge to apicultural activities in general and to adoption of modern beehives, in particular as bees are migrating to forests in search of suitable environments.

2.2.1.2 Collecting, assembling and storage

Most beekeepers sell crude honey to cooperatives, local collectors, retailers, processors and consumers at the local market or farm gate. In traditional honey production, farmers once they harvest honey from beehives, they pack the crude honey in convenient containers to transport it to their home. Due to beekeepers' and local traders' failure to use clean and suitable containers, harvested honey may be exposed to the humid atmosphere and lose its quality. Usually, beekeepers store harvested crude honey until all honey is removed from beehives. But in few cases beekeepers may sell the honey soon after they harvest it. In both study areas, it is not common to sell honey in an open market. Beekeepers sell crude honey to collectors (mostly kiosks and local traders in the nearby town), "teji brewers" or cooperatives, local collectors. The collectors sort, bulk transport crude honey and sell the product directly to honey retailers, wholesalers and processors.

2.2.1.3. Processing

Honey filtering is not a common practice among smallholder beekeepers in the areas. It is only recently that the beekeepers were introduced to hand tools for the extraction of honey. The primary honey cooperatives, on the other hand, do honey filtering activity using honey extractors or honey pressers. During this study it was established that some primary honey cooperatives have been supplied with honey pressers and honey extractors to squeeze the honey from the combs. The first one is used to get pure honey by centrifuging decapped broodless combs. This approach is used in harvesting honey from modern beehives. The second way of obtaining pure honey is by using pressing hand tools to obtain pure honey by pressing broodless combs in a cane container. Both tools are in use at household or cooperative level. The key informants mentioned some limitations of these hand tools. Pure honey that can be obtained from crude honey varied from 34.4% to 95.0% with mean of 73.15% which depends on the amount of beeswax found in the honey, the age of the honey comb and its pollen content and other foreign materials.

There are few small scale honey processing companies including SME and private investors such as the Bale Organic Honey enterprise and the Dawe Gachana honey processing. Small shop owners in various town of Oromia also do simple honey processing; refining honey by just keeping it in the sun and packing) for sale. In some of the honey producing areas such as in Delo-Mena, private honey processing company is absent.

2.2.1.4 Marketing

Key honey market actors in the area include beekeepers, local traders, beeswax collectors and primary cooperatives, and honey processing companies, retailers, “tej” brewers, honey processors, domestic consumers and exporters. Since domestic price for honey higher than the international price, private investors are not interested to invest in honey processing for export and in export beeswax. In honey marketing there are various brands of honey such as forest honey, organic honey etc. For instance, honey from Bale is marked as Bale forest organic honey (Figure 13). There are some activities underway to link beekeeper farmers to honey processors. Some of SME and private traders collect honey from cooperative, pack it and sell locally.



Figure13. local honey and other forest products shop.

It is important for private sector to work more on production either through private investment or out-grower arrangements. Particularly, in the case of out-grower, private sector could work on quality improvement through supply of inputs and offering trainings. Usually smallholder beekeepers or honey producers sell crude honey to local traders (kiosks), honey cooperatives and "teji brewers" (Figure 14). Then, the local traders and cooperatives sell the crude honey to private honey processing companies and export or sell to domestic market. A considerable share of honey marketing in domestic market is taking place through cooperatives.

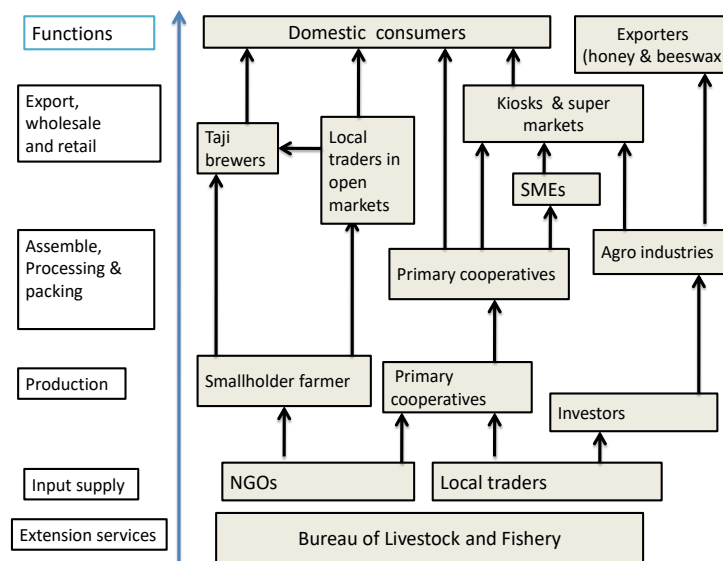


Figure 14. Honey value chain

Ethiopia has the comparative advantage in terms of potential to market organic honey, specialty honey and fair-trade labeled honey and beeswax products (Drost, et al, 2012)). Nevertheless, the share of exports from total honey production was less than 1%, and the exports of honey were substantially lower than that of exports of bee wax (WoldeGiorgis, et al. 2015). There is a good business model of marketing of eco-friendly forest products in Bale Area. Bale Mountain Forest Products Marketing Share Company is a SME engaged in marketing of forest products from bale eco-region including coffee, honey, and charcoal.

2.2.1.5 Private sector in honey value chain

The world market for honey is considerable, and demand is increasing. Ethiopia's main market for honey (90%) is a traditional (Drost et al., 2012). But there are few registered investors in beekeeping (WoldeGiorgis, et al. 2015). For instance, in Bale area there are 23 primary cooperatives engaged in forest coffee and forest honey production. Some of the private sectors engaged in honey sectors include:

- Ano Agro-industry plc has about 25 modern beehives, more than 100 traditional beehives and more than 40 transition beehives.

- Beza Mar Agro Industry
- Alem Honey Processing Industry
- Tesfa Beehives Private Limited Group Enterprise
- Yirgu Food Packer
- Nile Development and Services PLC
- Susan food and beverage PLC
-

2.2.1.6 Challenges in the honey value chain

- High moisture content of the crude honey and poor handling and storage system
- Most of the smallholder farmers prefer to produce honey in a tradition beehive system since the traditional beehives hardly require management. However, this compromise the honey quality.
- Farmers keep traditional beehives far away in the forest which make it difficult for the farmers to extract pure honey from the broodless combs by centrifuging.

2.2.1.7 Point of entry in the honey value chain

Private sectors can be engaged along honey value chain in;

- Support member of forest cooperatives, forest user groups to integrate beekeeping with natural forest management and plantation forestry to improve its return on investment
- Integrate apiculture with large commercial farms, like coffee plantations, large scale fruit and vegetable farms
- Private sector could engage in production and supply of modern as well as traditional beehives.
- Participate in processing and packing of honey
- Provide training on how to improve production and quality of honey

2.2.1.8 Indicative business plan of beekeeping

Activities

- Support supply of beehives, small-scale honey processing tools, and accessories to promote forest honey production each year for 20 forest cooperatives/forest user groups and participatory forest management.
- Develop guideline and provide training on beekeeping in garden, farm and forest to organic, forest/ wild forest honey production

- Provide training on how to improve production and quality of honey and in the processing and packing honey
- Support private sector engagement in production and supply of beehives (modern and traditional), and other accessories
- Provide pre-finance to be repaid at the end of production year
- Support honey certification, and market linkage

Benefits

- **Emission reduction benefits:** Reduce carbon emission and increase carbon stock by reducing deforestation and forest degradation for alternative land use
- **Improve household income:** the price of processed honey 5.50 USD per kg, certification and quality improvement, the honey is estimated to fetch plus 15% premium (about 0.80 USD per Kg).

Cost

- Modern and traditional beehives
- Cost of small-scale honey processing tools is estimated to be 75,000.00
- Packing container
- Accessories
- Training
- Certification cost
- Monitoring and evaluation

2.2.1.7 Take-off companies in honey value chain

- Forest management cooperatives in Harana natural forest area, Belete-Gera natural forest area, Yayu Biosphere reserve area
- Mountain Forest Products Marketing Share Company, Bale-Robe

2.2.2 Poultry value chain

2.2.2.1 Production

Poultry is one of the means of livelihood in the rural parts of Oromia regional state. Poultry production systems in Ethiopia show a clear distinction between traditional, low input systems on the one hand and modern production systems using relatively advanced

technology on the other hand. Production is dominated by backyard producers and characterized by small flock sizes, nil or minimal inputs, low outputs. There are different types of poultry production systems including industrial integrated system, commercial poultry production system and village or backyard production. In rural areas village level or backyard production in Ethiopia contributes to about 96% of national egg and poultry meat consumption (Boere et al., 2015).

Oromia region has about 34.4% of the total national chicken population and contributes to about 36% of the total annual national egg and poultry meat production. The region's rural areas constitute about 97.1% of the total regional chicken population while the urban areas constitute only 2.9%. The North, East and West Shewa administrative Zones of the Region together account for more than 25% of the total regional chicken population, followed by East and West Welega Zones, contributing to about 18% of the region's chicken population. Arsi and Jimma Zones each account for about 12% of the total regional chicken population (Demeke, 2008). Almost all the available commercial poultry farms of the country are located in Oromia region, East Showa Zone (Debre Zeit, Mojo and Adama).

The Climate resilience green economy strategy of the country has identified poultry as lower-emitting sources of protein. Poultry has become one of the destination of the private investment. Moreover, in rural and urban areas it is considered as one of the main job creation opportunity. As a result, a large number of youth associations are organized in small and medium enterprises both urban and rural areas to invest in poultry production. Poultry production is currently categorized into three packages: small package with less than 50 chickens; medium package with 50- 100 chicken, and large package with 100-500 chickens.

Chicken needs at least 6 types of immunization before being distributed to farmers. To minimize disease risk in rural community, government distribute chicken after immunization process is finalized.

2.2.2.2 Processing

There are a large and medium scale farms engaged in slaughtering and process process of chicken. Most chickens undergo low level of processing and sold plucked, eviscerated and frozen. Only some go into further processing for special cuts like legs, thighs or breast. Small scale poultry farmers usually lack slaughtering facilities. They sell the chicken in markets during holidays to collectors who buy their chickens and take it to processors.

2.2.2.3 Marketing

Key actors in poultry value chain are large scale private companies, small and medium scale private companies, SMEs, and smallholder farmers. There are also few actors who mediate trade between producers and consumers in the traditional poultry sector. The value chain is often very short, mainly through a direct interaction of producers and final consumers to buy and sell live chicken markets, and between poultry farm, retailer (supermarkets) and consumers who purchase poultry meat.

The challenge noted along poultry value chain is limited supply of day-one-chicks (DOC), and feeds. Smallholder farmers, and small and medium poultry farms get DOC from government-owned hatchery and mostly large scale poultry farms (multiplication centers). Large poultry farms import important inputs including parent stock and DOC. The farms are getting parent chicken from the Netherlands, France, Belgium and from South Africa. The country is importing about 1 million DOC per year from Netherlands (Ayele and Rich, 2010). Most hatcheries only produce layer day old chicks (DOC's); only few are working both on layer and broiler and only one hatchery is specialized only on broiler breeding.

All large scale layer farmers rear pullets themselves, mostly from their own or imported DOCs. However, some medium and most small scale farmers either choose for pullet rearing or for layer keeping. In order to provide layers for smallholder farmers and others who lack the ability or capacity to raise pullets in SMEs and multiplication centers raise DOCS on average up to 90days and sell them as layers. Small-scale farmers obtain other inputs such as feed, vaccines, or veterinary services either from poultry farms situated in East Showa or from government-owned enterprises (Ayele and Rich, 2010).

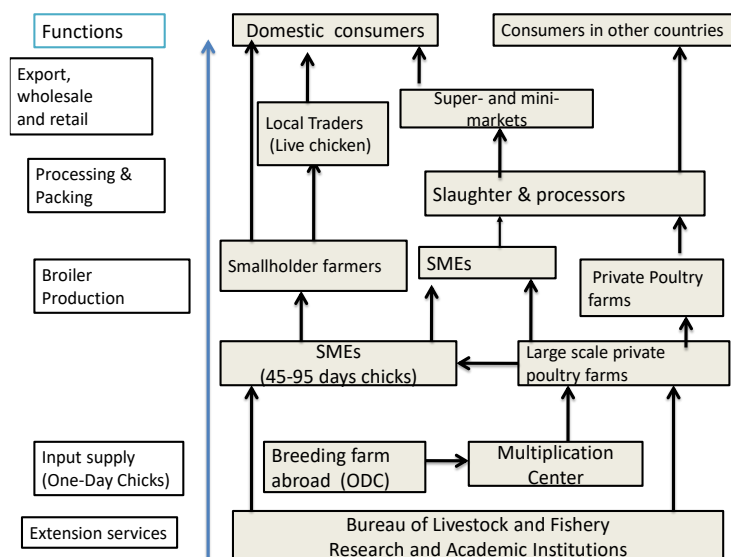


Figure 15. Poultry meat value chain

The value chain for table egg has similar in aspects as that of the large scale farms who sell their eggs in their own supermarket- and minimarket but kiosks play key role in table eggs value chain which is not the case for poultry meat value chain. Kiosks buy table eggs from wholesales/collectors and poultry farms, and sell to consumers. There is huge demand for egg and price of egg is rising steady. The export market for poultry products is very limited due to international competition, some level of export of poultry meat and eggs to the neighboring countries.

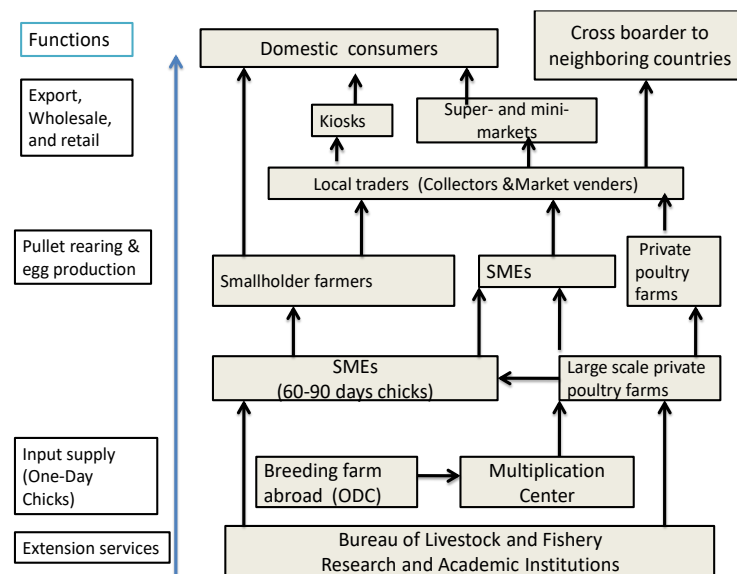


Figure 16. Table eggs value chain

With economic growth, rising household income, urbanization and increasing population, demand for animal protein in Ethiopia is increasing. Poultry is making a great contribution to meeting the increasing demand (Hailemariam et al, 2016). Many commercial Ethiopian poultry enterprises see the large untapped potential of commercial poultry products in the country, but feel that the market has to be stimulated to get this potential fully unleashed.

Marketing skills need to be further developed, based on market research. Per capita egg consumption in Ethiopia is still low as compared to other African countries. The Livestock Master Plan (LMP) forecasts the sub-sector to help close the total national meat production-consumption gap and achieve an increase in the share of chicken meat consumption to total meat consumption from the current 5% to 30% by 2030.

2.2.2.5 Private sector in the poultry value chain

There are about 20 private large scale commercial poultry production farms in and around Addis Ababa and about 20 new poultry farms in implementation and pre-implementation stage. There are also SMEs working on poultry production, and others work on feed

preparation and distribution while some others work on both poultry production and feed preparation. Some of the challenges to SMEs engagement in poultry and /or feed preparation include limited access to finance due to lack of collateral and lack of access to land. In general, inputs Day Old Chicks, and per-mix supply is monopolized by few large companies. There is also poor veterinary services and limited supply of drugs, and unreliable supply yet of basic housing equipment.

Some of private companies include:

- Ethio-feed import feed ingredient
- Elfora Agro-Industries Private Limited Company and Alema engaged in broiler chickens and layer chickens
- Friendship Agro-Industries
- Akaki Feed Factory
- Genesis
- Good Shepherd PLC
- Ethio-chicken is engaged in DOC production, Parent stock production, Pullet production
- Astral Foods and Feedco are foreign investors entering feed production, (particular pre-mix production) on a large-scale
- Alema Koudijs Feed PLC is engaged in parent stock production, DOC production, broiler production, pullet production, egg production, meat processing, retailing
- SAFE Poultry PLC: provision of DOC's to rearing farms, commercial eggs pullets
- Freisian Agro Processing and Farming PLC
- Mubarak Dafalla Gabril
- Luigi Monsellato
- Sadot Agri Food PLC
- Jacobs Integrated Farm OLC
- Preconex East Africa PLC

2.2.2.6 Challenges in the poultry value chain

Major challenges in poultry sector include:

- Limited supply of hatched young chicken,
- Limited feed availability. For instance, premixes and concentrates are usually imported since there is no production of good quality premixes and concentrates in the country.
- High cost of health services
- Lack of access of SMEs and individual investors to credit finance,

2.2.2.7 Entry point in the poultry value chain

- Poultry and table egg production
- Supply of Day Old Chicks (DOC), fertile egg, pullets, layers and broilers supply.
- Provision of poultry vaccination services

2.2.2.7 Indicative business plan for poultry sub-sector

Activities

- Finance establishment of eight Day One Chicks (DOC) multiplication center (two hatcheries every other year in different zones including East Shoa, North Shoa, West Shoa, South West Shoa) for four consecutive years of the during the project life.
- Support establishment of two chicken feed (pre-mix and concentrate) plants in each of the four zones of the region
- Support four veterinary services, one service provider in each of the four zones by providing competitive grant.
- Capacity building training for the producers on how to run poultry production and awareness creation among consumers to promote chicken meat consumption.

Benefit

Emission reduction: Considering the average meat weight of 120kg per cattle and while average meat weight of 2kg per chicken. It takes 60 chicken to replace meat production obtained from cattle. It is important also to note that cattle may take up to 4 years, on average, to get it ready for killing while chickens can be ready for killing in 6 months. One need to keep 15 Chicken each year can replace cattle meat after four years. Accordingly, using 1.08 tCO₂e per year for cattle and 0.0056 MtCO₂e per year (CRGE, 2011), consuming a chicken meat instead of cattle will reduce emission by 1.00 tCO₂e per year. Based on this, it is estimated that the two mini-hatchery with the capacity to 10,000 eggs each at a time. If the two hatchery supply 20, 000 DOC per week. Then, it is estimated to increase supply of chicken meat by 1,120,000. With the taking per capita meat consumption of

about 4.6Kg (IFPRI, 2005), and increasing demand for chicken there is sufficient demand. The proposed intervention will reduce emission by 1,120,000 tCO₂e per year. In monetary term it is about **5,600,000 USD per year**.

Improve livelihood: Promoting poultry production will improve the livelihood of resource poor and women farmers and reduce their dependency on forest, and in turn reduce deforestation and forest degradation. Taking the current average make price of 6USD per chicken, the sales revenue from increased poultry production of the intervention is estimated to be 6,720,000 USD per year.

Other economic benefits: this includes employment creation. Improving livelihood of farm households. If a farm household receives on average 5 chicken per year. there intervention can benefit up 200,000 farm households each year. and 20 small scale commercial farm (or SMEs) every year.

