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REPORT OF A STUDY ON FRESH VEGETABLES MARKET IN KENYA

DESK REVIEW

By

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List of Acronyms

AAK	Agrochemical Association of Kenya
ASALS	Arid and semi-arid Lands
ASDS	Agriculture Sector Development Strategy
CIF	Cost Insurance and Freight
COMESA	Common Market for Eastern and Southern Africa
EAC	East African Community
EMCA	Environmental Management and Coordination Act
EPC	Export Promotion Council
EU	European Union
FFV	Fresh fruits and vegetables
FPEAK	Fresh Produce Exporters Association of Kenya
FNSP	Food and Nutrition Security Policy
GAP	Global Agricultural Practices
GDP	Gross Domestic Product
HACCP	Hazard Analysis Critical Control Point
HCDA	Horticulture Crops Development Authority
IFPRI	International Food Policy Research Institute
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KARI	Kenya Agriculture Research Institute
KARO	Kenya Agriculture Research Organization
KEBS	Kenya Bureau of Standards
KENAFF	Kenya National Farmers Federation
KES	Kenya Shillings
KEPHIS	Kenya Plant Health Inspectorate Service
KFC	Kenya Flower council
KHA	Kenya Horticulture Authority
KHCDA	Kenya Horticulture Development Agency
KHCP	Kenya Horticulture Competitiveness Project
KIRDI	Kenya Industrial Research and Development Institute
KNFAP	Kenya National Federation of Agriculture Procedures
KRA	Kenya Revenue Authority
MAPS	Medicinal and Aromatic Plants
MDGs	Millennium Development Goals
NASEP	National Agriculture Sector Extension Policy
NARS	National Agriculture Research Systems
NEMA	National Environment Management Authority
NCPB	National Cereals and Produce Board
NFSCC	National Food Safety Coordination Committee
NGO	Non-governmental organization
SACCOs	Savings and Credit Cooperatives
SRA	Strategy for revitalizing agriculture
STAK	Seed Traders Association
PCPB	Pest Control Products Board
UPOV	Union for the Protection of New Plant Varieties

Executive Summary

Agriculture is the backbone of the Kenyan economy with an annual direct and indirect contribution to the GDP of 24 percent and 27 percent in 2011, respectively. Horticulture is among the leading contributors to the Agricultural GDP at 36 percent and continues to grow at between 15 and 20 percent per year.

The horticultural sector is among the leading foreign exchange earners and contributes enormously to food security and household incomes to a majority of Kenyan producers who carry out one form of horticultural production or another. The industry employs over six million Kenyans directly and indirectly. Of the total horticultural production, about 95 percent is consumed or utilized locally, while the remaining 5 percent is exported; yet in terms of incomes, the export segment earns the country huge amounts of foreign exchange. For example, in 2011, the industry earned the country KES 91.2 billion from exports.

The horticulture sub-sector is made up of five commodities; vegetables, flowers, fruits, nuts and medicinal and aromatic plants (MAPS). Of the total value of horticultural produce, vegetables account for 44.6 percent, fruits 29.6 percent, flowers 20.3 percent, and nuts, medicinal and aromatic plants account for the rest. About 95 percent of horticultural production goes to the domestic market and 5 percent to the export market.

The vegetable sub-sector is important in attaining food security and improving livelihood for smallholder farmers who produce 100% of the African vegetables and up to 70% of the Exotic and Asian vegetables. The major vegetables produced in Kenya are: Irish Potatoes, tomatoes, cabbages, snow peas, kales, spinach, runner beans, French beans, carrots, broccoli, indigenous vegetables, and Asian vegetables. In terms of enterprise value per acre, tomatoes are the most lucrative, followed by cabbages and French beans.

Several factors hinder the potential of the industry. These include multiple taxation regimes, low incentives in terms of local market prices, high costs of inputs as well as water, energy, and the cost of air freight, and a generally unregulated environment leading to produce poaching and lack of quality control for local produce. Agro-processing, packaging and quality standards in the domestic market are also not fully developed. There is need to invest in better production methods, post-harvest care and quality to improve consumer acceptance of produce in order to earn higher value.

There has also been little effort made towards ensuring that the produce complies with standards as with the case of international markets.

With liberalization and regional integration, Kenya continues to witness an increased influx of horticultural produce from the neighbouring countries of Uganda, Tanzania, Sudan, Ethiopia, Somalia, South Africa and Egypt. This has been attributed to the high cost of local production and low adoption of modern technologies by Kenyan farmers. This situation can significantly affect local production and depress prices of certain commodities thus negatively affecting the livelihood of many Kenyans who directly and indirectly depend on the industry.

Agro-processing and packaging technologies are relatively underdeveloped in Kenya. Deliberate efforts need to be made towards investing in this area to increase produce shelf life, reduce post-harvest losses, and improve consumer acceptance.

The activities of government agencies involved in regulating the industry are not harmonised and lead to delays and increased cost of compliance.

