

The Beans Value Chain in Kenya



SNV

Netherlands
Development
Organisation

August 2012

EXECUTIVE SUMMARY

This assignment was commissioned by SNV, HIVOS and Solidaridad – Horticulture and Food Security Program and implemented by SNV and Finline Systems and Management between March and August 2012. The objective was to develop an analysis of and the strategy for the bean sub-sector consistent with the M4P framework. The analysis include: (i) the overall sub-sector performance and position of the poor within it; (ii) the structure, players and relationship that describes how it operates; (iii) key systemic constraint impinging on the sub-sector; (iv) the main elements of the sub-sector strategy; and (v) specific interventions consistent with the analysis and strategy. The information used in the analysis was obtained through interviews with various participants in the green bean value chain conducted between March and August. The interviewees included smallholder farmers, farmer group leaders, horticultural industry association leaders, exporters, domestic green bean buyers, EU importers and EU supermarkets and certification companies. The interviews were supplemented with secondary information and data from reports on the sub-sector.

The Green beans are grown mainly by smallholder farmers under irrigation in Central, Rift Valley and Eastern Provinces. The beans were initially grown exclusively for export market, but over the years they have gained popularity in the domestic market, especially the premium supermarkets. In the year 2010, out of the 55841 MT of French beans produced, only 18,725MT (34%) were exported¹ for the value of Ksh. 4.4 billion (HCDA 2010). In 2011, French beans accounted for 29 per cent - Sh4 billion - of Kenya's total earnings from vegetable exports of Sh13.7 billion. The huge disparity between the domestic (Kshs 1.6 billion) and export (Kshs. 4.4 billion) values are due to the farm gate prices offered to farmers by exporters². The main importing countries for Kenya's green beans are UK, France, Germany, Holland, Belgium and South Africa.

The fresh bean production is mainly dominated by smallholder farmers, estimated at 50,000 growers³, who are mainly households with less than 2 acres of land. They cultivate the land, mainly using family labour. Households also provide labour in the large farms and are compensated through wages. They gain from fresh bean cultivation through the employment and income earned from the sale of the crop. This also contributes to food security of these households. A typical farmer⁴ growing bean makes an average profit of US\$750 (Ksh.60000) per year. Majority of the farmers working with the green bean did not sell to the local market since there was no ready demand for the vegetable. In addition, most of the farmers are organized in groups bound by regulations forbidding sale to the local market. Others have contracts with companies that may not permit sale of their produce outside the contract. Green beans are highly perishable and not convenient for sale to the local market. For these reasons, the local value chain for green bean is under-developed and information is largely unavailable. The sector is controlled by the private sector⁵, incorporating large and small-scale farmers and exporters scattered across the nation. While largely controlled by private investors, who have continued to export top quality fresh produce to the markets, the government has helped in policy and regulation of the sector.

¹The remaining 66% were marketed locally through premium supermarkets, hotels, schools, hospitals, children homes and other local institutions, used as animal feeds and other hawked/retailed.

²The average farm gate prices in the year 2010 are Ksh.28.7, while the average export value per kilogram of French beans was Ksh. 235.

³Small to medium growers are estimated to be 4000, while the large contract growers of beans are estimated to be less than 100 (DFID, 2010).

⁴There is no universally agreed definition of small-scale farms in developing countries. In much of the development literature, farms of less than five hectares can be considered "small". In general these farms often have limited capital or other assets. For the purposes of this paper we adopt a broad definition of a small-scale farmer. A small-scale is one who derives their livelihood from

a holding of < 2-5ha (usually < 2ha); and around 10 to 20 heads of livestock (although often there is < 2 or none at all). Small-scale farmers may practice a mix of commercial and subsistence production (in crops or livestock) or either, where family provides the majority of labor and the farm provides the principle source of income. In the paper we define a small holder farmer as one who is (neither large scale or medium scale farmers – meaning 5-several thousand acres), often using small inputs such as pangas and hoes to cultivate, with open plots of < 2 acres and which are off

<http://www.fpeak.org/industry.html> (accessed on 13th March 2012)

The fresh bean industry in general employs 45,000 to 60,000 people, of whom an estimated 60 per cent are women, in commercial farms, processing, and logistics operations. It is estimated that nearly half or 44 percent of Kenya's smallholder households are managed by women. Women are active at every point in the food chain and are often responsible for the household farming activities under which most of the green bean farms fall. At the pack houses, gender roles become distinct again with women dominating handling sorting, grading and quality control. Men will often do manually demanding tasks like land preparation, irrigation, spraying, loading and off-loading trucks.

Youth's engagement in export horticulture is ranked more favorably compared to other farm-level enterprises due to the high returns per unit area, short production period and regularity of income. However, these benefits are more skewed to the resource endowed youths who can afford the heavy and lumpy investments required to meet Global GAP standards. On the flip-side, the less resource-endowed youths either totally or temporarily exit export-bound horticultural production for other enterprises, remain non-compliant or maneuver their way into accessing the export market.

Kenya has been exporting vegetables to the Europe since the 1950s. Reasons for Kenyan success have varied with the changing market forces of the highly competitive UK and European markets. Kenya's original success in exporting vegetables, especially beans was based on its climatic and geographic competitive advantage. Producing temperate products year round and being well served by northbound airfreight (thanks to the Kenyan tourism market) proved lucrative for Kenyan vegetable exporters. Kenyan success has been due to market segmentation, investing in certification schemes, adding value to products through sophisticated packaging, servicing niche markets, and investing in marketing. Over the years, due to effective public-private dialogue, the Kenyan government has been receptive to implementing regulatory changes, investing in education, and improving infrastructure, which have increased the competitiveness of the industry. Requirements in the international markets for green beans and other fresh produce appear to be raising the bar for new entrants while at the same time throwing new challenges in the path of existing growers. In recognition of the need to meet these standards of environmental management, product food safety, quality, traceability and occupational health & safety of workers, FPEAK launched the code of practice (that has so far changed its name into **KENYA-GAP**) in 1996 as a certification measure for producers and exporters to achieve.

During the value chain analysis of the green beans for export and domestic market, a variety of constraints were identified that were limiting the production and income. The main challenges and opportunities have been identified, namely access to inputs and equipment; knowledge and information; pests and diseases; infrastructure services; coordination and organisational skills; limited markets and market information; challenges with innovation and product development; regulation, standards and laws; and finally access to suitable financing for smallholder. Traditional markets for green beans are faced with both tariff and non-tariff barriers which are increasingly exerting pressure and pose a threat to smallholders. Examples include sustained campaigns against air freighted products due to carbon foot prints; food safety standards; eminent threats for payment of 16% duty on Kenya and other 17 ACP countries following the expiry of Economic Partnership Agreements (EPA's) next year.

Therefore, for the sub-sector to remain competitive, the following key changes are proposed:

- **Market development and market information** – There is need to scout for other possible markets for the Kenyan green beans targeting both Domestic, regional and International markets. Consumption of green beans is emerging in Kenya and the region and there is need to promote it. There is a need to look for other alternative markets to EU, e.g. USA, Asia, etc. The development of the local and regional market is subject to promotion and awareness creation (informing the local consumer about the nutritive value of this vegetable). Otherwise, it is perceived to be a crop for foreign markets. There is need to improve the

marketing information system: Farmers need proper advise on when to plant to avoid overproduction. There is need to educate farmers on market driven production planning.

- **Technology, innovation and product development-** Pre-harvest crop management as well as postharvest handling both contribute to the quality of green beans produced and products channelled to the market (both local and internationally). Green bean postharvest losses account for a significant decline in marketable yield at farm level and along the marketing chain. There is therefore need for training and sensitizing farmers on farm level postharvest handling practices and adherence to set regulations to maintain product quality. Agro processing, packaging, canned and frozen beans and quality standards in the domestic, regional and international market are not fully developed. In particular, value addition, investment in packaging technology is critical during sea freight, whose cost is significantly lower compared to the air freight. Deliberate efforts should be made towards investing in this area to increase the produce shelf life, reduce post-harvest losses, and improve consumer acceptance both in domestic and international markets.

LIST OF ACRONYMS

AAK	Agrochemical Association of Kenya
ACP	Africa Caribbean Pacific
AGRA	Alliance for Green Revolution in Africa
DFID	Department for International Development
EFSS	European Food Safety Standards
EMCA	Environmental Management and Coordination Act
EPC	Export Promotion Council
EPA	Economic Partnership Agreement
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FPEAK	Fresh Produce Association of Kenya
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GLOBALGAP	Global Good Agricultural Practices
GMP	Good Manufacturing Practices
HACCP	Hazard analysis and critical control points
HCDA	Horticultural Crops Development Authority
HIVOS	Humanistisch Instituut voor Ontwikkelingssamenwerking (the Humanist Institute for Development Cooperation)
HVC	High Value Chain
IFAD	International Fund for Agriculture Development
JICA	Japan International Cooperation Agency
KARI	Kenya Agriculture Research Institute
KEPHIS	Kenya Plant Health Inspectorate Service
KEBS	Kenya Bureau of Standards
KENFAP	Kenya National Federation of Agricultural Producers
KES	Kenya Shillings
KIRDI	Kenya Industrial Research and Development Institute
MT	Metric Tonnes
MoALD	Ministry of Agriculture and Livestock Development
MENR	Ministry of Environment and Natural Resources
MOH	Ministry of Health
M4P	Markets for the poor
MRL	Maximum Residue Limits
NEMA	National Environmental Management Authority
PCPB	Pest Control Products Board
PPP	Public-private partnerships
SHDP	Small Scale Horticulture Development Program
SHoMAP	Small Holder Horticulture Marketing Program
SNV	Netherlands Development Organization
STAK	Seed Traders Association
UK	United Kingdom
USAID	United States Agency for International Development
VC	Value Chain
WB	World Bank

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ACKNOWLEDGEMENT

There are a number of persons and institutions that contributed to the successful completion of Beans value chain study in Kenya who we feel indebted to acknowledge in this report. First, we would like to thank Embassy of The Kingdom of Netherlands, Nairobi through Solidaridad East and Central Africa Expertise Center (SECAEC) for providing the finances to undertake the assignment. We are particularly thankful to Alphonse Muriu (Senior Economic Development Advisor SNV – Horticulture Sector Leader), Thomas Were (Senior Economic Development Advisor- SNV), and Benard Ndolo (Junior Consultant Horticulture - SNV) for their contribution towards the facilitation, content development, quality control and overall success of the study. Our appreciations also go to Finline Systems and Management Consultants team for the field data collection and collation led by Mr. Alex Mala.

We would also like to thank officials from the Ministry of Agriculture in all the beans growing areas visited especially in Central, Rift Valley and Upper Eastern Provinces. In addition our appreciation to all the stakeholders who participated in the study cutting across the producers, transporters, services providers, processors, traders, exporters and development facilitators without whom the results of this studies would not have been successful.

We also give our sincere gratitude to all the stakeholders who were involved in report validation at the validation workshop held in Fairview Hotel, Nairobi. Your contributions and positive critiques have shaped the outlook of this final report.

To all those mentioned above and others who may in one way or the other have contributed to the success of this project we are indeed very grateful and value your contribution.

Harm Duiker
Country Director SNV Kenya

1.0 INTRODUCTION

Horticulture is an important subsector of Kenyan agriculture, the mainstay of the country's economy, in achieving food security, income and employment generation, foreign exchange earnings, raw material for agro-processing, and poverty alleviation. Solidaridad/SNV/HIVOS has designed a programme to scale up the horticulture and food security in Kenya by strengthening the smallholder to produce in a more sustainable manner and improve the Kenyan food security.

This assignment was commissioned by SNV, HIVOS and Solidaridad – Horticulture and Food Security Program and implemented by SNV and a team of private sector consultants, Fineline Systems and Management and August 2012. The objective of the assignment was to develop an analysis of and the strategy for the bean sub-sector consistent with the M4P framework. The analysis included: (i) the overall sub-sector performance and position of the poor within it; (ii) the structure, players and relationship that describes how it operates; (iii) key systemic constraint impinging on the sub-sector; (iv) the main elements of the sub-sector strategy; and (v) specific interventions consistent with the analysis and strategy. The information used in the analysis was obtained through interviews with various participants in the green bean value chain conducted between March and August. The interviewees included smallholder farmers, farmer group leaders, horticultural industry association leaders, exporters, domestic green bean buyers, EU importers and EU supermarkets and certification companies. The interviews were supplemented with secondary information and data from reports on the sub-sector.

2.0 SECTOR DESCRIPTION

2.1 Overview of the horticulture sub-sector

Agriculture is the mainstay of the Kenyan economy with an annual direct and indirect contribution to GDP of 24% and 27% respectively. Horticulture is among the leading contributors to the Agricultural GDP at 33% and continues to grow at between 15 and 20% per year. The horticulture sub sector has grown significantly to become a major employer, with over six million Kenyans directly and indirectly employed. About 96% of the horticultural production is consumed locally, while the remaining 4% is exported; yet in terms of incomes, the export segment earns the country huge amounts of foreign exchange (National Horticultural Policy 2010). The Kenyan horticultural industry has grown from its base of small businesses and small farmers, to being dominated by very sophisticated businesses that are becoming increasingly vertically integrated. According to USAID Kenya Horticultural Competitiveness Project, export of fresh produce earned Kenya about Ksh.91.4 billion in the year 2011. In the year 2010 the value of Kenya's horticultural exports was Kshs. 77.71 billion shillings (\$ 971 million in foreign exchange) up from 71.60 billion shillings in 2009 representing a 7.7% increase. The overall subsector is comprised of a mix of products from the three main subgroups: primarily flowers, fresh fruits, and fresh vegetables.

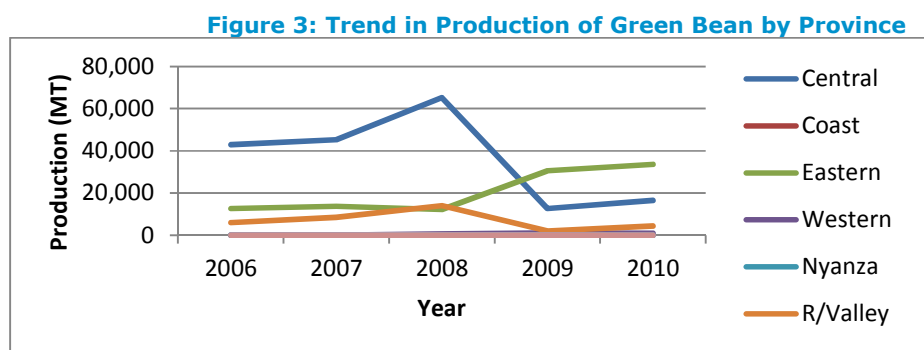
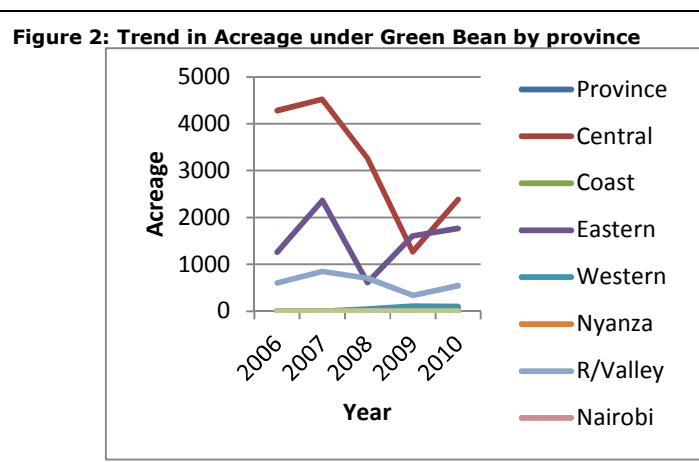
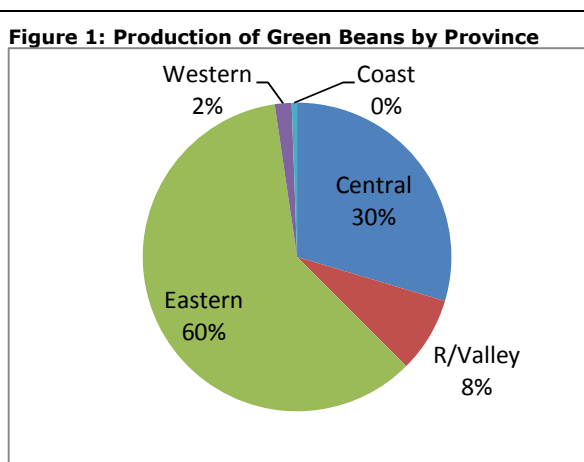
2.2 Key trends over the past 5 years

The subsector analysis will focus on green beans from among the range of horticultural export crops. The Green beans are grown mainly by smallholder farmers under irrigation in Central, Rift Valley and Eastern Provinces. French beans were initially grown exclusively for export market, mainly to the European Union but over the years the vegetable has gained popularity in the domestic market, especially the premium supermarkets; as more than 66% of green bean produced is consumed locally or wasted. The crop is grown mainly by smallholder farmers under irrigation in Central (16,526 MT), Rift Valley (4,419 MT), Eastern (33,596 MT), Western (980 MT) and Coast (320 MT) Provinces. There has been a 37% reduction in the area under green bean production from 7,733ha in 2007 to 4840ha in year 2010. Between 2008 and 2010, the production volume and value decreased by about 39% and 45% respectively. This was due to prolonged drought in 2008 – 2009. Table 1 shows the area (ha) and production (MT) for green beans.