Cost

- Cost of two mini-hatcheries each year is 625, 000 USD. Support 8 mini-hatcher in the four zones of the region. A hatchery with the capacity of 10,000 eggs costs 31,250 USD (CGRE,2011).
- Cost of the proposed two chicken feed processing plants is 25000 USD per year. Plant a total of 8 feed processing plant in the region. A feed processing plant cost 12,500 USD.
- To establish or strengthen provision of veterinary services in each of the zones by providing competitive grants of 10,000 USD to each of them.
- Awareness creation among producers to promote poultry production pamphlets is estimated to be 1 USD per farm household, 200,000 USD per year,
- Promoting chicken meat consumption among consumers for instance through preparation of manual and brochures/pamphlets is estimated to be 3000 USD per year.
- Cost of monitoring and evaluation is USD 1 per household per year

2.2.4 Forage and feed

2.2.4.1 Production

Ethiopia's livestock production depends mainly on natural open grazing feeding practices which is major cause degradation of natural resources. Particularly the smallholder livestock production is characterized by low productivity, among other things, due to limited access to improved livestock feed. Shortage of grazing land coupled with degradation of natural resources makes livestock feed shortage a crucial constraint (PIF, 2010). The key informants noted that local demand for feed is growing as more and more private companies and market-oriented smallholder farmers, small and medium enterprises are entering the poultry farm, fattening and dairy farm business. For instance, according to data from Oromia investment commission there are about 84 private investors engaged in dairy farming in the rural area and over 150 companies are registered to invest in animal fattening. There are also live animal exporters demanding a processed feed to feed their animals at designated area in the country before export: 30 days for cattle and 21 days for shoat and camel. In East Showa alone, there are 34 private investors 8 cooperative engaged in animal fattening.

The other challenge in the livestock feed sector is problem of feed quality such as maintaining standard composition. Most available formulations do not have appropriate vitamin and mineral premixes. The essential ingredients are mixed and processed by the few existing modern feed millers. Ingredients vary in nutritive value and there is no quality control. Unavailability of laboratory facilities for the chemical analysis of ingredients and processed feeds hindered effort of controlling quality of feed. In addition, most of the livestock feeds are based on by-products of food processing industries. For instance, livestock feed commonly used in the case of intensive livestock fattening includes wheat barn, wheat shard, nug cake, and maize. Ethiopian Animal Feed Industry Association was established recently to improve the quality and quantity of livestock feed production and services for the members.

The country depends on import of micronutrient supplements and vitamins to produce processed feeds although the country produces a wide range of ingredients suitable for livestock and poultry feeding. Moreover, the livestock feed sector is facing limited supply of ingredients.

Improved livestock production systems require processed feeds with essential components (MoA and ILRI, 2013). On the other hand, few private companies and cooperatives are engaged in livestock feed production. There are cooperatives engaged in livestock feed supply in various parts of Oromia Regional States. Most of the livestock feed produced in Oromia include desho grass and elephant grass. There are also some model activities by private investor engaged in improved forage production such as Eden forage in East Showa Zone. It is possible to produce forage twice or three times a year in this area. Some of the commercial poultry and livestock farms are producing and preparing their own feeds. There are also private companies produce and distribute animal feed seed such as oat, cow pea, lablab, elephant grass among smallholder farmers at reasonable price in its area, in different parts of the region.

2.2.4.2 Processing

The processed feed market is dominated by few suppliers such that they can fix the feed price. This makes it difficult for smaller millers to obtain feed ingredients. The companies process feeds for poultry, sheep, goats and dairy, and process feed for different age categories. It uses maize as the primary energy source, bone and meat meal as the main protein source, as well as vitamins and minerals. Based on data obtained from Oromia Investment Commission some of the private companies engaged in animal feed production and processing include:

- Alema Koudijs Feed PLC
- Ethio-Feeds plc
- Feedco Animal Feeds PLC
- Koket Dry Feed Complex PLC
- European Food and Cattle PLC
- Sorgia Agro- Industrial Complex Plc
- Verde Beef Processing PLC
- Alfa Fodder & Dairy Farm PLC
- Ethio Agri seft plc
- Wonji sugecane producers' cooperative union
- Gibe-Dedesa Cooperative union
- Eden Forage producers
- Tibebu Lema Kenaf Farm PLC –produce and sell forage
- Anatoli Forage and Forest Seed Supply PLC

2.2.4.3 Marketing

Key actors in the livestock feed value chain include private companies, cooperatives and small and medium enterprises and commercial farmers. Large commercial companies import pre-mixes, micro-ingredients, and concentrates from other countries. In fact, the pre-mix import is monopolized by a couple of large companies. Then, they sell it to cooperatives or SMEs that produce animal feeds by mixing the ingredients with by-products of food processing industries. Commercial farmers that are engaged in animal fattening or dairy production are using the processed feeds from cooperatives or unions, SMEs or local traders. Consumers located in different parts of the country depend on ingredients that are imported by few companies located in and around the Bishoftu town.

2.2.4.4. Private sector in the feed value chain

For a long period of time, the sector has received little attention from both government and private sectors. Only few private companies such as ELFORA, Genesis Farm and Alema Farm engaged in the production of compound feeds. Currently, the commercial animal feed sector in Ethiopia is developing fast. South-African Astral Foods and Kenyan Feedco are joining the feed production business in the country.

2.2.4.5 Challenges in the feed value chain

- Limited supply of pre-mixes, micro-ingredients and concentrates is bottleneck to modern livestock production, and contribute to reduce overgrazing induced carbon emission
- Few companies dominate supply of pre-mixes, micro-ingredients and concentrates in feed production.
- Limited supply of forage seed

2.2.4.6 Development partners in the feed value chain

- ACIDI/VOCA- through its FEED II project supported cooperative unions and provided grant to private companies producing forage and feeds
- IDH
- Ethiopian Animal Feed Industry Association (EAFIA) is established with the mission to improve the quality and quantity of livestock feed production and services for the members.

2.2.4.5 Entry point in the feed value chain

- Large-scale production of soybean and maize to ensure sustainable supply of ingredients available as inputs for feed processing (MOA and ILRI, 2013). Private companies can be engaged in the feed value chain in:
- More private investors need to invest in pre-mixes, micro-ingredients and concentrates factory for supply to local feed producers.
- Developing and distributing forage trees
- Growing livestock feed such as cow pea, pigeon pea etc.
- Producing of livestock feed seeds or seedlings
- Production and distribution of seed/seedling of livestock feeds

2.2.4.6 Indicative business plan for feed and forage

Activities

- Organize and provide seed money for a total of 9 SMEs and individual entrepreneurs to engage in production and distribution of forage trees and seed/seedling, cow pea, pigeon pea, etc. one in each of the nine selected zones (in highlands of Bale, Jimma, East Wollega, West Wollega, West Shoa, North Shoa, Arsi, East Shoa, and South-West shoa). In each zone 2000 smallholder farmers will get access to forage and seed/seedling each year
- Support private sectors engagement in preparation of compounded feed by conduct and showing private actor invest in the sector.
- Support establishment of area enclosure to avoid over grazing and reduce carbon emission in the pastoral and agro-pastoral areas such as in the lowlands of Bale, East Gujji, West Gujji, and Borena among other things to avoid overgrazing and seasonal livestock encroachment to natural forests. Five range land management cooperative in each Zones. Each cooperative will be established on an area of 20ha 500 members. The total beneficiaries will be 20,000 pastoral or agro-pastoral households.

Benefits

carbon emission reduction benefits:

- Rangeland management and area closure reduce emission by 3 Mt CO₂e per ha per year by avoiding over grazing. It improves carbon stock by 1.62 Mt CO₂e per ha per year.

- Improved feed and feeding systems reduce emissions from cattle reached by a further 10% per animal.
- Forage trees on crop fields is estimated to reduce emissions, on average, by about 3 MtCO₂e per ha per year.

Income benefits: The intervention enables farmers to keep better animals that can fetch a market price of up to 25% higher than without the better livestock feed availability.

Other economic benefits: it includes benefits of the intervention in improving climate resilience of livelihood target households.

Cost

- Cost of establishment of area enclosure and range land management cooperatives in the pastoral and agro-pastoral areas of the region such as in the lowlands of Bale, and Gujji to avoid overgrazing and seasonal livestock encroachment to natural forests is estimated to be 30,000 USD per cooperative including cost of furnishing office of the cooperatives, and support for fixed costs of establishment of the cooperatives.
- Cost of organizing and seed money for each SMEs and individual entrepreneurs to engage in production and distribution of forage and seed/seedling of livestock forage is estimated to be 10,000 USD.
- Cost of promoting private sector invest in compounded feed processing plant among by conducting feasibility study and organizing forum for awareness creation is estimated to be 12,000 USD per year.
- Project operation cost including monitoring and evaluation is estimated to be 20,000 USD per year.

2.2.4.6 Take-off companies

- Wonji sugar cane producers' union and SMEs Gemechu poultry farm is identified as a potential take-off companies to be engaged in multiplication of DOC and in feed processing. Wonji Sugar Cane Producers Union: the union has started feed production in 2012 with the support received from FEED project with the mission of producing quality feed at reasonable price. The union is currently producing feed for pullet, poultry, animal fattening, and for dairy production. The union provides training to member and non-member on how to use livestock feeds. The union buys special concentrates from Alema and Kaliti Food Complex.

- Since supply of concentrate used in feed production is monopolized by few companies, Wonji Sugar Cane Producers Union is facing includes high price of concentrates, and limited capacity to meet demand for feed in the area. Currently the union is planning a brand new machinery to increase its feed production. The union is also trying to work with youths organized in SME in the marketing of both sugarcane molasses and feed.
- In other parts of Oromia-Supporting SMEs and networking SMEs to facilitate distribution of processed feeds with unions
- Forage development link private companies working on forage development with primary cooperatives

2.3. Forest sector

2.3.1 Overview

Forests are a major source of social, environmental, and economic benefits including rural employment, and household energy. For instance, natural forest remains the major sources of domestic wood production and honey production. Forests also provide important environmental services, including watershed protection, biodiversity conservation, and carbon sequestration. Oromia is endowed with about 13 million hectares (70%) of natural forest in Ethiopia (Macqueen, 2008). About 20% of the plantation estate in the country is owned publically by the State through Oromia Regional Forest and Wildlife Enterprises (NFSDP, 2017). A considerable area of plantation forest resources of the region is also owned by private farm households and communities.

Deforestation and forest degradation attributed to land use change, mainly to agricultural land, and wood extraction for energy remain the major challenge of the forest sector. Scholars estimated that 2% deforestation, about 700,000 ha of 'forests' will be destroyed every year, releasing nearly 110 million CO₂ to the atmosphere (Moges, 2010). Unless, the government curbs the current deforestation and forest degradation, it is estimated that GHG emission from the forest sectors will reach 90 Mt of carbon emission by 2030 (CRGE, 2010). The national plan is to cover an area of 7 million ha of land with afforestation

reforestation and area closures and forest management of woodlands and forests is estimated to improve carbon stock by about 42 Mt CO₂e (CRGE, 2011).

On the other hand, country's demand for wood forest products and import of different types of forest products is increasing (Figure 17). In addition, there are growing number of wood processing private companies joining the sector (Annex Table 2.) while few companies are investing in the forest development (Annex Table 3).

2.3.1 Wood forest products

2.3.1.1 Production

State forests (natural and plantation), and smallholder farmers (community and "private") plantations are the sources of wood forest products such as construction materials such as poles and timbers. The state natural forests in the region are part of the protected areas. Extraction of wood forest products from these protected natural forest areas are considered as illegal activities. Other areas of natural forest that can be used for wood production is diminishing. The state plantation forests, the main sources of wood products of the region, are relatively a large areas of industrial forest plantations such as *Eucalyptus*, *Cupressus lusitanica*, *Juniperus procera*, and *Pinus patula* established in the 1970s. Most of the state, community and "private" owned plantation forest areas are established to supply round wood, sawn timber and fuelwood. Although, this day, the wood products forest products productivity of the state plantation forests is declining due to poor management.

The state owned natural and plantation forests in the region are currently under the concession of Oromia Forest and Wildlife Enterprise (OFWE). There are cases in which OFWE has provided part of its concession to forest cooperatives (i.e forest user groups, forest cooperatives, and unions of forest cooperatives) through participatory forest management (PFM) arrangement to promote sustainable management and benefit sharing. For instance, in the highland area of Bale Zone, there are 66 forest cooperatives. The forest cooperatives are established with the support from non-governmental organizations.

Economic and conservation activities that members can do in the in the area managed under PFM differs from place to place and depends on whether area is a natural or plantation forest. In general, the PFM arrangement allow members to plant trees in open spaces, harvest some of the wood and non-timber forest products from areas of forest under their management. In plantation forest area, the cooperatives protect, use and sale wood products. From natural forest under their management, the cooperatives or members are commonly allowed to harvest fuelwood, grasses and other non-timber forest products and to takeout limited amount of wood products for their own consumption with the permission of management committee of the forest cooperatives. In some cases, cooperatives sell grass to member at reasonable price. Once the cooperatives fulfill demand of members, non-members are allowed to buy forest products including grasses. Nevertheless, the PFM agreement in the region does not allow cooperatives to sale wood forest products from natural forest in cooperatives concession to private wood-processing companies to avoid over extraction.

In Ethiopia, according to IFC (2016), close to 1.5 million hectares of natural forests are currently managed under the PFM arrangement. In some case the forest cooperatives come together and establish a union. Usually the unions are established to handle the marketing of forest products and also to do value addition by establishing wood processing industry. The unions are expected also to support establishment of more PFM. The agreed benefit sharing mechanism was: 60 % to primary cooperatives for protection of forest, 30% OFWE for providing technical support for monitoring services that government provides; 10% goes to *kebele* for providing support in the protection of the forest. The 60 percent received by primary cooperatives goes to dividend (45%), forest development (20%), for the Union (30%) and for local social and economic development (5%).

In case of selective logging, usually by OWFE, from natural forest protected by a particular PFM or cooperative, the cooperative receives 20% of the profit generated by OFWE from the area up on production of forest products. Nevertheless, members of the cooperatives noted that they are not receiving the agreed benefit sharing in cash. The key informants noted that there are fallen trees in the OFWE concession not in use. The local community can increase benefit of natural forest through extraction of fallen trees. They also suggested that OFWE should allow selective picking of the fallen trees particularly from plantation forest in their concession. This can increase the benefits from the forest area.

There are also a number of cooperatives established on plantation mostly eucalyptus and pine forest in various parts of the region. In this case, the cooperatives can sell logs to private wood processing companies with the technical support from OFWE.

In many parts of Oromia, the forest cooperatives are prone to following challenges: 1) conflict over local households' inclusion and exclusion with growing demand for membership. In some cases, membership is not open as it depends on carrying capacity of the forest. The population has increased to the extent that it is beyond the carrying capacity of the patch of forest. Particularly, in WAJB establishment, the strategy was to reduce pressure on the natural forest beyond its carrying capacity, and the government and private sectors to create employment that can absorb growing population. But government and private sectors were not able to create employment as expected; 2) members' frustration with ineffective enforcement of the forest management law; 3) growing pressure on the natural forest for logging with private sawmilling companies increasing in the area; and 4) limited skilled manpower and lack of funding for conservation and lack of skilled manpower.

Studies revealed that although timber harvesting is shifting from natural forests to plantations and trees outside forests, supply from existing plantation forests is not sufficient to meet increasing national demand for forest products (Bekele, 2011). It was also noted that expansion of plantations is limited due to high competition from alternative land use. A recent study found that fast expansion of small-scale private plantations, woodlots and agroforestry (IFC, 2016). Nevertheless, most of the plantation forest by smallholder farmers are non-industrial. Due to continued increases in population and income, it is expected that domestic market for poles, fuel wood, paper and wood based panel products is growing. There is, therefore, a comparative advantage for developing short rotation fast-growing plantations on farm and in small woodlots.

Private sector can contribute to sustainable utilization of forest resources either by creating income streams from its sustainable utilization or by reducing pressure on the forest resources via alternative means of livelihoods. The key informants noted that collecting and transporting logs from the scattered smallholder farmers' plantation forest is costly to private sectors. In general, private sector can be engaged in activities such as seed collection in the natural forest and seedling development; wood processing using forest products from traceable sources or certified sources for its production and

harvesting system; support market linkage; provide certification services; produce wood, and round wood plantation, and timber production using out-growers, and restoration of degraded landscape. The following sub-sections focused on how private sectors can be engaged in integrated plantation forestry, support management of natural forests, and promote bamboo and sustainable utilization. Plantation forestry and sustainable utilization for natural forests includes integration activities with high-value agricultural and forest products such as beekeeping, spices, coffee to increase return to investment and to reduce deforestation and forest degradation.

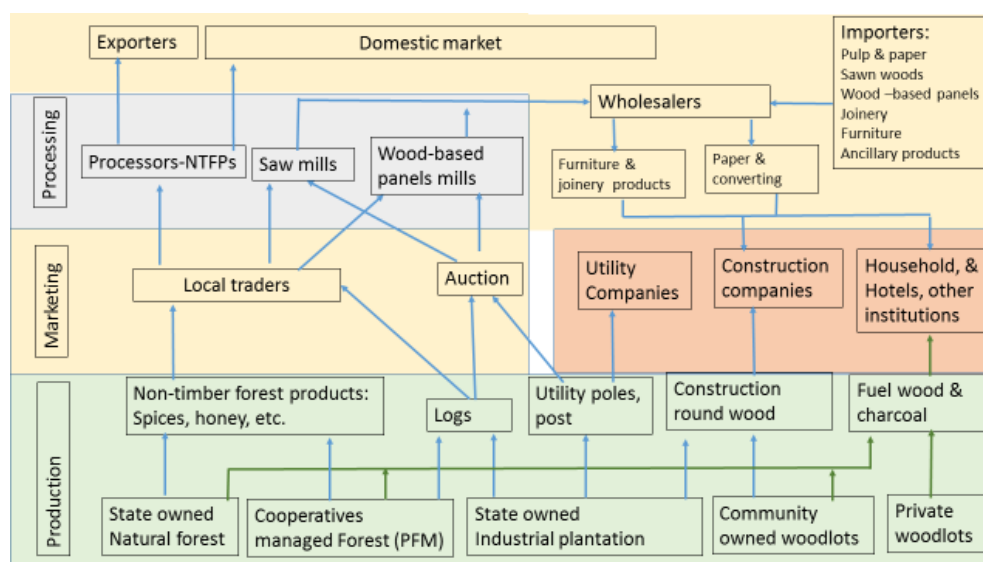


Figure. Forest products Value Chain

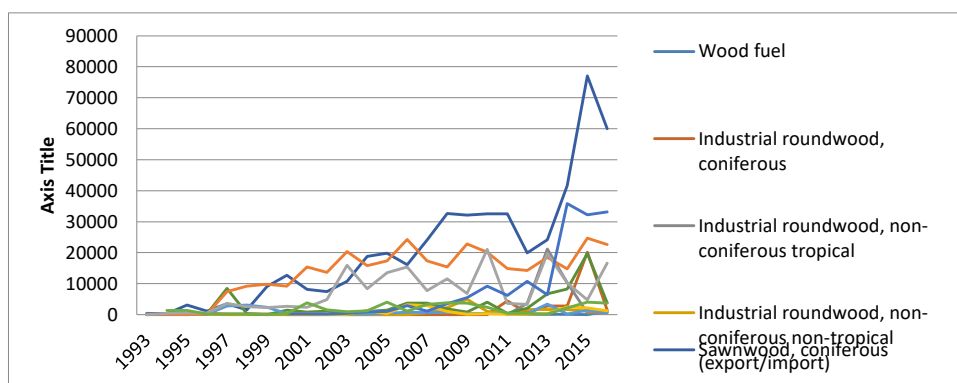
Note: the forest products value chain is developed based on IFC (2016) and data gathered for this study.

