



### Background

In 2009, the Royal Netherlands Embassy in Ethiopia commissioned a study on oilseeds business opportunities. The study indicated that sunflower and soybean represent the greatest opportunity for domestic market supply and import substitution. Imported soybean and sunflower oil have a considerable market share on the local market. Though both crops can be grown in many parts of the country, growing conditions for soybean in the peripheral areas of Ethiopia, to the west and east, are favourable, and could not only satisfy the edible oil but also the nutritious food and animal feed market. The follow up study in 2010 investigated growing conditions for soy and sunflower, and made a cost-benefit analysis for production of both plants. During the study, conclusions were drawn that, soy and sunflower production could be beneficial for farmers in case higher yields could be achieved and market linkages could be developed to ensure stable market demand.

Based on the findings of the two studies, the objectives for 2011 were to develop three soybean and sunflower edible oil chains, compared the experiences gained and lessons learnt in the development of the three chains and offer recommendations for EIAR MoARD and Mol on how to provide hands on assistance to the private sector in developing commercial value chains.

The interest in sunflower processing was not significant during the project, however soy production and processing seemed to be high on the agenda both on the farmers' and processors' sides. Because of this clear sense of urgency, the current policy brief is discussing the opportunities, lessons learnt in the soy subsector, and offering recommendations for the challenges emerged along the way.

### Reasons for promoting the development of soybean subsector in Ethiopia

#### Import substitution

Ethiopia imports large quantities of soybean and palm oil. The value of imported edible oil is 40 to 50% of the export earnings of oilseeds. Oilseed

crushers produce around 20% of the domestic consumption of edible oil: 80% is imported mainly as palm oil and soybean oil. Idle capacity for oilseed crushing and refining enables a larger production quantity. Increased domestic edible oil production can substitute these imports and improve the trade balance. In addition to edible oil, a significant amount of soy blended food is imported to Ethiopia; implying a further potential for import substitution.

#### Satisfy growing domestic demand

Ethiopia with almost 80 million inhabitants is a large market for edible oil. The combination of a growing GDP with an annually population growth of 2.6% makes it even more relevant that the availability of good quality oil, such as soybean and sunflower oil, is improved. There is also a large scarcity in high protein animal feed for the booming dairy, export beef and poultry sectors. Similarly, there is strong demand from the nutritious food industries; factories that supply to the World Food Program alone have a total annual demand of 60,000 tons to cater for soy blends for the food insecure and malnutrition affected areas.

#### Increase capacity utilization in processing industry

The most remarkable fact about the Ethiopian oil milling sector is its low level of the utilization of the capacity. Average capacity utilization is estimated to be less than 40%. This offers a huge opportunity as a higher utilization level will reduce the costs, particularly the fixed costs. Though to a lesser extent, under capacity utilization is a common problem in the nutritious food processors and animal feed processing.

#### Contribute to food security and commercialization of small holders

There are several reasons to promote soybean on small scale farmers field of developing countries such as Ethiopia.

Soybean is a multipurpose crop, which can be used for a variety of purposes including preparation of different kinds of soybean foods, animal feed, soy milk, raw material for the processing industry, and its counter effects

depletion of plant nutrients in the soil resulting from continuous mono-cropping of cereals, especially maize and sorghum, thereby contributing to increasing soy fertility. There is also a potential to intercrop soybean with long stem crops such as maize and sugarcane.

Food insecurity and malnutrition are among the urgent challenges that developing countries face these days. The major staple food crop of most developing Sub-Saharan African Countries, maize, contains low protein (5.2-13.7 %). The challenges are especially acute in Ethiopia and relatively more serious in the rural than urban areas, mainly because of a low level of understanding of a balanced diet and lack of capacity to purchase animal source proteins. Producing and consuming more soy would improve the situation as soy provides a nutritious combination of both calorie and protein intake: it is the most nutritionally rich crop, as its dry seed contains the highest protein and oil content among grain legumes (40 to 42% protein) with a good balance of the essential amino acids and has 18-20% oil on a dry seed weight basis. It is cheap and rich source of protein for poor farmers, who have less access to animal source protein, because of their low purchasing capacity.