Table 1: Production of French/Green beans from 2006-2010

Province	Hectareage (Ha)					Production (MT)				
	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
Central	4,282	4,518	3260	1,269	2384	42,820	45,180	65,200	12,690	16526
Coast	-	-	-	10	44	-	-	-	100	320
Eastern	1,262	2,362	608	1,607	1768	12,620	13,620	12,160	30,542	33596
Western	-	-	45	110	98	-	-	675	1100	980
Nyanza	-	-	-	0	-	-	-	-	0	-
R/Valley	603	851	700	338	546	6,030	8,510	14,000	2,044	4419
Nairobi	7	2	3	2	0	70	20	60	20	0
N/Eastern	0	0	0	0	0	0	0	0	0	0
Total	6,154	7,733	4616	3,336	4840	61,540	67,330	92,095	46,496	55841

Source (HCDA 2009/2010)



In the year 2010, out of the 55841 MT of French beans produced, only 18,725MT (34%) were exported⁶ for the value of Ksh. 4.4 billion (HCDA 2010). In 2011, French beans accounted for 29 per cent - Sh4 billion - of Kenya's total earnings from vegetable exports of Sh13.7 billion. The huge disparity between the domestic (Kshs 1.6 billion) and export (Kshs. 4.4 billion) values are due to the farm gate prices offered to farmers by exporters⁷.

6 The remaining 66% were marketed locally through premium supermarkets, hotels, schools, hospitals, children homes and other local institutions, used as animal feeds and other hawked/retailed.
 7 The average farm gate prices in the year 2010 are Ksh.28.7, while the average export value per kilogram of French beans was Ksh. 235.

According to MoALD (2004)⁸, vegetable exports are an important component of the vegetable supply chain, absorbing about 20% of all sold production by value, and accounting for about one-quarter of all value added after the farm gate. Domestic markets nonetheless remain the primary outlet for vegetable production and generate much more added value than do export markets. Value added per unit of farm-gate production is higher in the export sector primarily due to higher quality, input level and health standards requirements. Export prices of these vegetables have exceeded farm-gate prices by a factor ranging from 2.7 to 6.2 between 1992 and 2004, with an average of 2.9, or 290%.

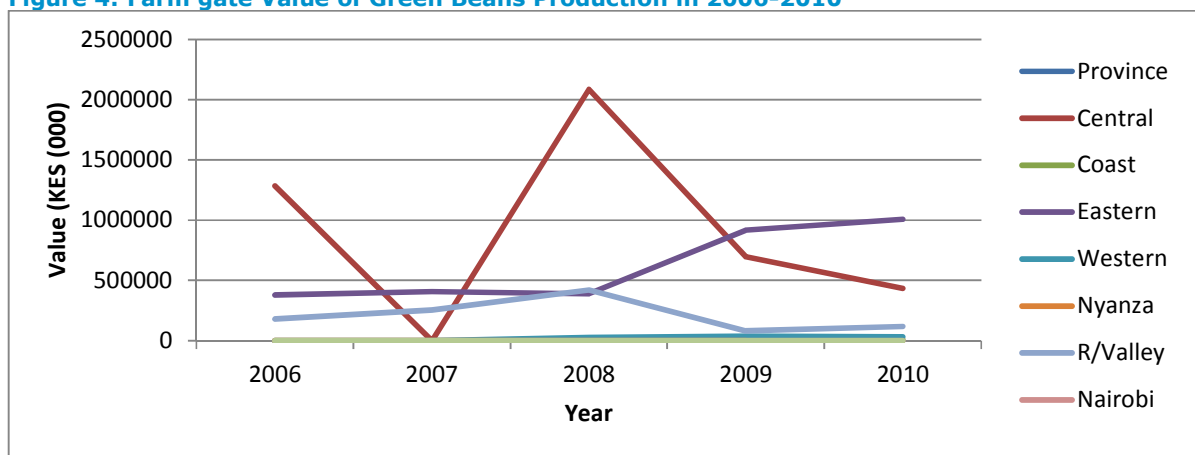
The main importing countries for Kenya's green beans are UK, France, Germany, Holland, Belgium and South Africa. The table below is the value of green beans at the farm gate between years 2006 to 2010.

Table 2: Farm gate Value (Ksh) of French Beans/Green Beans production in 2006-2010

Province	Value (Ksh' 000)				
	2006	2007	2008	2009	2010
Central	1,284,600	1,355,400	2,086,400	697,950	434,593
Coast	-	-	-	3,500	11,200
Eastern	378,600	408,600	389,120	916,260	1,007,886
Western	-	-	27,000	38,500	34,300
Nyanza	-	-	-	0	-
R/Valley	180,900	255,300	420,000	81,760	118,280
Nairobi	2,100	600	2,400	800	0
N/Eastern	0	0	0	0	0
Total	1,846,200	664,500	2,924,920	1,738,770	1,606,259

Source (HCDA 2009/2010)

Figure 4: Farm gate Value of Green Beans Production in 2006-2010



2.3 Relevance to the poor

The fresh bean production is mainly dominated by smallholder farmers, estimated at 50,000 growers⁹, who are mainly households with less than 2 acres of land. They cultivate the land, mainly using family labour. Households also provide labour in the large farms and are compensated through wages. They gain from fresh bean cultivation through the employment and income earned from the sale of the crop. This also contributes to food security of

⁸ Ministry of Agriculture and Livestock Development

⁹ Small to medium growers are estimated to be 4000, while the large contract growers of beans are estimated to be less than 100 (DFID, 2010).

these households. A typical farmer¹⁰ growing bean makes an average profit of US\$750 (Ksh.60000) per year. (DFID, 2010). Small holder farmers grow horticultural products because they are profitable, earning up to seven times more income than maize. In addition, the small land size of these farmers makes maize farming uneconomical.

2.4 The Sector Map of Green Beans

The subsector map is a visual presentation of the way the product flows through different channels from production to the markets. The map is divided between the different functions that are carried out in getting the product from farm to the end markets. The participants are divided into channels based on their forward and backwards linkages and their use of technologies that differentiate them from one another. The main functions in the subsector are production (or growing); harvesting, bulking, purchasing and collection of the product, packing and export of the product, the shipping, import and distribution to the consumer markets. These are described more fully below, along with the range of participants who fulfil the various functions. The domestic value chain, though not different from the export, has also been presented.

2.4.1 Growing of green beans

There are three differentiated kinds of growers. These are the large farmers, very small traditional and emerging bean growers. In the middle are small to medium farmers who grow beans primarily on contract.

¹⁰ There is no universally agreed definition of small-scale farms in developing countries. In much of the development literature, farms of less than five hectares can be considered "small". In general these farms often have limited capital or other assets. For the purposes of this paper we adopt a broad definition of a small-scale farmer. A small-scale is one who derives their livelihood from a holding of < 2.5ha (usually < 2ha); and around 10 to 20 heads of livestock (although often there is < 2 or none at all). Small-scale farmers may practice a mix of commercial and subsistence production (in crops or livestock) or either, where family provides the majority of labor and the farm provides the principle source of income. In the paper we define a small holder farmer as one who is (neither large scale or medium scale farmers – meaning 5-several thousand acres), often using small inputs such as pangas and hoes to cultivate, with open plots of < 2 acres and which are oft

Table 3: Growers of green beans and their characteristics and role in the value chain

Grower	Target Mkt.	Features	Strength	Challenges	Remarks
Large Firms - Large Farms - Exporters - Processors	Export	<ul style="list-style-type: none"> • Have farms of 50 to 100 hectares or larger • Use latest farming technology • Hire all of their labour • Deliver specified quantities for export at specified times • Farms are either owned by the medium to large exporters (vertically integrated) or by individuals who are on contract to large exporters • Growing vegetables is carried out as a business with tight cost controls and scientific planning • Farmers procure all of their own inputs, seed, chemicals, and fertilisers • Provide his irrigation system and cover the cost of pumping the water • keeps very accurate records of all elements associated with the production • Delivers sorted and graded cartons of green beans to the exporter • Profits to the farmer range between 25,000 to 50,000 Ksh. per acre per year of beans produced • Employs about one person for a day for every ten boxes of beans that it sells, or 30 person days per ton of product. • There are estimated to be less than 100 farms of this type. 	<ul style="list-style-type: none"> • Because of superior farming technology, production benefits from economies of scale • Strong enforceable contracts with exporters are a basic feature. This assures business. 	<ul style="list-style-type: none"> • High cost of running operation because of intensive hired labour and installation of irrigation systems 	
Farmers - Small - Medium - Large	Export	<ul style="list-style-type: none"> • Works directly with an exporter although may not have a written contract with the exporter/broker collecting from them • Small contract farms need to plant at least one half acre in size to have a sufficient yield to be able to make it worthwhile for the exporter to work with them. This can ideally be explained either in the context of ease of export logistics (transportation, 	<ul style="list-style-type: none"> • Support for inputs from the exporter who may provide seed and/or chemicals as well as assign an agronomist to the contract farmer • Assignment of an extension/agronomic officer to the farmers provides an 	<ul style="list-style-type: none"> • Work with exporters but do not have written contracts with them • About 10 farmers with an average of half to one acre need to be clustered in one place to make it worthwhile for an agent/exporter to collect. Sometimes this 	<ul style="list-style-type: none"> • There have been farmers who plant on less than quarter of an acre. Such are now considered to be too small by the exporters for economic reasons. • Often, they produce what they can and sell ordinarily to brokers looking for product for an exporter.

<p>Contracted Individual Farmers - Producer Groups</p>	<p>Export</p>	<p>record keeping, and agronomy support) or economic threshold for profitability from the small scale buyer.</p> <ul style="list-style-type: none"> • Employ only a few labourers. Even though the farmer will handle much of the basic work, they still need help working the fields and doing irrigation and harvesting. • Since many of the medium sized farmers are growing a couple of acres at a time, they require 15 – 20 workers on a regular basis for the harvesting. • Unlike the large farmers who own their transport fleet and will transport product to the exporter, this time the exporter visits the small contract farmer to pick up the product based on his own export schedule • Keeps very accurate records of all elements associated with the production including fertilizers and chemicals application • Recent estimates of the number of specific out-growers working with exporters are about 4,000 small farms (USAID). • Each of these farms employs on average between five and ten workers, working between three and five days a week depending on the season. 	<p>important support service to help them produce a good crop within the guidelines being set out for the export markets.</p> <ul style="list-style-type: none"> • 	<p>could be a challenge.</p> <ul style="list-style-type: none"> • Maintenance of records often presents problems for the smaller farmer, and so the exporter usually develops spraying schedules for each contract farmer and assigns an agronomist to work with the contract growers. • The very small farmer must procure their own seed and chemicals and do not get advice on the proper growing techniques. This is a challenge should there be any shifts in the standards. They may rely on the public sector extension staff, which is scarce or asks neighbours what products to apply • Because they cannot afford top quality seed, they tend to grow less expensive varieties that are not preferred by the exporters and hence gets a lower price at the farm gate • Because of 'loose' relations (no contracts) with exporters, they are often dropped whenever they succumb to the temptation to side-sell. 	<ul style="list-style-type: none"> • Occasionally, they will also sell directly to an exporter, especially small exporters
	<p>Contracted Individual Farmers - Producer Groups</p>	<p>Export</p>	<ul style="list-style-type: none"> • Small farmers grouped into economically viable units that can produce quality product while monitoring their production. • These are often organized by organizations such as HCDA & FPEAK 		<ul style="list-style-type: none"> • Concentration of these farmers within a specific geographic area so that they all use the same agronomic and post-harvest

	<ul style="list-style-type: none"> • Many work closely with the exporters. • They cultivate as individuals and undertake joint marketing of the collected green beans. • The exporter provides inputs and technical assistance through an agronomist to the group of thirty or so farmers • The agronomist will supervise the production and manage the spraying schedules and ensure proper record keeping. He will work closely with the farmers, help them plan their production and ensure that the product is properly packed and ready for shipping at the appointed time. He will also provide an eye on the leakage of product to other buyers (brokers or other exporters). • To make this economical, the growers must be concentrated within a reasonable area, about a 10 km radius, but do not necessarily need to be adjacent • For these groups, the exporter still prefers to have individual farmers with plots of at least one half acre under production, using at least 5 kg of seed per planting with a harvest totalling about one ton. The whole group should be able to provide at least 1-2 tonnes per collection, which seems to be an economic breakeven point. 		<p>practices can be a challenge with the possibility of some small farmer being left out of future developments of this industry due to clustering for logistics.</p>	<p>plots being rotated and farmed by specific farmers.</p>
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2.4.2 Collection and Brokering

When Kenya first entered the green bean market over 3 decades ago, brokers served the role of doing much of the collection from the very small farmers, buying from them at cheaper prices and reselling to the exporters (margin of about KES 10/ box of 3 kg., a cost that was often borne by the farmer. With the increasing requirements for traceability of the product, exporters must now contract directly with the growers, which make brokering an endangered profession. However the advantage of brokering is filling up inefficiency gaps in the product chain because the small, medium and even large exporters still suffer some product movement inefficiencies. They frequently use brokers to acquire additional product, thus cutting down on their own costs and time loss. Many exporters buy from brokers on a regular basis to round out orders. In areas where exporters do not reach the farmers, the brokers become the main outlet for farmer but pay relatively low prices, the alternative being that the farmer loses out completely. One disadvantage is; because of not having up-front costs, they tend to push their risk to the farmer and the exporter who may have supplied seed/input in advance. This in turn leads to side-selling, which in turn destroys the otherwise cordial contractual relationships with the exporters. Within the year (through several – 2 to 3 planting seasons, prices can vary from as low as KES 10 to as high as KES 110/kg. The reasons for such huge fluctuations includes demand/supply forces, poor quality beans and competition among buyers i.e. exporters, processors and to a small extent, brokers. Other causes of fluctuations may be weather changes, social holidays or events in the export market

2.4.3 Exporting of beans

This involves the purchase of the beans from the grower, final grading into the appropriate categories, packing, and shipping to a buyer in Europe. Even during the low season, there were about 37 firms exporting vegetable products (beans, etc.). These represent large, medium, and small firms. These figures come close to double during the peak season, as more part time exporters enter the market. Most of the exporters working with contract growers have trained them in grading to ensure that they get quality product. There are three major groups of exporters: the large vertically integrated, small to medium, and the briefcase exporters.

- a) Briefcase exporters:** These function only during the high season when prices are good. They procure their product from brokers, rent space in packing houses around the airport, loose pack the product, and ship to buyers in Europe. As they do not have any regular growers, the briefcase exporters, along with the brokers, are constantly looking for quality product. This product comes most often from the better growers who have been provided seed by other exporters. In the changing environment, where traceability¹¹ of product has become mandatory into Europe, and these exporters are being forced out of the market.

- b) Small to medium exporters:** These exporters are in the market all year long. They are serious about exporting, but do not have the resources or ability to reach the scale of the very large. Issues that make them unable to get to scale of large exporters are that most are start-ups that are growing, challenges in securing guaranteed large markets. They are often constrained by cash flow in their attempts to grow. There are approximately 15 – 20 exporters in this category doing between 400 and 1500 tons per annum of all products, but mostly green beans. In most cases these exporters have their own packing houses at or near the airport, though some will rent space for the final pack. These exporters are almost all integrated backwards into the production, for at least some of their green bean needs. Their farms are generally smaller, between 5 –20 acres, though some have much larger farms. They get the bulk of their product for export from growers whom they contract to grow for them. But they are also facing increasing cost and

¹¹ Such exporters are involved in produce poaching. They are also unable to trace the origin of their produce since they have no contractual relationships with small holder growers.