These challenges require a multi-sectoral approach in seeking and providing appropriate solutions. Presently, the National Horticulture Task Force provides a platform for addressing challenges that are multi-sectoral in nature, though it lacks the legal status to implement or enforce policy. It is therefore imperative that the industry establishes an institutional mechanism to address multi-sectoral challenges.

1 Introduction and Background

1.1 Background to the Study

The wholesale and retail trade sector is identified by the government of Kenya as one of the six priority sectors in the economic pillar of Vision 2030, the long-term strategy for Kenya to become a middle-income country by 2030. At the same time, the Government of the Netherlands identified Agri & Food as a so called top sector to be further developed, both nationally and globally.

The Embassy of the Kingdom of The Netherlands in Kenya has a key role in providing assistance to Dutch agribusinesses investing in Kenya as well as engaging in support programmes that promote food security in the country. Therefore, to increase understanding of the retail food sector, the Embassy has embarked on coordinating a study on this sector in Kenya.

1.2 Objective of the Study

The key objective of this study is to provide the Dutch agro-food sector with insights into the Kenyan retail food industry and investment opportunities therein. Currently, there are several Dutch companies producing food in Kenya and many more are willing to come and invest. Although convinced of the potential for food production in Kenya, many of them lack specific information on regulations and on available investment opportunities, which deters them from entering the market. This study will help them make an informed decision on how and where to start.

The study will focus on the fresh vegetables value chain running from farm to retailer and catering for the domestic market, the destination of over 90% of total vegetables production. Examples of important fresh vegetables are French beans, snow peas, baby corn, tomatoes, avocados, okra, cabbages, and onions.

1.3 Approach to the Study

Data collection was carried out through in-depth desk research and key informant interviews with industry stakeholders from government, the private sector and NGOs to collect anecdotal information about the horticulture sector and its opportunities for further investments. Interviews were also conducted with representatives from both small and large scale farmers.

1.4 Limitations of the Methodology

The fresh vegetables trade in Kenya is largely informal and non-transparent, with no data. Research in this study is therefore, qualitative, using structured and unstructured approach with experts and industry stakeholders as well as a review of existing literature, some of which have not been updated.

There is a severe lack of published statistics at the local level, and those that are published, like customs figures, taxes and cess, data from phytosanitary inspection offices, or market information, are recorded inconsistently across different bodies, making comparability impossible.

Key informant interviews frequently encountered difficulties finding people willing to be interviewed. Many people were reluctant to be interviewed for fear of being misquoted because of the lack of accurate information, concerns that the information would be used by competitors, or about potential tax liabilities of reporting accurate figures. Moreover, most traders and business owners did not keep records, responses were based on memory or unverified estimates. These limitations could affect the quality and consistency of data collected.

It is also important to note that at the time of this study some of the policies and regulations were yet to be implemented, like the National Horticultural Policy, and ongoing changes within some key regulatory bodies, for example the establishment of a directorate called Horticultural Crops Directorate

Chapter two below presents a review of the regulatory environment in which the agro-food chain in Kenya operates. These include the domestic and import regulations and the levies and taxes that impact the chain.

2 The Regulatory Environment for the Agro-Food Chain

The current regulatory and legal framework that governs the industry consists of acts of parliament and subsidiary legislations. However where such laws exist, there is inadequate enforcement. There are other legal and regulatory frameworks that influence the operations and governance of the industry and these include international standards, protocols, conventions, treaties and agreements at the multilateral and bilateral level and codes of practice for industry associations at the local level.

The table below presents an overview of relevant local key laws that deal with food safety in Kenya.

Laws	Agency	Relevance
Agricultural Act Cap 318	Kenya Plant Health Inspectorate Services (KEPHIS)	An Act of Parliament to promote and maintain a stable agriculture, to provide for the conservation of the soil and its fertility and to stimulate the development of agricultural land in accordance with the accepted practices of good land management and good husbandry
Plant Protection Act Cap 324	Kenya Plant Health Inspectorate Services (KEPHIS)	An Act of Parliament to make better provision for the prevention of the introduction and spread of disease destructive to plants
Agricultural Produce Act (Export) Cap 319	Kenya Plant Health Inspectorate Services (KEPHIS)	An Act of Parliament to provide for the grading and inspection of agricultural produce to be exported, and generally for the better regulation of the preparation and manufacture thereof
Agricultural Produce Marketing Cap 320	Kenya Plant Health Inspectorate Services (KEPHIS)	An Act of Parliament to control and regulate the marketing of agricultural produce, to enable Marketing Boards to be established for marketing such produce and to provide for the powers and functions of the Boards, and for matters connected therewith...
Crop Production and Livestock Cap 320	Department of Crop production	An Act of Parliament to make provision for the control and improvement of crop production and livestock, and the marketing and processing thereof [Cap. 205 (1948), Act No. 47 of 1949,
Seed and Plant Variety Act Cap 326	Kenya Plant Health Inspectorate Services (KEPHIS)	An Act of Parliament to confer power to regulate transactions in seeds, including provision for the testing and certification of seeds; for the establishment of an index of names of plant varieties; to empower the imposition of restriction on the introduction of new varieties; to control the importation of seeds; to authorize measures to prevent injurious cross-pollination; to provide for the grant of proprietary rights to persons breeding or discovering and developing new varieties; to establish a national centre for plant genetic resources; to establish a Tribunal to hear appeals and other proceedings; and for connected purposes

