

Review of Haricot bean Value Chain in Ethiopia

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Abstract

This paper has reviewed the haricot bean value chain particularly the case of Ethiopia. Haricot beans are among the most important grain legumes produced by small-scale farmers for both subsistence and cash, mainly in the lowlands and in the rift valley areas of Ethiopia. They are high in starch, protein, and dietary fiber, and are an excellent source of minerals and vitamins. Given the importance of beans, it is necessary to understand what the situation of the bean sub-sector in the country is in terms of production, marketing and consumption and also map the different actors in the bean value chain. The bean value chain consists of input suppliers, producers, traders, brokers, exporters and consumers. The major haricot bean producing regions in Ethiopia are Oromia, SNNPR, Amhara and Benshangul Gumuz which contribute more than 99% of total haricot bean output. In 2014/15 agricultural production, Oromia took the lion share (51%) of haricot bean production in the country, followed by SNNPR (27%), Amhara (20%) Benishangul-Gumuz 1.4% and the other regions contributing rest to the country total production. Haricot bean exports account for about 41 percent of pulse production and exports from 2005 to 2014. Its contribution to national export earnings was 134 million USD in 2014. The value chain however, remains underdeveloped. Due to various constraints such as the limited access to improved seeds, low volumes, poor product quality, scattered and fragmented suppliers, high transaction costs and long market channels are among others.

Keywords: Haricot bean value chain, actors, supporters and enabling environments

1. INTRODUCTION

1.1. Background and justification

Ethiopia is known as the homeland of several crop plants. It is ranked 13th among pulse producing countries in the world (FAO, 2015). The country produced about 1.3 million tons in 2014 (CSA, 2015). Pulses play crucial economic, and food and nutrition security roles in Ethiopia. Recently, the production and supply of pulses, increased due to increased demand in both local and international markets, thus enhancing smallholders' income (Chilot *et al.*, 2010).

Haricot bean (*Phaseolus vulgaris L.*) has been an export pulse crop for Ethiopia for more than 50 years and probably been grown as food crop for a much longer period in the low and mid land altitude areas of the country (Ferris and Kaganzi, 2008). The crop is widely grown in areas between 1400-2000 m.a.s.l. The main production areas include the East Hararghe, West Wellega, East shewa, West Arsi, Sidama, Wolayita, Wollo and East Gojam (EIAR, 2014). The crop is grown either as a sole crop and/or intercropped with either cereal or perennial crops (Rahmeto, 2007). There are a wide range of haricot bean types grown in Ethiopia, including the mottled, red, white and black varieties. The leading white bean varieties are the Awash 1, Awash melka and Mexican 142 varieties. The pure red and pure white colored beans are the most common commercial varieties (Ferris *et al.*, 2007).

Haricot bean is ranked as the second largest pulse crop in the country in terms of production with a share of 17 percent, next to Faba beans (Negash, 2007). CSA 2014/15 report also shows that the production share of haricot bean has consistently been 19 percent of all the pulses for the last two years. Ethiopian haricot bean production has increased by more than twofold from 138 to 513 thousand tones between 2005 and 2014 (CSA, 2015).

The increasing demand for quality haricot bean on the world export market, suitable climate of the country, low production costs, availability of arable land and access to the port of Djibouti are a great opportunity for Ethiopia to export large quantities all over the world and boost its export earnings (Bisschop and Dijk, 2007).

According to Gezahegn *et al.* (2006), haricot beans cover the dominant part of the Ethiopia's pulses export contributing about USD 134 million to the economy of country (ERCA, 2015). The exports account for about 41 percent of pulse exports increasing from 51 tons to 171 tons in the same period (FAO, 2015).

According to Gezahegn *et al.*, 2006, haricot beans cover the dominant part of the Ethiopia's pulses export. However, the share of pulses in general in the export market has been limited by external demand for quality.

Existing opportunity for improving the bean sector is that production is concentrated in and around the Rift Valley area, which is well connected by good road conditions to the Addis-Djibouti railway network (USIAD, 2010). Due to high demand in the international and domestic markets, Ethiopian haricot bean production has increased more than twofold from 138 to 513 thousand tones between 2005 and 2014 (CSA, 2015). Haricot bean exports account for about 41 percent of pulse production and exports 51 tones to 171 tons from 2005 to 2014. However, the value chain, remains underdeveloped and producers and traders earn a low share of the FOB price

(FAO 2015).