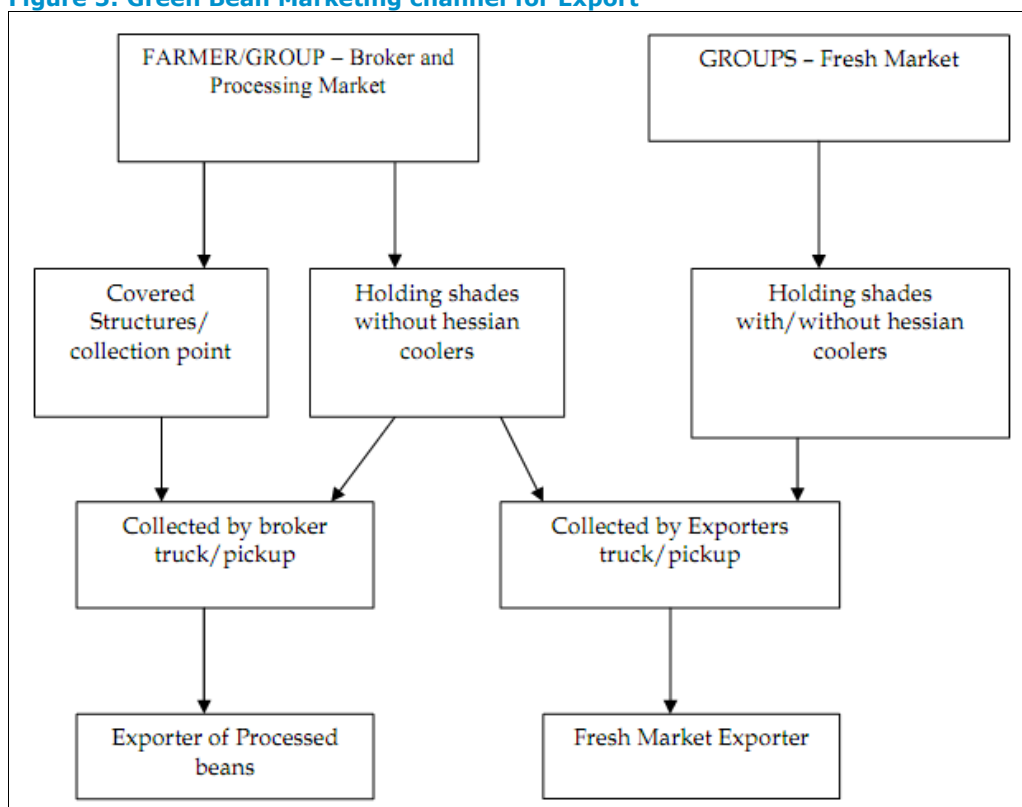
quality constraints that make it uneconomical for them to deal with individual small growers, so they must either work with larger groups of out-growers or with larger individual farmers.

- c) Large integrated exporters.** These exporters have increasingly integrated their operations both forwards into the markets and backwards into the production. Their total tonnage of exports ranges from between 2,500 tons per annum to 10,000 tons, all products included. Finlays, Vegpro, Sunripe, Everest and Frigoken have out growers schemes; they have contracted smallholder farmers through small producer groups. This form of small farmer/processor or exporter linkage has the advantage of being more politically and socially acceptable compared to using a company's own farms, as it fosters inclusiveness than tightly vertically integrated systems (such as those in the flower industry) where small farmers are completely locked out. Some large exporters such as Everest have very strong market links and generally provide a fairly consistent amount of product over the course of the year. Some of them, like Home-grown, Indu-farm and Everest, are integrated into the markets, with shareholding in the distributors in Europe.

Table 4: Exporters and their Key Characteristics

Exporters	Features	Strength	Challenges	Remarks
Brief case	<ul style="list-style-type: none"> • These function only during the high season when prices are good. • They procure their product from brokers, rent space in packing houses around the airport, loose pack the product, and ship to buyers in Europe. 	<ul style="list-style-type: none"> • Can enjoy the convenience of having very low capital expenditure 	<ul style="list-style-type: none"> • While this is their business model, it may be opportunistic on farmers' and exporter's investments (e.g. can buy on the side when the season is high for export and immediately go out of the market once it is over. • As they do not have any regular growers, the briefcase exporters, along with the brokers, are constantly looking for quality product. Such only comes from the better growers who have been provided seed by the exporters. • In the changing environment, where traceability of product has become mandatory into Europe, and these exporters are being forced out of the market. 	
Small / Medium	<ul style="list-style-type: none"> • There are approximately 15 – 20 exporters in this category doing between 400 and 1500 tons per annum of all products, but mostly green beans. • These exporters have their own packing houses at or near the airport, though some will rent space for the final pack. • Almost all integrated backwards into the production, for at least some of their green bean needs. • Their farms are generally smaller, between 5 –20 acres, though some have much larger farms. • They get the bulk of their product for export from growers whom they contract to grow for them. 		<ul style="list-style-type: none"> • They do not have the resources or ability to reach the scale of the very large • Often constrained by cash flow in their attempts to grow. • They face increasing cost and quality constraints that make it uneconomical for them to deal with individual small growers, so they must either work with larger groups of out-growers or with larger individual farmers. 	
Large firms	<ul style="list-style-type: none"> • Have increasingly integrated their operations both forwards into the markets and backwards into the production • Total tonnage of exports ranges from between 2,500 tons per annum to 10,000 tons, all products included • May have out growers schemes where have contracted smallholder farmers through small producer groups 	<ul style="list-style-type: none"> • Economies of scale • Socially acceptable when using small out-grower farmers/groups 	<ul style="list-style-type: none"> • Lack of diversification especially when fully integrated vertically and using own farms 	<ul style="list-style-type: none"> • Small farmer/ Processor or exporter linkage has the advantage of being more politically and socially acceptable compared to using a company's own farms.

Figure 5: Green Bean Marketing channel for Export



2.4.4 Shipping/Transport

The crates of beans are normally transported from the field to the shaded collection point in crates using bicycles and ox-carts because of poor state of roads to most farms in Kenya. Once at the collection points, the rest of the movement will normally be done in trucks. The food safety (hygiene) requirements farmers must comply with during the transportation stage include covering the crates with clean dry material (i.e., cloth or paper) to keep off dust and dirt, and also to screen off the direct sunlight. Farmers also ensure that the transport medium (ox-cart or truck) is thoroughly washed before the crates are loaded into it to prevent accidental contamination of beans with pathogens and dirt.

Beans are normally transported from the collection center to the exporter’s pack-house mainly in exporters’ trucks. In many instances, the trucks are non-refrigerated but usually take a relatively short time from loading at the farm to off-loading at the pack-house because once the beans leave the farms, the roads are relatively good. Same standards apply for farmer owned trucks as those for transport from the field to collection center. That is, the trucks must be clean and covered. The most careful attention to the control of contamination with pathogens occurs in the exporters’ processing facilities (pack-houses). Leading exporters have invested in state-of-the-art equipment that wash (with chlorinated water) and chill the beans before packing. The workers wear special clothes and rubber boots in the pack-house and are required to wash hands at regular intervals or whenever changing a shift to avoid cross contamination of beans with pathogens. It is normal to have random swabs taken from workers’ hands for pathogen tests. Sorting, chopping, and arranging into trays and pallets, packing and bar coding (in the case of high care pre-packed beans) are done under temperature-controlled conditions. While farmers are not typically involved at the pack-house stage, rejection of their produce for failure to meet physical or hygiene standards has direct implications on their continued participation in the market.

2.4.5 Bean Importers

These are the clients of the exporters. They are critical to the whole process. There are small independent importers who operate during the peak season, as do the briefcase exporters, but the majority of the export passes through the hands of regular, respected importers and distributors. The largest exporters have fixed relations with strong distributors who have long term relations with the supermarkets. Some of the distributors are actually co-owned by the exporters (Everest and Finlays).

2.4.6 Domestic Green Bean Consumption

In a study conducted by WB/EU/ACP (2010), a unanimous outcome of a series of studies indicated that a major problem faced in development of a methodology to characterize the supply of fruits and vegetables to major cities in East Africa was lack of data to characterize the domestic horticulture market. In Kenya, domestic fresh vegetables supply is irregular and faces lots of imports including bananas, papayas, pears, and apples among others. Although plenty of data exists to describe local production, little or no data is available on domestic supply. In a study of snap bean production, post-harvest practices and constraints in Kirinyaga and Machakos districts of Kenya, Ndegwa, A.M. Muthoka, C.W, Gathambiri, M.N,, Muchui, M.N., Kamau, M.W., and Waciuri, S.M. (2009)¹² found that local consumption of snap bean was minimal. They identified development of locally adapted varieties for promotion of the bean utilization in the local market. Majority of the farmers working with the green bean did not sell to the local market since there was no ready demand for the vegetable. In addition, most of the farmers are organized in groups bound by regulations forbidding sale to the local market. Others have contracts with companies that will not permit sale of their produce outside the contract. Lastly, green beans are highly perishable and not convenient for sale to the local market. For these reasons, the local value chain for green bean is under-developed and information is largely unavailable.

In a study of fresh fruit and vegetable consumption patterns and supply chain systems in urban Kenya, Tschirley, Ayieko & Mathenge, (2007)¹³ found that French beans were least purchased by Nairobi population (16%). The table below shows weighted households purchases of major fresh fruits and vegetables in Nairobi in 2004.

¹² Ndegwa, A.M. et al (2009): Snap Bean Production, Post-harvest Practices and Constraints in Kirinyaga and Machakos Districts of Kenya; KARI, Thika.

¹³ Tegemeo Institute of Agricultural Policy & Development, 2007

Table 6: Weighted Household Purchases of Major Fresh Fruits and Vegetables in Nairobi

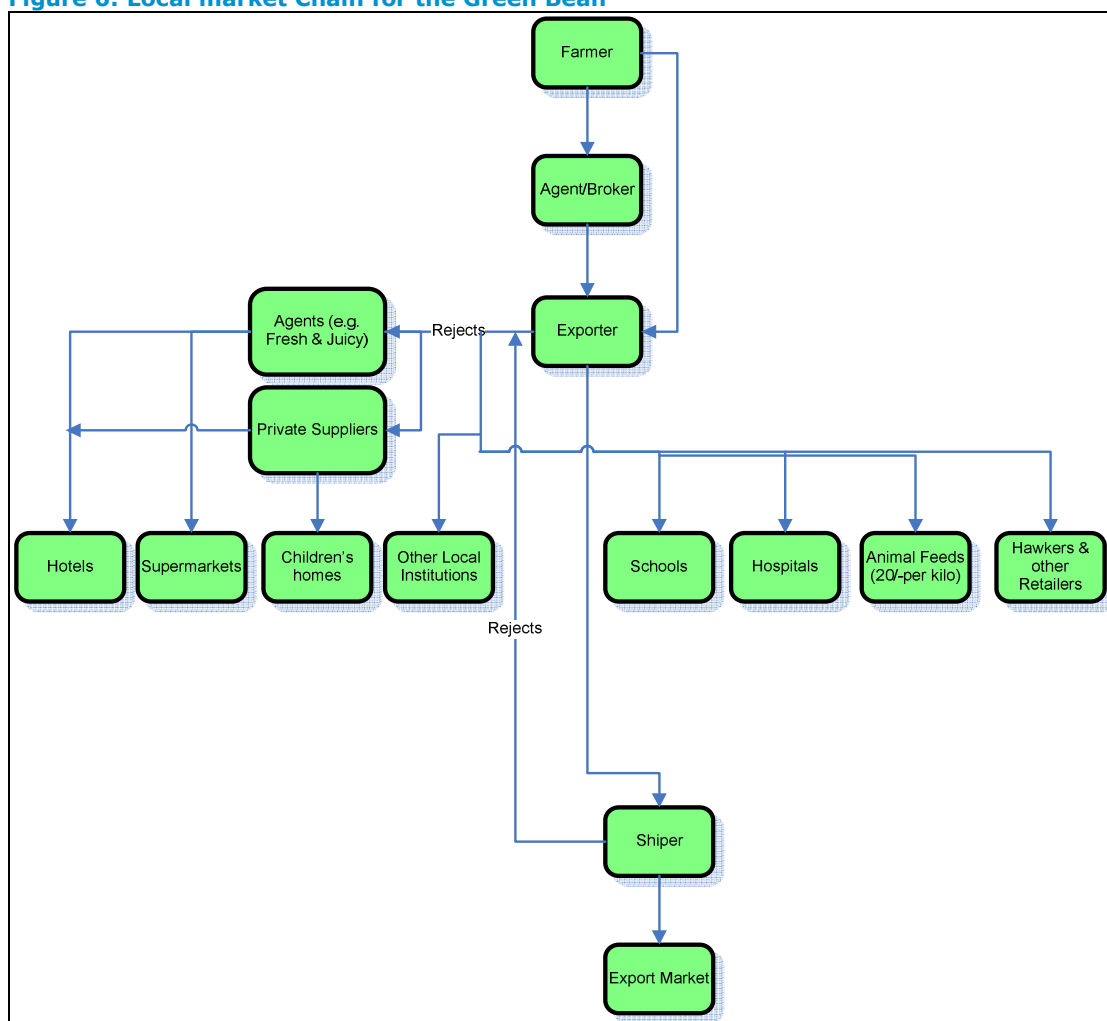
Item	% of Households purchasing	Monthly purchases among those purchasing				Average monthly expenditure over all Hhs
		Quantity (kg)		Value (Ksh)		
		Mean	Median	Mean	Median	
VEGETABLES						
Tomatoes	96%	9.8	8.3	239	180	229
Onions	94%	4.5	3.0	121	78	114
<i>Sukuma wiki</i> (Kales)	82%	12.7	10.0	121	130	99
Cabbage	77%	3.8	2.8	88	60	68
Irish potatoes	77%	22.7	24.2	187	180	144
Carrots	67%	5.0	3.5	91	52	61
Cooking bananas	35%	13.3	8.4	136	80	48
Sweet potatoes	24%	6.7	4.0	97	64	23
French beans	16%	3.9	1.5	84	50	13
<i>Average total monthly purchases of vegetables over all households (Ksh)</i>						799

Source: Tegemeo Institute, 2004.

One unique characteristic of the French bean in the market is that it is likely to be purchased in a supermarket than at any other source. In a study of fresh fruits and vegetables consumption patterns and supply chain systems in urban Kenya, Tscherley et al (2007) found that in decreasing likelihood order, consumers were likely to purchase French beans, oranges, onions, carrots, sukuma wiki, and tomatoes in supermarkets.

Green beans production is often not targeted for the local market, the distribution channel will normally be different from the channels followed for other common vegetables, i.e. from farmers (small, medium and large) at production level, to assemblers/wholesalers (who would normally be the exporter handling the bulk produce), then to the super-market and other outlets including small kiosks, open air markets, hawkers, hotels and other institutions.

Figure 6: Local market Chain for the Green Bean



2.5 Major supporting institutions or private service providers

The sector is controlled by the private sector¹⁴, incorporating large and small-scale farmers and exporters scattered across the nation. While largely controlled by private investors, who have continued to export top quality fresh produce to the markets, the government has helped in policy and regulation of the sector. The following is a summary of the major institutions, both public and private that drive the horticultural sub-sector, which also applies to bean production and marketing.

2.5.1 Government institutions

- i. **Ministry of agriculture:** The Ministry is the lead agent in agricultural transformation in the country. The ministry provides overall policy direction, regulation and operational direction. They also provide extension services to the farmers.
- ii. **Other government ministries:** Other ministries whose mandates directly impact on horticulture include Water and Irrigation, Health, (MOH), Environment and Natural Resources (MENR), Local Government, and Trade and Regional Development Authorities.

¹⁴<http://www.fpeak.org/industry.html> (accessed on 13th March 2012)

- iii. **Horticultural crops development authority:** The Horticultural Crops Development Authority (HCDA) is established under the Agriculture Act, (Cap. 318) through the Horticultural Crops Development Authority Order, 1967 (Legal Notice No. 229/1967). HCDA has the mandate to facilitate the development, promotion, coordination and regulation of the horticulture industry in Kenya.
- iv. **Kenya plant health inspectorate service:** The Kenya Plant Health Inspectorate Services (KEPHIS) was established by the Kenya Plant Health Inspectorate Service Order, 1996 under the State Corporations Act (Cap 446). KEPHIS is the designated competent authority with the responsibility of regulating plant health issues relating to phyto-sanitary and seed matters.
- v. **Kenya agricultural research institute:** The Kenya Agriculture Research Institute (KARI) is established under the Science and Technology Act (Cap 250) with the national mandate of carrying out research the fields of agriculture.
- vi. **The pest control products board:** The Pest Control Products Board (PCPB) is established under the Pest Control Products Act (Cap 346). Its functions are to regulate the importation, exportation, manufacturing, distribution and usage of pesticides.
- vii. **Kenya bureau of standards:** The Kenya Bureau of Standards (KEBS) is established under the Standards Act (Cap 496). Its primary function is to promote standardization in commerce and industry
- viii. **Kenya industrial research and development institute:** The Kenya Industrial Research and Development Institute (KIRDI) were established under the Science and Technology Act (Cap 250). It is mandated to undertake research and development in industrial and allied technologies.
- ix. **Export promotion council:** The Export Promotion Council (EPC) is established through Legal Notice No. 4342 with the mandate of developing and promoting Kenya's exports. EPC's primary duty is to identify and address constraints facing exporters and producers of export goods and services.
- x. **National environmental management authority**
- xi. The National Environmental Management Authority (NEMA) is established under the Environmental Management and Coordination Act (EMCA) No. 8 of 1999, as the principal instrument of government in the implementation of all policies relating to the environment.
- xii. **Universities and colleges of agriculture:** There are a number of public universities and colleges of agriculture in Kenya; these institutions are established under Cap 210 of the laws of Kenya. The institutions' primary roles are research and development of human capacity.