Suppression of Noxious Weeds Act Cap 325	Kenya Plant Health Inspectorate Services (KEPHIS)	An Act of Parliament to provide for the suppression of noxious weeds
Fertilizer and Animal Feedstuff Act Cap 345	Kenya Plant Health Inspectorate Services (KEPHIS)	An Act of Parliament to regulate the importation, manufacture and sale of agricultural fertilizers and animal foodstuffs and substances of animal origin intended for the manufacture of such fertilizers and foodstuffs, and to provide for matters incidental to and connected with the foregoing
Standards Act Cap 496	Kenya Bureau of Standards (KEBS)	An Act of Parliament to promote the standardisation of the specification of commodities, and to provide for the standardisation of commodities and codes of practice; to establish a Kenya Bureau of Standards, to define its functions and provide for it
Biosafety Act 2009 (CAP 321 A)	The National Biosafety Authority	An Act of Parliament to regulate activities in genetically modified organisms, to establish the National Biosafety Authority, and for connected purposes
Crops (No.16 of 2013)	Horticultural Development Authority	An Act of Parliament to consolidate and repeal various statutes relating to crops; to provide for the growth and development of agricultural crops and for connected purposes
Public Health Act Cap 242(Rev.2002)	Department of Public Health	An Act of Parliament to make provision for securing and maintaining health
Food Drugs Chemical Substances Act Cap 254(Rev. 2002)	Department of Public Health Government Chemists Department National Public Health Laboratories	An Act of Parliament to make provision for the prevention of adulteration of food, drugs and chemical substances and for matters incidental thereto and connected therewith
Science and Technology (Amendment) Act, Cap 256, 1979	KEMRI/KEPHIS/ National Council for Science and Technology	An Act of Parliament to establish machinery for making available to the Government advice upon all matters relating to the scientific and technological activities and research necessary for the proper development of the Republic; and for the co-ordination of research and experimental development; and for matters incidental thereto and connected therewith
Pest Control Products Act (Cap 346)	Pest Control Products Board	An Act of Parliament to regulate the importation, exportation, manufacture, distribution and use of products used for the control of pests and of the organic function of plants and animals and for connected purposes
Environmental Management and Coordination Act) (EMCA) (CAP 387No. 8 of 1999	NEMA	An Act of Parliament to provide for the establishment of an appropriate legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto

Essential laws and standards are elaborated in the next paragraphs of this chapter.

2.1 Domestic Regulations

Introduction

Domestic regulations impacting on the horticulture value chain are documented in the *Crops Regulations, 2014*.

The Crops Regulations, 2014, cites the establishment of a Directorate to be known as the Horticultural Crops Directorate. The Directorate shall be semi-autonomous in discharging its professional mandate of regulating, developing and promoting the industry and shall be the competent entity to represent Kenya in international forums on the regulation and promotion of the horticultural industry. The Directorate shall regulate, promote, coordinate and facilitate the industry.

The Crops (Horticultural Crops Directorate) Regulations, 2014

The Crops Regulations, 2014, cites the following the regulations governing the horticulture value chain:

1. Licensing of operators of a horticultural crop nursery or a mother block

Operators of a horticultural crop nursery and a mother block are required to make an application for registration with the Horticultural Crops Directorate. The application should be accompanied by a non-refundable fee of KShs. 1,000.

2. Restriction on transfer or distribution of planting materials

To transfer or distribute horticulture plant material from one part of the country to another, one has to have a plant movement permit that is obtained from the Kenya Plant Health Inspectorate Service.

3. Approved source of planting materials

A nursery operator can only procure rootstock, scion, or seed planting material from sources that are registered by the Horticulture Crop Directorate.

4. Production, produce handling, pack houses and processing facilities

Minimum requirements for the Production produce handling, pack houses and processing facilities.

5. Safe use of pesticides

All procurement, distribution, safe storage, usage and disposal of agro-chemicals is governed by provisions provided under the Pest Control Products Act. It is expected that a grower will ensure production of safe and quality produce and use at all times only the agrochemical recommended by the national institution responsible for pest control products. Further, it is expected that the

grower keeps a record of chemicals used and avail the records to a horticultural inspector at all times.

6. Registration for produce dealers

To operate as a dealer, one has to register and be licensed by the **Horticulture Crop Directorate**. A registration fee is applicable though the regulations do not clearly stipulate the amount. A certificate of registration is issued and is valid for 12 months. In case of failure to comply with the terms and conditions of the registration and licensing, a dealer may have its certificate cancelled.