2.3.1.2 Wood forest products marketing

Trading of wood forest products usually happen through local traders or through auction. Auction is mainly to sale wood products from large scale industrial plantation owned by cooperatives or OFWE, and sometimes wood products from community wood lots. Processors or local traders can be take part in the auction only if they have licenses, issued by regional trade bureau to use forest products. In case of wood products from smallholder farmers private plot the local traders/ broker negotiate and buy standing

trees, chop and supply to processors. In smallholder farmers sell stand of plantation trees to processors through local traders. Then, the processors take care of the harvesting activities, and transporting to their processing plants. Most of the logs are used for sawn timber.

With the further growing demand of wood products and limited increase in domestic supply of wood forest, the country is becoming dependent upon wood product as sawn wood, paper and ply wood imported from other countries (Figure 17). For instance, the plantation forests are estimated to supply 50% of the total industrial round wood production per year (IFC, 2016). To meet the growing demand for industrial roundwood in 2040, it is suggested that about 15 000 ha of new plantations need to be established annually (ibid). On top of this, more than 80% of households' energy supply is from fuelwood (CRGE, 2011), private sector has not been engaged in plantation forestry for charcoal and fuel wood production. Charcoal and fuel wood productions are conducted informally without license and the trading is characterized by weak enforcement of law. the production and transaction of charcoal and fuelwood, and non-timber forest products are discussed in secession and respectively.



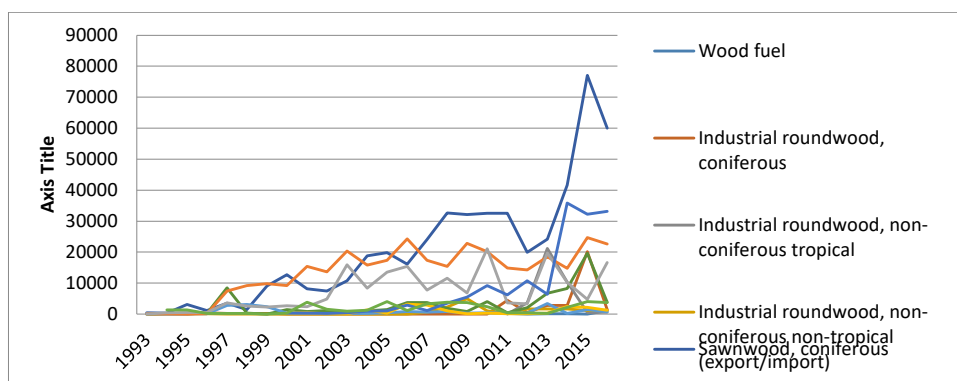


Figure 17. Trend of import of wood products
Source: FAOSTAT, 2018

2.3.1.3 Processing

The wood forest products processing plants in the region are owned either by OFWE and privately investors. most of processing plants are limited to basic processing such as sawmilling with limited value addition. there are some furniture plants. most of the sawmills are working under capacity, some are using outdated equipment resulting in limited efficiency and high wastage.

2.3.1.4 Private sector wood forest products

- there is no as such large scale tree plantation by either private investors or smallholder farmers.
- In the forest sector, the private investors are more interested in value addition than in establishing plantation. The private sectors are not attracted to investment in the plantation forestry due to is relatively long-term nature of investments. In the Oromia region, it is reported that smallholder farmers produce trees used for fuel wood with short rotations of, on average, 2-3 years. With relatively longer rotations of 4-5 years farmers produce short poles, and with longer rotation period of 7-9 years farmers produce longer poles (Bekele, 20110).
- There are growing number of private sectors investing in wood products processing (Annex Table 2). According to data obtained from Environment, Forest, and Climate Change Commission (EFCCC), some of the privately owned wood processing industries located in the regions and around Addis Ababa are:

- TY wood factory,
- Zhao xin wang wood product manufacturing,
- Zamu Plc
- FANGQIU JIANG wood products manufacturing
- A.M Pine wood works enterprise
- Gong zhenrong wood products manufacturing
- Min-Sen wood products manufacturing
- 3F Manufacturing Industry

2.3.1.5 Challenges in the sector

Challenges for private sectors to engage in forestry includes:

- Limited land available due to alternative land use competition
- Credit policy of the national bank of Ethiopia limit long term investment. The credit policy that doesn't accommodate financing of long-term project of more than 20 years.
- return in investment in the forest sector is long-term
- several tree species are affected by insects and diseases such as cypress aphid (*Cinara cupressivora*), *Armillaria* root rot disease and shoot blight and dieback
- Forest fire may also occur in case of natural forest, woodlands and shrublands
- instability risk
- private sector to invest in the wood processing is likely to face poor quality logs supply, limited and unsustainable supply of logs, and limited credit services for the sector.

2.3.1.6 Development partner

The focus of development partners and donors working in the forest sector is mostly on conservation. but in recent years' sustainable utilization is becoming a priority of some of the donors and non-governmental organization. some of the development partners working to promote sustainable conservation and utilization of forest sectors include:

- Ethiopian Environment forest and climate change research institute
- GIZ
- Farm Africa

2.3.1.7 Point of entry in the value chain

Private investment to engage in forest sector to reduce deforestation and forest degradation by:

- Establishing plantation for wood forest products production including timber, and fuelwood production. The land availability challenge could be addressed if private investors interested in establishing new forest plantation public- private or community-company partnerships, or through leasing.
- Wood processors can work with communities using out-grower or contract marketing arrangement

2.3.1.8 Indicative business plan for wood forest products production

Activities

- Promote out-grower mechanism such that smallholder farmers can receive loans from the existing companies to establish plantations on their land in return for selling the timber to the same companies at market price.
- Support commercial plantation forestry for timber round wood, and fuel wood. IFC (2016) estimated 1,498,795ha of degraded area in the low land gets enough rainfall for plantation forestry, and about 328,325ha of land that can be afforested to meet growing demand about 15,000 ha of new plantations need to be established per year nationally. considered 200 ha of plantation each year (100 ha of community land or 100 ha of degraded private smallholder farmers land. If a smallholder farmer allocates 0.25 ha, each year 400 farmer will take part in the intervention.
- Support nursery development and distribution for fast growing tree seedling. Each year 5 nursery will be supported
- Establish pilot "forest cluster" through voluntary consolidation of degraded area and farmers' plantation forest
- To develop one bankable project proposals on a plantation forestry each year at a cost of 30,000 USD per project.
- Provide capacity building and technical assistance for both local communities and private companies. a total of 500 smallholder farmers and member of communities each year.

Benefits

- **Carbon stock:** afforestation and reforestation of degraded forest improve carbon stock by about 10.75 Mt per ha per year.

- **Wood and non-wood forest products:** In afforestation/reforestation, sustainable forestry creates an income from timber and non-timber products is estimated to be around 7 USD/ ha/year.
- **Revenue from sale of planting material** of about 700,000 seedlings to plant 200 ha each year at a price of 0.035 USD per tree seedlings is 24,500 USD per year.
- **Other economic benefits** include eco-system services such as soil and water resource conservation , regulating water discharge of water to streams and rivers.

Cost

- Annual cost of nursery development or plant the 200 ha each year is estimated to be will be USD 1000. In the CRGE (2011) document it is indicated that cost of nursery site is estimated to be USD 10.00 to plant a ha of land, we considered the nursery cost of USD 5.00 to plant one ha of land in this case.
- Operation cost a nursery site is estimated to be USD 10,000 per year

2.3.2 Non-wood forest products

2.3.2.1 Bamboo

2.3.2.1.1 Production

Bamboo is an important forest resource of Ethiopia with high potential to contribute to forest sector development. The total bamboo forest area in Oromia is estimated to be about 34,153 ha while the country has about 519,124 ha of bamboo forest (Durai, 2018). The bamboo resource is situated in different part of Oromia (Annex Table 4) can be categorized in to four production systems: state bamboo forest, community bamboo forest, institutions bamboo grove, and "private" bamboo grove.

State bamboo forest refers to bamboo stand natural growing in state owned forests, usually under government's protection. Neither harvesting nor management activities are

allowed in the state bamboo forest. In most locations, bamboo forest stands remain de facto open access resources, where the local communities, used to harvest bamboo poles for construction and other uses. Bamboo in state owned forests are not managed. For instance, there is a large and high quality bamboo resource in Nesebo. The area has limited road access.

Currently, the government has developed institutional mechanisms for management of forests such as Participatory Forest Management (PFM), where the communities are assigned the responsibility to sustainably manage forest and allowed to benefit from it. Currently, bamboo supply comes mainly from smallholder producers. The local farmers are not allowed to harvest bamboo culms from state forest for sell but for their own use.

Community bamboo forest refers to bamboo growing in a defined areas provided to the community for grazing and/or for communal use. They are managed by community, or cooperatives of local communities (Durai, 2018). The community bamboo forests serve communities as source of culms for construction as well as for value-addition. In the case of bamboo trading and/or sale, the "association/enterprise/ cooperatives" need to get harvesting permit and pay royalty for harvesting and transport of bamboo. In general communal bamboo forests are unsustainably extracted in the form of bamboo culms.

Institutions bamboo refers to bamboo grown in land owned /designated to organizations such as churches and schools. The bamboo grown in institutional areas are relatively well managed with regular harvesting and management. The "private" bamboo grove refers to bamboo grove grown in homesteads or farmsteads of individual farmers and owned by a farmer. Small holder farmers grow bamboo in the form of block planting, farm boundaries or fence, and as homestead planting in their farms. Bamboo in private farms or smallholder farms are grown comparatively on small area also well managed than bamboo in state forests and in communal lands. In Oromia region, there are undergoing activities to promote bamboo production such as in Belete-Gera and Wonchi areas. Predominantly, highland bamboo (*Yushania alpina*) is preferred and grown by farmers in their farm land due to the ready market for bamboo poles, multiple use, ease in processing and managing it.

Bamboo is becoming an important Non-Timber Forest Product (NTFP) proving important source of raw material for a number of small and micro forest based enterprises. Engaging private sector in bamboo production and processing reduces or diverts pressure on forest for fuelwood, construction, beehives, furniture, etc.

2.3.1.2 Assemble, storage and transporting

Actors involved in the bamboo pole value-chain are smallholder farmers, community institutions who are the producers of bamboo poles; middleman, collector or local traders who act as a link between the farmers/producers and the processors and the consumers. At farm gate, collectors/agents may buy a bamboo stand to be harvested by collector hired as daily laborer or the supplier may deliver harvested culms. The collectors are often individuals from the area with better network and market information than ordinary farmers. They may not need to be licensed as far as the buyer is licensed. Bamboo culms collected from various transaction spots (farmers' neighborhood, roadside, and local market) will be temporarily stored at nearest place accessible to transport by vehicle until the collector arrange transporting to the desired market location. Some collectors also store bamboo culms vertically cling to a tree or themselves, and others pile it horizontally on the ground. Some others who are working on handicrafts are trying to treat the bamboo culms by burning area to store it. Bamboo culms are often delivered to market or to the roadside or assembled at temporary storage area with horse or donkey, pulled by horse or donkey.

The predominant species of bamboo grown in Oromia is highland bamboo. In the case of local sale, the institutions directly sell the bamboo poles to local farmers / processors. In the case of bamboo harvesting for market, the local communities, traders, PFM, and companies need to get "harvesting and transport permit" and need to pay royalty fees for transporting bamboo across "check points". However, it is important to note that the enforcement mechanism remains weak. Bamboo pole transportation is costly. It seems more feasible to establish bamboo processing plants in area of production. This will enable to save processing cost to the private investor and create job opportunity for the local people.

2.3.1. 3 Processing

In most cases, smallholder farmers play a dual role of resource producers (bamboo poles) and production of bamboo basketry and mat based products. Majority of the current bamboo processing activities are undertaken by household enterprises using manual technology for production of low value for domestic and rural markets. Individual entrepreneurs and micro and small- scale enterprises are producing bamboo furniture and bamboo craft production in towns and cities. For instance, there are youth organized and working on making furniture from bamboo in Goba town of Bale zone. The traditional

processors who produce handicrafts and furniture and they usually target low-income customers. It seems that the bamboo crafting is declining while the wood working is getting more momentum.

In addition, a few large industries (located in and around Addis Ababa) producing industrial products such as bamboo flooring tiles, bamboo stick curtains, bamboo stick based and energy products. Industrial uses of bamboo can be made to produce various high value products such as ply bamboo, floors board/parquets, composite boards, chipboard and various other laminated bamboo wares, pulp and paper.

2.3.1.4 Marketing

Bamboo marketing consists of bamboo resource producers, middlemen, bamboo processing enterprises; retailers and consumers (Figure 18). Bamboo resource production is dominated by small holder farmers who supply bamboo for value -addition enterprises. Key players in bamboo culms marketing are smallholder farmers, communities, institutions, collectors/agents, cooperatives, craftsmen/artisans and consumers. Smallholder farmers, communities, cooperatives and institutions (such as church and schools) are suppliers of bamboo culms while collectors/agents, craftsmen/artisans, and consumers are buyers. In the bamboo culms marketing collectors/agents first communicate with potential buyers elsewhere including processors, negotiate the price and then look for potential suppliers (bamboo producers) to buy at farm gate or can buy at local open market and on the roadside on market days.

Demand for bamboo products in major cities are often assessed by licensed craftsmen who then transport bamboo culms and employ craftsmen and transport them to these cities and towns. It may also involve agents collecting or harvesting bamboo culms from the rural areas and supply to traders who transport it to other areas. Although the price of bamboo culms varies with its size, varieties and accessibility, it appears that bamboo culms farm gate price are determined by collectors. Farm gate price seems to be determined in most of the places through negotiation between the bamboo producer/farmers and the collectors/agents. As the collectors get price information from the buyers elsewhere who can be processors or artisans as they indirectly influence the market prices.

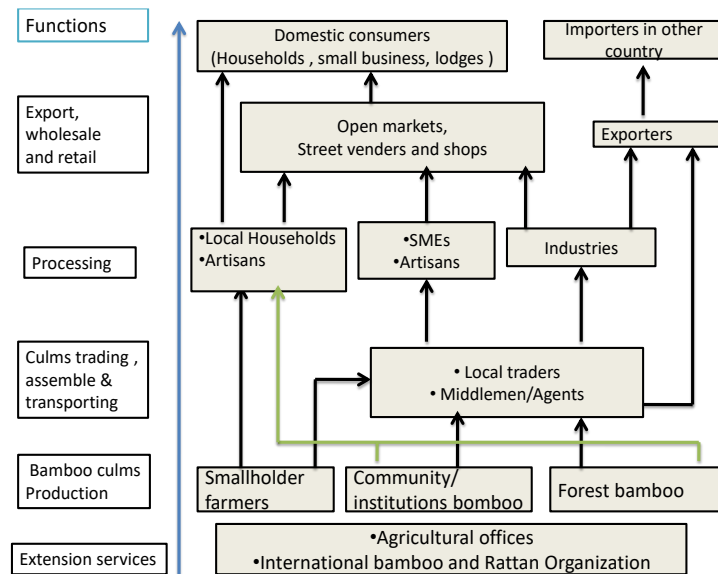


Figure18. Bamboo value chain

The consumers of the bamboo poles are households (construction and fencing), bamboo mat and basketry producers, furniture makers, and industries producing industrial products. Particularly, in rural areas, bamboo is extensively used in traditional construction with applications including fencing, roofing and making household furniture. Its fast growing nature, large biomass production and other attributes make it a versatile resource for wood-based industries. There are also limited local buyers of bamboo in many areas and it is used locally for fencing.

Most of the time customers buy bamboo furniture for temporarily use. Most of the customers don't often want to spend money for expensive products of high quality. This is becoming disincentive for the handicrafts to make high quality bamboo products. The handicrafts men and women also want to produce products with good market although the profit margin is declining from time to time, to meet their daily income rather than producing high quality and expensive product. Most of the traditional bamboo products are sold locally to consumers. However, in some cases, wholesalers who collect bamboo products, assemble and transport to large cities.

2.3.1.5 Private sector in the bamboo value chain

In recent years there has been growing interest to invest in bamboo industries. The number of private investors engaged in bamboo processing is growing. Although there are a few private medium scale industries producing bamboo industrial products such as bamboo flooring tiles, bamboo boards, and bamboo stick based products.

There are few private investors engaged in bamboo production except farmers but a large number of SMEs, individual artesian and large-scale industries are involving in bamboo processing. There are also few bamboo processing industries established in and around Addis Ababa includes Adal, African Bamboo, and SA established to produce bamboo flooring, roofing panel, blinds or curtains, table mats, incense sticks, tooth picks, briquettes and pellets.

2.3.1.5. Challenges in the bamboo value chain

The key challenge to engage in bamboo value chain is limited supply of bamboo culm, which could be addressed through private sectors engagement in bamboo production. Nevertheless, private sector to engage in bamboo production is further challenging due to limited land availability.

2.3.1.6 Development partners in bamboo value chain

- International Bamboo and Rattan Organization (INBAR) provides training for small and micro enterprises, and to increased bamboo resources it gives seedling to smallholder farmers and provide training on bamboo management

2.3.1.7 Entry point in the bamboo value chain

- Private investor can be engaged in bamboo production despite the land availability challenge.
- Bamboo processing seems an essential entry point for private investor in the forest landscape of Oromia. Industrial bamboo products identified in the bamboo sector stratagem framework of the country for private sectors to engage in Medium Density Fiberboard (MDF), Oriented Strand board (OSB), Woven Bamboo

Strand Board, Bamboo Mat Board, laminated bamboo ply boards, laminated bamboo lumber, Bamboo curtains & blinds, pand paper, Skewers, toothpicks, match-stick, incense-sticks, charcoal and Edible Bamboo Shoots.

- For sustainable supply of bamboo culms, bamboo processing industries need to out-grower arraignment; provide inputs and technical support for the out-growers to get bamboo of desired quality, and to ensure sustainable supply of bamboo poles/culms.

2.3.1.8 Indicative business plan for bamboo sub-sector

Activities

- Promote bamboo planation on about 15000 smallholder farmers in West Arsi, Bale, West Shoa, Southwest Shoa, Jimma, East Wollega. if each smallholder farmer plant on average about 0.2 ha of their private land with bamboo, 300 ha of bamboo will be planted each year.
- Sustainable utilization of natural bamboo in West Asri, Bale, West Shoa, Jimma, West Wollega
- Support bamboo products development and establishment of three bamboo processing plants one in West Arsi, West Wollega, and West Shoa.
- Support market linkage through contract bamboo production and out-growers' schemes between bamboo producers and processors. this will address market linkage problems of producers and to ensure sustainable supply of bamboo culms of desired quality for processors

Benefit

carbon storage: Bamboo has high carbon sequestration capacity its rapid biomass accumulation and effective fixation of CO₂. Total carbon stock of highland bamboo (*Yushania alpina*) 55 metric tons per ha (Sohela, et al, 2015). A well-managed forest bamboo provides carbon storage of up to 120 metric tons of carbon per ha. It also provides a carbon sequestration services of about 13 metric tons per ha per year (Nath et al. 2015).