2.5.2 Private sector Organisations

- i. **Fresh produce exporters association of Kenya:** The Fresh Produce Exporters Association of Kenya (FPEAK) was established in 1975. It is a members association dedicated to the welfare and enhancement of members' business activities through lobbying, information and marketing support, and promoting members' compliance with international standards. The FPEAK membership comprises large and small-scale farmers and exporters (see annex for the list of registered members).
- ii. **Kenya national federation of agricultural producers:** The Kenya National Federation of Agricultural Producers (KENFAP) is the umbrella organization of agricultural producers. KENFAP lobbies for and advocates through representation of producer groups and commodity associations at local, regional, national and international levels.
- iii. **Agrochemical association of Kenya:** The membership of Agrochemical Association of Kenya (AAK) comprises manufacturers, formulators, re-packers, importers, distributors, farmers, and users of pest control products (pesticides). The primary objective of AAK is to promote safe and effective use of pesticide chemicals.
- iv. **Seed traders association:** This Seed Traders Association (STAK) is an association for seed traders and seed trading companies operating in the country.

2.6 Cross Cutting Issues

While growing of green beans is done under tight controls in terms of use of inputs (fertilisers and pesticides), these pose occupational¹⁵ safety issues especially if the standards are not adhered to, especially to producers targeting both export and local market. Adherence to the standards has been a challenge to small scale farmers due to the increasing costs of compliance, limited skills and inadequate access to the right inputs. There have been initiatives by leading European supermarkets to be carbon neutral following concerns of carbon emissions from air freighted food. Green beans use airfreights due to their perishability. However, Kenyans growers are perplexed with the pre-occupation, though they note that climate change will directly affect green bean production. Kenyan horticulture is between 4 and 6 times less carbon intensive than the European equivalent, which relies on temperature control and heavy machinery (Africa Research Institute, 2009).

The fresh bean industry in general employs 45,000 to 60,000 people, of whom an estimated 60 per cent are women, in commercial farms, processing, and logistics operations. According to Feed the Future; Kenya 2011-2015 Multi-year Strategy, It is estimated that nearly half or 44 percent of Kenya's smallholder households are managed by women. This is largely attributed to rapid rural to urban migration by men in search of employment. Women are active at every point in the food chain and are often responsible for the household farming activities under which most of the green bean farms fall. There are more precision activities that require numbers and are best done by women especially at the farm level. These include; planting, picking pods, sorting, grading and packaging. At the pack houses, gender roles become distinct again with women dominating handling sorting, grading and quality control. Men will often do manually demanding tasks like land preparation, irrigation, spraying, loading and off-loading trucks. More research is however required to better understand the socio-economic implications of increased participation of women in the sector and intra-household labor (revenue retention) impacts of a transfer from traditional commodities to high value green vegetable products.

Employees typically earn just under US\$2 per day, while smallholders are reportedly able to earn the equivalent of US\$7 per day. There are concerns that proceeds are not shared equally among men and women farmers. Some of the underlying reasons for this include failure to target/support activities in which women, youth and children predominate, in effect serving to disempower them, failure to catalyse social innovations that reduce gender inequality in agricultural production such as innovations in agricultural labour saving technologies and practices that reduce women's labour burden, failure to link women to extension and markets, inadequate pro-women legislation enforcement efforts and lack of training on integration of gender in green bean value chains business.

Employment and work conditions, especially amongst the large scale and commercial farms, discriminate gender, against marginalised groups and persons with disability. Cases of sexual harassment, reluctance to accord women maternity leaves, poor pay and work conditions have been reported, especially in large farms (Government of Kenya, 2010). Youths are involved in gainful employment at various stages of the bean value chains growing for export and local markets i.e. production, marketing, inputs suppliers, Business Development Services, exports etc. For instance, youth farmers in Central and Eastern counties of Kenya have embraced the opportunities that facilitate Global GAP compliance and the challenges encountered in the process of acquiring GLOBALGAP certification. The main challenges encountered in pursuit of Global GAP compliance by the youth in Kenya include; unfavorable land tenure systems and insecure lease agreements, limited access to funds, limited

¹⁵ The health and well-being of people employed in a work environment in terms of safety equipment, training and procedures

awareness of potential effects/impact of Global GAP compliance, limited awareness of emerging export markets, non-binding contracts and poor coordination of stakeholders making compliance costly and complicated.

Youth's engagement in export horticulture is ranked more favorably compared to other farm-level enterprises due to the high returns per unit area, short production period and regularity of income. However, these benefits are more skewed to the resource endowed youths who can afford the heavy and lumpy investments required to meet Global GAP standards. On the flip-side, the less resource-endowed youths either totally or temporarily exit export-bound horticultural production for other enterprises, remain non-compliant or maneuver their way into accessing the export market.

There is need to provide incentive to the youth to innovatively involve them in different horticultural value chains. The sub-sector is among the leading foreign exchange earner and contributes enormously to food security and household income to majority of Kenyan producers. The industry also provides employment to many Kenyans thus contributing to food security. Green bean production is dominated by rural small scale farmers especially women and the youth and this make up a big part of their incomes. Women farmers working with green beans own small plots of land have succeeded in exporting green beans to Europe and other regions. The profit margin on green beans is relatively high. Most importantly, most of these women farmers grow them on family or group farms, which provides them with the flexibility to care and provide for their families while cultivating cash crops and earning an income. They participate in many activities ranging from planting, weeding, picking, sorting, grading and packaging. They also take part in decision making on what to do with the proceeds that directly benefits the families. According to USAID (2005); TRADE LIBERALIZATION, ECONOMIC GROWTH, AND GENDER, giving women farmers the same level of agricultural inputs and education as men could increase yields obtained by women more than 20 percent. This would translate into more income, and benefit to their respective families.

3.0 SECTOR ANALYSIS

3.1 Value Creation in bean sub-sector

Kenya has been exporting vegetables to the Europe since the 1950s. Reasons for Kenyan success have varied with the changing market forces of the highly competitive UK and European markets. Kenya's original success in exporting vegetables, especially beans was based on its climatic and geographic competitive advantage. Producing temperate products year round and being well served by northbound airfreight (thanks to the Kenyan tourism market) proved lucrative for Kenyan vegetable exporters. Kenyan success has been due to market segmentation, investing in certification schemes, adding value to products through sophisticated packaging, servicing niche markets, and investing in marketing. Over the years, due to effective public-private dialogue, the Kenyan government has been receptive to implementing regulatory changes, investing in education, and improving infrastructure, which have increased the competitiveness of the industry. For example, the Horticulture Crops Development Authority (HCDA) of Kenya was initially directly involved in the trading of vegetables but eventually switched to a more facilitative function; it now focuses solely on certification schemes. Throughout the 1970s and 1980s, the majority of Kenyan vegetables imported into the European Community were handled by firms that serviced wholesale markets and small or medium retail outlets. In the 1980s, Kenyan exports doubled in five years due to a differential foreign exchange rate for horticultural exports, which the government set below average prices, providing further incentive for exporters to invest in the industry. By the late 1990s, due to lobbying efforts of the Fresh Producer Exporters Association of Kenya (FPEAK), the Kenyan government partnered with the private sector to expand the Fresh Produce Terminal at the Nairobi airport, thus improving the competitiveness of fresh vegetable exports. Then, throughout the 1990s, large supermarkets began to dominate the European grocery sector, in part, by featuring signature "fresh produce" sections. As they did so, these firms increased the market demand for higher quality, more variety, and price-competitive fresh produce. To meet demand, many firms decided to vertically integrate their retail and wholesale operations, thus concentrating their power in the market and making price competition and product diversification major market forces. In the 2000s, as the power of the supermarkets continued to drive the market, many supermarkets began to pursue market segmentation and branding strategies, which increased the demand for higher quality standards, different varieties, and organic or "safer" produce. A number of exporters have invested heavily in growing their own high quality, certified vegetables to take advantage of the increased market opportunities for high-quality produce. The effect of these trends has been a much shorter supply chain, a greater degree of vertical integration, fewer active players, and production and exporting on a much grander scale.

The domestic market value chain for green beans though important, it has not been considered for development by both government and private sector actors. This is partly because the production of green bean is often not for the local market and given the structure of the value chain for the local market, little research has gone into tracking the value of bean that ends up in the local market. Almost all of the green bean volumes that find their way into the local market are actually rejects. They end up in supermarkets, where they are slashed and re-packaged, schools, big hotels; out-door catering companies and other institutions such as children's homes. The Small Holder Horticulture Marketing Program (SHoMaP) and Small Scale Horticulture Development Program (SHDP) are making efforts to develop the local value chains for an assortment of vegetables, including the green bean. The procedures, controls and costs that go into producing the bean cannot be sustained by the local market at the moment, and promoting this vegetable might entail use of less fastidious varieties, probably more adaptable to the local weather conditions, that require less chemicals and controls or those that are justified by the farmers' cost profiles and intended for the local market. If the same vegetables produced for the export market are the same to be marketed locally, then there would be implication on the contractual agreements and restrictions for side selling. There has to be a parallel VC developed specifically to service the local market and one that is economically justifiable by the market locally. The vegetables being sold now, are likely to be left

overs or those that do not meet physiological, chemical application and quality of freshness standards and which must be sold off without destroying, or those that have not been picked from the farms by exporters/brokers. The gap lies here and there is an opportunity to develop a completely new VC for the local market, with its own variety of seeds and production procedures.

3.2 The Formal and Informal Rules

Despite its importance in the economy as a leading foreign exchange earner, the industry has not had a policy to guide its growth and sustainability. However, in the year 2010, the National Horticultural policy was finalised (GOK, 2010). The policy analyzes the various industry concerns and highlights the challenges they face. It offers policy interventions for production, support services (financing the industry, research and extension), marketing (local, regional and export markets), infrastructure as well as regulatory and institutional arrangements.

Requirements in the international markets for green beans and other fresh produce appear to be raising the bar for new entrants while at the same time throwing new challenges in the path of existing growers. In recognition of the need to meet these standards of environmental management, product food safety, quality, traceability and occupational health & safety of workers, FPEAK launched the code of practice (that has so far changed its name into **KENYA-GAP**) in 1996 as a certification measure for producers and exporters to achieve. The code of practice covers the entire spectrum of production, food handling, transportation, packaging and waste management. KENYA-GAP is intended to enhance the reputation of Kenya's exports by encouraging production and marketing practices that are socially, environmentally and agronomically responsible. Certification against KENYA-GAP acknowledges that qualifying exporters are meeting internationally & nationally recognized production practices and standards for fresh produce and provides the market buyers with a 'guarantee of confidence'. The introduction of international food safety standards (IFSS)¹⁶ has given rise to the need for farmers to change their production and marketing practices. To be IFSS compliant, farmers find it necessary to: i) adopt alternative ways of managing pests, ii) adopt safer ways of handling, storing and disposing pesticides, iii) establish hygienic packing conditions, and iv) establish traceability system. The investments needed to make these changes are, in most cases, lumpy in nature and require various forms of capital. Small and large farms generally differ in their capital endowments and in the way they raise capital needed to finance new investments. There are other players/institutions in the government and private sector mentioned in sections above who work with the with input suppliers, growers and exporters of beans in mainly ensuring that the final products delivered to the market is of acceptable quality. The players are generally strong in their area.

3.3 Implications for value creation for the Market

Most of the smallholder farmers are generally poor households whose main role in the value chain is in growing beans. Therefore, interventions that help these farmers improve the quality and quantities of production vis a vis finding the markets for the beans both locally and for export will surely improve incomes and directly and indirectly meet household food situation. According to DFID 2010, Kenyan smallholder farmers earn between \$750 and \$2,250 a year from green beans. And, the high standards of good agricultural practice required have enhanced the farm management skills of 1000's of small scale farmers. On the other hand, the costs of reaching and maintaining these standards are high and it's not clear whether small-scale farmers can continue to meet them without sustained donor or other external support. Several studies have documented the difficulties smallholder farmers encounter in complying with European standards (Okello& Swinton, 2007; Graffham, Karehu& McGregor, 2009). Following the introduction of EFSS in Kenya, more than half of the smallholder outgrowers were dropped by leading exporters soon after the European retailers they supplied started

demanding strict compliance with their private food safety protocols. Consequently, while smallholders in Kenya produced over 60% of green beans in 1980s, their share had dropped to about 30% in 2003 (Kimenye, 1993; Jaffee, 2003). However, interventions in helping farmers cope with these requirements have contributed to increasing the numbers of smallholder players. The green bean export value chain the smallholder farmers are most threatened by the European food safety standards, and have often been excluded from the high value chains. The areas in the value chains where small holder farmers might be excluded that include:

- i) *Pre-harvest field level activities* – At pre-harvest the field level critical control points (CCP), individual smallholder farmers have found investment in facilities and skills needed to assure safety (i.e. hygiene and pesticide residue limits) unaffordable.
- ii) *Harvesting field level activities*- Handling and hygiene practices during the harvesting, grading and packing of green beans sold through the supermarket chain are also closely coordinated. Exporters have adopted the developed-country process standards such as the hazard analysis and critical control points (HACCP), good manufacturing practices (GMP), and good agricultural practices (GAP). For majority of smallholder farmers these requirements are too expensive owing to the large capital outlays involved. For instance, A full cycle of training to attain certification for compliance to EUROGAP can cost anything from KES 1 Million upwards. This is not easy for a local small farmer to raise, yet is essential for them to participate in the export business effectively. The exporters also require that farmers keep records of the type and quality of inputs used. Keeping majority of these records requires special skills and functional literacy, and is therefore a significant hurdle the illiterate and low-skilled farmers. The harvesting practices are also closely monitored by the exporter mainly related to the hygiene and aesthetic qualities. This requires investment in proper gear and equipment's, which might be expensive to farmers. (iii) *Post-harvest levels*- These include meeting postharvest handling practices such as storage, transport to the collection centre and pack-house. These have also proven to be costly to smallholder farmers. It is revealed that the extent of the threat of exclusion to smallholders at each of these points varies depend on the nature and cost of investment required to meet the hygiene and pesticide residue standards.

4.0 THE COMPETITIVENESS POSITION OF THE SECTOR

4.1 Global and Local Demand

There is demand for green beans locally, though most efforts in data documentation have been on export. For example, out of the 55841MT of green beans produced in Kenya in the year 2010, only 18,725 were exported. It is not clear how the rest of the beans were utilised, but the volumes involved are quite high and can contribute to local food situation. Interviews with the Solidaridad/HIVOs reveal that almost all of the green bean volumes that find their way into the local market are actually rejects. They end up in supermarkets, where they are slashed and re-packaged, schools, big hotels; out-door catering companies and other institutions such as children's homes.

Kenya has been exporting vegetables, especially green beans to the Europe since the 1950s, and there has been a growing demand at the international level, especially the European markets. French beans were initially grown exclusively for export market, mainly to the European Union but over the years the vegetable has gained popularity in the domestic market. In the year 2010, about 18,725 tonnes of beans were exported whose value was Ksh 4.4 billion. The European Union (EU) is the principal importer of Kenya fresh produce, with the French beans the second largest vegetable exported from Kenya destined for United Kingdom (59%), France (20%), Germany (7%), Netherlands (7%), Belgium (3%) and countries like Bahrain, Norway, Canada, China, Georgia, and France among others (4%). (HCDA, 2010)

In December 2011, Kenya was cleared to start exporting French beans into United States market following five years of intense lobbying by fresh produce growers, opening a new frontier outside Europe for farmers. The US amended the fruits and vegetables regulation and was satisfied with Kenya's pre-export conditions following improvements in washing, packaging and processing of beans¹⁷. The permission followed upgrading of standards along the value chain. The US opening comes at a time when Kenya's exports are grappling with less demand in Europe following the contagion from the Greek debt crisis brought about by the highly indebted countries such as Greece and Spain. US will, however, limit its market scope to protect its small-scale farmers from price shocks.

There are campaigns in Europe to limit importation of airfreighted food stuff, and since most of the Kenyan beans is airfreighted, this pose a new threat to this market. Kenya and other 17 ACP countries also is likely to start paying duty of 16% to the produce exported to Europe after the expiry of the Economic Partnership Agreement (EPA) next year. This will affect the competitiveness of Kenyan goods exported to Europe, losing to its competitors like Zambia, Senegal etc who will still enjoy the duty free market access.