1.2. Objectives of the Study

General objective of the review is haricot bean value chain status in Ethiopia. The specific objectives are

- To review Haricot bean value chain and identify actors along the chain;
- To review the importance of Haricot bean in the agriculture economy of Ethiopia
- To review constraints facing to the haricot bean production and marketing sector.

2. LITRETURE REVIEW

2.1. Haricot bean value chain in Ethiopia

According to IPMS Ethiopia study report in 2010, the IPMS project and its partners have adopted the value chain concept to pinpoint where actions can have the most positive impact for haricot bean development. The project, which started intervention in Alaba in 2005, adopted a “participatory market oriented commodity value chain development” approach, based on the concepts of innovation systems and value chains. Crucial elements in the approach are the focus on all the value chain components. Instead of focusing on production technologies, the approach also stresses the linking, capacitating of value chain partners, assessment and synthesis and sharing of knowledge among the partners.

2.1.1. Haricot bean Value chain Actors

According to FAO report in 2015 identified various actors involved in bean production, trading/marketing and exporting, but the major ones are farmers/producers, input suppliers, traders/retailers, processors and exporters. In addition, there are enabling institutions, such as extension service providers and credit institutions and research and development centers, which play pivotal roles in the production, marketing and export system. These functions jointly improve the performance of the sector.

Input suppliers - The Ministry of Agriculture supplies fertilizers and seeds through its affiliate institutions - the Ethiopian Agricultural Input Supply Enterprise (AISE), the Ethiopian Seed Enterprise (ESE) and Cooperatives. The majority of white bean producers, who are more market-oriented, use both improved seeds and fertilizers. On the other hand, red bean producers, who produce mainly for local consumption, use minimal level of fertilizers and traditional seeds. Still, improved red bean seeds are provided to some extent by NGOs.

According to Rashid *et al.* (2008), the pulse research program in Ethiopia has released 36 improved varieties of haricot beans. If these varieties are used with the recommended input packages, they have the potential to increase bean yields two or threefold.

Smallholder farmers are the key contributors to bean production, and the sector's performance as a whole. They are widely disbursed throughout production areas, often difficult to access. There is a growing awareness about the importance of using modern inputs

Primary Cooperatives: Primary Cooperatives are market actors who can buy from the primary market from member and non member farmers and can supply directly to their cooperative unions further more if they have a potential they can supply to the ECX market and also they can sell their produce directly to the international market.

Traders -Product aggregation at primary, secondary and tertiary markets is among the most important activities in the value chain. Actors are distinct, depending on the markets:

Brokers - Brokers are agents who work for a commission on behalf of other participants (Mussema, 2006). They are intermediaries between sellers and buyers, with some level of information about each actor. Since 2010 and the policy decision to make white bean trade through ECX compulsory, brokers can no longer officially connect wholesalers and exporters. However, they remain dominant actors for red bean trade. The broker marketing system has remained the same over centuries.

Wholesalers aggregate beans from secondary (woreda) markets from major producing zones, and then inform brokers (*delala*) when they are ready to supply. The relation between brokers and wholesalers from secondary markets is based on friendship, ethnic and family ties. The wholesalers' supply is sent by truck to the tertiary market.

Ethiopian Grain Trade Enterprise (EGTE) - The Ethiopian Grain Trade Enterprise is a government trading company established 50 years ago to assist in stabilizing prices by providing a floor price for purchasing of commodities on behalf of the government. EGTE remains a major buying instrument for the government and has storage capacity of 8 million quintals across the country, but in most cases does not use this capacity. According to management, farmers prefer to work with EGTE because it purchases in cash and buys in bulk (Ferris S and Kaganzi E. 2008).