7. Traceability of produce

The dealer is the enforcer of the traceability regulations. They are required by law to ensure that the national and international standards on safe handling of pesticide for food safety are adhered to. As such, they are required to ensure that the produce they handle can be traced to the source. Furthermore, dealers are expected to only work with registered agents

8. Restrictions on contract farming

A number of restrictions have been put in place to govern the contractual agreements between dealers and farmers. Dealers are expected to inform the directorate of any horticulture crop growing that the dealer may have sponsored. Such an arrangement should be regulated by a contract. All such contracts should be registered with the directorate.

9. General provisions on conformity for produce

The regulations stipulate guidelines on harvesting, sorting, grading, packaging, transporting and storing produce.

2.2 Levies and Taxes

There are multiple taxes, licenses, levies, fees, cesses and charges in the horticultural industry but because the fresh vegetables trade in Kenya is largely informal and non-transparent, there is no data.

Most of the taxes are levied on transit and at the point of entry to the market. No tax incentives exist. Financial services are limited and not readily available to the majority of smallholder farmers. In addition, there is limited awareness of insurance products for horticultural enterprises.

The Seventh Schedule in the crops (Horticultural crops directorate) Regulations, 2014 stipulates the horticultural crops industry levies as follows;

1. There shall be a levy imposed as per the Seventh Schedule on all horticultural crops destined for export other than those canned, bottled, preserved, dehydrated or delivered to operators for canning and processing factories at the rate of two per cent of their customs value.
2. The levy imposed under sub-regulation (1) shall be, payable at the point of exit, collected by the directorate on behalf of the authority and apportioned as follows; 1 percent shall be applied to the Horticulture Directorate in the manner provided under these regulations; 0.8

percent towards priority Horticulture research programs in liaison with relevant research institutions; and 0.2 percent to support horticulture at the county level.

3. There shall be a levy imposed on all horticultural crops delivered for canning and processing to all canning and processing factories at the rate of two per cent of the factory cost of the processed produce.
4. There shall be a levy imposed on all horticultural crops imported as finished products at the rate of four percent of the import value.
5. There shall be a levy imposed on all horticultural crops as fresh products or raw materials at a rate of two percent of the import value.
6. The levy due under sub-regulation (3) shall be remitted to the Directorate not later than the tenth day of the month following the month during which the levy was due.
7. One per cent of the import levies collected under sub-regulation (4) and sub-regulation (5) of this regulation shall be applied towards addressing emerging issues in the industry.
8. Any levy under this regulation, unless the manner of remitting is specifically provided for, shall be payable to the Directorate on behalf of the Authority or its agents by a dealer on whom it is imposed in such a manner and within such time as the Authority may direct.
9. Any levy imposed under this regulation which remains unpaid shall be recovered by the Directorate, on behalf of the Authority, as a civil debt due to it from the person by whom it is payable.
10. Despite the provisions of sub-regulation(1), all levies imposed under the Act on scheduled crops, shall be administered on behalf of the Authority by the respective Directorate, responsible for the scheduled crop and applied towards sustenance, development, promotion and for the benefit of the crop or sector in respect of which the levies are imposed.

2.3 Import Regulations

Introduction

Trade in agricultural commodities is a major determinant of national food security. With rapid population increase, declining per capita production and self-sufficiency, urbanization and changing eating habits, food imports have become increasingly important in ensuring food and nutrition security in Kenya as consumers have benefited from inexpensive and a wide range of imported food and food products. Imports increased significantly after the introduction of market reforms. There are fears that food imports from developed countries, where producers are heavily subsidized, may displace local production. This distortion may occur in the case of regional food imports. However, government interventions are able to affect dynamics in the market and thereby affect the potential of markets in ensuring food and nutrition security.

More predictable and transparent involvement of state in markets, particularly in changes in import tariffs, National Cereals and Produce Board (NCPB) purchase and sale prices, will reduce uncertainty and ensure a predictable supply of food imports and reduce costs of food. Official and informal cross-border trade with the neighbouring countries is common. Enhanced trade in food products among the EAC and Common Market for Eastern and Southern Africa (COMESA) member states will ensure regional food self-sufficiency, provided food safety is ensured. Following Government actions to improve regional food trade, the major challenges for Kenyan

farmers is to reduce the cost of their production and develop marketing arrangements to make farm products competitive.

Import regulations

Import duty is the levy charged on any import cargo into the country. Generally 35% of Cost Insurance and Freight (CIF) price is charged on any imports from outside COMESA and members of the East African Community (EAC). However, tax concessions are given to member states at different percentages. For example, Kenya has given Tanzania and Uganda 90% concession on primary agricultural produce. Thus, import cargo within this category attracts a duty of 3.5%. Import Declaration Form fees are charged on goods that have a value of more than \$5,000 at a rate of 2.75% of CIF price.