4.2 Competition

Among the factors that have supported Kenya's rise in the fresh produce exports is conducive Equatorial climate which allows year-round production, a competitive labour force with good education and technical background. As concerns the soil fertility, which is over time turning into less of a factor that guarantees competitive advantage for the Kenyan market due to nutrient depletion, studies are on-going by some stakeholders to ascertain the level of fertility and competitiveness of an area for growing selected crops in an effort to promote local markets. For instance, HIVOS, a Dutch development organization that has much experience with small holder initiatives and value chains on *horticulture and food security* projects, is working to support small scale entrepreneurial farmers in horticulture with the aim of improving food security and sustaining incomes. In October 2011, HIVOS piloted with 6 farmer groups in Kinangop, Naro Moru & Kirinyaga who grew green beans

¹⁷<http://www.hortinews.co.ke/article.php?id=357>

but had just been dropped by a major exporter due to stringent quality and maximum residue limits (MRL) requirements for export produce. The idea was to experiment with about 5 crops out of a possible 21 that would be candidate for scale up after the pilot period got subjected to agronomic skills being imparted, soil tests, climatic conditions suitability, ability to be rotated and local market requirements. Bulk of this experiment seeks to service and develop local value chains for selected horticultural crops, out of which *potato* has already been confirmed.

To ensure top quality produce reaches the market the exporters have brought in state-of-the-art technology. With two international airports, fresh produce can easily be shipped out. The table below shows a summary of other drivers of change in Kenyan vegetable export market;

Table 9: Drivers of Change in the Kenyan Fresh Vegetable Export Sector

Push	Explanation	Pull	Explanation
<ul style="list-style-type: none"> Transport costs 	<p>The states of Kenya’s infrastructure, specifically from the farms to the collection points are often very bad.</p> <p>Improved infrastructure can have a push effect in driving the sector by taking technology to the rural small holder farmers who adopt green beans production.</p>	<ul style="list-style-type: none"> Novel products/Value added products 	<p>Product and market diversification in the green vegetable market (e.g. pre-processing and mixing of certain export vegetables as opposed to exporting whole – which has seen some exporters e.g. Finlays build processing houses because of the envisaged opportunity) as well as exploring possibilities of supplying to non- traditional European markets e.g. middle East) has created opportunity and improved prospects for income.</p>
<ul style="list-style-type: none"> Decline in margins 	<p>High costs of inputs (fertilizers, spraying chemicals, training for compliance with EUROGAP, transport costs, inflation and high cost of fuel leading to higher flight charges on the exporter all contribute to declining margins across the value chain and which is eventually by the farmers on one end of the chain.</p>	<ul style="list-style-type: none"> Supply continuity/Quality Standards 	<p>This has been one of Kenya’s strengths as opposed to other seasonal exporters such as Morocco. Meeting supply standards through investment in training for GAP compliance has contributed to pulling of business.</p>
<ul style="list-style-type: none"> Supply chain consolidation 	<p>Vertical integration by some exporting firms due to the need for traceability and accountability has forced some small farmers out of the export market and this has led to the need for exploring opportunities for fresh vegetable supply in the local market.</p>		

In the case of green beans, Kenya's main competitors are Morocco, Egypt, South Africa, Cote d'Ivoire, Senegal and Zambia (Okello, J.J; Narrod A; and Roy D 2011). Freight costs are a strong determinant of a country's export competitiveness. Kenya's exporters see little likelihood of their airfreight costs declining relative to those of their competitors and believe that the only viable long term position is to specialize in supplying the premium/high-care end of the market. Kenya's own (air) freight costs are estimated to be between US\$1.50 and US\$1.60/kg. Only Zambia has similar freight costs to Kenya (Jaffee, 2003).. The other countries' costs are much lower, ranging from US\$0.75/kg to as low as US\$0.20/kg for sea shipment ex-Egypt (FAO, 2004). For similar distances, freight costs are likely to be lower among countries that already have well-developed and frequently-used freight routes, whether these are for air (including passenger) freight or containerized sea freight. Thus, the tourist economy in Kenya has had important spin-offs for the availability of freight for other sectors of the export economy. In Zimbabwe, the recent downturn in the tourism industry, and the consequent reduction in foreign passenger aircraft, has adversely affected the cost and availability of air freight for fresh produce exporters (Heri, 2000).

4.3 Emerging trends in innovation in the past 5 years

In order to survive the effect of standards, some smallholder farmers and the governments have adopted two non-market institutional arrangements for overcoming the screening effects of standards on smallholder farmers namely, collective action and public-private partnerships. As a group, smallholders invested in facilities needed to comply with European Food Safety Standards (EFSS) at the major CCPs thus reducing their per-person costs of meeting EFSS. Similarly, smallholder farmers sought certification (especially for GlobalGAP) jointly in order to demonstrate compliance with EFSS, though mostly with external support from governments, private sector or partnership of the two (i.e., public-private partnerships).

Public-private partnerships (PPPs) for maintaining the participation of smallholder farmers in the green bean High Value Chain (HVC) have mainly focused on provision of information, financial support (for investment in lumpy assets), and capacity building (through financing audits and certification for GlobalGAP compliance and the construction of grading facilities) to smallholders. Donors and NGO have jointly established Africa's only indigenous certification company (AfriCert) in order to make GlobalGAP certification cheaper and hence affordable to smallholders. The investment by some of the European private agencies (private sector) especially the Pesticide Initiative Project (PIP) helped in training farmers on pesticide use practices and pesticide residue limits thus helping reduce the screening effect of EFSS at farm-level CCPs. PPPs have also been instrumental in lobbying for the recognition of the ability of smallholders to meet GlobalGAP standards and the benchmarking of GlobalGAP to Kenyan conditions through the formulation of KenyaGAP. Other innovations have been in the organised logistics of bean marketing, pre-packaging of beans, branding and quality control measures.

4.4 Systemic constraints to competitiveness¹⁸

During the value chain analysis of the green beans for export and domestic market, a variety of constraints were identified that were limiting the production and income. Eight (8) commercially viable solutions with the potential to address those constraints, as well as existing providers of those solutions, were also identified: These constraints might need to be addressed concurrently in order to have the desired impact on small-scale producers. It is frequently difficult, therefore to evaluate the relative importance of one constraint over another.

¹⁸ Key benchmarks used for assessing competitiveness of the bean value chain is in the cost of production, value addition to the products, transportation and logistics costs amongst others.

Table 10: System Constraints facing the sector, market based solution and existing providers

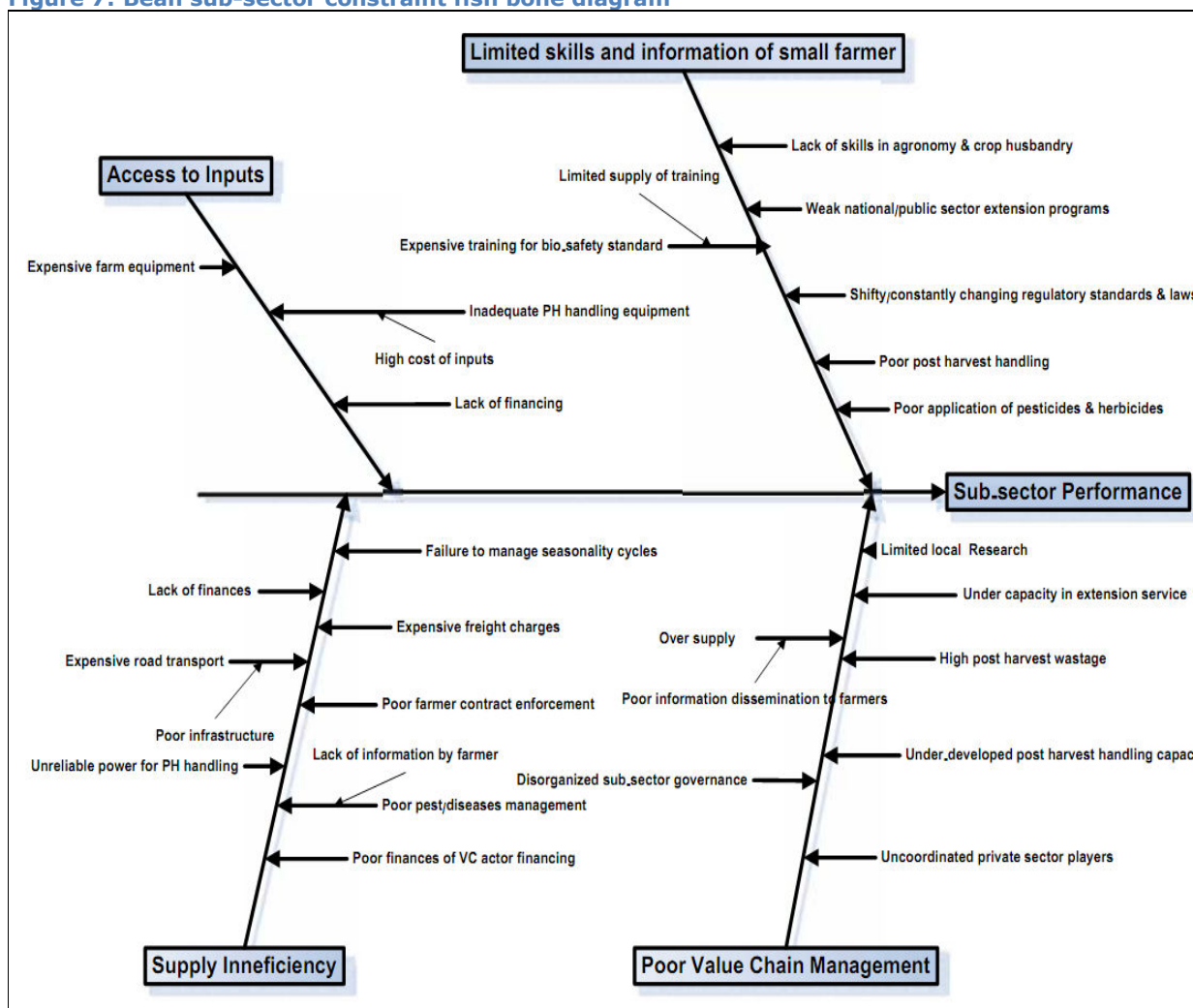
	Systemic challenges facing bean sub-sector	What are the causes of the constraint?	Market based solution	Existing Providers of the Market Solution
	<p>Access to inputs and growing equipment</p> <p>Access to appropriate inputs, though improved a bit through the government and private sector initiatives, is still a challenge to small holder farmers, especially those at entry level. High cost of inputs(seeds, pesticides and fertilizers)for small-scale growers</p> <p>Low germination rates of seeds.</p>	<p>Inefficient and almost defunct government agricultural financing institutions</p> <p>High inflation and a volatile macro economy leading to high process of inputs and other farm equipment</p> <p>Inadequately targeted fiscal and financial allocation in form of tax exemptions and input subsidy systems</p> <p>High interest rates that discourage borrowing for agricultural input financing.</p> <p>Inadequately targeted fiscal and financial allocation in form of tax exemptions and input subsidy systems</p>	<p>Provision of, and access to, affordable fertilizers, chemicals and quality seeds to small-scale growers.</p>	<p>Stockists</p> <p>Exporters</p> <p>Producer Organizations</p>
2	<p>Knowledge and information</p> <p>Lack of knowledge and skills in crop husbandry by small-scale growers.</p>	<p>Poor extension services systems and reach.</p> <p>Inadequate business development services and capacity building to facilitate proper management of agricultural enterprises</p> <p>Poor information dissemination on agronomic skills and market intelligence</p> <p>Little knowledge on the part of farmers which could be managed through capacity building on how to manage legal contracts and issues relating to their export farming business</p> <p>Weak legal institutions/(corruptible) that do not properly enforce contracts to the advantage of small farmers</p>	<p>Provision of affordable irrigation equipment to small-scale growers.</p>	<p>Irrigation equipment suppliers.</p>
	<p>Lack of respect for contracts between growers and buyers, resulting into high rejection rates, farm gate prices low and the impact on poverty reduction limited.</p>	<p>Poor extension services systems and reach.</p> <p>Inadequate business development services and capacity building to facilitate proper management of agricultural enterprises</p> <p>Poor information dissemination on agronomic skills and market intelligence</p> <p>Little knowledge on the part of farmers which could be managed through capacity building on how to manage legal contracts and issues relating to their export farming business</p> <p>Weak legal institutions/(corruptible) that do not properly enforce contracts to the advantage of small farmers</p>	<p>Training and extension services to small-scale growers.</p> <p>Access to mediation for breach of contract between growers and exporters</p>	<p>Exporters</p> <p>Input Supply Companies</p> <p>Government</p> <p>NGOs</p> <p>Government agency</p>
3	<p>Pests and diseases</p>			

<p>Pest and diseases: The major diseases facing green bean smallholder farmers include rust, fusarium wilt and nematodes and blights. Farmers are aware of some bio pesticides for management of insects but lack information on their effectiveness for safe plant disease management.</p>	<p>Lack of properly targeted research efforts Little or no agronomic training and extension services to improve farmers knowledge Lack of crop rotation leading to soil exhaustion and susceptibility to pests and diseases Failure to carry out periodic soil tests i.e. soil profile surveillance tests</p>	<p>Practice Integrated Pest Management (IPM) Access to safe and effective pesticides.</p>	<p>Input Stockists Agronomists Input supply companies</p>
<p>4 Infrastructure services</p> <ul style="list-style-type: none"> Poor infrastructure, such as bad roads which prevent regular collection by exporters Inadequate electricity/energy for cooling and processing, telecommunications Lack of cooling facilities to maintain freshness of produce until it reaches the market. Expensive and sometimes unavailable air freight for exporters. 	<p>Corruption in contracting for road building and repairs Failure to exploit alternative and innovative/sustainable and off-grid sources of energy</p>	<p>Lobbying to improve rural roads, rural electrification and telecommunications for growers and exporters</p>	<p>Exporters Exporters Association Growers</p>
	<p>Lack of financing to purchase on farm facilities Failure to exploit appropriate technology that can use locally available skills and materials to develop alternative cooling facilities</p>	<p>Access to cold chain for small-scale growers and exporters to maintain freshness of the produce.</p>	<p>Growers Exporters</p>
	<p>Inflation High cost of oil</p>	<p>Access to exporters of airfreight to export markets. Seek innovative packaging that necessitates use of sea freight options in the longer term</p>	<p>CargoAirlines Charter Airlines Passenger Airlines Forwarding Agents</p>
<p>5 Coordination and organisational skills</p> <ul style="list-style-type: none"> while this has been improved, a number of studies shows that there is increasing government involvement in the actual business side, rather than focusing on government's role of extension and developing a supportive policy framework; Disorganised private sector in its approach to lobbying, self-representation, and presentation on the export markets; 	<p>Poor coordination and segregation of duties between various stakeholders (government, private for profit sector, NGOs and donors. If this was done as expected, it would result in a more coordinated and efficient support systems for the small farmer and the entire value chain. Failure to develop regulations and legislations that will tend to increase efficiency of the value chains based on market needs. I.e. use market</p>	<p>Promote institutional coordination</p>	<p>Government Private sector Associations</p>

	<ul style="list-style-type: none"> and disorganised governance of the subsector, allowing the irregular briefcase exporters and promoting the continued use of brokers. 	based solutions and suggested interventions as pointers to effective regulatory frameworks		
6	Limited markets and marketing information			
	<ul style="list-style-type: none"> Inadequate marketing/ and market information for farmers leading to oversupply of beans on the market Seasonal demands for fresh vegetables by the EU export market. 	Poor information dissemination on agronomic skills and market intelligence	Access the domestic market and other alternative markets internationally	Growers Local retailers
	<ul style="list-style-type: none"> Produce not suitable for export going to waste. 	Poor information dissemination on agronomic skills and market intelligence Inadequate or under developed post-harvest handling techniques for managing seasonality of produce Poor quality control	Access to new export markets for Exporters and growers	Exporters Exporters Association
7	Regulations, Standards and laws		Increased knowledge on alternative uses of produce not suitable for export to minimize loss to growers	Exporters Research Institutions
	<p>The ever changing regulations, Standards and Laws in both local and international landscape stifle production by smallholder farmers, in terms of cost, and knowledge. E.g. a typical green bean farmer in Kenya makes a profit of \$750 a year from export vegetables BUT even with outside assistance it will cost him \$1150 to establish that he can meet EurepGAP standards and a further \$315 a year to maintain his accreditation. Without assistance this would cost more than three times as much. These costs are increasing and squeezing poorer and smaller farmers out of this market (DFID, 2010); Technology, innovation and product development...e.g. the agro processing, packaging and quality standards in the domestic market are not fully developed.</p>	Increasing customer awareness of their health and safety rights Lack diversified value chains e.g. local, regional + export focus as opposed to export only. Lack of adequate business development services offered to farmers on how to market produce, develop or add value to produce, manage their costs, prospect of new markets, preservation options etc.	Develop innovative ways of meeting the standards, and facilitating smallholder farmers to meet these standards	Government Private sector Exporters

8	<p>Limited access to finance/credit facilities</p> <p>Lack of access to affordable credit.</p>	<p>Inefficient and almost defunct government agricultural financing institutions</p> <p>High inflation and a volatile macro economy leading to high prices of inputs and other farm equipment</p> <p>Inadequately targeted fiscal and financial allocation in form of tax exemptions and input subsidy systems</p> <p>High interest rates that discourage borrowing for agricultural input financing.</p>	<p>Access to growers of affordable credit</p>	<p>Micro-lending institutions</p> <p>Exporters</p>
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Figure 7: Bean sub-sector constraint fish bone diagram



5.0 SECTOR STRATEGY

5.1 Sector Visions: Articulation of the sector visions

The sub-sector is governed by various public and private institutions with legal and institutional mandates, who have articulated the sub-sector visions within these mandates. Public institutions established under various statutes have a national mandate on various regulatory aspects with view of improving service delivery as well as providing an enabling environment for the sector to remain competitive locally and internationally. Private institutions are based on voluntary membership and focus on self-regulation and advocacy. There are also commodity based associations. However, weak and ineffective linkages among public, private and other regulatory, developmental and supportive institutions results in the inefficiencies in the industry.

