

*Full Length Research Paper*

# Value Chain Analysis of Sesame in Ethiopia

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Sesame seed is Ethiopia's main exported product after coffee. From 2000 to 2016, the total quantity exported annually increased from 31 thousand tones to about 317 thousand tones, an increase of more than tenfold. From different possible sesame chain the most common trend is farmers sell their produce to the spot market where all the sesame is bulked. In almost each Kebele a primary market has been allocated where legal trade may take place. From the primary market the sesame goes to the Ethiopian Commodity Exchange (ECX), where the sesame is graded into different quality groups (1-5). From the ECX the graded sesame goes to the export traders, who sell it to the international buyers. Sesame value chain in Ethiopia has several constraints which hinder effective value chain of the commodity. Some of the constraints reviewed in this article was lack of improved cultivars, poor seed supply systems; poor agricultural production techniques and post-harvest crop management, weak farmers organization to engage in the value chain, poor market information systems, limited financial material and skills for oilseed processing, limited use of traditional agricultural inputs and little research support to increase yields, and erratic rainfalls.

**Keywords:** ECX, Ethiopia Sesame Value chain

## INTRODUCTION

Agriculture is the core component and driver for Ethiopia's growth and long-term food security. The contributions are high: 15 to 17 percent of the Government of Ethiopia's expenditures are committed to the sector. Agriculture directly employs 80 percent of the total population, 43 percent of gross domestic product (GDP), and over 70 percent of export value (UNDP, 2013). Despite the considerable progress made in the sector, ensuring commercialized production remains one of the major challenges facing millions of people. There are also challenges which are associated with food security in some part of the country.

Within Ethiopian agriculture, oilseeds are the most important export crop in terms of volume and almost on par with coffee in terms of export value. Pulses have always been important for the domestic

market and are increasingly important for export incomes as well. Oilseeds play a significant role on the lives of the Ethiopian agrarian community and stakeholders in the national economy in Ethiopia. Increasingly, sesame seed is taking a significant role in the oilseeds sector over the past years and has become the most relevant commodity. Ethiopia's potential as major oilseeds exporter is a result of suitable climate for annual and perennial oil plants, availability of cheap labor force and huge global demand for quality food oil. Through these advantages, Ethiopia could expand its foreign market presence through increased production levels, which will lead to at least doubling of its current annual exports. (NABC, 2015)

Sesame (*Sesamum indicum* L.), otherwise known as sesamum or benni seed, member of the family

Pedaliaceae, is one of the most ancient oilseeds crop known to mankind. Sesame seeds were appreciated for their ability to add nutty flavor or garnish foods, they were primarily used for oil and wine. After the extraction of oil, the cake is mostly used for livestock feed or often as manure. Its color varies from cream-white to charcoal-black but it is mainly white or black. Other colors of some sesame seed varieties include, yellow, red or brown (T.Y Tunde et. Al, 2012). It has an important role in human nutrition. Most of the sesame seeds are used for oil extraction and the rest are used for edible purpose. Sesame is grown primarily for its oil-rich seeds.

Sesame is grown in many parts of the world on over 5 million acres (20,000 km<sup>2</sup>). The largest producer of the crop in 2007 was India, China, Myanmar, Sudan, Ethiopia, Uganda and Nigeria. Seventy percent of the world's sesame crop is grown in Asia, with Africa growing 26% (Hansen, 2011)

Sesame is the third most important oil crop in Ethiopia and occurs both as cultivated and wild. Sesame in Ethiopia shows a high phenotypic diversity for number of days to maturity, plant height, pod shape and size, and for seed size and color (FAO, 1996). Sesame production is increasing in Ethiopia especially in southwest and northwestern parts of the country which is driven by high market value and suitability of environmental conditions (Wijnands *et al.*, 2007). However, lack of wider adapting cultivars, shattering of capsules at maturity, non-synchronous maturity, poor stand establishment, lack of fertilizer responses, profuse branching, and low harvest index are the major constraints in sesame production worldwide (Ashri, 1994). Sesame being the most important export oil crop in Ethiopia, however, there is no adequate information available in Ethiopia (Zerihun J, 2012).

It is by far the most important both in terms of volume value and export earnings. The oilseeds produced are supplied both for the local and international market, in which especially sesame has become a major foreign currency earner for Ethiopia with exports all over the world, but especially China, India and the European Union. Sesame accounts for over 90% of the values of oilseeds exports from Ethiopia to the world. Ethiopia is the second largest sesame exporter in the world after India and sesame is second only to coffee in foreign exchange earnings. (NABC, 2015).