Improve income: a typical smallholder farmers' family residing in natural bamboo forest area is estimated to earn on average about 218 USD per year based on Study by (Andargatchew, 2009).

Other economic benefits: bamboo can be used to replace materials with high carbon emissions, such as PVC, steel and concrete. Bamboo can be important source of bio mass for sustainable charcoal production in supply of renewable. It reduces deforestation and forest degradation arise from wood demand for construction of houses and fences. In some are serves as livestock feed, and also for making beehives, agricultural tools, and household furniture which otherwise made from timber forest products.

Cost

- Annual cost of nursery development or plant the 100 ha each year is estimated to be will be 1500 USD.
- Operation cost a nursery site is estimated to be 10,000 USD per year

2.3.2.2 Spices value chain

2.3.2.2.1 Production

The underlying logic here is to integrate sustainable production of high value non-timber forest products (NTFPs) such as shade-loving spices to improve means of livelihoods of the communities residing around forest areas, as well as to increase the value of forest (natural and planation) land to reduce deforestation and forest degradation.

Ethiopia produces both highland and lowland spices are an important cash crops cultivated by both smallholder farmers and commercial farmers. Ethiopia is a homeland for many spices including Ethiopian cardamom, long red pepper, Black cumin, white cumin, coriander, fenugreek, turmeric, sage, cinnamon, and ginger. Some of the shade-loving spices are black pepper, Ethiopian cardamom, and long pepper produced in the forest landscape of Southwest Ethiopia. Spices can be produced both in the forest and adjacent areas, integrated to natural forest or intercropped perennial crops such coffee, and fruit trees. Particularly, Ethiopian cardamom, and long pepper are shade-loving spices that can grow under dense forest across a wider agro-ecological zone with high annual rainfall.

The farmers produce black pepper commonly on the boundaries of their coffee farms, backyard, while Ethiopian Cardamom is harvested usually from deep in the forest. Harvesting Ethiopian Cardamom takes place over relatively long period of time and done multiple times to pick the red (ripe) fruits. Nevertheless, due to competition with wildlife and to harvest more per trips, the harvesters usually pick the unripe, green fruits. This has quality implications. Its domestication will also improve the quality of harvest. Moreover, which is already underway in the area seems increasing women participation. Otherwise, although spices remain important source of income for women, traveling in the natural forests to harvest spices is hardly feasible for them.

In the past, collection and selling of wild spices from forests was a “resource-poor farmers’ business”, similar to wild coffee. This day that trend has been changing. It is becoming a complementary source of income for most of the farmers to their forest and semi-forest coffee. In recent years, farmers started domestication of spices by planting Ethiopia Cardamom on their coffee farms.

Currently spices supply seems not sufficient for agro-industries. It is, therefore, vital to engage private companies in production of shade loving spices. This will generate multifaceted benefits including reducing deforestation and forest degradation, meet raw material supply of agro-industries and to improve livelihood of local communities in the forest area.

2.3.2.2. Assemble, storage and transporting

Processing black pepper is not a complicated activity. Producers commonly harvest the black pepper seeds when it is ripe (turn yellow), dry it well on a clean surface, and do further cleaning from other matters before supply to market. Farmers usually store dry black pepper and transport it in suitable materials such as plastic sacks (*madaberia*) and sell to local market (kiosks).

Ethiopian Cardamom and long pepper do not go through much of process at producers’ hand. Smallholder farmers sell either fresh (wet) fruits or dry fruits mostly depending on urgency of cash. In some cases, the farmers decide to do the drying process. In this case they usually spread the fruits on the ground on mats, cloths, plastic sheets and sacks to be dried in the sun.

2.3.2.3 Marketing

Actors in spices value chains include smallholder farmers, commercial farmer (investors), local collectors, traders and exporters (Figure 19). Usually actors are involved in marketing of more than one spice. Smallholder farmers usually sell semi-processed products to local collectors and nearby kiosks. The local collectors and kiosks further process the products, for instance by dry and polishing and sell it to regional traders after bulking and packing in a plastic sacks. The regional traders transport the spices and sell it either to exporters or wholesalers at the central market in Addis Ababa. It is from the wholesalers at the central market that retailer buy spices, and sell to consumers in different parts of the country. Exporter buy spices from regional traders as well as from wholesalers, do further processing such as clearing and repacking, and then export to various destinations.

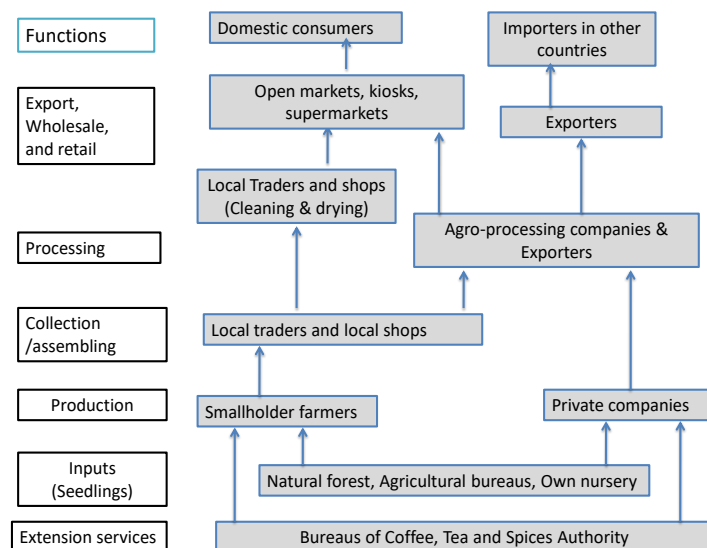


Figure 19. Spices value chain

Ethiopia exports processed and semi-processed spices, mainly to Middle East, Europe and Asia. Prior studies report also increased domestic and international markets for spices (Negera, 2015). Specifically, it has been noted that demand for organic spices in Europe, USA and Japan has been rising (NTFPs, 2004) which is a great opportunity for Ethiopia's spice sub-sector. Nevertheless, the spices sub-sector remains small-scale, fragmented, and the market structure is not well-established.

2.3.2.4 Private sector in the spices value chain

- Growing numbers of private companies investing in shade-coffee are also engaged in spices production by integrating it with coffee. Some of these companies are Abana Coffee Plc, Bellatte Ag Industries LLC, and Imco Agro Industries Plc while others such as lyad M.S. Aljurf is engaged in export of spices. More companies engaged in integrated spices production are listed in Annex Table 5.
- There are limited large-sale investor engaged in processing and export of spices.
- There a large number of small scale spices processors such as Selam, Abyssinia, Abeba, engaged in purchase, processing, preparations and selling of spices products for use by household and other consumers.

2.3.2.5 Challenges in the in spices value chain

- Lack of consistent supply of sufficient amount of spices throughout the year.
- Quality problem that arises from pre-harvest and post-harvest management such as harvesting immature, and storage problem

2.3.2.6. Development partners in spices value chain

- Shade-loving species have received little attention from development partners regardless of it important role in deforestation reduction and in livelihood of resources poor farmers.

2.3.2.7 Entry point in the spices value chain

- Community-based organization can be engaged in integrating shed loving spices to natural forest to increase economic value of forest area and in turn reduce deforestation and forest degradation.
- Private sectors can be engaged in supply of planting materials for long paper, black paper and Ethiopian cardamom
- Private companies can be engaged in value-addition and export of shade-loving spices

2.3.2.8 Indicative business plan for the spices sub-sector

Activities

- To increase return to investment in both plantation and natural forests, promote shade-loving spices such as Ethiopian cardamom, black-paper and long-paper on a total of 1000ha per year on private plantation forest, *de facto* private natural forest, and on natural forest under PFM in Jimma, Buno-Badale, Illu Abba Bora, Bale, West Arsi, West Wollega, and East Wollega zones.
- Support seedling development and distribution for shade-loving spices for long-paper, black-paper and Ethiopian cardamom
- Provide training and awareness creation
- Support market linkage by linking producers with processors and exporter by organizing bazars, and trade fairs,
- Support standardization and certification of commodities and products such as forest coffee, organic honey and other NTFPs under suitable certification systems including rain forest alliance, fair-trade, UTZ etc.
- Support branding, access to niche market and price premium for products and services reducing deforestation and forest degradation

Benefits

carbon stock: Carbon stock benefits of sustainably managed forests is 3.24 t CO₂e/ha/year. In addition, based on Negash and Starr (2015), it is estimated that planting spices in plantation and natural forest shade-loving increase carbon stock by about 3Mt per ha.

Improve income: Income from sustainable utilization of forest management considering timber and non-timber products is about 3.50 USD/ha per year. Since in most of the cases farmers are harvesting these spices from natural forests, data on productivity is not well established. Based on Seyoum (2017) the productivity for black paper production about 9.5quental per ha. productivity of Ethiopian cardamom is estimated to be 7.7 quintals per ha, while that of black papper is 20 quintals per ha. The prices will give harvest in 2-3 years after planting.

Cost

- Annual cost of nursery development to plant the 1000 ha each year is estimated to be will be 15,000 USD per year.
- Operation cost a nursery site is estimated to be 10,000 USD per year

2.4 Energy sector

2.4.1 Overview

The Energy sector of Ethiopia is characterized by excessive dependence on traditional biomass energy (fuelwood, charcoal, dung cake, and crop residue), low per capita consumption of modern energy, and low efficiency energy consumption. According to the International Energy Agency (IEA) about 90% of the population rely on traditional fuels for cooking purpose (IEA, 2013). Biomass is consumed mainly for cooking purpose among rural and urban households. In 2010, biomass energy comprised of 92% of the primary energy consumption of the country, followed by fossil (7%) and only 1% is electricity (Guta and Börner, 2017). Fuelwood shares about 77.5% of the final household energy consumption, while agricultural residue contributes 7.0%, while dung and charcoal makes 8% and 1.2% from total final energy consumption (Kassa, 2007). The Oromia regional state is estimated to makes 38 % of the total rural household woody biomass energy consumption (including charcoal equivalent of wood) which is estimated to be 91.2 million tons per year, and 27 percent total urban household consumption of wood (including charcoal equivalent of wood) is estimated to be 11.2 million tons per year (Geissler, et al, 2013).

In its strategies, the Government has recognized that most rural households rely on wood for fuel supplies, which contributes to deforestation and land degradation. In addressing deforestation that emanate from fuelwood consumption, the Government is committed to 1) promote development of fuelwood plantation of fast growing plants, modern charcoal making from selected forest products and by products, 2) promote demand side management or energy saving initiatives such as wider diffusion and dissemination of improved cooking stove, and 3) promote switch from traditional energy sources towards modern alternative energy sources.

Biomass-based household energy use is not only the cause of deforestation and degradation of forest but it is among the main sources of GHG Emission. For instance, according to FAOSTAT (2018), burning biomass of humid tropical forest and other forest emits about 0.2 g of N₂O/kg dry matter, 6.8 g of CH₄/kg dry matter, while emission burning biomass in organic soil emits 0.2 g N₂O/kg dry matter, 20.8 g CH₄/kg dry matter,

1703 g CO₂/kg dry matter. Moreover, when biomass is combusted in an open fire or traditional cooking stove technology it causes of health hazard due to indoor air pollution (carbon monoxide); disproportionately affecting women and children.

Therefore, one of the possible measure used to mitigate the adverse consequences of unsustainable biomass energy consumption stated above; and consequently to reduce deforestation and forest degradation is by improving energy use efficiency (the demand side management), and from the supply side, by promoting sustainable fuelwood and charcoal production. Under the business as usually scenario, raising demand for fuelwood consumption may leading to forest degradation of more than 22 million tons of woody biomass (CGRE, 2011). it is vital to reduce demand for fuelwood among other things through development and dissemination of fuel-efficient stoves, and production of carbonized charcoal/briquettes. Hence, in this action plan the improved cooking stove technology, and sustainable charcoal production are value chains that were identified in the energy sector to explore the possible intervention areas for the private sectors to address deforestation and forest degradation. The following section discusses the value chains of the two products in detail.

2.4.2 Improved cooking stove value chain

2.4.2.1 Production

Various types of improved cooking stoves such as Mirt, Gonzye, Lackech, Tikikil and Mirchaye (the names are in Amharic) have been produced and promoted in different parts of the Oromia Region. The products are produced by women organized in micro and small enterprises, and individual entrepreneurs. For instance, Mirt is a cooking stove produce in small-scale mainly to sell it to local rural and urban communities, while Gonzye is also produced in rural areas targeting the rural customers. Tikikil stove is a relatively new product, produced and distributed on a large scale mostly with support of NGOs. The Mirt and Gonzye are cooking stoves with large cooking surface for making injera. Tikikil and Merchaye stoves require relatively a small cooking surface. Laketch stove is can be used both for charcoal briquettes as well as normal or traditional charcoal.

The women groups, youth groups, and individual entrepreneurs receive training from Woreda Water, irrigation and Energy office or NGOs to produce improved cooking stoves.

During our field work we witness that women and youth groups are involved in producing fuel efficient cooking stove in different parts of the Oromia, for instance, in Goba and Modjo towns. These groups work on the material with simple tools and bare hand. The group also stated that they have limited capacity and limited access to market.

Key informants noted that the Ministry of Water, Irrigation and Energy had got well equipped workshop for improved cooking stoves. Currently, the promotion of improved cooking stove has been moved from the Ministry of Water, Irrigation and Energy to the MEFC. Among other things, the MEFC encourages engagement of private sectors on production and marketing of improved cooking stoves. The MEFC provides letter of support for establishment manufacturing and assembling of cooking stove and monitor quality and standard of products.

2.4.2.2 Marketing

The market of improved cooking stove involves considerable subsidies from non-governmental organizations. The price for improved cooking stoves depend primary on the amount of subsidy received and the cost of production, rather than demand and supply. So, it is set by producers.

Cooking stove marketing involves a short value chain with no well-established distribution channels. In the lowest range of improved cooking stove value chain there are producers who purchase raw materials from traders and also use local inputs to produce the stove. These are groups of women and youth organized into SMEs and private companies. In the former case the group sells the product to traders, or alternatively the stove is being transported by NGO, MWIE and SMEs and distribute through three channels: 1) shortest route where it is sold directly to the rural residents, 2) through distributors it is sold to rural residents, 3) through kiosks and supermarkets the stove is sold to urban residents. In the case of production by private companies, the cooking stove is sold to traders, who in turn sell it to distributors. Then, the distributors sell it directly to the rural residents; or sold to the urban residents through kiosks and supermarkets. In regional towns the practice of purchasing locally produced improved cooking stove from supermarket is very rare as there are only few supermarkets in regional towns. Even in Addis supermarkets supply modern electric stove mostly imported or produced locally to some extent. So, in urban areas the main sellers of improved cooking stove are kiosks.

The value chain depends on the type of improved cooking stove one considers (Figure 20). For instance, the value chain is particularly short for large size cooking stoves such as Mirt stove since it is heavy to transport over long distance. Gonzye is made of light raw materials which make it possible to easily transport and sell it in open markets if necessary. Tikikil stove has been distributed by NGOs, a very small number of products have been bought and used by individual customers in a market-based solution.

The Laketch stove has been available for a number of years with relatively established supply chain. Laketch has dominated the market demand and it is produced by many private organizations. It was observed that though the Laketch product could not be easily found in several peri-urban areas, it was commonly found in urban areas across Ethiopia where urban residents buy it from kiosks or supermarkets.

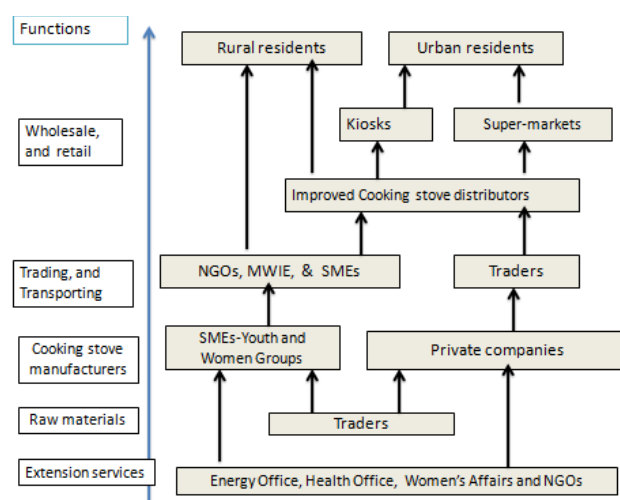


Figure 20. Value chain for improved cooking stoves

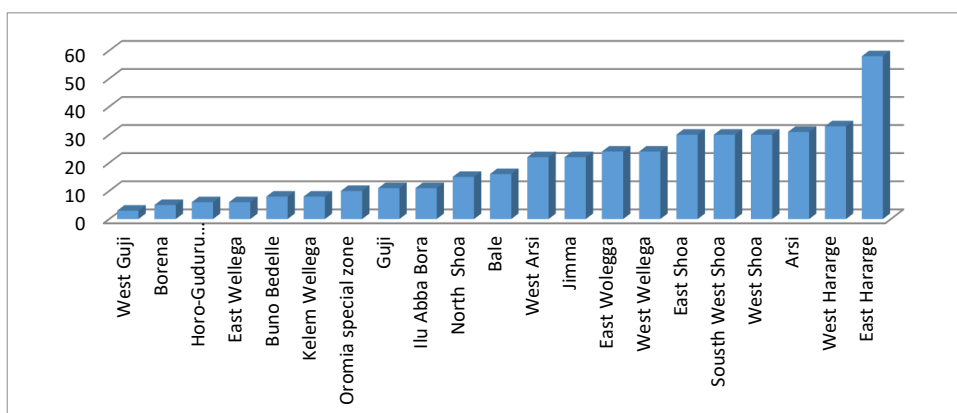
The demand for cooking stove depends on the supply of respective fuel type that goes with the stove. For instance, a key informant noted that demand for Merchaye depends on supply of charcoal and briquettes in a specified geographical area. Besides a number of factors affect demand for improved cooking stove including users' preferences (e.g. sometimes people prefer flavor of food cooked using traditional cooking stove), affordability, convenience of use etc. Adoption of improves cooking stove, and its

contribution in reducing deforestation and forest degradation depends on availability of charcoal through sustainable charcoal production. Some of the stove such as Merchaye is commonly used in urban areas, and it is available in retail shops and mini markets. Recently, retailers have started to supply charcoal to their customer together with the cooking stoves.

2.4.2.3 Private sectors in the value of cooking stove

A considerable number of Small and Micro Enterprises but few private companies are engaged in production of improved cooking stove. There are three briquette producers, and a cooking stove manufacturing and assembling company owned by South African and Ethiopian.

A key informant noted that non-governmental organizations and development partners such as UNDP have supported engagement of private companies in production and marketing of cooking stoves. Numbers of small and micro enterprises are relative few in natural forest abundant area (Figure 21). This could be due to lack of demand for the products as fuel wood is relatively available in the natural forest area and low time opportunity cost is involved in fuelwood collection, or it could be due to limited promotion efforts.