Exporters

As to IPMS report in 2008 The white bean exporters are the most specialized operators involved with large-scale procurement, cleaning, grading, re-bagging and organizing finance and contracts either with the largest exporters or directly with overseas buyers. In Ethiopia, it is at the export level where produce is cleaned either with gangs of women labor working in mechanical checking lines, or using electronic color sorters. At present there are very many

small to medium sized export companies in Adama, with some larger exceptions such as the AWAD brothers and Agricultural Commodity Suppliers (ACOS).

Consumers

The haricot bean is a principal food staple particularly in Southern and Eastern parts of the Ethiopia and is used as a source of income generation (Bisschop and Dijk, 2007). The importing countries consume by adding value to the Raw product or canned product are Yemen, The United Kingdom, The United Arab Emirates , Pakistan , India, Belgium , South Africa and Kenya, the Netherlands , Italy and Sudan.

2.4.2. Haricot bean Value chain supporters

Extension services – Improving productivity per unit of area and labor remains one of the core challenges to develop haricot bean production. To promote knowledge of new varieties, the government implements training programs and farmer field days, while Farmers Training Centers (FTCs) are used to demonstrate efficient agricultural practices. Extension workers/development agents provide technical support on planting, harvesting, threshing, storing and marketing related issues.

Research and Development - Smallholders use traditional varieties of beans that reap relatively low yields. In collaboration with various NGOs, the government has recently started to supply improved seeds. The Ethiopian Institute of Agricultural Research is developing improved haricot bean varieties, mainly in the Melkassa and Hawassa Agricultural Research Center.

Provided basic or foundation seeds, prepared leaflets and manuals on haricot bean, organized planning and reporting. Training for expertise to enhance skill and knowledge, initiated the idea of small pack experiment and the packs. MARC and HARC has purchased haricot bean from farmers to distribute to others and both MARC and HARC organized annual meetings. CIAT implements Tropical Legume II with partners in the nation. ESE-Hawassa is also source of improved haricot bean for farmers in the district.

Credit providers: - The union is source of credit for farmers involved in crop protection and is also involved in marketing of haricot bean grain Alaba Menchenon Farmers Union (IPMS 2008).

NGos – Different Ngo projects assisted the by introducing new varieties as of 2006 from research center to community, demonstrated bio-fertilizers, and seed treatment machines .

2.4.3. Enabling environment for Haricot bean value chain Development

The Agricultural Development Led Industrialization (ADLI) and all subsequent development policies and strategies in Ethiopia place strong emphasis on grain and cash crop production (including white haricot beans) in overall economic development. The Growth and Transformation Plan (2010-2015) also pays due attention to producing enough food for domestic supply and high value crops for export.

According to Alemu *et al* (2010), the creation of a centralized trading floor for buyers and sellers was also envisaged. The new system was expected to develop a secure and reliable scheme for handling, grading, storing services, bids for commodity transactions, risk-free payments and a good delivery system to settle transactions.

Since its foundation, ECX has invested both in physical and human resources, established warehouses in the major coffee, sesame and white haricot bean marketing centres, including Awassa, Dilla, Soddo, Bonga, Jimma, Gimbi and Bedele for coffee, and Adama, Shashemene, Humera, Metema and Bure for sesame and haricot beans. These centres provide quality inspection, grading and warehouse services.

ECX warehouse and trading floor -The introduction of white haricot bean trade at the ECX, from October 2010 onwards, has made a significant difference in the value chain. Although this note concentrates on the 2005-2012 period, it is worth describing the new system. Through the ECX system, traders of white haricot beans buy and aggregate in the designated primary markets, and deliver to ECX warehouses at Dessie, Addis Ababa or Adama, depending on their proximity, for quality inspection and grading. Delivery is made directly by the trader or through his agent at the ECX quality inspection centre.