A value chain describes the full range of activities required to bring a product or service through the different phases of production, including physical transformation, the input of various producer services, and response to consumer demand. As such, value

chains include the vertically linked interdependent processes that generate value for the consumer (J.E. Austin, 2012).

## Objectives of the Article

### The General Objective of the Article

The general objective of the article is to review the overall value chain analysis of sesame and to review the challenges and opportunities in value chain of sesame in Ethiopia.

### Specific Objective of the Article

To review important marketing chains,  
To review major constraints of sesame marketing.  
To review marketing and trade status of sesame in Ethiopia.

## VALUE CHAIN

The value chain describes the full range of activities that firms and workers do to bring a product from its conception to its end use and beyond. This includes activities such as design, production, marketing, distribution and support to the final consumer. The activities that comprise a value chain can be contained within a single firm or divided among different firms. Value chain activities can produce goods or services, and can be contained within a single geographical location or spread over wider areas. The GVC Initiative is particularly interested in understanding value chains that are divided among multiple firms and spread across wide swaths of geographic space, hence the term "global value chain."

### Major Concepts Guiding Agricultural Value Chain Analysis

There are four major key concepts guiding agricultural value chain analysis (Kaplinsky and Morris, 2000, Anandayasekeram and Berhanu, 2009). These are effective demand, production, value chain governance and value chain upgrading.

#### Effective demand

Agricultural value chain analysis views effective demand as the force that pulls goods and services

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through the vertical system. Hence, value chain analysis need to understand the dynamics of how demand is changing at both domestic and international markets, and the implications for value chain organization and performance. Value chain analysis also needs to examine barriers to the transmission of information in the changing nature of demand and incentives back to producers at various levels of the value chain (MSPA, 2010).

### Production

In agricultural value chain analysis, a stage of production can be referred to as any operating stage capable of producing a profitable product serving as an input to the next stage in the chain or for final consumption or use. Typical value chain linkages include input supply, production, assembly, transport, storage, processing, wholesaling, retailing, and utilization, with exportation included as a major stage for products destined for international markets. A stage of production in a value chain performs a function that makes significant contribution to the effective operation of the value chain and in the process adds value (Anandajayasekera and Berhanu, 2009).

Producing the required amount effectively is a necessary condition for responsible and sustainable relationships among chain actors. Thus, one of the aims of agricultural value chain analysis is to increase the quantity of agricultural production. Understanding the mechanisms of the agricultural production greatly help to design appropriate policy that bring more gain to farmers and the whole society at large. For a long time, sector analyses have been used to measure the different economic aspects of production. However, sector analyses have not been without weaknesses. In particular, sector analysis tends to be static and suffers from the weakness of its own bounded parameters. Such analysis struggles to deal with dynamic linkages between productive activities that go beyond that particular sector (Kaplinsky and Morris, 2000). By going beyond the traditional narrow focus on production, value chain analysis examine interactions and synergies among actors. Thus, it overcomes several important limitations of traditional sector assessments.

### Value chain governance

Governance refers to the role of coordination and associated roles of identifying dynamic profitable opportunities and distributing roles to key players

(Kaplinsky and Morris, 2000). Governance ensures that interactions between actors while value chain reflect organization, rather than randomness. The governance of value chains emanate from the requirement to set product, process, and logistic standards, which then influence upstream or downstream chain actors and results in activities, roles and functions (Abraham, 2013). It is important to note that governance and coordination sometimes appear as synonymous or interchangeable terms. For instance, the research conducted by Williamson (1979; 1985) used the term governance to define the set of institutional arrangements in which a transaction is organized.

On the other hand, a work on global commodity chains and the role of governance showed the vertical organization of activities (Gereffi et al. 2005). The application of contract or private, and ordering or governance leads naturally into the re-conceptualization of the firm not as a production function (in the science of choice tradition) but as a governance structure (Williamson, 2002). According to Raikes et al. (2000), trust-based coordination is central for goods and services, whose characteristics change frequently, making a standardized quality determination for the purposes of industrial coordination difficult. This applies to the manufacturing industry as well as agri-food chains. It is possible to identify in one industry several coordination forms used by different firms where the choices rely on the trust existent between the firms. Value chains can be classified into two based on the governance structures: buyer-driven value chains, and producer-driven value chains (Kaplinsky and Morris, 2000).

Buyer driven chains are usually labor intensive industries, and so more important in international development and agriculture. In such industries, buyers undertake the lead coordination activities and influence product specifications. In producer-driven value chains which are more capital intensive, key producers in the chain, usually controlling key technologies, influence product specifications and play the lead role in coordinating the various links. Some chains may involve both producer and buyer driven governance.