The interpretation on what rates to levy on each commodity is derived from the First Schedule of the Customs and Excise Act (Tariff Interpretation). In return for Kenya's 90% concession, Tanzania and Uganda are expected to reciprocate by giving Kenya tax concessions on some categories of cargo e.g. primary agricultural produce. However, Kenya custom officials complain that Tanzania frequently resorts to suspended duty (anti-dumping) at 25% on Kenyan goods. Kenyan traders also complain of red tape with high tax rates imposed. When the presidents of Uganda, Tanzania, and Kenya met in July 2003, one action they took was the creation of a task force to harmonize duties among the countries to facilitate trade (Source: Tegemeo Institute of Agricultural Policy and Development. Working Paper No. 08B/2004).

In order to address the challenges on food trade and ensure a predictable supply of commercial food import, the Government will:

- i) Facilitate the competitiveness of Kenya's agricultural sector;
- ii) Foster regional trade by adhering to EAC and COMESA trade policies;
- iii) Contribute towards harmonisation of regional standards which will provide a level playing field and fair trade practices for Kenyan farmers,
- iv) Control dumping of subsidized foods, and
- v) Ensure predictable and transparent involvement of state in markets to reduce uncertainty and ensure a predictable supply of food imports.

2.4 Food Quality and Safety Standards

Introduction

In Kenya, the food safety control system is multi-sectoral in approach. The legal and regulatory framework governing produce food safety and quality standards for both domestic and export markets is contained in local statutes, subsidiary legislation, Global Good Agricultural Practices and to a lesser degree, international protocols.

Horticultural produce is prone to pesticide residue, heavy metal and microbial contamination. Whereas Kenya has put in stringent measures in complying with international standards and market requirements, a lot remains to be done for the domestic market.

There is no coordinated self-regulation mechanism among small producers on produce safety. The growers of produce destined for domestic markets are therefore not effectively regulated. This can partly be attributed to ineffective enforcement of legal and regulatory provisions.

Food quality and safety standards regulation

The issues of food safety, standards and quality control are addressed in Chapter 3 of the Food and Nutrition Security Policy (FNSP). The government policy objective is to ensure safe, high quality food by creating public awareness on relevant issues, and by setting, promoting and enforcing appropriate guidelines, codes of practice, standards and a regulatory framework.

Responsibility to date for ensuring food safety and quality is scattered amongst twelve (12) regulatory ministries/government departments and twenty (20) Acts of Parliament. Major responsibility lies with the Department of Public Health, Government Chemist, Kenya Bureau of Standards, Department of Veterinary Services, Horticultural Crop Development Authority and Kenya Plant Health Inspectorate Service, among others. Coordination and some capacity aspects within these institutions have been weak, contributing to inefficiencies. Key laws that deal with food safety include the Public Health Act Cap 242 of the Laws of Kenya, the Local Government Act, Horticultural Crop Authority orders, Food, Drugs and Chemical Substances Act Cap 254 of the Laws of Kenya, and the Standards Act Cap 496 of the Laws of Kenya. Most of the said Acts are not in conformity with current international standards and guidelines and need to be revised and adapted based on the Hazard Analysis Critical Control Point (HACCP) and good manufacturing practices.

Production related incidences of food poisoning due to common agricultural residues are widespread resulting in the emergence of acute and chronic diseases. Poor hygiene and inappropriate food handling and storage contributes to spoilage and consumption of poor quality foods posing serious health risks (such as diarrhoea, cholera and aflatoxicosis).

Improvements in food safety and quality control will lead to more diverse diets, improved consumer health and nutrition, new opportunities for local and export trade, and ultimately to enhanced food security and good nutrition.

While food safety and quality control are both national and county issues, concern about public health is particularly acute in urban areas. Agricultural production in urban and peri-urban areas, often of nutrient-rich vegetables, typically occurs along riversides using contaminated water, thereby discouraging urban consumers from diversifying their diets. This is exacerbated by informal roadside markets, further contaminating food with pollution, lead and dust.

The National Food Safety Coordination Committee (NFSCC) has been established as an inter-ministerial body to increase awareness about the impact of food safety and quality, and initiate the revision and harmonisation of all the relevant Acts of Parliament.

The private sector comprises key stakeholders in many areas related to food safety, notably the major food processing and food marketing companies. Most companies strive to develop safe and high quality products, but government must provide appropriate standards and guidelines.

The private sector is therefore a substantial partner to further efforts to improve food product quality, regulations and safety.

There are also bio-safety concerns on production, importation and consumption of genetically modified foods. However, these are being addressed through the National Bio-safety Act.

The government policies that impact the agro food chain in Kenya including the policy direction are presented in Appendix III. This Appendix also gives an overview of the Agricultural Sector Development Strategy 2010-2020 and Vision2030.

Chapter four looks at the fresh vegetables value chain structure from farm to the retailer, the main stakeholders in the value chain and the relationships between these stakeholders.