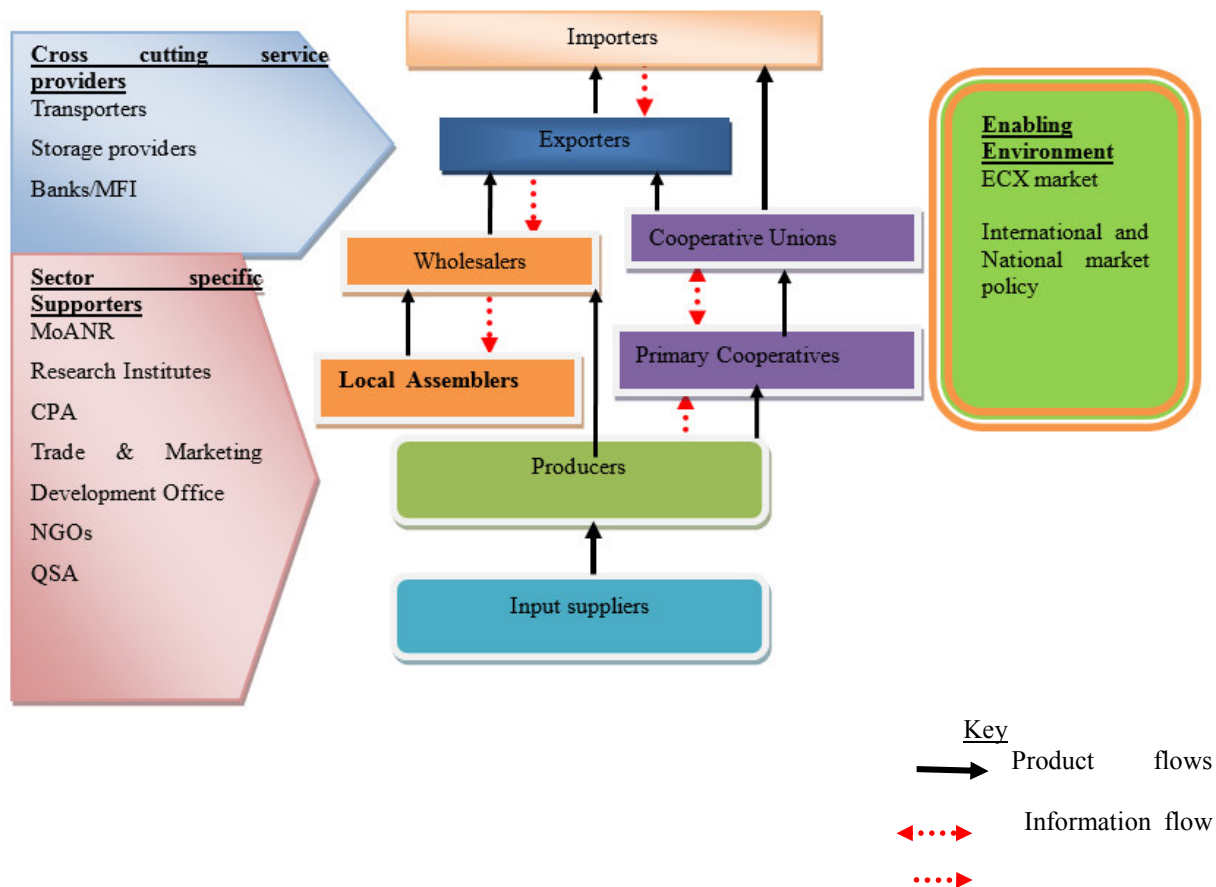


Figure 5: Haricot bean value chain map
Source:- Adopted from IPMS,2008, Frehiwot 2010 and FAO, 2015