Yet in further work (Humphrey and Schmitz, 2002; Gibbon and Ponte, 2005) it is argued that governance, in the sense of a clear dominance structure, is not necessary a constitutive element of value chains. Some value chains may exhibit no governance at all, or very thin governance. In most value chains, there may be multiple points of governance, involved in setting rules, monitoring performance and/or assisting producers. Chain governance should also be viewed in terms of 'richness' and 'reach', i.e., in terms of its depth

and occurrence (Evans and Wurster, 2000). Richness or depth of value chain governance refers to the extent to which governance affects the core activities of individual actors in the chain. Reach or pervasiveness refers to how widely the governance is applied and whether or not competing bases of power exists. In the real world, value chains may be subject to multiplicity of governance structure, often laying down conflicting rules to the poor producers (MSPA, 2010).

### Value chain upgrading

The concept of upgrading refers to several kinds of shifts that firms or groups of firms might undertake to improve their competitive position in global value chains. According to Humphrey and Schmitz (2002), there are four types of value chain upgrading. These are:

**Product upgrading:** Firms can upgrade by moving into more sophisticated product lines which can be defined in terms of increased unit values

**Process upgrading:** Firms can upgrade processes by transforming inputs into outputs more efficiently through superior technology or reorganizing the production systems. Production would be a form of process upgrading.

**Intra-chain upgrading:** This involves several types of upgrading opportunities that exist within a particular value chain. Firms can acquire new functions in the chain, such as moving from production to design or marketing this type of upgrading sometimes called as functional upgrading. Firms can also move backward or forward to different stages in a value chain, such as moving from the production of finished goods to intermediates or raw materials (upgrading via vertical integration). In addition, firms can diversify their buyer-supplier linkages within a value chain, for instance a clothing maker adding different kinds of lead firms such as an upscale retailer or brand-name client to expand or raise the price points of its orders (network upgrading).

**Inter-chain upgrading:** This occurs when firms apply the competence acquired in a particular function of a chain (e.g., competence in producing particular inputs, or in export marketing) to a new sector. These various types of upgrading offer a framework that is not only relevant to the analysis of firms, but also to an understanding of how countries fashion development strategies to attempt to move themselves into relatively high value, sustainable niches in the global economy (Gary et al, 2001).

### Constraints for Developing Country Value Chain Upgrading

The main aim of a value chain is to produce value added products or services for a market, by transforming resources and by the use of infrastructures within the opportunities and constraints of its institutional environment. Therefore, constraints for value chain development are in our view related to market access (local, regional, international) and market orientation (e.g. Grunert et al. 2005), available resources and physical infrastructures (Porter 1990: factor conditions) and institutions (regulative, cognitive and normative; Scott 1995)

### Resources and (physical) Infrastructures

Getting access to markets is not a sufficient condition for developing country value chains to be able to sell their products. Supporting infrastructures, resources including knowledge and capabilities are conditional for these chains to be successful. According to Porter (1990), factor conditions relate to the nation's endowment with resources such as physical, human, knowledge, technology and infrastructure. These factors enable or constrain value chain upgrading. Typical constraints faced by companies in developing countries include lack of specialized skills and difficult access to technology, inputs, market, information, credit and external services (Giuliano et al. (2005).

First, low levels of available physical resources such as input materials for production and other input supplies (e.g. energy and water) constrain value chain upgrading. For example, high energy costs in many Eastern African countries limit growth possibilities for companies and value chains. Second, the geographic position of a company or value chain may impact its competitive position, for example if it is located far from high-value markets (such as countries and regions in Central Africa). Third, availability of educated labor and the availability of knowledge (production, distribution, and marketing) is an important condition for innovative behavior of value chain actors. A fourth category is the level and availability of technology that can be used for production and distribution activities in the value chain.

Besides availability of resources the presence of an adequate distribution and communication infrastructure is a basic condition for value chain development and upgrading. Weak infrastructures

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hamper efficient flows of products to markets and exchange of market information upstream in value chains.

### **Voids Institutional**

The third component we recognize in the business environment of value chains is institutions. Institutions impact organizational life. In our definition of institutions we follow Scott (1995), who makes a distinction between regulative, normative and cognitive institutions. Regulative institutions encompass legislation and government regulations and policies that companies can use and/or have to comply with. Normative institutions are embedded in business practices, business policies and ethical standards. Cognitive institutions reflect the way people interpret and make sense of the world around them on the basis of rules and schemata. Hence, diverse cultural belief systems, values and identities inform people (in different roles as consumers, producers, policy makers, citizens, etc.).