3 The Fresh Vegetables Value Chain Structure from Farm to the Retailer

Domestic trade is an important source of livelihood for players in the horticultural value chain. The bulk of produce for domestic market comprises vegetables, fruits and medicinal and aromatic plants (MAPs). The major actors involved in trade are producers, traders, middlemen, transporters and local authorities. The margins between farm gate prices and consumer prices are wide. Margins for the producer are small and indicative of suppressed profitability. Many markets have inadequate physical facilities and do not therefore provide facilities like storage and cold rooms, weighing equipment, loading/unloading and social amenities.

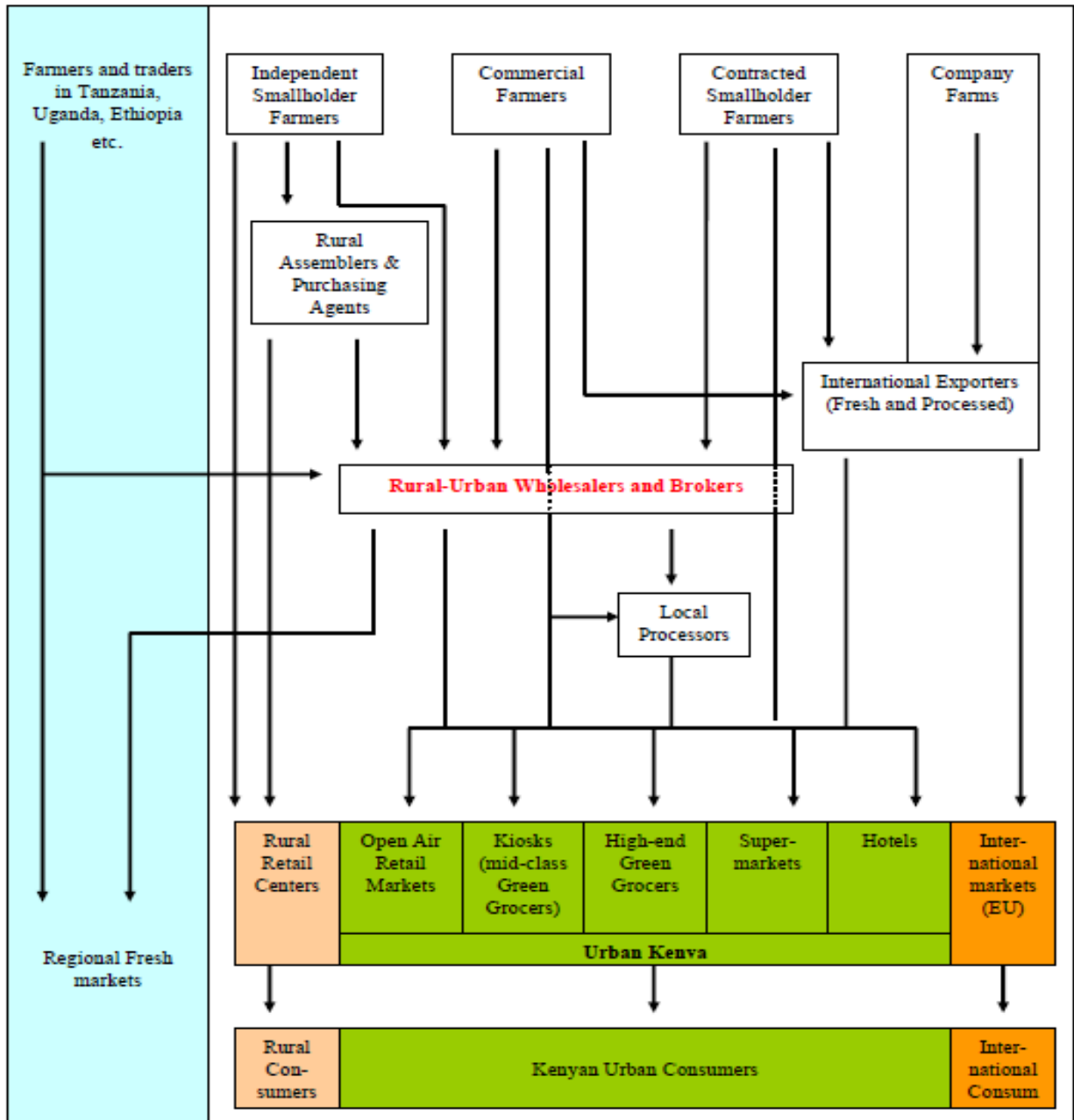
The performance of the traditional wholesale markets greatly affects the costs, prices, and distribution of benefits throughout the production and marketing system. The bulk of the costs in the vegetable trade occur in the wholesale and distribution segment of the value chain. Wholesale marketplaces are also where significant inefficiencies in the value chain are concentrated.