The Government through the Ministry of Agriculture has developed a National Horticultural Policy to accelerate and sustain growth in the sector. In order to resolve farming challenges that are multi-sector in nature, the Ministry of Agriculture jointly with sector Ministries, relevant Government sub-sector regulating agencies, and the industry have formed a National Horticulture Task Force (NHTF). This is an *ad hoc* forum that addresses all forms of multi sectoral challenges affecting growth and sustainability of horticulture sub-sector in Kenya. In addition, the Government has mandated the Horticultural Crops Development Authority (HCDA) with the responsibility of developing, promoting, facilitating, and regulating the industry.

A number Non-Governmental Organizations and farmers associations are also involved in capacity building of smallholder farmers, e.g. the Fresh Produce Exporters Association of Kenya (FPEAK), and the Kenya National Federation of Agricultural Producers (KENFAP). The FPEAK is involved in building smallholder farmers capacity in market requirements and linking them to markets. The FPEAK has facilitated 350 smallholder farmer groups certification to KenyaGAP and linking of the groups to the premium supermarket chains namely *Nakumatt* and *Tuskys*. KENFAP is an umbrella federation of farmers comprising of over 1.4 million farm families. The federation empowers Kenyan farmers with a strong voice hence better bargaining power in business transactions.

The factors driving changes in the sector include the changing consumer demands, mostly internationally, which have triggered changes in the technological process in the modes of production, pre-processing, packaging, and transportation. The shift from tariff to non-tariff barriers in international horticulture trade has necessitated more regulation of the industry to comply with the new market requirements. However, the activities of government agencies involved in regulating the industry are not harmonised and lead to delays and increased cost of complying with non-tariff barriers.

5.2 Key Actors in the change process

5.2.1 Public agencies

The Government continues formulating horticultural projects and programs with a view of addressing specific objectives; four such projects are the National Accelerated Agriculture Input Program (NAAIP), NjaaMarufuku, Smallholder Horticulture Marketing Project (SHoMAP), and the Smallholder Horticulture Development Project (SHDP). The NAAIP is involved in capacity building and provision of seed and fertilizer grants for one hectare per smallholder farmer. The target of this program is 2.5 million smallholder farmers. Unlike NAAIP, the focus of NjaaMarufuku is smallholder farmer groups and not individual farmers. The program extends grants of up to \$ 6,250 per farmer group. SHoMAP is facilitating smallholders in addressing marketing and market infrastructure challenges. This program is earmarked to benefit 12,000 smallholder farmers. The SHDP is focused on establishing irrigation schemes for horticultural farming with a view of mitigating the negative effect of climate change. The program has established 9 irrigation schemes with a total area of 2886 Ha; and is directly benefiting 5900 smallholder farmers. The Government in collaboration with the International Fund for Agriculture

Development (IFAD), Alliance for Green Revolution in Africa (AGRA), and the Equity Bank (K) set up a loan scheme known as "Kilimo Biashara" to facilitate credit access to smallholder farmers. This initiative also involves a cover known as the "weather Index Crop Insurance" that insures crops failure due to erratic weather. However, the success of these programmes has not been evaluated on their impacts on bean farmers.

5.2.2 Donor agencies and NGOs

In addition to the Government funded projects, there is a large number of Non-Governmental Organizations with different initiatives towards supporting horticulture in many parts of the country. Most of these projects are funded through international cooperation agencies such as the USAID, JICA, GTZ, among others.

USAID, through the Kenya Horticultural Development Project (KHDP) and managed by FintracInc is providing assistance to the fresh and processed food sector in Kenya. It provides marketing, postharvest handling, processing and agronomic support for smallholders and allied agribusinesses. KHDP partners include grower associations, input suppliers, processors, exporters, research institutions and trade associations. USAID, which is currently preparing a follow-on programme to their Kenya Export Development Support (KEDS) programme which assisted the horticultural sector for the past 9 years first through a technical assistance team and then through a follow on programme to support the FPEAK..

The FAO is currently working with farmer field schools to improve production practices in various regions around the country, including many green bean farmers in Central Province. They can be a good resource for identifying promising regions and groups of farmers. The UK's Department for International Development (DFID) set aside a challenge fund, the Food Retail Industry Challenge Fund (FRICH), to reduce poverty in Africa by improving the income of the rural poor. FRICH has awarded a £200,000 grant to British supermarket chain Waitrose to encourage them to stock Kenyan beans, thus increasing the income potential of farmers.¹⁹

5.3 Pathways to systemic change

Under the competitive section above, 9 main challenges and opportunities have been identified, namely access to inputs and equipment; knowledge and information; pests and diseases; infrastructure services; coordination and organisational skills; limited markets and market information; challenges with innovation and product development; regulation, standards and laws; and finally access to suitable financing for smallholder. However, analysis shows that there are a number of initiatives/ interventions that are addressing these challenges though there are weaknesses in reaching out to new markets as well as technological innovations and product development. Traditional markets for green beans are faced with both tariff and non-tariff barriers which are increasingly exerting pressure and pose a threat to smallholders. Examples include sustained campaigns against air freighted products due to carbon foot prints; food safety standards; eminent threats for payment of 16% duty on Kenya and other 17 ACP countries following the expiry of Economic Partnership Agreements (EPA's) next year. Therefore, for the sub-sector to remain competitive, we propose the following key changes:

- i. **Market development and market information** – There is need to scout for other possible markets for the Kenyan green beans targeting both Domestic, regional and International markets. Consumption of green beans is emerging in Kenya and the region and there is need to promote it. There is a need to look for other alternative markets to EU, e.g. USA, Asia, etc.
- ii. **Technology, innovation and product development**- Agro processing, packaging, canned and frozen beans and quality standards in the domestic, regional and international market are not fully developed. In particular, value addition, investment in packaging technology is critical during sea freight, whose cost is

¹⁹ <http://www.independent.co.uk/news/world/africa/kenyas-quos-green-beans-hit-uk-supermarket-shelves-2067630.html>

significantly lower compared to the air freight. Deliberate efforts should be made towards investing in this area to increase the produce shelf life, reduce post-harvest losses, and improve consumer acceptance both in domestic and international markets.

Table 4: Intervention area

Intervention area	Target group	Indicators	Incentives to different market actors that will deliver these changes
Market expansion and market information	<ul style="list-style-type: none"> Local, regional & foreign markets development Extension and market information dissemination agents Facilitative regulatory regime to support the sub-sector Government on improvement of infrastructure to facilitate distribution in the local/regional markets Farmer 	<ul style="list-style-type: none"> Number of promotional activities to develop business in the local, regional and international markets Studies/reports on market surveillance done and implemented recommendations on market development Evaluation surveys on information dissemination to farmers and the local market for instance. Number of bills, regulations and controls passed/implemented to support growth of the sub-sector in a given market, especially local Number of roads built in a given time. Assessment of farmer understanding of their market dynamics 	<ul style="list-style-type: none"> Training in business development services for agronomists, and marketers, capacity building, sector needs assessments, GAP requirements and market development Financial support for studies geared towards studying and developing the local/regional markets Rating counties in performance based on agro-indicators and infrastructure deployment
Technology innovation and product development	<ul style="list-style-type: none"> Research institutions e.g. KARI, ICRI SAT Agricultural information dissemination agents and extension workers (public and private sectors) Financial institutions BDS support service providers Farmers Input suppliers Transporters 	<ul style="list-style-type: none"> Amount of research findings dispensed as well as new varieties tested, developed or scaled up Number of training offered in the areas of technology and product development to/by extension workers, BDS service providers, Financial literacy and agricultural finance and literacy programs, and number of farmers, and transporters trained on various courses over time especially on post-harvest handling 	<ul style="list-style-type: none"> Financing/grants for research in agricultural research in FF&V sub-sector development and growth Financial support for BDS, capacity building to farmers, agronomists, financiers and researchers
Policy and regulatory issues	<ul style="list-style-type: none"> Government departments Private for profit stakeholders Non-governmental organizations supporting small scale agriculture Donor agencies e.g. SNV, SOLIDARIDAD, USAID, DFID etc. 	<ul style="list-style-type: none"> Number of relevant programs initiated in respective government departments, and all other participating private sector and donor organizations Budgets allocated towards the same Number of regulations introduced over time Number of legislations passed towards supporting the sub-sector especially in market development 	

5.4 Potential Interventions

The Kenyan fresh vegetable export industry has grown enormously in size and value added, in large part by implementing new processes and operations. These have been initiated by private business in response to evolving market trends, recognized opportunities, and value chain pressures. The public sector has been an active partner in this growth. Further opportunities exist to increase the competitiveness of the Kenyan fresh vegetable export industry through value chain deepening, as well as through other approaches (for example, increasing the technical capacities and market understanding of serving growing markets beyond Europe, extending the exporting season, and reducing costs and losses through infrastructure). The realization of each enhanced process will, in turn, provide opportunity for added services within the value chain. The following are the shortlisted interventions:

POTENTIAL INTERVENTIONS

Market expansion and market information

- Promote utilization of beans locally and regionally - According to research by Ndegwa et al 2006²⁰, carried out in major green bean growing areas of Kirinyaga, Embu and Machakos districts, a notable proportion of the respondents (up to 50%) consumed green beans at least once a week with the rest consuming occasionally. However, it was not the preferred vegetable of choice for most (over 60%) of the respondents. Reasons given for this were tedious preparation methods and need to add other expensive condiments to the snap beans to formulate a tasty vegetable relish. Over 60% of the respondents did not know the nutritive value of these beans. Close to 80% of the respondents reported that they would not purchase snap beans in the market for home consumption since other vegetable options were available and more delicious. This finding reveals lack of awareness for the beans. The development of the local and regional market is subject to promotion and awareness creation (informing the local consumer about the nutritive value of this vegetable). Otherwise, it is perceived to be a crop for foreign markets. According to HIVOS, they do not see any challenge with finding local market. Organized production, reliability and consistency of servicing a market are the problems.
- Scout for other complimentary markets - The shift from tariff to non-tariff barriers in international horticulture trade has necessitated more regulation of the industry to comply with the new market requirements, especially in the EU and USA markets where consumers are concerned with the carbon footprints of imported food. There is need to look for other markets for the green beans as well as explore reduction in carbon foot prints.
- Improve the marketing information system: Farmers need proper advise on when to plant to avoid overproduction. There is need to educate farmers on market driven production planning.

Technology innovation and product development

- Pre-harvest crop management as well as postharvest handling both contribute to the quality of green beans produced and products channelled to the market (both local and internationally). Green bean postharvest losses account for a significant decline in marketable yield at farm level and along the marketing chain. There is therefore need for training and sensitizing farmers on farm level postharvest handling practices and adherence to set regulations to maintain product quality.
- Promote value addition interventions such as agro processing, packaging, canned and frozen beans and quality standards in the domestic, regional and international market
- Alternative packaging in particular, investment in packaging technology is critical during sea freight, whose cost is significantly lower compared to the air freight. Deliberate efforts should be made towards investing in this area to increase the produce shelf life, reduce post-harvest losses, and improve consumer acceptance both in domestic and international markets.

²⁰ Ndegwa, A. M., N. M. Muthoka1, C. W. Gathambiri 1, M. N. Muchui, M. W. Kamau and S. M waciuri (2006). Snap bean production, postharvest practices and constraints in Kirinyaga and Machakos districts of Kenya. Kenya Agricultural Research Institute, Thika.

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7.0 ANNEXES

Annex 1: Average cost of production and profits for green bean

kilograms	375	750	1500	3000	9000
Acres	0.125	0.25	0.5	1	3
Sales Cost(Kshs 56 per Kg)	16875	33750	67500	135000	405000
Cost of Production					
Cost of seeds	2250	4500	9000	18000	54000
DAP Fertilizer cost	562.5	1125	2250	4500	13500
CAN cost	312.5	625	1250	2500	7500
NPK(17:17:17)	312.5	625	1250	2500	7500
Foliar Feed	100	200	400	800	2400
Decis	113	225	450	900	2700
Dithane	88	175	350	700	2100
Insecticides Karate	146	292	583	1167	3500
Land preparation cost	250	500	1000	2000	6000
Furrow construction	375	750	1500	3000	9000
Planting cost(1.5kg*150*Kgs)	338	675	1350	2700	8100
spraying cost (9times*170)	191	383	765	1530	4590
Weeding cost (4times*no.of People*150)	375	750	1500	3000	9000
Fertilizer application	113	225	450	900	2700
Picking Cost/Grading	3500	7000	14000	28000	84000
Petrol Cost	875	1750	3500	7000	21000
Telephone(credit)	394	788	1575	3150	9450
Staking cost	1250	2500	5000	10000	30000
Stationery	63	125	250	500	1500
Transport of inputs to farm	500	1000	2000	4000	12000
Gross cost	12105.88	24211.75	48423.5	96847	290540
Reject cost(30%)	3631.763	7263.525	14527.05	29054.1	87162
Net cost	15737.64	31475.28	62950.55	125901.1	377702
Net Cost per Kg	41.96703	41.96703	41.96703	41.96703	41.96689
Net profit	6,405	12,811	25,621	51,243	153,728

Average production costs and profit margins for Tropical fresh grower. Presently, the buying price for extra fine beans remain @ Kshs. 56 and Kshs. 45 for fine beans

Source: Tropical fresh

Annex 2: Kenya Green bean exporters

29 registered with the fresh produce exporters

AAA Growers Ltd
Mr. Neville Ratemo
P.O. Box 32201 - 00600 Nairobi
Tel: 020-4453970 - 4
Fax: 020-4453975
neville@aaagrowers.co.ke, admin@aaagrowers.co.ke

Agrifresh Kenya Ltd
Mr. W. Dolleman
P.O. Box 63249, Nairobi
Tel: 020-8560650/1/2
Fax: 020-8560653
info@agrifreshkenya.com

Ansa Horticultural Ltd
Mr. Sam Wangai
P.O. Box 53579 Nairobi
Tel: 020-2367705/821884
Fax: 020-821927
info@ansa-horticultural.com

Avenue Fresh Produce Ltd
Mr. C. Muchiri
P.O. Box 3865-00506 Nairobi
Tel: 020-825342/820015
Fax: 020-825288
info@avenuefresh.co.ke, avenue@avenue.co.ke

Belt Cargo Services Export Ltd
Mr. J. Muigai
P.O. Box 688, Ruaraka
Tel: 020-4448821/4448822
Fax: 0209-4448820
beltcargo@swiftkenya.com

Dominion Vegfruits Ltd
Mr. John Mairura
P.O. Box 55078 - 00200, Nairobi
Tel: 020-823002/3
Fax: 020-823005
vegfruits@wananchi.com

East African Growers Ltd
Mr. P. Mahajan

P.O Box 49125 Nairobi
Tel: 020-822017/25
Fax: 020-822155
peeush@eaga.co.ke

Everest Enterprises Ltd
Mr. J. Karuga
P.O. Box 52448, Nairobi
Tel: 020-824141/823333
Fax: 020-824195
jkaruga@everest.co.ke , smuhoho@everest.co.ke

Fian Green Kenya Ltd
Mr. F. Thuita
P.O. Box 60455, Nairobi
Tel: 020-826157
Fax: 020-826158
info@fiangreens.com

Fresh An Juici Ltd
Ms. Maleka Akaberali
P.O. Box 39833 - 00623, Nairobi
Tel: 020-826090/3
Fax: 020-826092
maleka@freshanjuici.co.ke,

Frigoken Ltd
Mr. D. Karim.
P.O Box 30500, Nairobi
Tel: 020-8560096/8560449
Fax: 020-8560098
frigoken@frigoken.com