Developing countries are often characterized by institutional voids, defined as “situations where institutional arrangements that support markets are absent, weak or fail to accomplish the role expected from them” (Mair and Marti 2008). Government legislation, regulations and policies can constrain value chain upgrading, amongst other ways by setting trade barriers for production materials and production technology, by limiting the flow of information, national as well as international, by imposing unfavorable taxes and by denying infrastructural investments that would benefit value chains. Furthermore, business practices and characteristics of business relationships can limit value adding and profit orientation in valued chains. For example, interpersonal and inter-company relationships may enhance the social capital of a company, but also imply relational constraints that limit a free flow of goods and information (Lu 2007). Moreover, cognitive institutions may prevent innovations in products or processes and can limit a free flow of information and knowledge, mobility of labor, and relationships between communities.

New institutional economics and specifically transaction cost economics focus on transaction costs. Value chain theory encompasses important discussions on where in the value chain value is added. Governance form: From new institutional economics, value chain theory and network theory we draw the governance and bargaining position of value chain actors, and related distribution of value added.

New institutional economics investigates the optimal governance structure between economic actors. Value chain theory has developed a theory on chain-wide governance structures. Network theory focuses on (formal and informal) governance of horizontal and vertical relationships. Changes in the institutional environment or the competitive base or in enabling infrastructures and availability of resources may alter the functioning and performance of value chains, thereby forming main constraints for value chain development. Alternatively, value chain actors may be motivated to improve their position in the chain, e.g. by getting involved in a different market channel, by enhancing value added (by improving quality and delivery conditions or lowering costs) and by re-organizing the collaboration with value chain partners. Such upgrading strategies may also be fostered by non-value chain actors such as governmental agencies, NGOs, public-private partnerships and development organizations.

Figure 1 below depicts our framework. The arrows reflect a possible order of analysis of value chains: define constraints for the value chain under study (redesign) opportunities for this value chain define upgrading options, taking into consideration value chain constraints.

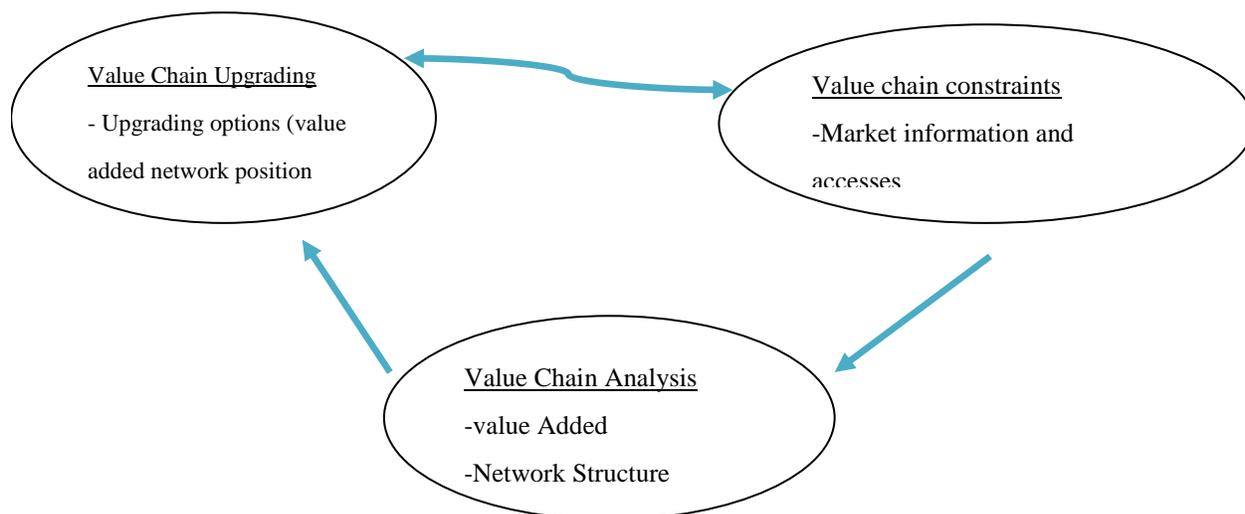
### **Principal inputs use**

Farmers generally did not use modern agricultural inputs like improved seed varieties, chemical fertilizer, agro-chemicals (pesticides and herbicides), machineries etc. Insignificant producers exercise on improved seeds trial and very limited use of chemicals observed in Metema woreda.

### **Use of Storage**

Evidently, storage services help for the smooth and continuous flow of products marketed and create time utilities. The survey result done in metema district showed that 40.2 % the sampled farmers used storages for their sesame produce until marketed. However, the status of the stores was so poor that could not maintain the quality of sesame. Had it been stored longer; it would have been exposed to insects and rodents resulting to quality and quantity deterioration. From the farmers who reported accessed to storage, 44.09 % and 50.39 % reported that they stored their sesame in a separate store and in residence, respectively.