2.2. Haricot Bean Production

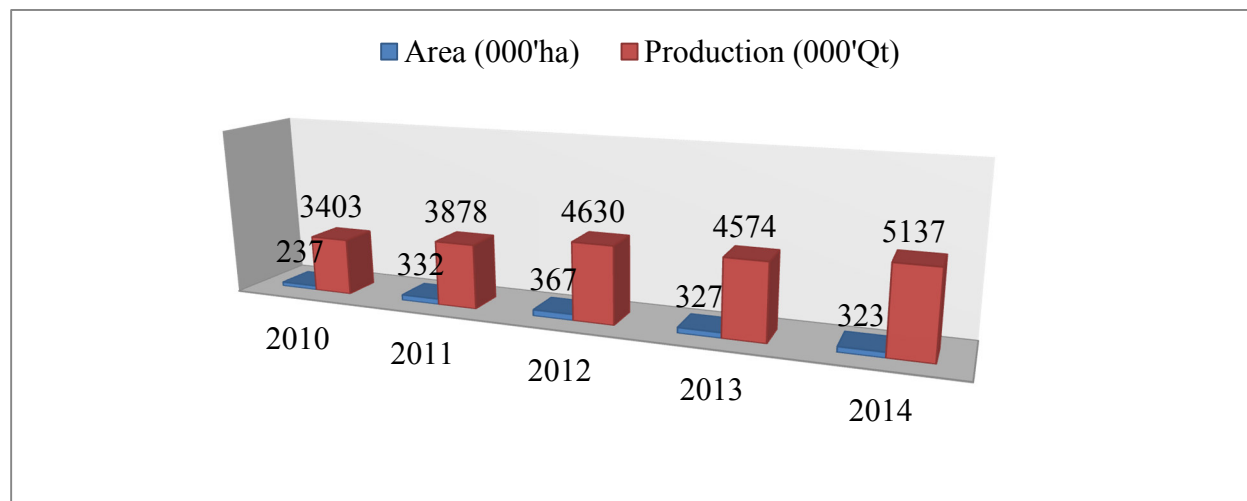
Almost all haricot beans were produced by smallholder farmers. The average farm size for smallholder farmers is between 0.25 to 0.5 hectare. There is a wide range of haricot bean types grown in Ethiopia including mottled, red, white and black varieties (EIAR, 2013). The most commercial varieties are pure red and pure white colored beans and these are becoming the most commonly grown types with increasing market demand (Ferris and Kaganzi, 2008).

To support both the growth in domestic and export bean markets, the Ethiopian Institute of Agricultural Research (EIAR,2013) has developed a range of high yielding, multi-disease resistant bean varieties (Ali *et.al*,2003). The focus of this genetic improvement program has been on the pure red and white beans to support the commercial sector (Ali *et.al*, 2003). With in the red bean types, the most favored and most commercially accepted varieties include Red Melka, a mottled medium sized red; Red Wolaita, a medium sized pure light red; and Nasser, a small pure dark red variety (Ferris and Kaganzi, 2008).

According to the 2014/15 Annual Agricultural Sample Survey conducted by CSA, among the country pulse crops haricot bean is the second both cultivated area and in volume of production accounting 21% and 19% respectively.

2.2.1. Production Trends

The levels of haricot beans production are highly dependent upon rainfall similar to other cereals and pulses in the country. During 2010/11 to 2014/15 the volume of production generally shows an increasing trend with average annual growth rate of 11 percent. Generally, the area cultivated for haricot bean does not follow a uniform pattern its average growth rate under the specified period was 10%. (See Figure 1).



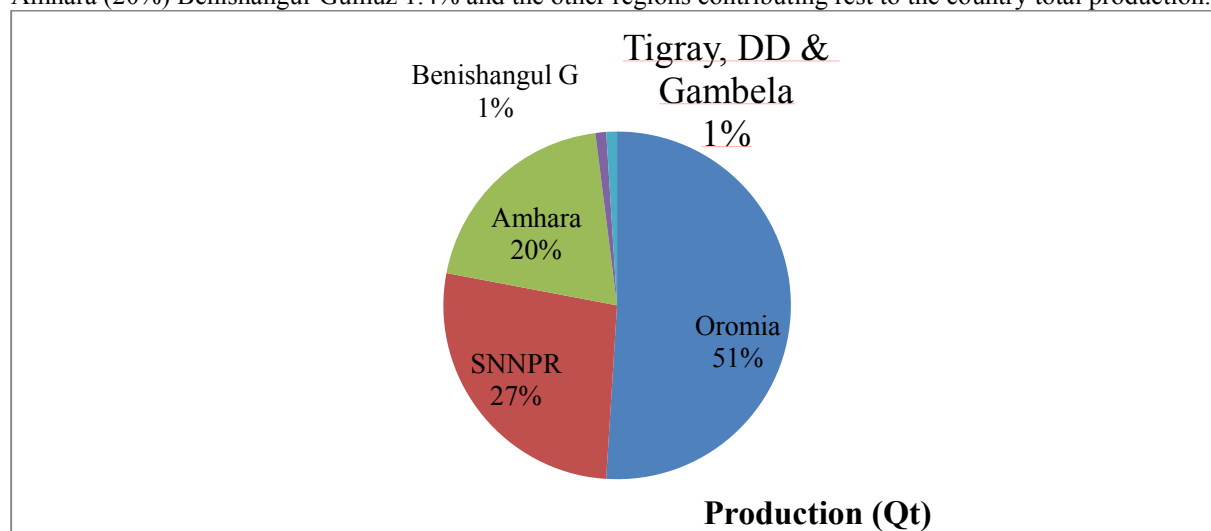
Source: CSA 2010/11 - 2014/15 Crop production survey report