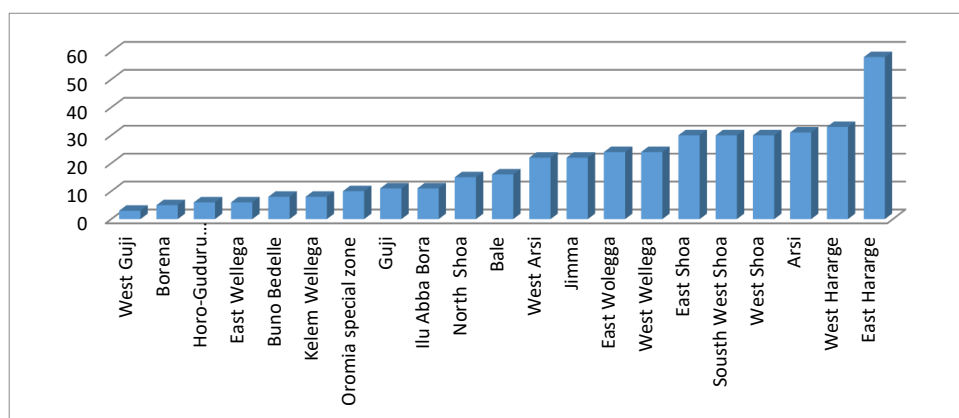


Figure 21. Number of improved cooking stove producing enterprises by zone
Source: Oromia Energy Bureau

2.4.2.4 Entry point for private sector

Although the distribution of private sectors engaged in improved cooking stoves vary over location and by the types of the stoves, a considerable number of them engaged in stoves production. The impact of the stoves in reducing deforestation and forest degradation depends on its adoption by households which in turn depends on its availability and availability of fuel/charcoal/Briquettes, and effective use of it depends on availability of technical assistances, such as local maintenance and repairing services which is mostly lacking in rural areas. Private investments can be directed to such intervention areas. Therefore, private sectors engagement in:

- Production of carbonized charcoal/briquettes
- Distribution of improved cooking stove together with carbonized charcoal and briquettes, along the same channel, can have impact in reducing deforestation and forest degradation.

2.4.2.5. Challenges in the cooking stove value chain

- Creating demand in fuel wood abundant area might be challenging
- financial constraints hamper private sector to engage in production and dissemination of improved cooking facilities.

2.4.2.6 Development partner in the improved cooking stove value chain

- UNDP has been providing grant for improved cooking stove producing companies
- BAR foundation – support production and distribution of improved cooking stove
- Farm Africa/ SOS Sahel have been supporting SMEs in production eco-charcoal, that is charcoal produced from coffee husks and sawdust in Bale.

2.4.2.7 Indicative business plan for cooking stove

Activities

- Support private sector to produce and distribute 10,000 improved cooking stoves per year in deforestation hotspot area at subsidized price. The improved cooking stove are with at least 50% saving efficiency.
- to provide training on production and installation of fuel-efficient cooking stoves
- To create awareness among rural households regarding benefit of using improved cooking stove using printed material (leaflet, banner/poster, sticker, and user guide),
- Create market linkage among producer and distribute of improved cooking stoves

Benefits

Carbon emission reduction: promotion of improved stoves reduces carbon emission by reducing amount of biomass burned and by reducing forest degradation. the carbon emission reduction from burning less biomass is estimated to be 1.6 Mt per unit of cooking stove year while that of increasing carbon sink from reduced forest degradation by using improved cooking stove is estimated to be 1.4 Mt per cooking stove per year (CRGE, 2011). The total carbon emission reduction as a result of promotion of improved cook stove is up to 3 Mt per cooking stove per year¹. Revenue from emission reduction of promoting 20,000 cooking stove per year considering 3.00 Mt CO₂e/cooking stove/year, at price of 5USD/Mt of CO₂e reduction, is estimated to be **300, 000 USD per year**.

¹ A report by WVE (2016) revealed that adoption of efficient energy cooking stove carbon reduced emission by 2.32 Mt per year per household.

Livelihood benefits: Improved cooking stove savings is valued to make about 10% of household income, particularly in rural areas (CRGE, 2011). based on Gelete et al (2018 and Worako et al. (2015), an average total income of a rural household in Oromia is estimated to be about USD 732 (20,500. birr) per year. Accordingly, the the livelihood benefits of promoting cooking stove in terms of saving household income is estimated to be **USD 73.2 per household per year**.

Other economic benefits include reducing health impact of indoor air pollution. during the nine years' project life the intervention will create job for at least 1,800 individual, particularly women (200 individuals per year for nine-years).

Costs

- The unit cost of fuel efficient cooking stove USD 8 with an average durability of 5 years (CRGE, 2011).
- Cost of capacity building training for 200 women per year on how to build and install cooking stoves is estimated to be 15 USD/participant. Total capacity building cost is 3000 USD per year.
- Create awareness and market linkage through bazars and pamphlets etc. 5000 USD per year.

2.4.2.6 Take-off companies

- Google improved cooking stove- private company engaged in production of improved cooking stove in Addis Ababa
- Partnership between OFWE and SMEs or private companies to produce and distribute briquettes

2.4.3 Charcoal

2.4.3.1 Sustainable charcoal production

Ethiopia is the third charcoal producer county in the world next to Brazil and Nigeria; but production is predominated by informal small scale sector (FAO, 2017). Production and marketing of charcoal is an informal business. Until 1993, there was a state owned Construction and fuelwood Production and Marketing Enterprise (CFPME) which was the

only legal producers and supplier of charcoal in Ethiopia. Since 1993, a large share of charcoal was produced and traded in the informal market. In 1997, check points for charcoal were removed with the expectation that local communities can stop illegal charcoal production, and that charcoal producers would be licensed and that Bureaus of Agriculture would be able to develop and enforce sustainable forest practices (Geissler, et al, 2013). Sustainable Charcoal production can be determined by gauging social and environmental impact of activities along charcoal value chain (the forest resources production, charcoal production, trading and uses) against Cramer framework of sustainable biomass production (BTG, 2010).

There is interest from government side, if a private sector can burners the invasive tree *Prosopis* to charcoal. *Prosopis* was introduced to partly reduce soil erosion, partly to produce biomass for feed and as live fence in the low land before it becomes invasive tree. However, there have been delays in developing and implementing a sustainable charcoal production practices at the field level and instituting a system of licensing and currently there is no nationally implemented charcoal strategy (Geissler, et al, 2013). Nevertheless, negative perception of actors in government institution makes private sectors engagement in sustainable charcoal value chain difficult to achieve.

Private sector can engage in tree plantation for sustainable fuelwood production to reduce pressure on forest or relieve deforestation and forest degradation. Plantation forest can be established under the ownerships of the private sector, individual farmers, the community, or the state. Ethiopia has a long history of tree planting activities. This day, although it is not directly meant for fuelwood, there are various activities in different part of the country to promote plantation of tree. The agricultural and natural resource offices found at different levels provide both the seedlings and technical support to promote tree plantation.

A key informant noted that the country doesn't have strategy for charcoal production and that discussion is underway to learn from other countries business on charcoal production. Currently, there are two kinds of charcoal production in Ethiopia. The most common method of production is the one by which charcoal burners burn wood or other biomass in earth mound kiln, in the absence of air after which it breaks down into liquids, gases and charcoal. This approach is traditional and mostly inefficient in terms of wood used, and cause significant carbon emission. For instance, FAO estimated the average conversion ratio from wood to charcoal in the case of such small scale producers ranges from about 10-15% (FAO, 2017).

The other form of production is a relatively model form charcoal production in which the charcoal burners use metal barrel to burn coffee hulks, was dusts and bamboo to produced briquettes. Yet, few individual entrepreneurs are taking the initiative to make

briquettes charcoal from coffee husk and sawdust. For instance, to mention some of the eco-friendly charcoal production activities that uses coffee husk and saw dust Delo-Mena, Bale, in Negele Borena, West Arsi, in Nopa, Ilu Aba Bora to produce charcoal briquettes (Figure 21). This appears a promising business model to reduce deforestation and forest degradation in charcoal making in area with sufficient supply of coffee husk or saw dust. Bamboo tree and its residue can also be used as a feedstock in charcoal briquettes production; especially residue from bamboo processors can be used sustainably.



Figure 21. Biomass briquettes production from coffee husk and sawdust.

2.4.2.2 Marketing

Charcoal is produced in rural areas and transported to urban areas using different means of transportation such as trucks, automobiles, camels and donkeys. Once charcoal is produced either by a regular or occasional producers, then usually they bring it to the road side or, keep the charcoal in house close to the road side and they stay on the road side to seeking buyers. Buyers are usually collectors/whole seller transporting to big cities, and drivers or by passing passengers. Sometimes, there will be arrangement among suppliers who hire trucks to collect and transport the charcoal to wholesaler in major cities, including Addis Ababa.

Charcoal value chain is presented in Figure 22. The predominant charcoal producers in Ethiopia are charcoal burners who buy wood from smallholders to produce traditional charcoal. They sell it to traders or drivers on roadside. The traders or drivers sell charcoal to domestic consumers. Major domestic consumers include urban residents, handcrafts such as blacksmith, and different service sectors (e.g. hotels and restaurants). Private enterprises produce charcoal from biomass feed stocks (e.g. sawdust, coffee stalk and others) applying modern briquettes production technology. These enterprises may directly export briquettes charcoal or sell it to cooking stove distributors. Sometimes, cooking stove distributors transport charcoal briquettes and sell to kiosks and supermarkets located in urban areas; from where the final consumers purchase it. Charcoal export is a rare practice as supply often fails to meet the domestic demand. Similar to improved cooking stove price for charcoal is set by sellers.

There is also a case in which the smallholder farmers themselves act as charcoal burner; producing charcoal in small scale directly sell it to the end users or consumer; without intermediary role of traders or drivers. They transport charcoal using different mode of transport such as carry on women back, use donkey, camel, or cart, and sell charcoal in open market of urban centers, or to traders, or kiosks.

There is growing demand of in the domestic sector for cooking as well as in institutions and factories. For instance, there is huge demand potential to use charcoal briquettes to heat their kilns in cement factories.

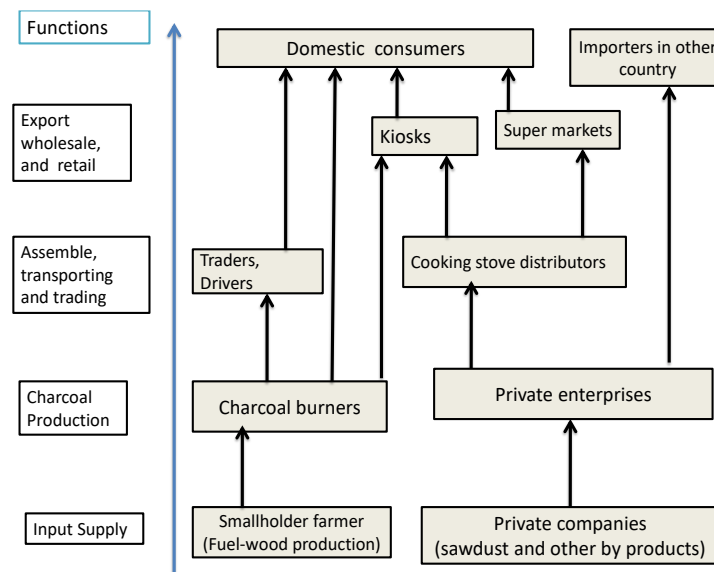


Figure 22. Charcoal value chain

2.4.2.3 Private sector in charcoal value chain

- The sector is dominated by informal actors. There are some private actors engaged in briquettes production.

2.4.2.4 Entry point for private sector

- Farmers grow eucalyptus trees to meet own fuelwood demand, for construction (e.g. fence, house), and as a source of income (selling of standing tree or fuelwood at market) due to decline in forest resources in their area.
- A key informant from the MEFC noted that there are wood processors, domestic investors and investors mainly from India and China, who have interest to invest in fuelwood plantation in different parts of Ethiopia. But due to limited land availability, what the MEFC can do is to connect investors to smallholder farmer out-growers.

On the other hand, the recent forest policy of the country suggests fuelwood production along the buffer planting of natural forest.

2.4.2.5 Challenges in sustainable charcoal production

- Lack of national and regional strategies for sustainable charcoal production
- Bureaucratic burden to obtain land to establish fuel wood plantation and briquettes factory
- Government offices limited awareness about importance briquettes factory and fuelwood production

2.4.2.6 Development partners in the sustainable charcoal production

- Danish aid agency (DANIDA) funded project to establish briquettes plants in eight in different part of the country, one of which was the Dilla coffee husk briquetting plant operationalized in 2012. the first briquette plant was introduced in Ethiopia in 1980s by individual entrepreneur producing briquettes from saw dust, coffee husks and cotton-seed husk, and sale to hotels (Asresu, 2017).
- FZS, and Farm Africa /SOS has been NGOs supporting introduction of biomass briquettes in Bale.
- Mercy Corps, and WISE (Organization for Women in Self Employment) has supported resource poor women organized in groups to engage in production cooking fuel briquettes from organic waste in Addis Ababa.
-

2.4.2.7 Indicative business plan

Activities

- Support establishment of six biomass briquettes factories in selected four zones (West Hararge, Bale, West Arsi, Jimma, Illu Aba Bora, and West Wollega) production from coffee husks, chat stem, sawdust, bamboo and other biomasses such as *Prosopis*. It is more than 141,332 metric tons of coffee husks/pulps, and much higher amount of sawdust and chat stem are released each year in Oromia region alone (UNDP, 2009).

- Provide training on charcoal briquettes for 200 women and youth each year.
- Linking companies producing eco-friendly charcoal/briquettes with stove producers and distributors

Benefits

Emission reduction:

- Reduce forest degradation for fuel wood extraction, and reduce direct carbon emission by improving thermal efficiency
- Greenhouse gas emissions (CH₄) produced from the decay of the organic materials used for the briquettes,
- **other economic benefits** such as reduce solid waste, reduced cost of fuelwood, save hard currency used to import coal, furnace oil/Petcoke in used by cement plants, create employment and can generate revenue (hard currency) from carbon sale as CDM project.

Cost

- **Equipment cost:** based on assessment of UNDP (2009) cost of equipment including biomass chopper, briquetting Plant Equipment, hammer mill, piston briquettes, screw press briquettes and bagging station is estimated to be 176,000USD.
- Cost of production of 1 metric ton of briquette cost is estimated to be USD108.
- Cost of monitoring and evaluation 2000 USD per year.

2.4.2.5 Take-off companies

- There are individual entrepreneurs like Mr. Fetene Yehualashet in Illu Aba Bora, and Mr. Ambasse Jamal in Gimbi engaged charcoal briquettes production from coffee husk.
- SMEs in Bale, West Arsi, Jimma, West Wollega, Illu Abba Bora zones

3. Enabling Environment and Institutions

3.1 Policies and strategies

The government of Ethiopia is committed to increase private investment in agribusiness, forest and energy sectors. The Federal Government of Ethiopia is committed to improve security of private sector access to land, for instance, through land registration and certification. The land policy provides transferable user rights to land. That means, private sector can access land through leasing or rental arrangements. However, restricted lease periods and limited allowable land leasing size of the land policy remain a constraint.

The Oromia Rural Land Administration and Use, Proclamation no.130/2007 recognizes the rural land in the holding of peasant or pastoralists or semi-pastoralists or other bodies who are entitled by law to use land as private land holding. Similarly, it also recognizes state and communal land holdings. Moreover, the proclamation provides private investor, social organizations, governmental and non-governmental organizations with the right to get rural land. It also provides peasants, and agro-pastoralist with the right to use and lease their holdings but prohibits selling of fixed assets such as coffee except its products for 3 years. On the other hand, it states that the land users right can be terminated if the land is required for more important public use with replacement or compensation. Investors can lease land either from government and land holder. The proclamation provides peasant the right to rent their private holding up to three years for transitional farming and up to 15 years for mechanization farming.

According to the "revised rural land use payment and agricultural income tax proclamation No. 131/2007" that was issued to amend the previous proclamation No.99/2005, private investor who develops forest based on the directives of Oromia Investment Commission shall be exempted from rural land use payment.

Regulation no. 270/2012 adopted by Council of Ministers Regulation elaborates investment incentives and types of investment reserved for domestic investors. According to this regulation Agriculture, animal, forestry and energy production are among areas allowed for foreign investor to invest in. Investors establishing new enterprise are exempted of income tax for years vary with area of investment, volume and location of investment. For instance, for an investor investing in animal feed it is exempted from income tax for 3 years in area outside Addis Ababa and Oromia Special zone. Those

investing in perennial crops production (fruits and beverage crops) in area outside Addis Ababa and Oromia Special Zone are income tax exempted for 5 years. This figure is 4 years for dairy, poultry, apiculture, fish farming, and silk production. Similarly, an investor investing in forestry outside Addis Ababa and Oromia Special Zone is entitled to income tax exemption for 9 years. On top of this, those investing in Guji and Borena zone of Oromia national regional state are entitled to 30% income tax deduction up to 3 years after the income tax exception expiry.

The regulation also states that any investor who exports or supplies to an exporter as production or services inputs gets income tax exemption on at least 60% of his products or services for two years in addition to the exemption mentioned above. Income derived from an expansion or upgrading of an existing manufacturing, agro-industrial or agricultural enterprise is exempted from income tax for a period of two years if it exports at least 50% of its products and increases, in value, its production by 25%. Business enterprises that suffer losses during the tax holiday period can carry forward such losses for half of the income tax exemption period, after the expiry of such period.

The guiding principles of the environmental policy of the country is to use fees, taxes, tax reductions or incentives that can be established to correct for market failures in environment and natural resource sector. It states the need to provide subsidies, taxes or tax concessions to achieve a sustainable use of natural resources and the environment. Similarly, the national REDD+ strategy states that incentives like long-term interest-free loan, tax break during the first two harvests, and technical and administrative support should be provided to investors engaged in forest activities.

Improving forest coverage of the country through afforestation and reforestation, and by reducing deforestation and degradation of forest landscape has also received attention of federal government as well as regional government of Oromia. For instance, the environmental policy of the country suggests to promote afforestation of eroded hillsides in order to increase the stock of trees for fuel-wood, construction material, implements and crafts, for forage and for other tree products. The policy also allows sustainable forest management which is referred to as social acceptability and economic viability harvesting (the volume of wood harvested in a given period is about equal to the net growth that the forest is capable of generating). Besides, the policy states the need to stall feeding of domesticated animals through a combination of providing agricultural residues, on-farm produced forage and fodder as well as the cutting and carrying of grass and browse from

meadows and hillsides in order to encourage revegetation of grazing lands and the reduction of soil erosion.

On the recent forest development, conservation and utilization proclamation no.1065/2018 of Federal government acknowledges, the social, environmental and economic benefits of forest development, conservation and utilization, and emphasized the need to have productive as well as protected forests. The proclamation recognizes private forest, community forest, association forest, and State forest types of forest ownership. The proclamation further categorizes state forest as productive, protected and preserved forests. It allows the establishment of fast-growing tree species plantation on the periphery of protected forest to be used for fuel-wood and construction by the local communities. It also states that private forest developer has the right to get certificate of title for forest land including the right to transfer his possession, sale products obtained from the forest land at local and foreign markets, get technical support from federal and regional governments. The private forest developer has also the right from carbon and other ecosystem services generated from forest under own possession and get compensation in case of expropriation of the forest land for public interest.