The average storage periods identified were 2.31 months with significant difference among farmers in the



**Figure 1:** Value chain analysis framework

different PA. The contributing major reasons for their early sales are the early cash requirement to settle past loans, labor and other expenses soon after harvest. The survey also revealed that the main reasons for storage were expectations of better prices.

## SESAME PRODUCTION TRENDS

Oil crops are the second largest source of foreign exchange earnings after coffee (FAO, 2012) and sesame is the main oilseed crop in terms of production value. In 2010, Ethiopia was considered the second main exporter of sesame seeds in the world, behind India (FAOSTAT, 2012). The cultivation of sesame has grown since 2000, owing to its high value on the export market and good adaptability in the country. The many varieties of Ethiopian sesame seeds make it suitable for a wide range of applications, either as seeds or oil products. Another feature of sesame is its flexibility to different soil types and harsh environments, which makes it well suited for production in most of the country. Furthermore, “sesame rotates well with a number of other crops including cotton, corn, peanut and sorghum, and is also a good soil builder. That said, many farmers do not diversify and focus solely on sesame” (Coates et al., 2011).

It also represents an important source of income for many Ethiopians. Since the 2000s, sesame

production and marketing has registered significant growth. In 2000, the total area cultivated for sesame was about 16 000 ha (FAOSTAT, 2012). In nearly ten years’ time (up to 2010), the total area of sesame production has increased more than twentyfold (FAOSTAT, 2012). Similarly, the quantity of sesame produced for export also increased from 26 642 tones in 2000 to about 317 653 tones in 2012 (FAOSTAT, 2012), which represents an increment of over 1090 percent.

The oilseed sector has received renewed attention in the recent Growth and Transformation Plan (GTP) for the years 2010-2015. The plan states that farmers and pastoralists will be encouraged to shift gradually from low value production to high value products (GTP, 2010), taking into account geographic differences on specializations and the existence of favorable market and infrastructural facilities. Therefore, sesame is now a priority crop for the government because it is an important source of foreign exchange earnings and as income for many smallholders. However, “despite the high potential for increased production and the rapidly growing demand in the international market for Ethiopian sesame, it is generally felt that the logistical supply chain of sesame suffers from different challenges” (Gelalcha, 2009).

According to the CSA (2013), sesame represents, on average, 32 percent of the total cultivated area under oilseed production for the period 2005-2012 which represents 3 percent of the total cultivated area for major crops. As average production statistics (2005-

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2012) obtained from CSA (2013) depict, almost 37 percent of the country's total sesame seed production comes from the Amhara regional state, with 30 percent coming from Tigray and 16 percent from Oromia. However, for the stated period, the highest average productivity for Tigray was about 9 quintal/hectare, followed by Amhara region about 8 quintal/hectare.

### Humera and Metema production zone

The country's main sesame production areas are located in the semi-arid lowlands of North-West Ethiopia, especially 6 AGP woredas (Humera, Tsegede and Wolkayit in Tigray and Metema Quara and Tach Armachiho in Amhara). These production zones account for more than 70% of the national production and are therefore the focal area of the Sesame Business Network and its support programme. Implementation of activities is as much as possible decentralized to the level where sesame production and marketing take place.

### Sesame Production Constraints in Ethiopia

Seed sources are mainly farmer saved seed or imported from Sudan. Some new varieties are available. There is much potential for improving agricultural practices; timely land preparation is an issue, the use of fertilizer and pesticides is insignificant and the incidence of pests and diseases is high. Post-harvest and storage losses are high, often > 30%. Sesame is labour intensive; harvesting requires 30-40 person days per hectare. Labour shortages and hardship conditions incur relatively high labour costs. At peak times, the sesame zone of NW Ethiopia hosts up to 500,000 seasonal laborers. Agricultural credit is largely informally organized; credit comes at a very high cost to farmers. Sesame is often poorly cleaned and graded. Little value addition takes place in Ethiopia; processing, tracing and certification are at their infancy. Most of the Ethiopian sesame is exported to low-value markets; Ethiopian sesame fetches below the average world market price. The white Humera type sesame has however a good reputation in the international bakery and confectionary sector (Wageningen UR, 2013).

### Some important Applications of Sesame

Sesame is used in wide range of applications (Wijnands et al., 2007). The most important ones are:

1. Edible oil: The oil is odor less with distinctive nutty sweet flavor. Roasted sesame seed resists rancidity due to the antioxidants formed during seed roasting. Sesame oil is especially important in the Far Eastern cuisine, mainly Japan and china.
2. Confectionery, biscuit and bakery industry: Hulled clear white sesame is required for bakery products.
3. Tahini industry: Tahini, a traditional Middle Eastern paste, is made from hulled sesame seed and is rich in protein.
4. Halva industry: Halva is a sweet made of 50% Tahini, boiled sugar and some other ingredients.
5. Sesame flour and sesame seed sprouts.
6. Pharmaceutical ingredients.