2.2.2. Productivity

Haricot beans productivity depends on good weather condition and use of appropriate technologies (fertilizer, improved seed, and herbicide) with the recommended rate and time. The national agricultural research system has generated a number of improved agricultural technologies and recommendations such as crop variety, agronomic practices, crop protection measures as well as other technical advices and practices. The technologies promoted include improved varieties, recommended fertilizer rates and types, improved agronomic and weed control practices. According to the official statistics of the country, CSA, the average haricot bean productivity was about 15.89 quintal per hectare during 2014/15. However, the experience from experimental plots indicates that 25-30 quintal per hectare can be obtained (EIAR,2014).

2.2.3. Regional Distribution of beans production

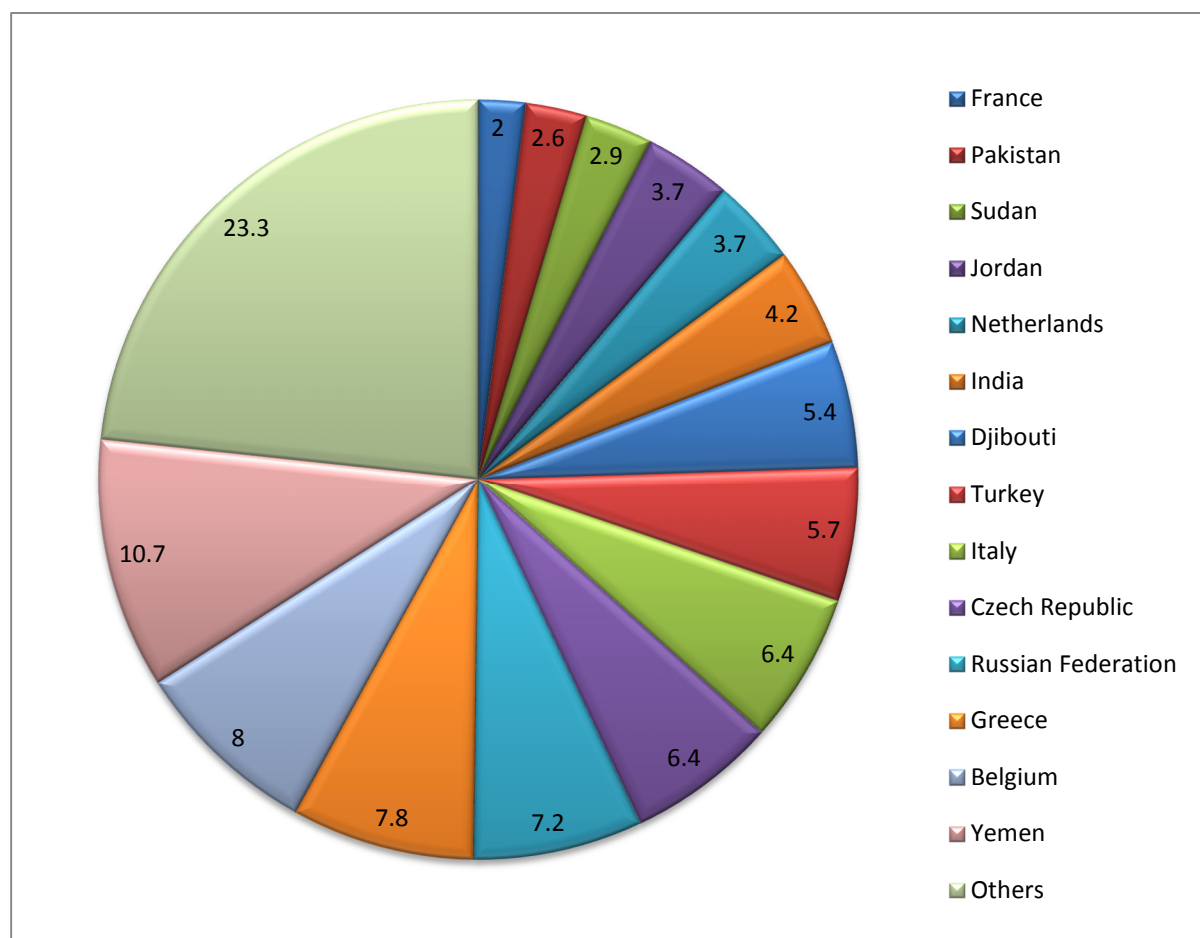
Haricot beans are grown throughout Ethiopia and are an increasingly important commodity in the cropping systems of smallholder producers both for food security and income. According to the 2014/15 agricultural sample survey result, Oromia took the lion share (51%) of haricot bean production in the country, followed by SNNPR (27%), Amhara (20%) Benishangul-Gumuz 1.4% and the other regions contributing rest to the country total production.