There is favorable climatic and soil conditions for production in South and Western Ethiopia, therefore, soybean can be easily produced both for commercial purposes as well as for subsistence farming.

### **Drive economic development by linking large scale commercial farms to markets**

More and more domestic and foreign investors are moving into large scale farming in Ethiopia. The size of these large scale farms under production range anywhere from a few hundreds to thousands of hectares. Some farmers are producing only soy, others have a number of crops on their lands. As these farmers most of the time are not linked to any specific product chains, the crop they produce might change from year to year based on the prices prevailing in the markets for the different produce. This makes

specialization, internalization of production technologies, collection of market information, linking to buyers much harder, as year by year the farms have to deal with another crop. Linking large farms to soy processors would create the opportunity for them to engage in more market and buyer specific production as far as volume and quality are concerned, and contribute to satisfying increasing demand for soy.

## **Opportunities**

### **Different strategic approaches according to scale of production**

The various soy producing areas in Ethiopia are at different phases of development regarding commercial orientation for soy production, therefore they require different interventions. The table below reflects the differences as well as the strategic options that could be followed building on the identified differences. There are two main strategic options:

1. Link commercially oriented small and large scale farmers to value chains;
2. Promote soy production and processing among small holders, engaged in subsistence farming, for food security purposes.

**Table 1: Strategic opportunities for small (S) and large (L) scale farmers in the different soy producing areas based on their commercial orientation.**

Soy growing area	Commercial orientation		Objective	Strategic approach
	Small scale	Large scale		
<b>Jimma</b>	Weak		S: Food security	S: Promote soy milk, and soy products at household level, soil fertility, small scale nutrition value chain; milk processing factory in Jimma
<b>Bedele</b>	Weak	strong	S: Food security; value chain development via Bedele union  L: Value chain directly with processors	S: Comparative risk analysis for sesame and soy. Grassroots level promotion on soybean production and household use.  L: link to processors
<b>Chawaaka</b>	Very strong		Value chain via Chawaakka union	Link union to processors
<b>Assossa</b>	Very strong	strong	S: Value chain via Assossa Union (processing facility) L: Value chain	S: Link Assossa Union to processors L: Link to processors
<b>Pawee</b>	strong	Very strong	S: utilize existing warehouse, organize farmers  L: Value chain	S: Set-up warehouse system after feasibility analysis. Invite processors to collect from warehouse L: link to processors
<b>(others: Harar, Shashamene and Arsi)</b>				Study potential for soy production

### Chain development

In the “Chain Development for Edible oil project supported by the Dutch Royal Embassy, the focus was on chain development involving small scale farmers organized in cooperatives, who are already commercially oriented with experience in soy production, and large scale farmers active in soy production. Four types of chains emerged from the efforts to link producers to processors:

1. edible oil chain;
2. animal feed;
3. nutritious food;
4. soy milk and other soy products.

### Edible oil

Most edible oil processing factories faced with critical shortage and increased price of oilseeds in 2011. Price of popular oilseeds: nough increased from 890 to 1505 Birr/Quintal between January and August while prices of linseed and rapeseed rose from 900 and 734 in January to 1300 and 1460 respectively in August. During the same period price of soybean increased from 400 Birr/Quintal to 2500 Birr/Quintal. Price ceiling on imported palm oil in January 2011 created market instability. Following the price ceiling importers and distributors shifted their product assortment from edible oil to other products; resulting critical supply shortage.

Government attempts to fill the void by importing and distributing by itself didn't work and price ceiling on all commodities but palm oil, sugar and wheat flour was taken off. Since then there have been indications that the market is moving towards stability.

#### *Response to the Soy VCD Project*

Not all edible oil factories possess the technology to crush soy. Those who have the technology; Adama Taim, Addis Mojo and Health Care showed strong interest to take part in the soy and sunflower value chains development. These companies contacted the value chain team to link them with farmers' organizations and producers for an immediate supply. However; at that time there was no sufficient volume and quality of product to cater for their demand. Even producers who had some product declined to sell speculating higher price. The idea of signing contract for advance purchase for next production didn't materialize because of processors perception of contracts as legally binding and restrictive i.e. they didn't want to commit on products with unknown quality, quantity and price.