### Marketing and Trade

Sesame seed is Ethiopia's main exported product after coffee. From 2000 to 2012, the total quantity exported annually increased from 31 thousand tones to about 317 thousand tones, an increase of more than tenfold (ERCA, 2013). Over the 2005-2012 period, exports increased by 61 percent in volume and 178 percent in value (US\$), enabling the country to increase its global market share. Over the 1990-2011 periods, Ethiopia ranked in the market share behind India, Sudan and China (Ministry of Trade, 2011). However, sesame exports decreased from 2005 to 2008, and recorded a bumper in 2009 (an increase of 94 percent). Since 2010, exports increased substantially (about 40 percent until 2012) to more than 317 thousand tones, the biggest volume over the whole period (see Table 1).

### Trade Status of the Product

Sesame seed is among the major export commodities in Ethiopia that has a substantial share of the earnings from oilseed exports. Sesame was mainly exported over the period and averaged more than 209 thousand tonnes annually (see Table 2) (ERCA, 2013).

**Table 1:** Sesame Seed Trade in Ethiopia, 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012
Export Volumes (tonnes)	197	153	139	131	255	228 038,7	253 747,0	317 652,6
Exports Value (*1 000 000 ETB)	987,8	661,2	653,0	688,7	782,8	4 275,61	5 907,14	7 626,74
Exports Value (* 1 000 000 US\$)	1 345,54	1 018,65	1 187,94	2 019,37	3 885,53	293,56	346,16	426,90

**Source:** Ethiopian Revenue and Customs Authority, 2013

**Table 2:** Trade Balance for Sesame in Ethiopia in tonnes, 2005-2012

Ethiopian Revenue and Customs Authority data	2005	2006	2007	2008	2009	2010	2011	2012
Export Volumes (*1000 tonnes)	197.98	153.66	139.69	131.69	255.78	228.04	253.75	317.65
Import Volumes (tonnes)	0	0	0.47	0.4	0.25	0.39	0.29	0.1
Trade balance (1000 tonnes)	197.98	153.66	131.69	131.69	255.78	228.04	253.75	317.65
FAOSTAT data	2005	2006	2007	2008	2009	2010	2011	2012
Export Volumes (*1000 tonnes)	219043	189515	139653	130997	255783	228039	254127	
Import Volumes (tonnes)	0	15368	3	7502	7502			
Trade balance (1000 tonnes)	219.04	174.15	139.65	123.48	248.28	228.04	254.13	

**Source:** ERCA, 2013 and FAOSTAT, 2013

## THE SESAME VALUE CHAIN

The sesame value chain in Ethiopia is poorly organized, although it is currently under reform since the introduction of the new market auction system (ECX). The main actors are producers/suppliers, collectors, wholesalers, brokers, farmers associations, the auction market (ECX) and exporters. Other important actors are transporters, agricultural input suppliers, consumers and retailers.

Getting sesame from producer to end (international) buyer in Ethiopia involves a range of players most of the time, partly depending on whether the sesame is organic or non-organic. Figure 2 below gives an idea of the value chain for non-organic sesame. In one possible chain, farmers sell their produce to the primary market (also called spot market),

where all the sesame is bulked. Sometimes there are traders in between the farmer and the primary market, although this is illegal practice. In almost each Kebele a primary market has been allocated where legal trade may take place. From the primary market the sesame goes to the Ethiopian Commodity Exchange (ECX), where the sesame is graded into different quality groups (1-5). From the ECX the graded sesame goes to the export traders, who sell it to the international buyers.

### Constraints for Sesame Value Chain

Constraints to the sesame value chain include: lack of improved cultivars; poor seed supply systems; poor agricultural production techniques and post-harvest crop management (Gelalcha, 2009); weak farmers