Global Fresh Ltd
R. Chaudhry
P.O. Box 3970 - 00100, Nairobi
Tel: 020 - 827549/50
Fax: 020 - 827551
info@globalfresh.co.ke

Greenlands Agro Producers Ltd
Mr. G. Murungi
P.O. Box 78025, Nairobi
Tel: 020-827080/1/2
Fax: 020-827078
murungim@greenlands.co.ke

Hillside Green Growers &
Exporters Co. Ltd
Ms. Eunice Mwangera
P.O. Box 73585 -00200, Nairobi
Tel: 020- 3878134/74
Fax: 020 - 3872127/6623
infoland@nbnet.co.ke

Homegrown Kenya Ltd
Mr. R. Fox
P.O. Box 10222, Nairobi
Tel: 020-3873800/3874193
Fax: 020-3873800/3874940
Richard.Fox@f-h.biz

Indu farm EPZ Ltd
Mr. C. Bernard
P.O. Box 42564, Nairobi
Tel: 020-550215/6/7
Fax: 020-550220
info@indu-farm.com/christian.
benard@indu-farm.com

Kakuzi Ltd
Mr. R. Collins
P.O. Box 24, Thika
Tel: (060)33012/31393
Fax: 067-64433
[rcollins@kakuzi.co.ke/](mailto:rcollins@kakuzi.co.ke)
mail@kakuzi.co.ke

Kandia Fresh Produce Suppliers Ltd
Ms. Lucy Mundia
P.o. Box 42806 - 00100, Nairobi
Tel: 020 - 3500866
Fax: 020 - 821152
kandia@swiftkenya.com

Keitt Ltd
Mr. Asif Aman
P.o. Box 6390- 00200, Nairobi
Tel: 020 - 822829
Fax: 020 - 827842
asif@keitt.co.ke

Kenya Horticultural Exporters (1977) Ltd
Mr. Manu Dhanani
P.O. Box 11097, Nairobi

Tel: 020-650300/1/2
Fax: 020-559115
khe@khekenya.com , manu@khekenya.com

Makindu Growers & Packers Ltd
Mr. O.P. Bij
P.O. Box 45308, Nairobi
Tel: 020- 822812
Fax: 020-822813
info@makindugrowers.co.ke

Mboga Tuu Ltd
Mr. J. Kent
P.O. Box 47070, Nairobi
Tel: 020-3877988/3561196
Fax: 020-3878071
mtl@wananchi.com

Migotiyo Plantations Ltd
Mr. B. K. Rao
P.O. Box 19, Mogotio
Tel: 051 - 2214898/020-4449128/9
Fax: 051 - 2214898
alphegasial@wananchi.com,
migotiyo@kenyaweb.com

Njambiflora Ltd
Ms. Marie Njambi
P.O. Box 9728-00100, Nairobi
Tel: 020-822506/7
Fax: 020-822505
njambiflora@timefast.co.ke

Nicola Farms Ltd
Ms. Grace Wanjiku
P.O. Box 64-10205, Maragua
Tel: 020-2048874/76
Fax: 020-2048874
marketing@nicola.co.ke

Sacco Fresh Ltd
Mr. J. M. Muia
P.O. Box 26211-00100, Nairobi
Tel: 020-824687/8
Fax: 020-824689
info@sacco-fh.com

Samawati Fresh Produce (K) Ltd

Ms. M. Nyambura
P.O. Box 214 - 00618, Nairobi
Tel: 0722-890030, 0721-828474
Fax: 020-234047
bmwangi@samawatifresh.com

Shree Ganesh Fruits & Vegetables Ltd
Mr. Kanji Kalyan Patel
P.O. Box 83745 - ,Mombasa
Tel: 020-80243645
meleka@freshanjuici.co.ke

Sian Exports Kenya Ltd
Mr. S.S. Mangat
P.O. Box 43042-00100, Nairobi
Tel: 020-822220
Fax: 020-890287
rano@sianexports.com

Sunripe (1976) Ltd
Mr. Hasit Shah
P.O. Box 41852, Nairobi
Tel: 020-822518/822879
Fax: 020-352266/822709
info@sunripe.co.ke

Value Pak Foods Ltd
Mrs. J. R. Patel
P.O. Box 42828, Nairobi
Tel: 020-823438/823439
Fax: 020-823347
valuepak@wananchi.com

Vegpro Kenya Ltd
Mr. B. Patel
P.O. Box 32931, Nairobi
Tel: 020-82283-4
Fax: 020-822753
bharat@vegpro-group.com,
ddevraj@vegpro-group.com

Wamu Investments Ltd
Mrs. P. Muriuki
P.O. Box 26026, Nairobi
Tel: 020-822441/824990
Fax: 020-824991
wamu@swiftkenya.com, peris@wamu-

investments.com

Waqash Enterprises Ltd
Mr. S. Gulamhussein
P.O. Box 90728, Mombasa
Tel: 041-2314596/2225512
Fax: 041-2220394
waqash@swiftmombasa.com, exports@waqash.co.ke

Wilham Kenya Ltd
Mr. P. Mahajan
P.O. Box 52494, Nairobi
Tel: 020-822030/827486
Fax: 020-822823
peeush@eaga.co.ke

Woni Veg-Fru Importers and
Exporters Ltd
Mr. T. K. Mutiso
P.O. Box 52115, Nairobi
Tel: 020-532805/650350
Fax: 020-650350
woni@swiftkenya.com

Other exporters of green beans not registered with the fresh produce exporters association of Kenya

- ZENITH GLOBAL EXPORTERS, MUNAE ROAD, NAIROBI Country- Contact Allan Mutwiri -Telephone: 254-722-539910 Mobile Phone: 254-722539910
- Hortifresh Exports Limited
- Eden's Green Grocers Exporters LTD
- Dahiraan Enterprises Ltd
- Doracyn General Suppliers
- WEA International Inc
- Highlands Evergreen Exports
- Kyome Fresh Company Limited

Other Farmers and stakeholders interviewed;

- 1) Tropical Fresh Limited; Interviewed Sylvester Maina
- 2) Mwhoko Farmers Group; Talked to Benson Githinji
- 3) Tumaini Farmers Group; Talked to Patrick Mwangi

Annex 3: Instruments Used to Collect Data from Farmers and Key Informants

a) Interview guide

1. What do you do? (with regards to promoting food security within the local market)
2. How do you promote yourselves?
3. Do you promote green bean farming for LOCAL market? Does a formal value chain map for the local market exist?
4. What is the potential/How strong is the LOCAL market for the green bean?
5. Have you made any investments whatsoever towards promoting the local value chain?
6. Where does produce go after it leaves the farms? At what point of the supply [local/international]?
7. How is this done?
8. How much of it [2011 stats/figures] services the local markets?
9. (i) What in your opinion and from experience would you say are the major challenges/opportunities in this sub-sector?
(ii) How is the future looking like?
10. Any information on *pricing*? Production costs, farm gate/retail prices– for local/international, freight charges
11. Any information on *value* of the local market/domestic consumption?
12. Number of players in the value chain;
 - a) Farmers:
 - b) Input suppliers (seed & other)
 - c) Extension service providers/acre of farm
 - d) Research institutions
 - e) Financing arrangements
 - f) Transportation/distribution
 - g) consumers

b) Farmer Interviews for Bean Value Chain Analysis

CONTACT INFORMATION		Aspodea David Mukiri 0723868805 Green Beans, snow peas, potato Self Help Group Jambini, Engineer, Nyandarua	
Kamwoki Farmers' Group Rose Njoki 0724256859 Green Beans 27 Self Help Group (Reg'd under Ministry of Social Services)		Majuni Farmers Charles Ndoria 0723766464 Green Beans, snow peas, local vege Self Help Group Kabaru, Slopes of Mt. Kenya	
ADDRESS		Self Help Group (Reg'd under Ministry of Social Services)	
MARKET ACCESS			
Question	Comment	Comment	Comment
1. What do you see as your main need/opportunity in accessing the market?	Indo-Farm, an exporting company picks 100% of the produce from the farms and the farmers do not have to go look for market. Certified seeds are given to farmers. There is need for written contracts between farmers and the company. There is none and this contributes to the temptation to want to sell in the open market, which offers a better price. Need to scale up as most farmers farm on small pieces of land. Smallest is < 3 acres.	Most farmers are unable to adhere to GAP requirements, due to frequent application of pesticides and insecticides. Our main collector/Exporter recently moved away to larger scale farmers Requirement for mandatory chemical store caused one of the group (Rongai) to move to VEGPRO Currently looking for another buyer of farmer produce.	Presence of an organized market where farmers are linked to exporters is a great opportunity. Exporters supply us with certified seeds. Once the crop matures, harvest can be over extended periods, e.g. up to 3 months
2. To whom do you sell your produce?	Indo-Farm	Used to sell to Indo Farm, VEGPRO and now targeting local market until we find a new buyer	Kenya Fresh, Indo Farm, VEGPRO
3. How do you promote and market your produce?		We rely on associations like FPEAK to assist in market linkage.	
4. How strong is the market for your product right now? Next year?	Very strong because assured of market. Not sure about next year mainly due to many restrictions and stringent conditions coming in from Indo-farm on safety and residual level of chemicals applied to crop.	The market is challenging for as long as we are unable to meet the GAP requirements and buyers are falling out due to logistical and technical reasons. Next year, it might be even more challenging and we are looking at possibilities of diversifying into the local market	Strong because assured of market

5.	Are some markets better than others in terms of revenue growth?	Yes. Local market easier to satisfy but with a different crop like potatoes and carrots due to long term sustainability. But rate of income per kilo lower than export produce. Export produce lucrative because fetch good prices but conditions and requirements for safety too much. Can fetch between 60 – 120/- per kilo.	Local market offers slightly better prices but supply is limited because the vegetables are not common	Export markets are better because reliability of supply is assured and process range from 70/kg-120/kg
6.	Do you ever collaborate with other firms on promotion and marketing?	Our group functions alone. The exporter comes for the crop from the farm.	Collaboration with government department in training and exposure to GAP principles	Collaboration done for similar training sessions and exchange of market information and developments.
7.	Do some of your workers need additional training? In what skills?	Yes; Integrated Pest Control, GAP, EU SPS laws and regulations i.e. such as are taught to a selected few officials of the group due to limited resources.	Yes; Capacity building, IPM, First aid, GAP	Yes; Pesticides and GAP management skills in light of the changing needs of the market.
8.	Do you have a brochure for customers that describe your firm's capabilities?	No	No. However, when we need to market ourselves, we often use our strengths in record keeping and certification of members in various training sessions.	No
MANAGEMENT/ORGANIZATION				
1.	In Management, what are your major needs? What management skills would you like to strengthen in order to grow your business?	Basic levels of education to facilitate record keeping in line with the EU fresh produce markets.	Centralized record keeping system, Group store	Training in management of local vegetable growing such as potatoes and carrots to tap on local markets too e.g. more of what has been done by Solidaridad lately on potato
2.	Who does most of the work in the area of management, purchasing, production, accounting, shipping, marketing etc?	Employed a special clerk to undertake those duties away from the primary farming. He keeps records of kilos picked, pesticides applied and when applied.	A specialized clerk	Specialized appointee from the group whose work is just to manage records
3.	Do you sometime collaborate with other farms to produce and deliver customer orders?	In most cases, our group works functions alone and delivers to only one agent/exporter Indo. There is little side-selling and collective	Yes; When produce does not meet the	Yes; Collaboration done for

		order servicing with other groups except when there is very little produce and the trucks need more produce to fill, then they collect across farms. All other activities are performed as a group, within the group.	threshold load, the agents may collect form a number of farm beyond our own. This does not comply to the current requirement for collections being made from registered and verified suppliers only	similar training sessions and exchange of market information and developments.
4.	What aspects of your business do you intend to change in the next 2 years? (Machinery, computers, new products, marketing strategy, quality control, management system)	We intend to focus a little more on vegetables for local consumption for purposes of stability and sustainability.	MOA has warned that EU markets are shaky as far as receiving produce from Naru Moru area is concerned. E.g. Chemical application can sometimes be as often as weekly and German and Holland markets are the strictest cf. England. We are therefore thinking of diversifying into the local market, i.e. have contracts with big clients such as leading supermarkets, schools, hospitals etc for potato, carrots, and local vegetables. These have less hustle in chemical application procedures and market is readily available and stable	To diversify into supplying the local market especially in potatoes.
INPUT SUPPLY				
1.	What are your major opportunities in the areas of input cost, quality and availability?	Indo Farm gives us certified seeds. As for fertilizers and pesticides, we buy ourselves but the type of chemicals is specified by the Agent/Exporter. We bear the cost of weeding, land preparation and picking We use pumps for irrigation. Indo Farm is the exclusive provider of certified seeds for the green bean. Other inputs are bought from selected local agro-input shops but must be specific as we cannot apply any pesticides we choose. Fertilizers include CAN and DAP	When we used to supply for international markets, certified seeds for green beans, sugar snap/snow peas were provided. The export companies for the exotic vegetables Local input suppliers for fertilizers and chemicals. E.g. Bayer , Fuga Lima chemical distributors, Meru District Cooperative Union.	No problem getting fertilizers, but have issues with availability of local vegetable seeds e.g. potato. Only available from KARI. They have never had government fertilizers. Only hear about them. Kenya Fresh, Indo Farm, VEGPRO KARI (potato) Local agrovetts provide fertilizers DAP/CAN
2.	Who are your most important suppliers of inputs?			
3.	Are there problems in obtaining some of the inputs?	No problem with seeds. Farmers are asked to get organized so that whenever they get income (end month), they keep aside what	No problem sourcing.	Seeds for potato problematic to get

		will be needed to purchase fertilizers and other chemicals.			
4.	Have you ever purchased inputs jointly with other businesses?	N/A			
FINANCE					
1.	Where do you go when you need money for your business?	Most of our activities are self-financed	Self-reliance (from own incomes) Supplier credit arrangements	Faulu Kenya, KADET, Cooperatives, SACCO (Moki SACCO), Equity Bank	
2.	Do you get credit from input suppliers? What are the terms?	Yes. We get pesticides, fertilizers and spray chemicals in advance and pay later.	Yes	Input suppliers used to give seeds and we would pay later, but the arrangement was stopped.	
3.	Do you get production financing from your buyers?	Used to get chemicals but was discontinued.	Yes; Seed on credit from Indo farm initially on an 8-wk basis. This arrangement was later restricted because Indo farm is in EPZ jurisdiction thus restricted to supply inputs to far flung farmers	No. If need seeds for say potato, we buy cash.	
4.	Do you have need for additional financing at the moment? If so, what would it be used for?	Yes. Improving the Chemical store and packing shades.	Yes; This would go to securing of quality seeds for locally consumed vegetables and marketing of the same.	Yes; Scale up the quality of the grading area, increase the farming business. Most farmers work on small plots because of limited resources, create dams for irrigating the farms	
5.	What sources have you approached for loans? What have been the key problems?	Equity. Interest rates are high. There is no wide variety to choose from because not many institutions are willing to give agricultural loans.	TAIFA SACCO. Loans of <100K do not require collateral, rates are good i.e. between 12-14%	Faulu Kenya, KADET, Cooperatives, SACCO (Moki SACCO), Equity Bank Interest rates are high and most loans are ordinary cash loans and not specialized for agricultural needs.	
INFRASTRUCTURE					
1.	What are the most important infrastructural constraints affecting your business?	Storage facilities. Sometimes the vegetables are harvested late and they are collected following morning. Spoilage rate is so high and when graded, most is abandoned.	Roads are very bad. We are about 20 KMS away from Nyeri town. Exporters sometimes have problems collecting produce.	We are only 2 KMS from the grading area (off-road). After that, road is perfect all the way to Nairobi.	