Incentives indicated for private forest developers include: access to land free from land lease and free of any sort of tax for the first production year, access to loan fulfilling requirements to be further determined by regulation. The proclamation give community developing forest on communal areas designated for this purpose to get certificate of title and share benefits generated from the forest and natural forest surrounding them. The community forest developers are exempted of for the first two consecutive production years and access loan fulfilling appropriate per the requirement. According to the proclamation association forest developers must be registered with appropriate government body, can acquired land identified for forest development, can get certificate of title for developing forest on the identified forest land, and free from any sort of tax for the first production year. The proclamation allows management of productive and protected state forests in a way that it can generate revenue from eco-tourism, and ecosystem services including carbon trade. It also states that community, association or investor forest developers can receive productive or protected forest from identified government possession on concession agreement to conserve and utilize in accordance with management plan and directives.

Forest proclamation of Oromia regional state (proclamation No 72/2003) also recognizes protected forest, state forest, community forest and private forest. According to this proclamation, private forest refers to forest developed by person or investor, organized communities, government and non-government organization on own land holding. Moreover, the proclamation recognizes that rural land and natural resources

administration Authority strengthens community to participate in forest development and protection. Private companies and individual can reach agreement with the authority to strengthen forest development, management and protection. Depending on exiting investment regulation, the private investors who rent land for forest development shall get technical support from the authority. Private investor may get plantation that belong to the State through lease. Organized local communities or local cooperatives may establish own forest on communal land. Nevertheless, the proclamation demands that individuals to have written permission from competent authorities for some activities related to forest utilization such as charcoal making.

The green economy strategy of the country also emphasizes development of renewable source of energy and energy efficient technologies as one of its pillars. Similarly, in the national REDD+ strategy, fuel efficient stoves and alternative renewable energy source sources such as electricity, LPG, biogas, bio-fuel are considered as possible options identified to reduce forest degradation impact of growing demand for fuelwood and charcoal. The strategy also targets increased supply of construction wood and fuelwood, timber and other wood products, among others, through plantations established and managed by regional forest enterprises, community forests and privately owned commercial forests. The need for sustainable charcoal production schemes from sustainably managed natural forests and plantations established for this specific purpose was also set as one of the targeted measures of the strategy.

The energy policy of the country puts afforestation for increased fuelwood supply as one of the policy direction. It provides priority to hydroelectric power development and energy utilization efficiency. The policy also emphasizes the need to achieve gradual transition from traditional source of energy towards modern energy options. Nevertheless, the policy barely states the role of private sectors in development of the energy sector. The environmental policy requires institutions and industries consuming large amounts of fuelwood established on their own plantations or make contractual arrangement with out-growers. It also states the need for Government to encourage lease concessions for private entrepreneurs to plant fuelwood lots.

On the other hand, substitution of fuelwood with alternative source of energy, particularly renewable energy, was one of the policy directions of the environmental policy of the country to reduce reliance on biomass energy resources and relieve pressure on forests. Moreover, the environmental policy states the need to promote private commercial and community sector initiatives to develop and market environmentally friendly energy sources. The environmental policy emphasizes the Country need to minimize atmospheric inputs of greenhouse gases as it has a large potential for harnessing hydro, geothermal,

wind and solar energy, none of which produce pollutant gases in significant amounts and to develop its energy sector.

Policies and strategies that depend on forest development including afforestation and reforestation are meant to put the country on Low carbon emission economic growth path. For instance, the climate resilience green economy (CRGE) strategy of the country emphasize the need to re-establishing forests for their economic and ecosystem services and carbon stocks, while protecting the existing forest. The national REDD+ strategy explicitly states the need to consider community based organization such as Participatory forest management (PFM) as one of the implementation approaches to sustainable conservation and use of forest resources. The strategy states also that private investors, public enterprises, public and religious institutions must be encouraged to engage in forest development. Some of the forest-friendly small scale businesses income generating activities identified in the national REDD+ strategy includes mushroom, poultry, and silk production.

Natural resource development, forest protection and reforestation programs that enhance the economic and ecological advantages of forests are some of the areas of focus of the second growth and transformation plan (NPC, 2016). It emphasizes the need to prepare and promote forestry development packages and manuals and provide trainings. It also states that private investors and cooperatives interested in forestry development can get necessary support and information regarding land availability, technical, legal, marketing, loan, and insurance services.

3.2 Organizational arrangement

Various organizations from federal and regional government, and development partners, community-based organization such as forest cooperative and PFM, unions, SMEs and private companies are stakeholders in sustainable conservation and utilization of forest landscapes. It has been noted that there is an overlap of activities and trade-offs among their tasks. Promoting forest production, investment in land management, licensing private sector engagement in forest sector, import and export of forest products, environmental and social safeguards all fall under the mandate of different government institutions. Therefore, strong cross-sectoral coordination is required to enhance efficient support services to the private sector.

Forest cooperatives or PFMs are usually organized by farmers with coffee or those highly depend on the patch of forest. By joining the forest cooperatives, the members expect at least to maintain the benefit they used to get from the forest. Under forest cooperative,

sustainability of the forest landscape depends on the level of benefits that members generate from the forest area, and the extent to which exclusion-inclusion conflict can be effectively addressed.

Most of the forest cooperatives committee allow members to use forest products such as collecting dried and failed tree for free for own use while non-members have to buy it from the cooperatives. Members can collect forest products such as grass and fuelwood, collect forest coffee and cando reforestation depending on by-law of their organization membership of the forest cooperative is open. Non-members can become member of the forest cooperative at any time. Both members and non-members can hang beehives in the protected forest. Participant of the focus group discussion noted that being member of the forest cooperatives creates a feeling of ownership to reduce deforestation and forest degradation. Members of the forest associations emphasized that forest products such as coffee, honey, and spices from their concession area should be certified under various certification schemes to generate a higher price premium.

There are also pastoral rangeland management (PRM) cooperatives in the low land area of Bale Zone which can be scaled-out in other areas. The PRM are working on area enclosure and livestock particularly goat trading. The PRM established in Bale is doing business by supplying goat to a slaughter in Modjo through Yadot Union. A key informant noted that the success of PFM cooperatives and forest user groups depends on the participation of member, which in turn depends on benefit that participants generate from their participation. In some area where benefit of member of PFM is low, the PFM tend to be weak in enforcing the by-law of their organization

There are SMEs contributing to reduce deforestation and forest reduction by engaging in poultry production, supply of pullets for farmers, animal feed production and distribution. Some of the challenges related to SMEs engaged in these activities include limited access to finance due to lack of collateral and lack of access to land. Some of the forest cooperatives, forest user groups (WAJIBs) and SMEs are suffering from lack of equal participation.

3.3 Policy gaps

- Building resilient green economy is one of the pillars of the GTP II. Although the environmental, agricultural, forest and energy policies state the vital roles that the private sectors can play in reducing deforestation and forest degradation, and also provided the incentives, but the incentive seems not able to attract private actor to the sector. This is mainly because the policies and strategies has gaps in addressing the bottleneck of the sectors such as land availability, lack of insurance scheme, and lack of access to finance. For instance, the land leasing policy which states that smallholders can lease their land for a period of up to five years, limit smallholder farmers access to land for perennial crop production such as forest plantation. Even for investors, the short leasing period discourages investment in the forest sector.
- It appears that information exchange between the Regional Bureaus and the MEFC, particularly on land availability for investment, is limited. So, a key informant said what the MEFC can do is to refer to the Regions. At the Federal level investor can get license to invest on forest development from the Ethiopian investment commission. Currently, the Ethiopian investment commission does not seek for any technical support from the MEFC before issuing the investment license. Unlike this, in the case of import and export of forest products, the ministry of Trade request quality assurance letter from the MEFC before issuing business license for forest products.
- In some cases, related tasks are given to multiple ministries which results in duplication of efforts. For instance, part of the energy sector is Ministries of Water, Irrigation and Electricity, Ethiopian Electric Authority, Ministry of Mining and Natural Gas, Ministry of Environment, and Forest and Climate Change. The regional bureaus are also organized in a similar fashion.
- Strategy on the sources and means of fund raising such as through environmental tax, or corporate social responsibilities, payment for ecosystem services is missing.
- Adverse effect of some of the policies. For instance, the intention to promote sedentary life among pastoral and agro-pastoral communities, there are re extension activities that are underway to promote crop production in the area. This is done usually by converting bush land to agricultural land. But the key informants noted that usually this land become unproductive shortly due to various factor including drought.

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- Although forest sector is a means of livelihoods for a considerable share of rural population, forest-based livelihoods in the rural community has received little attention from government. For instance, even if building resilient green economy is one of the pillars of the GTPII, investment in the forest sector is not a priority area, unlike manufacturing and construction sectors, so no attractive incentive package are designed for investors to invest in this sector.
- In the GTP II, the role of private sectors in the land rehabilitation and community-based watershed development targets is not well considered.
- The federal as well as the region government lacks forest investment plan (FIP). GTP II states that coordinated and all rounded supports will be given to youth graduates to enable them participate in agricultural investments in an organized manner including by providing them with rehabilitated mountains but does not stated how youths will be engaged in forest investment.
- Although finance is a limiting factor in most of the forest friendly activities, the key informants noted that there is access to finance from Oromia Credit and Saving Share Company and from revolving funding allocated by federal government for some of the activities such as beekeeping, honey processing, incense and gums production, charcoal briquette production, improved cooking stove production. Moreover, the youth can be organized on forest protection, and on minerals extraction. However, it is vital to address concern of Muslim communities by designing interest free revolving fund and credit systems.

4. Challenges for private sector to invest in forest development

There are various social, economic, and institutional factors affecting private sectors engagement in forest development or in sustainable conservation and utilization of natural resources. The challenges identified to hamper private sectors investment in reducing deforestation and forest degradation include:

- **Limited access to suitable land:** the key informants emphasized that limited land availability is the main challenge to engage private companies in plantation forest investment. Although during the first stakeholders' workshop officials said each year the region identified land for various types of investment including plantation

forestry the short leasing period discourages investors' engagement in forest development. Others said land assigned for forest development may not be suitable for desired species, and fast growing trees. In addition, it was also noted that lack of access to infrastructure in areas where land is available for plantation forestry private companies investment is prohibited due to high transaction cost to market products.

It was also noted that the Government doesn't give SMEs with any legal right to land but use right for five years. This is because SMEs are expected to move to higher level within 5 years. So, it is not possible to establish SME on forest development. When SMEs are established for instance on tree seedling development, the land doesn't belong to them. It is also not allowed to establish SME on Perennial crops production.

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- **Limited incentive:** Although there are some concepts of organic products, fair-trade products, forest products, the concept of deforestation-free products is not well developed in the domestic or international market to provide sufficient incentives for the private sector to play key role in changing the deforestation and forest degradation practices. For instance, the price premium under forest alliance certification mechanism may not cover the opportunity cost of non-intensive forest coffee production in the natural forest.
- **Limited access to affordable capital and long term-credit:** Financial institutions often view agricultural and forest development sector as a risky enterprise. The existing short time tax break and high interest rate financing schemes is not encouraging private investors to invest in forest development project. For instance, the development bank of Ethiopia (DBE) has three streams of credit: agricultural, manufacturing and agro-processing. The key informants noted that the bank has no financing stream for forest development. For instance, project such as timber production is out of the credit policy of the DBE. Nevertheless, the DBE do finance coffee and fruit tree projects. The tax break for fruit tree is 6years and the tax break for coffee is 5years.

The wood and forest development is not part of the financial system of the DBE. So far there was not request for finance for forest development except for bamboo development. The bank can finance plantation forest project as far as the project is feasible for the bank. Particularly, if development of plantation forest is for services such as eco-tourism the DBE cannot finance because DBE is not mandated

to finance any project of service sector. Banks find it difficult to develop and structure appropriate financial products and lose interest to financial products with the longer tenure that is typically needed for investment on forest development.

Development Bank of Ethiopia has two type of financing scheme: lease financing and project financing. The lease financing is for small and medium enterprises. Through its lease financing scheme the Development Bank of Ethiopia covers 80% of machinery cost and 20% is contributed by client in cash. And the bank maintains ownership over the machine. The lease financing is expected to be paid back in upto 5years. Tax grace period for this type of financing is 6 months after starting production and interest rate is 9%. This covers financing from birr 800,000 to 7.5 millions. Nevertheless, most of the small and medium enterprises and individual entrepreneurs working on the agricultural and energy enterprises fail to meet financial institutions' creditworthiness requirement, among other things, due to long tenure and low return nature of the project.

Project financing is for large scale project. It covers credit more than 7.5 million birr. This could be for joint venture project in which 51% owned by Ethiopian, the bank finance 75% of the project while the investors contribute 25% either in cash or in capital. Interest rate of DBE is 9% if more than 90% of products of the project is for export; 9.5% if 60-79% of the product is for export; 9.5% for import substitution projects, and 12% otherwise.

The maximum tax break period for any investment projects in Ethiopia is 15 years. It is not possible for the DBE even to give a tax break of 15 years since the maximum project life for any DBE financed project is a maximum of 20 years. To finance development project within its mandate, the DBE accepts government guarantee or equity contribution, not collateral. Usually Government gives guarantee with letter stating that in case of default, the government pays the amount.

- **High Risk:** Unpredictable environments discourage long-term investments and decisions, many of which are needed to invest in sustainable production system. For instance, in recent years, one of the challenges that the private investors may face includes conflict with local communities. The private investors are experiencing their farm being trespassed, and encroached by local communities in different parts of the region.

- **Lack of insurance system:** Some of the insurance companies in Ethiopia have recently started to provide insurance for investment in agriculture including that of smallholder farmers. But there is still no insurance system for investment in forest sector.
- **Limited partnership experiences:** Lack of experience of private sector to work in partnership with community based organization is one of the limiting factor. There is misperception among some of the local community as they consider private sector as actor working only for his own benefits, but does not care for the community at all.
- **Limited awareness of potential benefits:** Private sector has limited awareness about the benefits of engaging in forest development as business or as corporate social responsibility. Making the low carbon production system more paying through various incentive mechanisms and creating awareness about this among potential private companies deem essential. Limited awareness of model private sector engagement resulted in limited appetite of private sector to engage in forest development.

Although Government is committed to reduce rural unemployment (PIF, 2010), the economic benefit of forest sector such as in creating rural job opportunities, and its contribution to the overall economy of the region has received little attention as compared to the agricultural sector and agro-processing industries. Particularly, the attention that the forestry sector received in current “economic revolution” activities of Oromia Regional State is very much limited.

- **Limited capacity of private sector:** Private sector has limited understanding of forest development investments and their risk profiles, and incentive systems and management practice of forest sector. This means that private sectors find it difficult to think of bankable projects and forest investment plans, they have limited skilled manpower in the wood industry. Most of the working forces engaged in the wood processing industry are not well trained but only depend on their own experience. The key informants noted that most domestic private investors lack technical and managerial skills, and experiences of operating in forest development and wood industries as compared to agro-processing and manufacturing industries.

- **Limited research and extension services:** Research in identifying fast growing tree species and to improve the quantity of wood is limited. Little has been done so far in creating awareness of private investors about various tree species and their use in the wood industries. Moreover, an extension service for forest sector is almost absent.

5. Risk mitigation mechanisms

One of the challenges to engage private sector in forest development initiatives is that investment in forest sector is usually regarded as a risky business. Investment in forestry involves production, market, political and reputational risks depending on experts, location, local communities' partnership, benefit sharing and other factors (Tennigkeit et al., 2013). The production risks refer to the volume of timber and biomass to be harvested from a forestry investment; while the market risks is whether the timber harvested gets good prices. The outputs and inputs market of forest products industry is not standardization, code to get license in forest products trading and standard for export of timber and most of the other forest products is missing. Only recently the country has developed code for bamboo and poles trade license registration.

Forestry investment involves political risks related to situation affecting the governance and tax framework while the reputational risks refer to the public perception of the investment. The political instability experienced in the different part of the region, mostly in the remote part of the region where land is relatively available for investment in the forestry sector remains key challenge for private sector engagement.

Strategic direction and options to increase private sector investment in Oromia forest landscape shall employ the following mechanisms to minimize the risk involving investment in forest development.

- Government risk mitigation guarantee
- Partnerships: public-private partnership, community-private partnership, and public-community partnership
- Insurance system

6. Source of Finance for OFLP

A range of source of resource exist to finance OFLP that can be mobilized through mandatory or voluntary contribution, public private partnership and international cooperation. The regional competent authority need to assess possibility for concessional loans and grants, and undertake fund raising for OFLP. Various sources of climate-related finance can be used to leverage much larger private investments to reduce deforestation and forest degradation and also to increase carbon stock in the forest landscape of Oromia. Some of the potential domestic and international sources of finance are discussed as follow.

6.1 Domestic source of finance for OFLP

- **Public budget:** mainstream the activities OFLP in public budget of the region and that of federal government such as youth job creation fund. Under this scheme the youth need to be organized in a SME and have business plan and save up to 10% to get credit from the revolving fund. Nevertheless, this scheme is used to finance agro-industries such as honey processing, but it is not meant for the forest sector.
- **Loan from Development bank of Ethiopia:** Currently it is a big challenge to get bank loan for investment in the forest sector. This is because of both national bank credit policy and limited capacity of private sectors to provide collateral. With the implementation of this strategic action plan, it is important to explore possibilities for the private sector to access bank loan using carbon credit as bank collateral together with government guarantee for forest development.
- **Micro-finance:** The local community can be organized in a SMEs to access credit from OCSSC group based collateral scheme. The SME is required to have business plan and save 20% to get credit from OCSSC.
- **Payment for Environmental services:** This refers to the voluntary and mandatory payments that private companies such as beverage and mineral water bottling companies make to maintain environmental services. Mandatory payments can be collected through tax while voluntary payments include corporate social responsibility. For instance, corporate social responsibility involves local and multinational companies such as:
 - Coffee companies such as Nespresso, Starbucks,
 - Water and non-alcoholic beverage bottling companies (Annex Table 6)
 - Alcoholic beverage companies (Annex table 7),
 - Flower producing companies

- Tanning industries
 - Poultry industries
 - Slaughter houses such as Luna, Kolba
 - Flower farms
 - Sawmilling
 - Hydro power-based energy companies,
 - Municipalities
 - Commercial farmers,
 - Public water production and supply agencies
- **Crowd funding:** this is a mechanism by which competent authorities mobilize funds from individuals or companies with strong interest in social and environmental sustainability voluntarily.

To initiate the payment for ecosystem services and crowd funding for forest landscape management, the Oromia Regional State needs to adopt regulation on how to run the finance, fund management and use policy, set up institutional and sign up bank account for "Ecosystem Services Fund". Currently, some of the private companies such as Loko Mango Farm noted that they support schools, established water points, and provide transportation services to local communities as part of their corporate social responsibilities.

6.2 International and regional sources of finance

The international sources of finance for OFLP includes those funds that are currently or potentially available including from the private sector, multilateral banks, development partners or donors, foundations, and philanthropic entities. Such finance can be secured through foreign direct investment, bilateral agreements, grants, and carbon markets. Here are some of the possible international and regional sources of finance for OLFP.