#### *Critical Issues*

It is important to critically evaluate whether it is a good idea to promote soy for edible oil industry. As compared to other oilseeds such as nough, cotton, sunflower and linseed; soy as edible oilseed is less popular both from technological and market perspectives. Most of the existing processors require additional investment on the existing processing line to incorporate soy oil extraction. There is strong public perception that nough oil is healthy, tasty and it is integrated into the household cooking system. Most of the existing large scale edible oil processors such as Addis Mojo, Mulat and Nazreth are using cotton seed as a principal input. Because of increasing demand for cotton by the growing textile industry, more and more investment is going to cotton farming and this may adversely affect the growth of soy as edible oilseed.

On the other hand; these should be seen from the perspective that nough and linseed are increasingly becoming expensive because of strong export demand. Can soy be a substitute for these products? The emergence of companies such as Akasis (French-German Joint Venture) who plans to produce 90, 000 liter of soy edible oil per day for domestic and international market suggest there is indeed a potential to nurture soy for edible oil.

As it stands the edible oil chain has limited demand as compared to the nutritious food and animal feed chains. Will there be a possibility for integrated technology like that of Health Care that extracts edible oil but at the same time process other food items from the by product?

#### **Recommendation 1**

Re-focus scope to those edible oil factories that crush soy and explore emerging ones such as Akasis. Involve experts on soy crushing technology to offer technological support to factories for upgrading.

#### **Animal feed**

There is a large scarcity in high protein animal feed in Ethiopia for the booming dairy, export beef and poultry sectors. The animal feed industry uses maize/soy seed and oil cakes (nough, linseed, cotton and soy) as principal raw material. The oilcakes as by-product of the oil crushing is valuable feed for livestock, e.g. dairy cows. This has two economic benefits: the value of oilseed rises and the production level of dairy cows increases at the same time. In 2011, there was more than 100% increase in price for animal feed between January and August. Critical supply shortage of oilseed/cake added to extended drought in many parts of the country are the main reasons for the price increase. At some point, it was very difficult to find input (seed as well as cake) even at a higher price. Some poultry farmers and animal feed distributors have gone to the extent of divesting their businesses. Since July, price has slightly gone down but it remained

high and industry was stuck with critical shortage of raw material at the beginning of September, 2011.

#### *Response to the Soy VCD Project*

Feed processing companies such as Alema Koudijts and Akaki Animal Feed Processors are keen to take part in the Soy VCD Project. For these companies, price and quantity are very important to create direct linkage with producers. Currently, they procure from edible oil processors for the cake and buy the seed from traders. They believe it's a good idea to directly link to producers for soy seed, especially for poultry feed, and strengthen the existing relationship with the processors for the oil cake. As in the case of the edible oil processors the factories were willing to procure supply from producers; however, there was no product.

#### *Critical Issue*

The benefit of soy as animal feed ingredient is strongly appreciated by the factories. However; increasing price of soy and soy cake could force them to shift to less nutritious but cheaper substitutes such as maize. However the substitutes do not have the protein content as that of soy, which makes substitution quite challenging. Given that the cake is the main raw material for the animal feed industry, the potential for soy consumptions depends on how much soy is used by the edible oil and nutritious food factories that sell the cake as a by-product.

#### **Recommendation 2**

Animal feed factories must be part of the follow up activities in the project. The animal feed industry can be a direct consumer of soy for high protein feeds (poultry) but the principal chain should be with the cake suppliers.

#### **Nutritious food**

The drought and famine in the horn of Africa has created a huge market for the local nutritious food processors; World Food Program is buying a

big volume of soy for the food-insecure people in Somalia and Darfur. However; increasing price of soy has remained a challenge for the factories; soy represents one fourth of the ingredients of their products. Because of the shortage, the factories were forced to start importing soy.

#### *Response to the Soy VCD Project*

As in the other chains, there was strong interest to participate in the soy VCD. However, there was limited move towards practicalities such as linking producers and farmers. A number of reasons are mentioned for the slow response; quality, quantity, price competitiveness and sustainability are the main ones. For some, such as FAFFA, purchasing decisions are based on tendering process and that makes it difficult to enter into advance contract. Now, with the rise in soy price this may change.