2.3. Economic Importance of haricot bean in Ethiopia

Ethiopia has a geographic comparative advantage over other competitive countries. It takes nine weeks for sea shipments of beans from China to reach EU markets, whereas it only takes three weeks from Ethiopia (Ferris et al., 2008). According to ERCA 2015 report shows that haricot bean exports increased in total value from 19 million USD in 2005 to 134 million USD in 2014, quantity of 43 thousand MT in 2005 to 171 thousand MT in 2014, exhibiting a growth of more than threefold.

The main destination markets in terms of earnings over the 2005-2014 periods were Yemen (10.7%), Belgium (8%), Greece (7.8%), Russia (7.2%), Czech Republic and Italy (6.4%), Turkey (5.7%), Djibouti (5.4%) and others.



Source: Ethiopian Revenue and Custom Authority, 2015

2.4. Constraints of Haricot bean Marketing in Ethiopia

Despite the policy interest to expand Haricot bean production for exports and its high potential for improving the incomes of the rural poor, the crop has not been fully exploited. Several challenging factors have contributed to this.

Limited access to Improved seed - Farmers increasingly prefer to use improved haricot bean seeds owing to their high impact on yields. However, there are several constraints preventing farmers from using improved inputs, such as availability, affordability, quality and timeliness of supply (Ferris and Kaganzi, 2008). A combination of factors explain this, including supply side constraints, such as extension, limited smallholder knowledge on production practices and benefits of diversification, and a set of market-led demand constraints, and weather induced risks.

Price volatility - According to National Bank of Ethiopia and ERCA, 2013 data unit value haricot bean generally follows an increasing trend under the period 2005 to 2008. Whereas in 2009 and 2011 decreased and then 2012 increased. Recent shifts in prices and demand for beans has led to increase risk and volatility in both prices and volumes.

Poor Coordination amongst Traders Most of bean traders are not part of a formal trading organization. Consequently very poor business coordination amongst traders has been observed. It was difficult for these informal traders to gather information and access opportunities in new area of the business. Moreover, these traders are seasonal bean traders and worked with other commodities such as maize, teff and coffee during the year. If traders were to be given support in terms of business skills development, they would wish such an intervention to apply across commodities.

Poor product quality: Poor quality due to high level of impurities is another constraint that the sector faces. The poor quality of locally marketed haricot bean due to poor cropping system, harvesting technique and deliberate actions (adulteration) forces exporters to invest in cleaning and grading of the purchased seed in most cases by hand picking, which considerably increases the processing cost. This in turn has direct implication on the price competitiveness of our export (Gashahun, 2015).