- **Development partners:** OFCCA can mobilize official development assistance funds to provide capacity building and other activities that helps to create enabling environment for private sectors engagement as well as to undertake public investment in the development of forest sector. It is also possible and important to harness agricultural development funding from development partners and non-

governmental organization to support agricultural activities that enable the region in reducing deforestation and forest degradation emanating from the sector.

- **Foreign Direct Investment:** The key informants noted that there are growing number foreign companies interested to invest in forest development, particularly plantation forest. It is important to use this growing interested to develop the forest sector of the region.
- **Foreign banks:** funding can be available from foreign banks for investment in the forest sectors if the private sectors able to meet the criteria of the financial institutions. The key informants from IFC noted that IFC has not yet financed any local and international companies engaged in forest development but they are willing to finance private investors in forest development or other agricultural activities that meet its environmental, economic and social criteria and performance standards. In the case of Nespresso project IFC play advisory role.
- **BioCFplus funding of ISFL:** ISFL provides grant to create enabling environment for sustainable land use and for piloting engagements with the private sector. For instance, there is a good experience in Oromia in which Nespresso obtained grant from the ISFL to provide finance to coffee farmers with sustainable coffee production through field-based agronomy and business training including enhancing shade tree planting within coffee farms and enhance the sustainability of wet mill processing. As part of this program, Techno Serve together with IFC has also provided guarantee for the cooperatives to access credit from NIB banks and Cooperative Bank of Oromia Share Company. IFC has provided 10% guarantee through letter while Techno Serve provide 20% guarantee by depositing at the bank.
- **Carbon off-set:** The environmental policy of the county suggests the need to seek financial support from the industrialized countries for offsetting their carbon dioxide emission to finance reforestation, agro-forestry, the rehabilitation of degraded areas, a general revegetation of the land. The region needs to tap on carbon off-set finance. It is a finance by which companies, governments, or other entities compensated for or purchase reduction in emissions of greenhouse gas or carbon dioxide made elsewhere.

- ***The Global Environment Facility:*** The Global Environment Facility (GEF) supports various kinds of environmental conservation projects. Through its small grant program GEF has funded various projects that support community-level actions that address environmental concerns and improve livelihoods of target communities; empowers communities and individuals.
- ***African Guarantee fund:*** The African Guarantee fund (AGF) assists financial institution to partially cover the risks associated with SME financing and thus enables them increase their portfolio in that asset class. It also supports financial institutions to enhance their SME financing capabilities. AGF supports partner financial institutions to bring their SME financing business to the required scale that would not only enable them to bring down transaction costs significantly, but also increase returns on investment.
- ***IDH- The Sustainable Trade Initiative:*** IDH supports sustainable sourcing. This includes Supporting private companies and smallholder farmers meeting various certification schemes such as global good agricultural practices certification in Ethiopia in Ziway area of Oromia Regional State. For instance, IDH has also supported Techno Serve to address the unwashed coffee supply chain sector of Ethiopia to meet socially and environmentally friendly production system
- ***Climate investment fund:*** The climate investment fund has Forest Investment Program grants and low-interest loans to help governments, communities, and private stakeholders working with the people and economies that rely on forests without compromising the important environment services that forest ecosystem.
- ***Green Climate Fund:*** It is a climate finance investing in low-emission and climate-resilient development initiatives. It was established to reduce greenhouse gas (GHG) emissions in developing countries, and to help vulnerable societies adapt to the unavoidable impacts of climate change.

7. Assessment of deforestation reduction opportunities and tools

7.1 Brief overview

Deforestation and forest degradation remain a critical problem of the forest sector in the Oromia Regional State. Smallholder farmers and private investors all understand that it is critical to move from deforesting livelihood activities to forest-based activities for sustainable livelihood in the face of growing impact of climate change. Yet, there are illegal activities in the protected forest areas due to growing demand for forest products and ineffective enforcement of regulations. Some of the small and micro enterprises and private companies engaged in sawmilling and furniture in nearby town depends on illegally timber extraction. Other sources of logs from smallholder farmers' developed as private plantation. Reducing the ongoing deforestation and forest degradation requires an effective and equitable combination of enabling policies, institutions and economic and social incentive mechanisms.

Most of the time small and medium wood processors get logs through purchase of standing trees from farmers' field. The main criteria in the selection of trees or plantation to buy are the price and estimated volume of logs that can be obtained. This may include considering age of the trees. The possible environmental implications of that logging are not considered in the decision making of the private investors. The key informants noted that government needs to do more to encourage plantation forest, particularly on the degraded land, in order to sustain the forest product supply and reduce deforestation and degradation of natural forest. The key informants have also emphasized the positive role that introducing out-grower mechanisms between wood processing companies and smallholder farmers play in reducing deforestation and forest degradation.

We found that most of the SME and private companies engaged in sawmilling and furniture production do not have environmental policies. Private investors working in the wood processing noted that there is a decline in log availability. Therefore, to address the log supply issues some of the private investors are trying to establish their own plantation on family farm, others are trying to encourage other farmers to plant trees of their desire by providing seedling for free. However, it takes long time for such plantation to get ready or mature for harvesting. For instance, *Junipers Procera* takes 10-15 years to be harvested for timber industries. However, the wood processors believe that the log supply shortage is going to be a big challenge in the future since the forest coverage is dimensions (diminishing) at an alarming rate.

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Smallholder farmers as well as private investors need fast return although some of them are interested in establishing their own plantation; they look for fast growing trees. High discount rate, lack of loan for the forest development projects and limited land availability remain the challenge of private sectors to enter in the tree plantation business.

The OFWE, public enterprise established by the Regional Government of Oromia, can play vital role in reducing deforestation and forest degradation in the region through; 1) effective enforcement strict protection and restriction on harvesting, and 2) reforestation of degraded area under its concession area and cut it for its industries, and open spaces in its concession. The OFWE is encouraged to undertake afforestation and reforestation in area outside its concession as its corporate social responsibility. The OFWE provides seedling of trees commonly *Juniperus Procera* and Eucalyptus, and fruit trees such as Mango, Avocado, papaya, coffee for free or at subsidized price, and providing technical support to smallholder farmers to promote afforestation initiatives. The OFWE allows establishment of PFM in its concession area to ensure sustainable conservation of forest and to benefit local people from sustainable conservation and utilization of the forest areas.

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The PFM enters into agreement with the OFWE regarding the different aspects of conservation and sustainable utilization of forest including benefit sharing. However, we have noticed lack of clarity of benefit sharing mechanism between the OFWE and the forest cooperatives. The key informants stated that the OFWE is not sharing them with the benefits as agreed in the memorandum of understanding. There are also cases of conflict of interest and mistrust between the forest cooperative/ PFM committees and the *kebele* officials. Some officials focus on utilization of natural resources while the PFM committee focuses on conservation.

There were also some activities underway in the region to establish out-grower mechanism with smallholder farmers, for instance, in Western Arsi Zone. According to the key informants, those farmers with more than 0.5ha can be out-grower and get technical support from the OFWE. Nevertheless, farmers think that it is binding and not interested in entering into contract with the OFWE. There were also similar attempt by Farm Africa to connect forest cooperatives to private investors. Nevertheless, according to a key informant, the out-grower mechanisms has suffered from mistrust

between the smallholder producer (smallholder farmers) and the buyers (private companies and enterprises). The private sectors were not interested to commit themselves on the long term contract to avoid risk. So, it may be important for the government competent authority, perhaps the OFECCA, to provide guarantee for the contract marketing to promote plantation forest on private land.

7.2 Opportunities and tools for reduction of deforestation

7.2.1 Opportunities

- Political commitment of regional government to build green economy
- Political commitment for private sector development. This day, government has provided due attention to private sector engagement in the economic growth of the country including forest sector development.
- There are a number of department partners, donors and foundations supporting and willing to support development activities reducing deforestation and forest degradation. Some of the development partners are:
 - Norad (NORAD) is supporting REDD Investment Program to reduce deforestation and forest degradation and to implement afforestation and reforestation
 - DANIDA) is supporting PFM to reduce deforestation
 - SIDA is supporting afforestation, reformation (reforestation) and assisted natural regeneration
 - GEF is supporting climate resilience in the highlands including afforestation
- Investment in forests landscape has a wide spectrum of environmental, social, economic benefits. There are opportunities to integrate forest sector development in the ongoing economic revaluation of Oromia National Regional State to ensure sustainable economic growth of the region.
- Land registration is also another opportunity. It is an opportunity because; once land is register as forest land it is not possible to change it into farm. In order to improve

the benefits of forest land, in other word to reduce opportunity cost of forest land, it is important to integrate coffee with forest land.

- Better infrastructures such as roads, railways, hydro- and solar energy, telecommunication, establishment of industry parks encourage private sectors to engage in forest development to reduce pressure on existing forest resources.
- Through its job creation and food security program, the regional government of Oromia provides capital and non-capital incentives to encourage youth organized in SME and local communities in conservation and sustainable utilization of natural resource including forest resources. The capital incentives include access to credit, and machine lease while in capital incentive it is mainly to provide working space or shade for production and marketing. The SME are required to save up to 20% in cash to get machine lease.
- Companies in the global value chain are under pressure to improve their sustainability.
- Better land availability for agro-forestry such as for fruits and coffee. In some area there are potential land identified for coffee production. For instance, in Haro-Limu woreda, of East Wollega about 50 ha of communal land is identified for coffee plantation.

7.2.2 Policy and market instruments/tools

The Oromia Regional Government can employ various policy instruments to reduce deforestation and forest degradation in the region. These instruments can be economic and social incentives, and legal instruments. The economic incentives include tax and subsidies while social incentives are incentives related to cultural and religious benefits of forest resources. Regulatory instruments are tools related to defining and enforcing “what to do and not to do” in the forest landscape.

7.2.2.1 Regulatory instruments

- The regional government can use legal system such as demanding pass permit or banning harvesting of particular forest product, or banning harvesting of particular

forest area to reduce deforestation and forest degradation. Currently, the smallholder farms need no permission and pass permit to harvest plantation trees and transport it locally. For forest products to be transported out of that area, one has to have pass permit.

- Enforce public provision such as rules and regulations: for instance, the government investment regulation requires that companies allocate 2% of land they acquired for investment to conservation.
- Regulate silvicultural practices
- Considering property right including forest concession and carbon right

7.2.2.2 Social instruments

Oromia has a wide range of indigenous cultural and social capital that can be used to reduce deforestation and forest degradation. For instance, government can use Gada system and communities' social cohesions to address the natural resources degradation problem in the region.

7.2.2.3 Economic instruments

- The regional government may use economic instruments such as tax, resource fees, and subsidies or payment for ecosystem services to address the deforestation and forest degradation problems. The Government levies tax on actors that cause deforestation and forest degradation, and provide tax refund for those actors that work on improved environmental performance. Similar mechanism has been applied to WAJIBs in Dodola area to ensure sustainable conservation of Bale forest. WAJIBs with poor environmental performance pay more tax.
- To use certification mechanisms to create economic incentives for community-based enterprise such as forest users group, forest cooperatives to sustainably use the forest areas
- Contract based marketing, public auctions, and cap and trade system. The market based approach is a voluntary approach. For instance, under a cap and trade system, government may require wood processing companies to have a given amount of land under forest development.

8. Strategic Action plan to engage private sector in Oromia forest landscape program

8.1 Introduction

This strategic action is to provide broader framework for enhanced private sector engagement in OFLP implementation. The strategic action plan is developed based on finding of studies conducted as part of its development process. This strategic action plan is non-binding that shall be implementing in alignment with respective bureaus, authorities and line departments in the regional state as well as in collaboration with line federal ministries whenever necessary. The strategic action plan constitutes strategic objectives, strategies and actions that can evolve and need to be updated with contexts depending on changes. This strategic action plan of enhancing engagement of private sectors in reducing deforestation and forest degradation is based on the following guiding principles.

- *Private sector can* address deforestation, and reduce forest degradation and land-use based emission, and increase carbon stock by increasing the value of forest development and conservation to local communities and other stakeholders.
- *Community-based interventions* need to link private companies' investment with Community-based enterprises to create opportunities to improve livelihood of local communities, and need to ensure full participation of local community in decision making.
- *Market-based approaches* that focus on addressing the deforestation and forest degradation problems, and promote forest development through intervention of private sector along value chain.
- *Addressing institutional barriers and designing appropriate incentives* are vital to ensure successful implementation and sustainability of outcomes market linkage that reduce deforestation and forest degradation, increase carbon stock.

8.2 Vision

- Equitable and sustainable low carbon development in the Oromia Regional State through increased engagement of private sector

8.3 Goal

- To create enabling environment for increased private sector engagement in forest-smart agricultural and livestock production activities, in sustainable forest development and management, in sustainable household energy to address deforestation and forest degradation, reduce agricultural land-use based emissions, and enhance forest carbon stocks in the Oromia Regional State.

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8.4 Strategic objectives

1. Ensure that institutional systems and practices encourage private sector invest in development activities reducing deforestation, and increase carbon stock
2. Increase private sector's capacity to tolerate risk while reducing risk related to investment in the development and sustainable management of plantation and natural forest
3. Increase value of forest development and conservation of natural forests to local communities and other stakeholders
4. Mainstreaming production systems reducing deforestation and forest degradation, and increasing carbon stock in agricultural, livestock, forest, energy sectors of the region

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8.5 Strategies

Strategic objective 1: Ensure that institutional systems and practices encourage private sector engagement in development activities reducing deforestation, and increase carbon stock

Strategies:

- Reduce bureaucratic burden to private sector engagement in agricultural, livestock, forest and energy production systems reducing deforestation and forest degradation, and increase carbon stock
- Take regulatory measures to improve private sector's access to land and finance to invest in forest development activities contributing towards reducing deforestation and forest degradation in the region
- Design institutional setting to enable private sector discharge their corporate social responsibilities and environmental commitments including voluntary and mandatory payment for ecosystem services

Actions:

- Improve institutional collaboration/communication horizontally across various sectors working in the Oromia forest landscape and vertical with federal institutions
- Revisit existing land leasing regulation to improve private sector's access to land
- Promote mechanisms in which private investors can lease land from government, plant trees and provide management aspect to local community on well-defined benefit sharing agreement involving government guarantee.
- Engage in policy dialogue to change current national bank credit policy that does not account for investment in forest development
- Facilitate credit and provide government guarantee for SME engaged in forage production, beekeeping based on their business plan Improve land governance such as tenure security, and land leasing to allow long-term leasing of forest land so that wood processing companies can engage in forest products development
- Tap to grants that support community-based environmental friendly activities from various sources such as climate finance.
- Tap climate financing potentials such as options of using carbon credit as bank collateral together with government guarantee for forest development.
- Organize fund raising events and awareness creation workshop to promote private sectors engagement corporate social responsibilities and payment for ecosystem services

- Adopt regulation on how to collect and administer payment for ecosystem services and how to run other fund raising mechanism for reducing deforestation and forest degradation
- Establish “**Ecosystem Services Fund**” Bank Account to be managed by a committee Chaired by Vice President of Oromia Regional State and having OFECCA as Secretary of the Committee. Oromia Investment Commission and relevant bureaus will be member of the committee.
- Ensuring commitment of regional government to collect environmental user fees, taxes, and other voluntary payments from mineral water and beverage bottling companies, and farmers to modify their practices for sustainable provision of environmental services.
- Design incentives-based policy instruments such as subsidies and tax break if farmers, farmer associations and private companies improve environmental services including emission reduction, and charge fees (e.g pollution charge) for hurting environmental services
- Ensure that the private actors have environmental commitments

Strategic objective 2: Increase private sector’s risk tolerance capacity while also reducing risk related to investment in the development plantation forestry and sustainable management of natural forest

Strategies:

- To promote partnership between private investors, government and local community to share risk
- To secure insurance schemes for investment in forest development, and deforestation reducing agricultural activities
- To secure government guarantee for investment in forest development

Actions:

- Promote public- private partnerships to transfer some of the risk and management responsibility from the government to the private sector while it encourages the private sector to take risks invest since government share some of the investment cost.
- Promote private-community partnership such as contract farming and out-grower mechanisms

- Promote the existing public-community partnerships such as participatory forest management
- Invest in institutional development at local community level to enhance bargaining power of local communities in both partnership formation and in marketing of commodities or products
- Provide training to stakeholders on out-grower and contract farming mechanisms between companies and individual producers (farmers) or cooperatives that can reduce deforestation and forest degradation while ensuring sustainability of supply chain.
- Discussion with insurance companies on options to design for inclusive insurance policy to encompass forest development investment
- Organize training and experience sharing from insurance companies providing crop insurance
- Advocate for government guarantee to finance investment in forest development and discuss with relevant government authority

Strategic objective 3: Increase value of forest development, and conservation and sustainable utilization of natural forests to local communities and other stakeholders

Strategies

- To integrate high-value agricultural and forest products with plantation forestry and sustainable utilization of natural forests
- Promote sustainable production of forest products including non-timber forest products
- To promote community based eco-tourism

Actions

- Support forest-smart economic activities such as production of shade-loving spices and coffee, beekeeping, and sustainable forest coffee harvesting
- Engage private sectors including small and micro-enterprises, farmers' organizations, individual entrepreneurs' engagement in supply of planting materials for shade-loving spices for long paper, black paper and Ethiopian cardamom and coffee
- Support private companies' engagement in processing and export of shade-loving spices

- Support standardization and certification of commodities and products such as forest coffee, organic honey and other NTFPs under suitable certification systems including rain forest alliance, fair-trade, UTZ etc.
- Support branding, access to niche market and price premium for products and services reducing deforestation and forest degradation
- Promote participatory forest management, certification of their forest management, and price premium deforestation-free commodities or products
- Introduce allowable harvest and annual auditing for sustainability production systems of non-timber forest products such as species and forest honey
- Identify tourist attraction and support community-based eco-tourism with clearly define benefit sharing mechanisms

Strategic objective 4: Mainstreaming production systems reducing deforestation and forest degradation, and increasing carbon stock in the agricultural, livestock, forest, energy sectors of the region

Strategies

- Identify options and create awareness about benefits of low carbon and deforestation reducing investment options among government officials and private sectors
- Support private sector's engagement in the value chains of agricultural, livestock, and forest commodities/products, and energy sources identified to reduce deforestation and forest degradation, and increase carbon stock

Actions:

Identify options and create awareness:

- Prepare a document/investment profile that indicates a wide range of investment options in the agricultural, livestock, forest, and energy sectors that reduce deforestation and forest degradation
- Work with Chamber of Commences to create awareness among consumers, traders and processors about low carbon emission, deforestation reducing products/commodities
- Organize Bazar/platform to link producers of forest-smart products and services to domestic and export markets

Agricultural sector

Promote coffee agro-forestry:

- Promote shade-tree planting in garden and plantation coffee farm
- Supporting expansion of shade-coffee to farmland
- Introduce appropriate shade-coffee certification mechanisms and price premium deforestation-free coffee
- Engage private sector in supply of inputs such as supply coffee drying mesh wire and jute bags (*jonnie*) for transportation/storage to improve shade-coffee quality. This could be arranged through contract marketing
- Provide pre-finance for farmers to address cash shortage for coffee farm management and harvesting. This could be also done as part of contract marketing
- Support private sector in establishing coffee processing plants in areas with recently increased coffee production potential such as in West Shoa, Gololcha in Arsi and Bale, and in East Wollega
- Support SMEs to engage in coffee seedling development and distribution
- Provide technical support on coffee production and facilitate coffee market development in area previously not know for coffee production but now increasing growing coffee

Promote fruit trees agroforestry

- Provide training on how to integrate fruit trees such as Mango in agricultural production
- Support SMEs to engage in seedling development and distribution fruit-tree seedlings
- Support market linkage

Livestock sector

Promote poultry sub-sector

- Give strong support for private companies interested invest in establishing Day One Chicks (DOC) multiplication center, chicken feed (pre-mix) plant, and vaccination services.
- Support integrated forage production in agro-pastoralist areas to avoid overgrazing and seasonal livestock encroachment to natural forests

Promote beekeeping

- Support supply of beehives, small-scale honey processing tools, and accessories to promote forest honey production
- Develop guideline and provide training on beekeeping in garden, farm and forest to organic, forest/ wild forest honey production
- Provide training on how to improve production and quality of honey and in the processing and packing honey
- Support private sector engagement in production and supply of beehives (modern and traditional), and other accessories
- Support honey certification and market linkage

Promote feed and forage development

- Support SMEs and individual entrepreneurs engaged in production and distribution of livestock feed and seed/seedling of livestock feeds
- Support private sectors engagement in animal feed processing and supply including preparation of multi nutrient feed
- Support establishment of area enclosure and range land management cooperatives in the lowlands
-

Forest sector:

Bamboo production

- Promote bamboo production among smallholder farmers and private investors
- Support bamboo products development and establishment of bamboo processing plants
- Promote out-growers' schemes between bamboo producers and processors to address market linkage problems and to ensure sustainable supply of bamboo culms of desired quality

Promote plantation forestry:

- Support commercial plantation for fuel wood, and round wood, and timber
- Support reforestation and afforestation of adjacent degraded areas or community plantation forestry

- Establish pilot “forest cluster” through voluntary consolidation of degraded area and farmers’ plantation forest
- Support small and micro-enterprises, farmers’ organizations, individual entrepreneurs in nursery development for fast growing tree and fruit trees can be integrated with per agricultural, livestock and household energy production
- Provide technical support in assessing return of investment in the forest sectors and in developing bankable project proposals
- Provide technical assistance on silvicultural practices for both local communities and private companies

Energy sector

Improved cooking stove

- Support private sectors engagement in development of energy-saving and clean energy technologies and on inputs for low carbon energy sector
- Support production and distribution of efficient stove production

Sustainable charcoal production

- Support private sector engagement in charcoal Briquettes production from coffee husk, sawdust, bamboo and other biomasses
- Linking companies producing eco-friendly charcoal/briquettes with stove producers and distributors

4.3 Implementation action plan

Strategic objectives 1: Ensure that institutional systems and practices encourage private sector engagement in development activities reducing deforestation and forest degradation, and increase carbon stock

Commented [u16]: What could be the major engagement modalities/approaches, implementation time frame and their budget requirements? How to deal with the private sectors with diversified initiatives throughout the wider landscape?