The main traders in the regional markets are the wholesalers. Wholesalers as a group are divided into collecting wholesalers and distributing wholesalers. The former specialize in collecting produce from farmers in the region. They travel long distances to purchase commodities in spot markets from the producing areas and towns in Kenya, Tanzania, and Uganda. To facilitate operation, collecting wholesalers frequently employ purchasing agents who work in the production areas on their behalf. Purchasing agents reduce costs by identifying produce for sale, carrying out the negotiations, accumulating, assembling and carrying the produce to a nearby earth road for ease of collection. Hence, they streamline the procurement process (Dijkstra, 1996; 1997; 1999). Once enough products are obtained, collecting wholesalers then transport the commodities to the main cities/towns generally using lorries with a minimum of seven tons. These professional collecting wholesalers sell primarily in urban wholesale markets to distributing wholesalers.

Collecting wholesalers operate in such a way as to allow distributing wholesalers to focus entirely on their urban clientele. This is important in large regional urban centers such as Nairobi and Mombasa where wholesale and retail markets are operational six days a week. For such distributing wholesalers, being absent results in lost revenue and poor customer relations (Dijkstra, 1997). The urban clientele that these distributing wholesalers serve are highly diverse. They include traders in traditional open-air retail markets, green grocers serving middle-class clientele in roadside kiosks, high-end green grocers mostly in established retail centers, supermarkets, and hotels.

3.1 The Main Value Chain Stakeholders

Domestic, regional and international marketing channels for Fresh Horticultural produce in Kenya (Source: Tegemeo Institute of Agricultural Policy and Development, Egerton University. Working Paper No. 08B/2004)



Understanding the stakeholders

1) Producers

Vegetables are generally produced by small- and medium-scale farmers who grow one or two crops as primary cash crops. Farmers generally sell to the first buyer who comes along or the buyer with the best price. Producers often depend on traders for transport to the markets and selling price is thus dictated by traders (intermediaries) and not farmers (Koenig, 2008). Producers generally have limited access to price information and therefore little bargaining power with buyers. A lack of on-farm storage facilities also forces farmers to sell produce immediately. Finally, farmers have little to no knowledge regarding consumer preferences, or quality grading standards. What producers cannot sell to buyers at farm gate is usually consumed at the household level or sold in small quantities in local markets. In some cases, this can cause considerable losses for farmers who are poorly connected to buyers and markets. Women generally take the lead in growing vegetables and focus on crops for household consumption, selling any excess. Men cultivate cash crops primarily for sale which leads to a disproportionate portion of agricultural income going to men.

2) Traders

Different types of traders are involved in various segments along the value chain. Traders include: intermediary traders (at aggregation points), brokers and wholesale traders. Produce often passes through several traders before reaching the consumer, but can also be traded directly off the farm to a retailer. A retailer is not a trader, but sells produce to consumers. Over half the traders in markets are youth and thus provide employment opportunities that are open to youth. Most of these traders have no formal offices, low levels of membership in associations which implies a low level of cooperation and coordination. The relative longevity of businesses observed and the low proportion of formal office space suggests that operations and relationships are largely informal, and that low levels of investment are common, which may explain why the sector is appealing to youth.

An **intermediary** generally purchases produce from one or more farmers, grades and re-packages it and then sells in bulk to wholesalers who trade goods in a wholesale market. An intermediary may also buy goods from a broker or another intermediary at aggregation markets or smaller wholesale markets and can sell produce to large suppliers or institutional consumers although sales to other wholesalers are most common. A **wholesaler** is a trader who operates and sells goods exclusively in an established wholesale market. The wholesaler buys goods from intermediaries, often via a broker, and sells to either another wholesaler or a retailer. Wholesalers generally specialize by product category, set opening prices and control price changes throughout the day. Wholesaler traders in markets keep constant contact with intermediaries in order to control supply of produce, requesting more if demand is high or avoiding large surpluses. Because of the of cash constraints and the lack of storage space, especially cold storage, wholesalers try to sell all vegetable stocks by the end of each day causing volatility of market prices.

The lack of storage, notably cold storage is a big constraint across the country and to all the value chain actors. A relatively small number (16%) of traders have storage separate or near the

market, and are able to hold inventory of produce. Traders who do have storage facilities are able to set market prices and take advantage of higher prices when incoming supplies dwindle. The majority of traders bring produce to the market by truck before sunrise and expect to sell out in a single day. Those that do not sell out often keep their product overnight in the truck or on the ground at the market and pay another day's fees for the market space and the truck in order to clear their inventory. Wholesale prices generally drop in the course of a trading day.

Market entry can be difficult for wholesalers because business relationships are so informal. Interviews with key informants indicate that to successfully enter into the market, a wholesaler must purchase goods at a loss until he builds trust with intermediaries and/or brokers along the supply chain. Thus, a trader must have the capacity to invest a considerable amount of capital upfront to successfully enter the market as he will likely suffer losses for several weeks before he will successfully find produce at realistic, market prices.