There is clear interest from World Food Program to replace soy they get as kin-kind support from the United State with soy coming from local producers. Currently, World Food Program is working with 8 processors, and in the state of rethinking the tendering requirements, including involvement of small holders in the supply chains of their suppliers.

#### **Recommendation 3**

The nutritious food chain seems the principal target for the soy VCD, as the biggest demand comes from this group. Therefore, it is important that to involve as many nutritious food processors as possible in the value chain development.

#### **Soy milk and other household products**

There is a need to develop the market itself. The market for soy milk at commercial level hardly exists. So far soy milk production is limited to a small scale level including the Mothers Self Help Group Factory in Jimma. Indian company (Ruchi Soya) has taken license to produce soy milk at large scale but not yet functioning. Despite soy milk is less popular as of now, there is a clear

potential given the fact that more 45% of population, around 40 million people, are orthodox Christians and the majority are fasting (abstaining from cow milk) for more than 260 days in a year. If we assume only 50% of the people (20 million) are fasting and 5 bottle of soy milk per year per person there is a potential to reach a volume of 100 million bottles per year. In addition, soy chapatti and sauce are a big potential food stuffs that could be promoted at household level especially in the rural areas.

#### *Response to the Soy VCD*

The Jimma Mothers SHG is already connected to local cooperatives for its soy supply. However; the factory is operating at a very slow momentum because of difficulties to penetrate the market. Liyunet is a food recipe processor operating at a very small scale. Though their demand is very small they would like to process more soy if there is community awareness program to promote soy food at household level. In general, there was limited effort by the soy VCD team put towards this group. However this area should be given a special focus in projects with food security mandate, as it has strong implication for household food security and malnutrition.

#### **Recommendation 4**

As long as market is not developed with clear demand to pull soy through the chain, there is no need to connect more cooperatives to the aforementioned factories.

#### **Challenges**

##### **Production constraints**

Although soybean breeding and production have been going on in Ethiopia since the 1950's, it was not easy to achieve wider dissemination and production of the crop. The main limitations were lack of know-how of the local farmers on the utilization aspect of the crop, unavailability of attractive market for the produce, and lack of systematic approach in popularizing the crop, which emphasized training farmers on the production of soybean, its utilization, and market potential. Consequently, the land allotted for growing soybean in the country was limited for several years.

**Table 2. Total area coverage, production, and productivity of soybean in the main cropping season on small-scale farmer holdings in Ethiopia for the period 1999-2006**

Production year	No. of holders	Area of coverage (ha)	Total production in q	Productivity Kg/ha
1999-2001		NA	NA	NA
2002		1769.47	16205.35	920
2003		1027	4547	446
2005		2606	8335	320
2006	29,923	3327	38119	1146
2007		7807	84006.39	1076
2008		6236	78989	1267
2010		11261.12	158244.12	1405

Source: Central Statistical Authority (CSA), statistical bulletins for the period 2000-2007

The possible reasons for such slow increase in soybean production are:

- The soybean scaling-up effort has not been consistent; it gets due emphasis at one moment and freezes another time. In the Jimma area, women received training on what kind of dishes can be made of soy and how to prepare the dishes. By the time, considerable women have been reached with the awareness raising campaign, farmers stopped producing soy due to lack of market demand. The situation was similar with processors. Some of them promised farmers market outlet for their soy, but failed to show up when harvest time came around;
- Lack of strong linkages between the farmers, processors and exporters;
- Low yields: in spite of the importance of the crop and efforts made to enhance its production, the productivity of soybean on farmer's field has been very low i.e., 920-1146kg/ha (Table 2) relative to its potential productivity of 2000-3500kg/ha. There is a big difference in yield among the different geographic areas. In the Jimma area, productivity is on the lower side, but in Pawee there are farmers who are producing above 3 t/ha. The high yield is due, on one hand, to the high yielding varieties with longer maturity period, appropriate for the high-land areas, on the other hand, to the level of commercialization of farmers with know-how regarding production technologies;

#### **Box 1**

Strong efforts are needed to:

1. develop improved varieties of soy:
  - high yielding;
  - rust resistant;
  - high oil content;
  - high protein content.
2. provide access to seeds for farmers so that they can meet the demand of

- Poor crop management practices: lack of use of proper weed management techniques, optimum plant population, and appropriate planting time;
- Poor soil fertility management; such as lack of application of the right type and amount of fertilizers;
- Lack of access to improved varieties which are resistant to rust and tolerate the adverse environmental conditions.