Strategies	Actions	Responsible
<ul style="list-style-type: none"> Reduce bureaucratic burden to private sector engagement in agricultural, livestock, forest and energy production systems reducing deforestation and forest degradation, and increase carbon stock 	<ul style="list-style-type: none"> To discuss and have a clear understanding of communication channels, and sign memorandum of understanding Establish platform to be coordinated by OFECCA for periodical update on progresses of deforestation reducing activities of private sectors and relate issues Develop a regional document indicating investment profiles of deforestation and forest degradation activities 	<ul style="list-style-type: none"> Oromia Forest , Environment and Climate change Authority
<ul style="list-style-type: none"> Take regulatory measures to improve private sector's access to land and finance to invest in forest development activities contributing towards reducing deforestation and forest degradation in the region 	<ul style="list-style-type: none"> Revisit existing land leasing regulations to improve private sector's access to land Promote mechanisms in which private investors can lease land from government, plant trees and provide management aspect to local community on well-defined benefit sharing agreement involving government guarantee. Engage in policy dialogue to change current national bank credit policy that does not account for investment in forest development Facilitate credit and provide government guarantee for SME engaged in forage production, beekeeping based on their business plan Improve land governance such as tenure security, and land leasing to allow long-term leasing of forest land so that wood processing companies can engage in forest products development Find grants that support community-based environmental friendly activities from various sources such as climate finance. To use climate financing potentials such as options of using carbon credit as bank collateral together with government guarantee for forest development. 	<ul style="list-style-type: none"> Oromia Forest , Environment and Climate change Authority

	<ul style="list-style-type: none"> Organize fund raising events and awareness creation workshop to promote private sectors engagement corporate social responsibilities and payment for ecosystem services 	
<ul style="list-style-type: none"> Design institutional setting to enable private sector discharge their corporate social responsibilities and environmental commitments including voluntary and mandatory payment for ecosystem services 	<ul style="list-style-type: none"> Adopt regulation on how to collect and administer payment for ecosystem services and how to run other fund raising mechanism for reducing deforestation and forest degradation Establish "Ecosystem Services Fund" Bank Account to be managed by a committee Chaired by Vice President of Oromia Regional State and having OFECCA as Secretary of the Committee. Oromia Investment Commission and relevant bureaus will be member of the committee. Ensuring commitment of regional government to collect environmental user fees, taxes, and other voluntary payments from mineral water and beverage bottling companies, and farmers to modify their practices for sustainable provision of environmental services. Design incentives-based policy instruments such as subsidies and tax break if farmers, farmer associations and private companies improve environmental services including emission reduction, and charge fees (e.g pollution charge) for hurting environmental services Ensure that the private actors have environmental commitments 	<ul style="list-style-type: none"> Oromia Forest , Environment and Climate change Authority

Strategic objective 2: Increase private sector's risk tolerance capacity while also reducing risk related to investment in the development plantation forestry and sustainable management of natural forest

Strategies	Actions	Responsible
<ul style="list-style-type: none"> To promote partnership between private investors, government and local community to share risk 	<ul style="list-style-type: none"> Promote public- private partnerships to transfer some of the risk and management responsibility from the government to the private sector while it encourages the private sector to take risks invest since government share some of the investment cost. Promote existing public-community partnerships such as participatory forest management Promote private-community partnership such as contract farming and out-grower mechanisms Provide training to stakeholders on out-grower and contract farming mechanisms between companies and individual producers (farmers) or cooperatives that can reduce deforestation and forest degradation while ensuring sustainability of supply chain 	<ul style="list-style-type: none"> Oromia Forest , Environment and Climate change Authority
<ul style="list-style-type: none"> To secure insurance schemes for investment in forest development and deforestation reducing activities 	<ul style="list-style-type: none"> Discussion with insurance companies on options to design for inclusive insurance policy to encompass forest development investment Organize training and experience sharing from insurance companies proving crop insurance 	<ul style="list-style-type: none"> Oromia Forest , Environment and Climate change Authority
<ul style="list-style-type: none"> To secure government guarantee for investment in forest development 	<ul style="list-style-type: none"> Advocate for government guarantee to finance investment in forest development and discuss with relevant government authority 	<ul style="list-style-type: none"> Oromia Forest , Environment and Climate change Authority

Strategic objective 3: Increase value of forest development and conservation of natural forests to local communities and other stakeholders

Strategies	Actions	Responsible
<ul style="list-style-type: none"> To integrate high-value agricultural and forest production activities in forest development and sustainable utilization of forest areas 	<ul style="list-style-type: none"> Support forest-smart economic activities such as production of shade loving spices and coffee, beekeeping, and sustainable forest coffee harvesting Support certification of production system reducing deforestation and forest degradation Engage private sectors including SMEs in supply of planting materials for shade-loving spices for long paper, black paper and Ethiopian cardamom and coffee Support Private companies' engagement in processing and export of shade-loving spices Support standardization and certification of commodities and products such as forest coffee, organic honey under suitable certification systems including rain forest alliance, fair-trade, UTZ etc. Support branding, access to niche market and price premium for products and services reducing deforestation and forest degradation 	<ul style="list-style-type: none"> Oromia Forest, Environment and Climate Change Authority, Oromia Coffee and Tea Authority, Oromia Bureau of Agriculture and Livestock Resources
<ul style="list-style-type: none"> Promote sustainable production of forest products including non-timber forest products 	<ul style="list-style-type: none"> forest management certification and price premium deforestation-free commodities or products Introduce allowable harvest and annual auditing for sustainability production systems of non-timber forest products such as species and forest honey 	<ul style="list-style-type: none"> Oromia Forest , Environment and Climate change Authority
<ul style="list-style-type: none"> Promote community based eco-tourism 	<ul style="list-style-type: none"> Identify tourist attraction and support community-based eco-tourism with clearly define benefit sharing mechanisms 	<ul style="list-style-type: none"> Oromia Tourism Bureau

Strategic objective 4: Mainstreaming production systems reducing deforestation and forest degradation, and increasing carbon stock in the agricultural, livestock, forest, energy sectors of the region

Strategies	Actions	Responsible
<ul style="list-style-type: none"> Identify options and create awareness about benefits of low carbon and deforestation reducing investment options among government officials and private sectors 	<ul style="list-style-type: none"> Prepare a document/investment profile that indicates a wide range of investment options in the agricultural, livestock, forest, and energy sectors that reduce deforestation and forest degradation create awareness among consumers, traders and processors about low carbon emission, deforestation reducing products/commodities in collaboration with Chamber of Commences Organize Bazar/platform to link producers of forest-smart products and services to domestic and export markets Design information system and safeguards management to scale up investment 	<ul style="list-style-type: none"> Oromia Forest, Environment and Climate Change Authority, Chamber of Commerce
<ul style="list-style-type: none"> Support private sector's engagement in the value chains of agricultural, livestock, forest, energy commodities/products identified to reduce deforestation and forest degradation, and increase carbon stock 	<p>Agriculture sector:</p> <ul style="list-style-type: none"> Promote coffee agro-forestry: Promote shade-tree planting in garden and plantation coffee farm Supporting expansion of shade-coffee to farmland Introduce appropriate shade-coffee certification mechanisms and price premium deforestation-free coffee Engage private sector in supply of inputs such as supply coffee drying mesh wire and jute bags (<i>jonnies</i>) for transportation/storage to improve shade-coffee quality. This could be done through contract-marketing arrangement. Provide pre-finance for farmers to address cash shortage for coffee farm management and harvesting. This could be also done as part of contract-marketing arrangement. 	<ul style="list-style-type: none"> Oromia Coffee and Tea Authority, Oromia Forest, Environment and Climate Change Authority

	<ul style="list-style-type: none"> • Organize workshop to create awareness among private sector to invest in coffee processing plants and coffee marketing (i.e engage suppliers) in coffee emerging areas such as in West Shoa, Gololcha in Arsi and Bale, and in East Wollega • Support SMEs to engage in coffee seedling development and distribution • Provide technical support on coffee production and facilitate coffee market development in coffee emerging areas • Promote fruit trees agroforestry: • Provide training on how to integrate fruit trees such as Mango in agricultural production • Support SMEs to engage in development and distribution fruit-tree seedlings • Support market linkage such as by organizing bazars, exhibitions and workshops that bring producers and, processors and market actors together. 	<ul style="list-style-type: none"> • Oromia Bureau of Agriculture and Livestock Resources
	<p>Livestock Sector:</p> <ul style="list-style-type: none"> • Promote poultry sub-sector • Give strong support for private companies interested invest in establishing Day One Chicks (DOC) multiplication center, chicken feed (pre-mix) plant, and vaccination services. • Support integrated forage production in agro-pastoralist areas to avoid overgrazing and seasonal livestock encroachment to natural forests • Promote beekeeping • Support supply of inputs and beehives, honey processing and market linkage • Develop guideline and provide training on beekeeping in garden, farm and forest to organic, forest/ wild forest honey production • Provide training on how to improve production and quality of honey and in the processing and packing honey 	<ul style="list-style-type: none"> • Oromia Bureau of Agriculture and Livestock Resources

	<ul style="list-style-type: none"> • Support private sector engagement in production and supply of beehives (modern and traditional), and other accessories • Support honey certification and market linkage • Promote feed and forage development • Support SMEs and individual entrepreneurs engaged in production and distribution of livestock feed and seed/seedling of livestock feeds • Support private sectors engagement in animal feed processing and supply including preparation of multi nutrient • Support establishment of area enclosure and range land management cooperatives in the lowlands 	
	<p>Forest sector:</p> <p>Bamboo production</p> <ul style="list-style-type: none"> • Promote sustainable utilization of forest bamboo and promote bamboo production on private land among smallholder farmers and investors • Support bamboo products development and establishment of bamboo processing plants • Promote out-growers' schemes between bamboo producers and processors to address market linkage problems and to ensure sustainable supply of bamboo culms of desired quality <p>Promote plantation forestry:</p> <ul style="list-style-type: none"> • Support commercial plantation for fuel wood, and round wood, and timber • Support reforestation and afforestation of adjacent degraded areas or community plantation forestry • Establish pilot "forest cluster" through voluntary consolidation of degraded area and farmers' plantation forest 	<ul style="list-style-type: none"> • Oromia Forest , Environment and Climate change Authority

Commented [u17]: Consider also results-based payments for this sector. You can refer the BSM draft document.

Commented [u18]: Forest and other related seed suppliers engagement is another task to be touched here.

	<ul style="list-style-type: none"> • Support small and micro-enterprises, farmers' organizations, individual entrepreneurs in nursery development for fast growing tree and fruit trees can be integrated with per agricultural, livestock and household energy production • Provide technical support in assessing return of investment in the forest sectors and in developing bankable project proposals • Provide technical assistance on silvicultural practices for both local communities and private companies 	
	<p>Energy sector:</p> <ul style="list-style-type: none"> • Improved cooking stove • Support private sectors engagement in development of energy-saving and clean energy technologies and on inputs for low carbon energy sector • Support production and distribution of efficient stove production • Sustainable charcoal production • Support private sector engagement in charcoal Briquettes production from coffee husk, sawdust, bamboo and other biomasses • Linking companies producing eco-friendly charcoal/briquettes with stove producers and distributors 	<ul style="list-style-type: none"> • Oromia Forest , Environment and Climate change Authority

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Annex

Annex Table 2. Wood processing industries

Commented [u19]: Source?

Investors	Country of origin	Phone number
Zhengyou Gong	China	
Pengei wood products manufacturing PLC	China	0921258457
Aplus Manufacture PLC	China	0913127818/ 0930013750
Zhaoxin Wang	China	0929526093
Fangqiu Jiang	China	0947360946
Ben Shi Wood Factory plc	China	0944278338
Yangzhou Tang	China	0966069999
Shenghlia Xu	China	0924872229
Afritrack industries PLC	Angola/USA	0119234744
Porta Manufacturing PLC	USA/Ethiopia	0911451252
Xiuning Wang	China	0929117611
Majestic Furniture Manufacturing PLC	China/Ethiopia	0911509152
Gedur Furniture Manufacturing PLC	Turkey/Ethiopia	0930098699/0935005566
Saray Furniture Manufacturing PLC	Turkey/Ethiopia	0912616200
Sini Furniture Interior Design PLC	China/Finland	0913894586
Hengtong wood processing PLC	China	0960832177
IFH Engineering plc	China	0114391971
Amwaj Industry plc	Lebanon/Ethiopia	0912506430
Mirgo Wood Material PLC	USA/Ethiopia	0911-394242
Diyala Wood Products Manufacturing PLC	China	
Diyala Wood Products Manufacturing plc	China	0912616499
Heng Sen Lumber Manufacturing PLC	China	0923985779/0911515195

Techno Wall Manufacturing PLC	Canada/Israel	0930010929
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Annex Table 3. Domestic investors licensed in forest development in Rural Oromia

Name of investors	Licensed in year
Ethio-Limat Con.plc	2000
Kurnan plc	1999
Yeti Agro-forestry	2001
Yasimn Coffee Plantation	2001
Abdaa Aloo	2001
H/Kamaal H/Hasan	2001
Nebiyu Aguma	1999
Gorfu Bekele	1999
Danye G/Michael	1993
Gebirel G/Micheal	1998
Mudin Nuru	1994
Sisay Yohanis	2001
Gemeda Senbeto	1997
Abara Jima	1999
Kadir Ibrahim	1999
Tashoma Geneti	1998

Source: Oromia investment commission, 2010.

Annex Table 4. Districts endowed with bamboo resources in Oromia.

Zone	Woreda / District
Bale	Gololcha Bale, Gore, Guradambale, Herena Buluk, Lege Hida, Mena, Rayitu, Seweyna and Sinana.
Arsi	Amigna, Aseko, Bele Gesgar, Chole, Degaluna Tijo, Diksis, Dodota, Gololcha Arsi, Guna, Hitosa, Inkolo Wabe, Jeju, Limu Bilbilo, Lude Hitosa, Merti, Munissa, Seru, Shirka, Sire, Sude, Tena, Tiyo and Ziway Dugda
South West Showa	Wolisso and Wonchi
Guji	Adola, Afele Kola, Ana Sora and Bore

Source: Durai, et al 2018.

Annex Table 5. Private companies licensed to engage in integrated spices production and export

Commented [u20]: Source?

Name of Investor	Country of Origin
Imco Agro Industries PLC	India/Singapore
Osama Abdullah	Saudi Arabia
Abana Coffee Plc	USA
Iyad M.S. Aljurf	Palestine
Amro Abdo Mohamed Abdo	Sudan
Gautam Jugalkishore Jain	India
Salaheldeen I H Almethen	Kuwait
Jayanti Mamokacha Spices plc	Switzerland/Ethiopia
Madge-Maureen Hylton	Jamaica
Salaheldeen I H Almethen	Kuwait
Jayanti Mamokacha Spices plc	Switzerland/Ethiopia
UHA Integrated Industries PLC	Britain/Canada/Pakistan
Swatham Agro Farms plc	India/Ethiopia
Bellatte Ag Industries LLC	USA/Ethiopia
Three H Industries PLC	India
Abdulkader Mohamed Ahmed	Yemen
Amro Abdo Mohamed Abdo	Sudan
Imco Agro Industries PLC	India/Singapore
Osama Abdullah	Saudi Arabia
Gibagri Farm PLC	Germany
Gesha Village Coffee Estate PLC	USA
Bebeka Coffee Estate Share Company	Saudi Arabia/Ethiopia

Annex Table 6. List of some of water bottling companies

Commented [u21]: Source?

- Coca Cola Chare Company
- Pepsi Share Company
- Galam Spirng Water PLC

- ESGN General Trading PLC
- Violet General Busin.PLC
- SBG trading PLC
- Baalee Bottled Water PLC
- Al -Tewab Trading PLC
- Sons industrial PLC
- MDS Natural Mineral Water Plc
- Vela Water and Beverage PLC
- Jiazhen Song
- East Africa Bottling Share Company
- Kistrel Industries PLC
- MGF Industries Plc
- Alkbous Agro Industry plc
- AL-Sulaiteen Group of companies Ethiopia plc
- Al Fors Industries PLC
- Origin Investments PLC
- Yes Brands Food and Beverages PLC
- Artesian Bottling Share Company
- ROI of Grace Farms PLC
- Tramp Business PLC
- Nehe Beverage Complex PLC
- Nestle Waters Ethiopia Share company

Annex Table 7. List of alcoholic beverage

- Heineken
- St. Georges
- United Beverages Share Company
- Bedele Brewor share Company
- Mapple Distilleries plc
- C.A.P.T.S Beverages Share Company