		Transport is a problem because the farm is about 20 KMS inside away from tarmac. It becomes problematic when it rains because collectors are unwilling to brace the difficulty of bad terrain.	We use mountain water to irrigate. Gravity powered but the irrigation infrastructure is needed to facilitate farming.	We need irrigation facilities/dams Water is in plenty but harvesting process is weak.
2.	What is your industry doing about this problem	We save to improve on storage facilities although it's very costly to have cold rooms.	Trying to cluster farmers groups close to each other so that the logistics of collecting become easier and more cost effective.	Seeking assistance from possible financiers (mentioned Solidaridad) to assist in this respect.
BUSINESS MEMBERSHIP ORGANIZATION				
1.	Is your industry/trade sector represented by national or local business associations? If so, please name them.	FPEAK; Fresh Produce exporters association of Kenya	FPEAK; Fresh Produce exporters association of Kenya	FPEAK; Fresh Produce exporters association of Kenya
	Are you a member?	Yes	Yes	Yes
	What are the primary functions and benefits of these associations?	Brings together farmers and exporters through sharing information; Market linkage to local outlets where applicable	Facilitate training of farmers in GAP	Information on export farming best practices
	What additional services should they provide?			Information on how best to service both local and international markets.
OPEN ENDED QUESTIONS				
	What do you think are the strengths of your industry locally and/or internationally?	Organized linkage of farmers to exporters and other	Training of farmers in GAP and integrated pest and chemical management. Farmers understand problems of export markets (responsible use of chemicals, readiness for random checks by export market labs)	Closeness to Europe, a well-developed airline with good traffic to destinations.
	What are the main weaknesses of your industry?	Lack of formal contracts between farmers and exporters. This has encouraged exploitation by the buyers many times.	Legal basis of our group renders it impossible to have any contracts enforced because it's a self-help group that is not a legal entity. Enforcing by laws is difficult	Ever changing conditions from the European markets Corruption and non-transparent rejection of crops and farmers are left to bear the brunt because the exporters reject their produce whenever that

	<p>What do you think is the greatest challenge facing your industry today?</p>	<p>International good agricultural practices requirements and the strict conditions under which the vegetables must be produced.</p> <p>Requirements of the groups not to double deal yet there are no contracts.</p> <p>Our group seems to be fairly advanced compared to the farms around us.</p>	<p>The changing rules and tightening requirements of the export markets, including expiry of the preferential tax economic partnership agreement.</p>	<p>happens.</p> <p>Market conditions and cost of air transport.</p>
	<p>Can you name some business owners in your industry who are leaders –for example, in terms of technology, product design, quality, or marketing?</p>			

Annex 4. Focus Group Discussion (FGD) Guide for Agricultural Finance

Mwihoki self-help group

This guide is made to help the moderator to ask relevant questions to guide discussion. These discussions should focus on issues affecting farming activities, challenges, solicit ideas on how these farmers could be assisted and explore possibilities of financing the agricultural activity. The role of the moderator is to set the climate, introduce the issue, probe for more information and make notes on discussions.

Below are guiding questions relevant to the research:

	Guiding Questions/probes	Responses from FGD participants
1	<p>What farming activities do you undertake? (list all types of farming activities)</p> <p>Indicate whether the activities are Rainfed or irrigated; what are the planting season(s)?</p>	<p><u>Rain fed agriculture</u></p> <ol style="list-style-type: none"> 1. Maize and Beans (Various legumes) 2. Sweet Potatoes, Pumpkin, 3. Oranges, Water melons <p><u>Irrigated agriculture</u></p> <ol style="list-style-type: none"> 4. Horticulture – Various vegetables Tomatoes, Sukuma wiki, onion
2	<p>Why do you grow French beans rather</p>	<p>The area has a history of growing French bean and the people have a lot knowledge, experience and expertise. Good soils and water from Thiva river to irrigate and grow beans throughout the year.</p>
3	<p>Why did you choose to grow this crop?</p> <p>Where do you get the inputs?</p>	<ol style="list-style-type: none"> 1. Indu Farm and Frigoken are two Exporters that have been encouraging farmers to form groups to grow French beans for them. 2. It was a collective decision by the group members to grow the crop so that they can scale up production hence be attractive to Exporting company to work with them. 3. Farmers have been organised into groups to grow the crop to get economies of scale for sourcing technical expertise, inputs and transport.
4	<p>What challenges are you facing in growing and selling this French Beans?</p> <p>(these could be problems related to farm preparation, sourcing inputs, dealing with pests and diseases, marketing, storage, technology, finance, etc)</p>	<ol style="list-style-type: none"> 1. The market for French beans is Limited and farmers have no alternative but to sell to the single exporter or to brokers. 2. The locals and the greater Kenya people do not consume the French bean as a vegetable. This further limits the market. 3. Very stringent Eurogaps that make the growing of the crop very expensive 4. The Exporting companies often breach the contract terms with the farmers: <ul style="list-style-type: none"> • The Exporters pick the produce from collecting centres and transport it to Nairobi only to reject later. Rejections rates of up 100%, 70% have been common. • The variation of the contract agreement price is the norm rather than the exception. • There are many occasions where the Exporter fails to pick the crop or decide they are picking fewer quantities than what was contracted. • Sprayings at various stages is labour intensive and cost of chemicals is high

	Guiding Questions/probes	Responses from FGD participants
		<ul style="list-style-type: none"> • Pests and Disease reduce the production • The crops are highly perishable and therefore must be sold fresh and can not be stored • Exploitation by brokers and middlemen that offer very low prices for produce • Land preparation is labour intensive and expensive • Farm inputs: Seed, fertilizers and chemicals are expensive, at times of poor quality or unavailable. Lack of technical knowledge on inputs to use.
5	<p>How do you finance the growing of the crop support would you wish to receive to help improve your crop production?</p> <p>Credit, money transfer, insurance, payment system</p> <p>Any consideration in making the choice?</p>	<p>The Export Company provides the seed for the French beans usually sufficient for growing 0.25 Acres or between 20,000 – 23,000 seeds. This is to consider the minimum acreage to grow the French economically.</p> <p>Farmers cautious in taking agriculture credit because of the risks involved in agriculture as a whole. They would only take if the risks are mitigated as discussed in 7 below.</p>
7	<p>What other support mechanisms do you think would be useful to support you in this crop production?</p>	<ol style="list-style-type: none"> 1. Market Linkages: Find market for the French Beans and develop local consumption of the same. 2. Formation of a producers association to lobby for policy or regulation in production and marketing, setting of prices 3. Look at value additions and possible processing of the beans, tinning and preservation.
7	<p>How do you mitigate risks associated with farming these crops?</p> <p>Any insurance taken? If any with which provider?</p>	<ol style="list-style-type: none"> 1. Crop diversification so in case of crop failure of one then farmer can rely on the other 2. Agricultural insurance against bad weather. 3. Locals to enhance their consumptions of French beans. 4. Farmer associations to protect members, search for markets, bulk produce and transport to the market 5. Enhancement of field extension services to advise farmers
8	<p>Other comments</p>	<p>The group currently is not growing French bean and will not do so until the challenges mentioned are addressed. They have now switched to different horticultural produce.</p>

SYSTEMIC CHALLENGES ARISING FROM FIELD VISIT

Market Access

- a. Limited Export Market i.e. To Europe mainly. Recently USA market opening up
- b. Almost nonexistent local Market
- c. Seasonality of the Market
- d. Few oligopolistic Market because there are only handful buyers or exporters.
- e. No processing or value addition further constraints the market
- f. The Exporters (the buyers) are located far from the producers thereby high transporters and impacts on quality on arrival
- g. Most transporter do not refrigerated vehicles

Solutions

- a. Look for new markets outside the traditional markets i.e. USA, Asia and Regional Markets. Promote local consumption of the product.
- b. Explore value addition for the product including processing and canning into new products.
- c. Encourage the formation of more exporters to enhance competition and reduce the oligopolistic power of the Exporters
- d. The other stakeholders including the Donors, Government and private sector organizations should jointly collaborate to market the French beans outside Kenya.

Legal and Regulatory environment

- h. The policy and regulation exist but implementation is very poor. Most farmers are completely ignorant of them and are hardly visited by the authorities.
- i. There are a number of government agencies involved in horticultures the MOA, HCDA but their impact is hardly felt. They are hardly known at the farm level. For instance there are many HCDA cooling facilities in the area of operation but the farmers are not informed of the service offered.
- j. Enforcement of legal contracts is a huge challenge leading to unfair business practices. Farmers are exploited and out rightly robbed of their hard earned incomes when contracts are breached.
- k. Farmers breach contracts also by side selling when produce is on high demand.
- l. The farmers are organized as social groups registered with the Ministry of Culture and Social Services. This form of registration does not give the group a legal status in law.

Solutions

- Consultative workshop that bring various stakeholders together to address issues affecting the French Bean value chain, defining roles and develop a French Bean strategy plan.

Threat of complete Production and Market failure

All the groups visited have virtually stopped growing French beans as a group and few farmers growing on individual basis. Hence sourcing certified seeds and other inputs include extension service is becoming a challenge and expensive.

The Brokers

Advantage

- The brokers have been both a friend and enemy of the Farmers. They come in to rescue the farmers when the Exporters fail to collect the crops.
- Enhance competition
- Bulking and transportation and Marketing

Disadvantages

- Unfair business practice Low prices
- Source of conflicts between farmers and Exporters causing breach of contracts.
- They are not licensed

Annex 5: Questionnaire used in the field

SNV				
FRENCH BEAN VALUE CHAIN FOR SMALL SCALE FARMERS IN KENYA				
QUESTIONNAIRE				
INSTRUCTIONS TO INTERVIEWER: Please follow instructions as provided in each section and question below. Make sure that all questions are answered. Mark choice answers by a Tick (✓)				
SECTION A				
QUESTIONS	ANSWER CATEGORIES AND CODES			
Enumerator name				
Name of Region	<input type="checkbox"/> Olkalou	<input type="checkbox"/> Nyeri	<input type="checkbox"/> Njabini	<input type="checkbox"/> Kutus
Date of interview	/ August /2012			
SECTION B				
Name of Interviewee				
Gender	<input type="checkbox"/> Male	<input type="checkbox"/> Female		
Age	<input type="checkbox"/> 18-35 years	<input type="checkbox"/> 46-60 years		
	<input type="checkbox"/> 36-45 years	<input type="checkbox"/> Over 60 years		
SECTION C: FARMER OF FRENCH BEANS				
What is the ownership arrangement of the land on which you farm?	1 <input type="checkbox"/> Self owned	2 <input type="checkbox"/> Leased		
	3 <input type="checkbox"/> Borrowed/relative	4 <input type="checkbox"/> Other (Specify) _____		
What are the main inputs that you use in your per acreage of farm?	Inputs	Sources	Cost per Season	
	Seeds			
	Fertilizer			
	Pesticides/ Fungicides /insecticides			
	Preservatives			
	Other services			
Where have you been selling your crop? Mode of payment [1]cash on delivery [2]deliver & paid within 7days [3]deliver & paid within 14 days [4] deliver & paid after 14 days [5] payment varies with buyer	Buyer	Percentage sold to each	Price/kg	Payment Mode
	Local Retailers (e.g. supermarkets)			
	Consumers			
	Wholesalers			
	Brokers			
	Local Exporters			
	Other			
How do you promote/market your crop after harvest?	<input type="checkbox"/> Collaborate with other farms <input type="checkbox"/> Engages in individual marketing strategies			
Other organizations supporting the marketing of your crop	<input type="checkbox"/> NGO	<input type="checkbox"/> Government	<input type="checkbox"/> Other private firms	
How much did you spend and earn from your produce?	Item	Production expense/month	Income/month	

What challenges do you encounter in production?	PREPARATION AND INPUTS		
	<input type="checkbox"/> Lack of quality seeds/planting material		
	<input type="checkbox"/> Lack of financing services to facilitate timely planting		
	<input type="checkbox"/> Unpredictable weather pattern/droughts		
	<input type="checkbox"/> Lack of credit to acquire inputs and other requirements		
	<input type="checkbox"/> Other		
	CROP MANAGEMENT		
	<input type="checkbox"/> Destruction of crop by pests and wild animals		
	<input type="checkbox"/> Crop diseases		
	<input type="checkbox"/> Lack of legal framework to support crop production		
	<input type="checkbox"/> Lack of finances to facilitate weeding and crop pest management		
	<input type="checkbox"/> Access to irrigation and other weather mitigation facilities		
	<input type="checkbox"/> Other		
	POST HARVEST HANDLING		
	<input type="checkbox"/> Lack of proper/adequate storage facilities		
	<input type="checkbox"/> Lack of information on processing technology		
	<input type="checkbox"/> Poor prices owing to market gluts during abundance seasons		
	<input type="checkbox"/> Difficulty accessing the markets		
	<input type="checkbox"/> Lack of market for produce		
	<input type="checkbox"/> Exploitation by middlemen/brokers/traders		
	<input type="checkbox"/> Lack of financial system to facilitate payments		
<input type="checkbox"/> Unfavorable regulatory framework especially on production requirements(Euro gap, global gap)			
<input type="checkbox"/> Lack of technical support and training in management of crop			
<input type="checkbox"/> Other			
Do you use insurance services to mitigate your crop production risks?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
If Yes to C.13, specify services used and provider	Type of Insurance Service:		
	Provider:		

SECTION D: MIDDLEMEN/BROKER/EXPORTER	
Where do you buy your French beans?	1 <input type="checkbox"/> Directly from farmers 2 <input type="checkbox"/> From brokers/middlemen 3 <input type="checkbox"/> Others business people 4 <input type="checkbox"/> Transporters 5 <input type="checkbox"/> Others (Specify)
How do you buy your produce?	1. <input type="checkbox"/> Cash 2. <input type="checkbox"/> Credit < 7 days 3. <input type="checkbox"/> Credit 7-14 days 4. <input type="checkbox"/> Credit > 14 days 5. <input type="checkbox"/> Others (specify:
What are your main challenges in buying this produce?	1. <input type="checkbox"/> Production varies (affected by weather) 2. <input type="checkbox"/> Farmers are not reliable 3. <input type="checkbox"/> Poor quality of produce 4. <input type="checkbox"/> Unreliable market for fresh produce 5. <input type="checkbox"/> Transport challenges 6. <input type="checkbox"/> After harvest wastages (storage) 7. <input type="checkbox"/> Lack of credit 8. <input type="checkbox"/> Weak payment system 9. <input type="checkbox"/> Lack of insurance against loss 10 <input type="checkbox"/> weak policy framework to support production of the crop 11 <input type="checkbox"/> Others (specify)
Where do you sell the crop?	1. <input type="checkbox"/> Nairobi or other major Town 2. <input type="checkbox"/> Exporters of fresh produce 3. <input type="checkbox"/> Deliver to processors 4. <input type="checkbox"/> Major hotels 5. <input type="checkbox"/> households locally 6. <input type="checkbox"/> middlemen/ other traders 7. <input type="checkbox"/> Other (specify)
Do you do anything to the produce once you buy? {Value addition}	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
If YES in the question above, What do you do?	1. <input type="checkbox"/> Process it 2. <input type="checkbox"/> Repackage 3. <input type="checkbox"/> Rebrand and export 4. <input type="checkbox"/> Other (specify)
What do you offer to your customers in terms of train or capacity building?	1 <input type="checkbox"/> None 2 <input type="checkbox"/> Training lessons on use/application chemicals 4 <input type="checkbox"/> Provide written materials/documentation as provider by manufacturer 5 <input type="checkbox"/> facilitate skills transfer with supplier 6 <input type="checkbox"/> Other (specify)

SECTION E: INPUT SUPPLIER

Which of these products do you sell?	1. <input type="checkbox"/> Seeds/seedlings
	2. <input type="checkbox"/> Fertilizers,
	3. <input type="checkbox"/> Agrochemicals
	3. <input type="checkbox"/> Sprayers and other farm tools
	4. <input type="checkbox"/> Farm machinery
5. <input type="checkbox"/> Other (Specify)	
Where do you get your products?	1 <input type="checkbox"/> Manufacturer 2 <input type="checkbox"/> Distributor 3 <input type="checkbox"/> Farmer/dealer 3 <input type="checkbox"/> Others(Specify)
How do you buy your products?	1. <input type="checkbox"/> Cash 2. <input type="checkbox"/> Credit, < 30 days 3. <input type="checkbox"/> Credit, > 30 day 4. <input type="checkbox"/> Others (specify):
How do your customers buy from you?	1. <input type="checkbox"/> Cash only 2 <input type="checkbox"/> Cash and times Credit limited to 30 days 3. <input type="checkbox"/> Cheque 4 <input type="checkbox"/> Check off at harvest 5 <input type="checkbox"/> Other (specify)
Do you give any other support to farmers?	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
If YES in question above, which service(s) do you offer?	1. <input type="checkbox"/> Training and technical assistance
	2. <input type="checkbox"/> After sale support
	3. <input type="checkbox"/> Marketing information
	4. <input type="checkbox"/> Other (specify)
What complaints do you receive from your customers for farm inputs and agrochemicals?	1. <input type="checkbox"/> Poor quality seeds/planting materials
	2. <input type="checkbox"/> Resistant pests and disease
	3. <input type="checkbox"/> No market for the produce
	4. <input type="checkbox"/> Bad prices/glut
	5. <input type="checkbox"/> No money to buy inputs
	6. <input type="checkbox"/> Others (specify)
What are your major challenges in dealing with this business?	1. <input type="checkbox"/> The market is small and uneconomical (unsustainable)
	2. <input type="checkbox"/> The prices farm inputs changes a lot
	3. <input type="checkbox"/> Lack of credit to buy seeds and other inputs in time
	4. <input type="checkbox"/> Farmers not able to buy for seeds in time
	5. <input type="checkbox"/> Seeds are not available in time
	6. <input type="checkbox"/> Agrochemicals are not effective/poor quality/counterfeits
	7. <input type="checkbox"/> Lack technical skills & knowledge on chemicals & inputs
	8. <input type="checkbox"/> Other (specify)