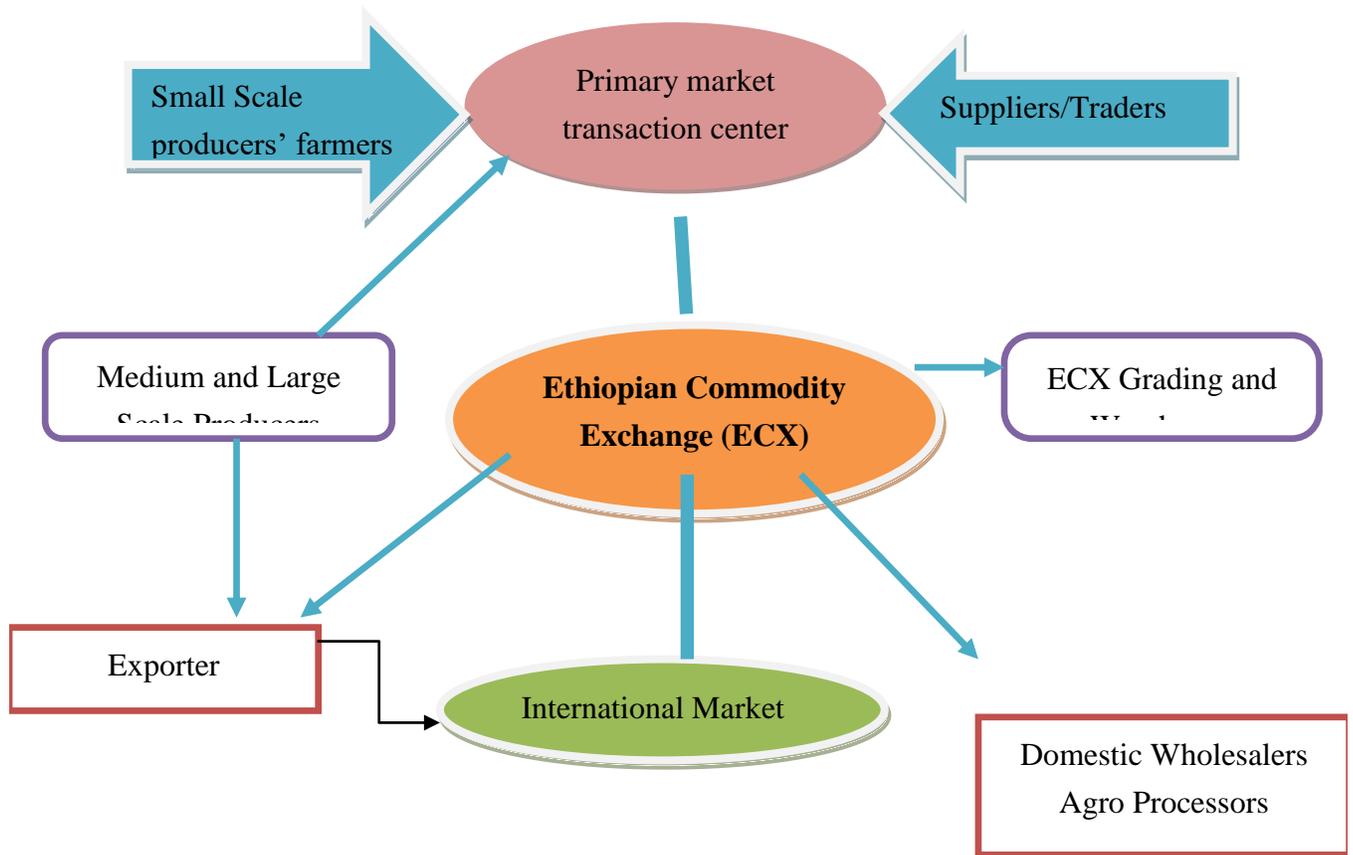


Figure 2: Getahun Bikora – Ministry of Trade (2013): Sesame Value Chain

organization to engage in the value chain; poor market information systems; limited financial material and skills for oilseed processing; limited use of traditional agricultural inputs and little research support to increase yields, and; erratic rainfalls (SID Consult-Support Integrated Development, 2010).

Although the ECX provides producers market price transparency, there are various reasons to avoid selling through the ECX: -

No differentiation is made between various sub-regional sesame varieties. Varieties that are recognized as Humera type sesame seeds are acknowledged at the ECX when they are produced in certain districts. Once the Humera type varieties are produced outside these districts, then the seed may be considered as Wellega type (for example). This also happens the other way around. Wellega type seeds produced in areas that are considered to be delivering Humera type seeds, will eventually be traded and exported as Humera type seeds.

No differentiation is made between organic and non-organic sesame and the grading system of the sesame at the ECX is not fully transparent another value chain, not shown in the next figure, goes via the primary cooperatives. In this case, farmers are organized in a primary cooperative to which they sell their produce. The cooperative consequently sells to the ECX, which means no differentiation will be made for sesame type. The cooperative can also sell to the Union, which can directly sell to the international market.

### Sesame Export Trends

According to CSA (2015) the total area covered by oil crops was 884,613 hectare and the total production was 7,607,786 quintals. From this amount of area and production the share of sesame was 3.35% (about 420,490.98 hectares) and 1.07% (about 2,887,700.79 quintals) respectively.