#### **Box 2**

Currently, there are 16 certified soy seed varieties in Ethiopia, but farmers generally do not know about the existing varieties and their characteristics. Those who know about the existence of the varieties, generally have no access to the needed varieties. There is only 1 state seed company, but that alone cannot address all demands regarding the different crops. There are many private seed companies, who are interested in highly profitable crops such as maize, but not soy. It is for these reasons that soybean seed is currently imported by large scale farmers. One of the sunflower processing companies is setting up its own sowing seed supply, and also it is also ready to supply farmers seeds in an outgrowing scheme. By setting up similar schemes in other parts of the country, demand of farmers for soy seed could be satisfied. Even the Even EIAR Pawee entered into seed multiplication to ensure the small farmers have access to soy seed in the Pawee area.

### Recommendation 5

#### *Increase productivity*

Develop efficient and effective input marketing system to ensure access to inoculum seeds, fertilizers and credit facilities. Offer recommendation packages on production input and crop management are needed for each soy variety. Improved variety on its own gives 20-30 % yield increase, doubling of yield is possible with use of complete recommendation package.

### Recommendation 6

Improve seed production and distribution systems by supporting the development of market oriented seed producing business models in the informal seed sector, such as outgrower schemes, small scale seed enterprises, seed producing cooperatives, etc.

#### **Box 3**

As of now, the variety release procedure of the country doesn't require seed size, nutritional quality as a requirement for variety release. Therefore, unless for some other reason research is conducted, the varieties released in the country may not have the seed size and nutritional quality information. If fragmented information is available, it is difficult to get a comprehensive seed and nutritional quality information for varieties released in the country.

While there are many production constraints, it must also be emphasized that agricultural research in Ethiopia is on adequate level and impact oriented.

#### **Market failures**

The soy subsector is facing numerous challenges:

- There are many actors in the chain. Producers (farmers) sell to a local collector, this collector in general sells to a town trader who will sell his produce to a trader in Addis;
- While middlemen fulfil important roles e.g. collecting and transporting soy from distant places to the Addis area where most bigger processors are, they do have a lot of power in setting prices by entering into speculations. After collection, often they hold back the soy in warehouses expecting higher price if there is no produce on the market;
- Due to the length of the chain, there can be a huge difference between farm gate price and the price for which processors can find soy in the market. Processors recalled price of 2200 birr / 100kg of soy, while cooperatives insisted that the highest price they could get for their produce was 1400 birr / 100kg;
- The biggest problem the soy subsector is facing is the enormous transaction costs incurred along the chain:
  - As there are many sellers and many buyers in the soy chain, finding information on who is selling what quantity and quality at what price takes a lot of investment;
  - Negotiating and writing contractual agreements is a challenging process as no standards are set yet (price, purity, quantity, delivery time);
  - Meeting contractual requirements, honouring contracts, is not in the culture in Ethiopia. Enforcing contracts is difficult. In addition, because of legal protection of unions within the framework of a contract, processors are not so eager to enter into contractual arrangements with unions;
- As production is volatile, prices are also volatile depending on the demand and supply, which contributes to the frustration of both buyers and sellers;



- Lack of quality standards hinders trader in the sector:
  - Grading for soy has not yet been established;
  - There is poor alignment and implementation of different rules regarding standards for edible oil. Currently, there are 3 categories for edible oil: processor with fineries (refined edible oil). Medium for semi refined oil, and smaller ones for crude oils (millers). The Ethiopian Edible Oil Standard allows for refined and semi refined oil (nough, sunflower and groundnuts). However, a significant part of the domestic market is covered by crude oil because of weak legal enforcement;
  - Standards for animal feed have not yet established;
- Lack of market studies and available market information.