Unfair trade practices imposed by brokers at the market place - Farmers were cheated through incorrect weighing scales, and any protest from them would trigger a rejection of their produce by these brokers. The brokers

lured the farmers with good price and later allegedly adjusted the scales during measurement to give a low reading (Agete, 2014),

Lack of Market information - Farmers depend on traders' price and there is no room to negotiate with traders. Farmers revealed that traders and brokers set the price and it is usually unstable (Agete, 2014). According to Frehiwot report in 2010 there was little evidence that Ethiopian bean traders were involved in long term storage and speculative trading. At the same time as many traders argue that storage would have been highly profitable, the general lack of short and long term market information meant they had insufficient data to plan for future sales with confidence. Throughout the country bean producing area, farmers and traders have been unable to access regular market information. This has been considered to be a major problem in developing marketing plans and in price discovery.

Long marketing channel: haricot bean market is characterized by long marketing chain and consequently high transaction costs. Haricot bean has to pass a long marketing chain from the primary producer to the final consumer, which has an implication on the level of costs, consumer/export prices as well as the percentage of final price accruing to the producer. According to FAO report in 2015 bean exporters express dissatisfaction with the new system owing to the additional transportation costs they must bear to transport the commodity from a regional ECX warehouse to their own warehouse. Before 2010, wholesalers directly supplied to exporter warehouses without additional transportation costs.

Limited grading and quality control systems and asymmetry of information- According to exporters, the quality level was also higher before because they had more room to inspect the products' consistencies from samples provided before delivery, and complain for any disparity on the spot before making any payment. This is not possible anymore under the ECX system because exporters must pick products by quality and grade in the ECX warehouses, with the name of the supplier kept anonymous. ECX agents carry out the grading and quality inspection step, and therefore exporters feel frustrated not to be involved in the process (FAO, 2015).

3. CONCLUSION AND RECOMMENDATIONS

3.1. Conclusion

Haricot bean is grown in many areas, as a food crop, as a cash crop and for soil fertility restoration. Ethiopia has suitable agro-climatic conditions for haricot bean production. Haricot bean is a very important foreign exchange earning crop. However, due to various constraints such as the limited access to improved seeds and poor product quality etc., the country did not benefit from the product export in the past.

The haricot bean value chain is generally characterized by low volumes, scattered and fragmented suppliers, long value chain, high transaction costs, lack of reliable sources of market information, and lack of quality control and grading systems. The predominance of low value local varieties and high transaction costs make exports unattractive. Along with low yields and limited volume of production that also limit competitiveness.

3.2. Recommendations

Core interventions and enabling actions can holistically strengthen the Ethiopian Haricot bean value chain to be productive and stable, and provide year round transactions that supply domestic and international markets. These recommendations are complementary to and intended to accelerate the impact of current Government of Ethiopia and development partner strategies:

- **Increase inputs to improve productivity:** Access to inputs is a key step in bridging the yield gap between current and potential production. Phosphates and other fertilizers should be supplied to farmers, along with knowledge on how to use them effectively. Seed multiplication should be increased to adequately supply the needs of exporters and domestic demand (Ali et al,2003 ; Gezaheg et al,2006; Rashid *et al* ,2008 & EIAR,2013)
- **Enhance linkages between exporters and producers.** Stronger linkages between exporters and smallholders will lead to a more efficient value chain where demand signals are clearly communicated to the producers, and where inputs are available to ensure proper production of the necessary export haricot beans. Actions to enable consistent supply between producers and exporters may include: provision of regional-specific input packages; development of new varieties appropriate for export; leverage of cooperatives to provide consistent input supply and off-take (Frehiwot,2010 and FAO,2015).
- **Providing adequate market information to the exporters and farmers.** ECX will play an important role in market transparency, quality, and aggregation for exports. However, exporters association and other relevant agencies assume the responsibility of tracking both domestic and international markets (Frehiwot,2010)
- **Improve on-farm storage management practices and structures** - reduce post-harvest losses from poor storage facilities and management (Ferris & Kaganzi, 2008 & Alemu et al, 2010).

In general, cognizant to recommendation given to enhance the value chain of haricot bean, different surveys have to be done on extension service provision and strengthening capacity of primary cooperative in terms

of credit provision and training on marketing aspects could be a crucial point to enhance the value chain of the product throughout the country.

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