Very recently, sesame has become an important export commodity of the country and has helped to derive foreign currency. International prices and the government an incentive (with its limitations) has contributed to the involvement of producers and traders as well. The supply and share of sesame has increased over the years in the international market. According to FAO (2013), the export quantity showed significant increase and reached its peak of 2,400.940 quintals during 2013 due to the increase in world demand and the favorable production condition and good market supply at the domestic market. Similarly, the nominal FOB price has recently shown improvement when compared with other earlier periods.

The major Ethiopia's sesame seeds export partners/clients/ for the year 2013 were China, Israel, Turkey, and United Arab Emirates. China can be said the main destination export market of Ethiopian sesame. The main justification for this statement is that it stood first among 37 importing countries, accounting for 38% of the year 2013 Ethiopian sesame export. The country received 95 orders of different sizes of sesame import from china in the same year.

### Quality and Standards

Ethiopia's sesame has developed good track records in fulfilling the quality requirements of importers. This affection has been obtained through years of efforts of traders and producers as well. To maintain the quality, traders inspected the color, impurity and shrinkage of the seed during purchase.

As the researcher observed on the field, traders were serious enough in checking each and every quintal of their purchase. In their inspection, they gave priority to seed type, color, a mixture, and the seed size in that order. Due to the traders though measures in rejecting the inferior seed quality, producers used thresh on plastic mats and Shera. The findings of Eleni (2001), suggested that sesame quality checking and standardization during purchase was limited only to visual inspection.

The most preferred traits of sesame seed are basically determined by their client's preference. Most importing partners (China, Israel, and Turkey) and others have developed good tests for our whitish sesame variety. To meet the taste and preference of importers, sesame quality is checked by different institutions. The Ethiopian quality and standards authority (EQSA) checks and certifies the grades. MOARD had to check and issue certificate of phytosanitary. Sesame has got three grades set by EQSA. All these requirements are strongly

enforced and implemented due to the demand by importers.

### Market Pathway Analyzed

The North Gonder zone in the Ahmara region is the main producing area for sesame seeds in Ethiopia. Thus, the farm gate level reflects the price around Metema city, which is part of the North Gonder zone. Metema sesame seeds were traded in the open wholesale markets before the government introduced compulsory trade through ECX in late 2009 (see description of the value chain section). One of the two regional warehouses of ECX is also located in Metema. Therefore, the Point of competition considered is Metema. Though the fastest road from Metema to Djibouti could pass through Debre Tabor and Weldiya, the preferred market pathway comes through Addis Ababa owing to bad road conditions and safety along the direct one. Sesame production is mainly concentrated in the north-western part of the country, close to Port Sudan. However, the FOB price at the port of Djibouti has been chosen over Port Sudan, as exports through Port Sudan are currently low due to limited availability of basic infrastructure, institution and services. Besides, official historical reference prices are available for Port Djibouti.

### CONCLUSION

Sesame value chain involves a range of actors from producers up to end users some of main actors are producers/suppliers, collectors, wholesalers, brokers, farmers associations, the auction market (ECX) and exporters and other important actors like transporters, agricultural input suppliers, consumers and retailers participate in the chain.

From different possible sesame chain the most common trend is farmers sell their produce to the primary market (also called spot market) where all the sesame is bulked. In almost each *Kebele* a primary market has been allocated where legal trade may take place. From the primary market the sesame goes to the Ethiopian Commodity Exchange (ECX), where the sesame is graded into different quality groups (1-5). From the ECX the graded sesame goes to the export traders, who sell it to the international buyers.

Sesame value chain in Ethiopia has several constraints which hinder effective value chain of the commodity. Some of the constraints reviewed in this article was lack of improved cultivars, poor seed supply

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systems; poor agricultural production techniques and post-harvest crop management, weak farmers organization to engage in the value chain, poor market information systems, limited financial material and skills for oilseed processing, limited use of traditional agricultural inputs and little research support to increase yields, and erratic rainfalls.

Sesame seed is Ethiopia's main exported product after coffee. From 2000 to 2012, the total quantity exported annually increased from 31 thousand tones to about 317 thousand tones, an increase of more than tenfold (ERCA, 2013). Over the 2005-2012 period, exports increased by 61 percent in volume and 178 percent in value (US\$), enabling the country to increase its global market share. Over the 1990-2011 periods, Ethiopia ranked in the market share behind India, Sudan and China. However, sesame exports decreased from 2005 to 2008, and recorded a bumper in 2009 (an increase of 94 percent). Since 2010, exports increased substantially (about 40 percent until 2012) to more than 317 thousand tones, the biggest volume over the whole period.

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