Interestingly enough, despite the obvious disadvantage of the middlemen, processors are not willing to engage in backward integration, such as collecting and transporting soy to their factories as much investment would be needed to collect soy on village level and transport product to the factories. Processors lack of experiences, know-how and infrastructure to organize logistics: trucks, machines, packaging, loading and unloading for factories.

### **Recommendation 7**

Develop a business model where a few traders will organize direct logistics from village to factory cutting out the many middlemen in between. This way, factories would also have direct contact with producers, trust could be developed, long-term relationships could be built where engaging in future contracts would be attainable.

### **Recommendation 8**

Set up sector platform to mobilize actors for collective action in the soy sector:

1. Develop code of conduct for the sector to set ethical guidelines and contract procedures, and build trust by ensuring contract discipline;
2. Establish quality standards for the different products: soy, edible oil, animal feed to facilitate trade;
3. Develop and institutionalize marketing information system to reduce transaction costs and to increase awareness on monthly and year-to-year price fluctuations.

### **Challenges in the enabling environment**

There are several challenges the investors face working in the soy / edible oil subsectors:

- The Ethiopian Development Bank has not set oilseeds as a priority area for investment, which makes credit for investors in the oilseed sector more expensive relative to credits for other sectors;
- Imported palm oil is free from import tax and VAT, which results in a clear disadvantage for domestically produced edible oil;
- In previous years, food aid seriously distorted the domestic edible oil market by cheap palm oil;
- Soy is currently not on the list of commodities to be traded on the Ethiopian Commodity Exchange (ECX). However, it is on the list to be traded on the ECX from 2014. The ECX can decrease the transaction costs and risks in the value chain at the same time increase the transparency and provide incentives for quality production due to the grading system. However, there are concerns that the ECX might jeopardize specialty trade.

In addition, ECX is that it does not provide flexibility for development of dedicated, integrated chains as it breaks the chain in two, before and after ECX, which implies no contract farming / outgrower arrangements can be organized (except for cooperative/union).

### **Recommendation 9**

Ensure a level of playing field for edible oil production (import vs. domestic production) by abolishing import tax and VAT free status of palm oil.

### **Challenges in the process of developing the chains**

Following the initial workshop, where farmers and processor had the chance to meet and discuss burning issues, some contacts have been made, such as follow up calls, and some actors even entered into negotiations, but no deal has been agreed on among producers and processors of soy for the following reasons:

- Price of soy increased: there has been a consistent increase in price until September 2011. Some producers were not willing to sell as they were anticipating even higher price, and wanted to wait for a better deal:
  - There was either no product available or the quantity / quality of product was not sufficient, which caused disappointment on the processors side;
- Buyers and sellers could not agree on the price;
- Perception of contract also cause a bottleneck:
  - Processors do not want to enter a future contract when they do not know much product they are buying;

- While unions were positive about entering into contract, processors were less eager to enter into a contractual arrangement. Unions, especially farmers are very much protected by law. If they fail to deliver on a contract, they cannot be touched.

### **Recommendation 10**

Enhance knowledge and skill of actors in the sector by ensuring knowledge transfer in the areas of contract farming, edible oil standards, improving processing technology, production costs and productivity, credit facilities, pre-and post-harvest technology, etc.

### **Key messages**

According to the preliminary studies and to different actors active in the sector, there could be sufficient margin for each stakeholder in the different chains using soy as input. Opportunities are abundant.

By promoting soy, the agricultural system could be diversified by adding pulses to grains.

There are two strategic options for enhancing soy production: promoting soy on subsistence level farming to ensure food security, or link commercially oriented small holders and large scale farmers to value chains.

Entrepreneurs must be in the lead for developing the sector from informal soy seed production through soy production and trade to processing.

On national level, favourable investment climate is needed by providing access to inputs and by abolishing the import tax and VAT free status of imported of palm oil.

#### *Reference:*

Oil Seeds Business Opportunities Ethiopia, 2009; J.H.M. Wijnands, J. Biersteker, E.N. van Loo