A **broker** is different than an intermediary or wholesaler in that he does not own the product at any point in the value chain (Koenig et al. 2008). A broker's role rather is to link buyers to sellers and negotiate prices on behalf of either party. Brokers are paid a commission by either or both parties in the transaction. Brokers at farm-level connect producers with intermediaries and at market level connect intermediaries with wholesalers. The vast majority of vegetables are marketed and sold through brokers, also referred to as 'middlemen.' They have therefore a large influence in price setting. Collusion is common, if not standard, among brokers. Many brokers deal in just one commodity leading to the formation of cartels.

3) Transporters

Few traders own their own trucks, which are usually rented from transporters, and range in size from five to 18 metric tons (Fuso Canters, Fighters, or Ten-wheelers). Traders have no preference for specific transporters, perhaps due to high competition in the marketplace.

The traders do not combine their shipments, reaffirming the low level of cooperation among traders for anything but price information. The main constraints for the transporters include: excessive number of police checkpoints and road blocks along trade routes, extortion from police and inadequate parking space and congestion in wholesale markets.

4) Retailers

Retailers purchase goods from wholesalers or other retailers and sell to consumers. Many retailers operate in the same wholesale markets from which they source the vegetables. Others transport produce to kiosks or other retail markets. The majority of vegetable retailers in Kenya are women. In Nairobi, for example, 74 percent of businesses in open-air markets and 72 percent of kiosks are female-owned according to Tschirley and Ayieko (2009).

The most significant constraints faced by retailers included: lack of storage / cold storage in marketplaces, poor market infrastructure, and seasonality of supply, perishability and wholesale price fluctuation / volatility.

5) Input suppliers

- a) Seed companies e.g Amiran, Monsanto
- b) Agro-chemical dealers who supply pesticides, fertilizers to the farmers/producers
- c) Agro-dealers who supply farm equipment
- d) Processing equipment suppliers who include, Kenya Industrial Research & Development Institute (KIRDI), Jomo Kenyatta University of Agriculture and Technology (JKUAT), and DK engineering.

6) Service providers

- a) Extension services provided by Ministry of agriculture, local and international NGOs
- b) Ministry of Cooperatives – who assist farmers in the formation of savings and credit cooperatives (SACCO's) which they use to access credit facilities and purchasing of equipments/inputs in bulk hence cheaper than individual purchases.
- c) Kenya National Farmer's Federation (KENAFF).

7) Exporters

All horticultural exporters are registered with HCDA for export to international markets. They contract farmers who produce and sell to them for the export market.

3.2 Relationship between the Various Stakeholders

Cooperation between all actors along the value chain is low. Most operate individually without the support of farmer or business organizations or contractual agreements (Koenig, 2008). Farmers groups are uncommon and membership in traders associations is low. The little cooperation that does occur is based on friendship or family relations and information on prices, buyers, and markets is exchanged in this way. Agreements and informal contracts between market participants are characterized and even dependent upon, very high levels of trust (Koenig, 2008). For example, a wholesaler may agree with a broker on a price for a commodity in the morning and will receive volumes of the commodity without immediate payment. The wholesaler then sells his supplies to one or more retailers. Retailers often pay the wholesaler progressively throughout the day as they sell goods to consumers. Wholesalers generally set buying prices with retailers but retailers are in a strong bargaining position when setting price to sell to consumers. The bargaining power of retailers, however, differs considerably between high and low seasons as supply fluctuates.

Traders and brokers tend to be opportunistic, with only a short-term perspective and collusion is common. Coordination is low and market actors prefer to operate individually and business relations are largely informal. Market management, most often employed by municipalities, has limited resources and little incentive to ensure basic services like sanitation, waste removal and security. As a result there has been limited investment in market maintenance and infrastructure.

The fresh produce business is considered high risk and volatile. Post-harvest losses are high, especially during transport and off-loading. Wholesalers share a disproportionate amount of the risk and establish prices to account for these losses. Gross profit statistics often mask the real return on investment for these players. Many wholesale markets feature brokered transactions rather than transfer of ownership between first sellers and wholesalers. This brokering activity frequently creates suspicion among farmers and smaller traders.

Other challenges that exist in the domestic trade include:

- i) Information asymmetry among market players distorts market prices, reduces producer margins, skews trade benefits toward middlemen and traders, and blocks entry of new market players while increasing the wide gap between the farm gate and market price.
- ii) Lack of access to physical markets for new entrants due to presence of cartels and brokers.
- iii) Failure to honour contractual obligations between buyers and producers.
- iv) Conflicting markets' management and regulatory roles by Government agencies.
- v) Prevalence of produce of substandard hygiene and quality arising from lack of enforcement of standards, and poor consumer awareness.
- vi) Inappropriate pre- and post-harvest handling practices and packaging of horticultural produce.
- vii) Lack of organized and hygienic fresh produce markets for supplies to ship chandlers.
- viii) Inadequate appropriate fresh produce transporting vans (refrigerated lorries etc).

4 Government Interventions Required To Improve and Create an Enabling Environment for the Private Sector to Invest In

Harmonize data collection methodologies and strengthen the country's capacity to collect, analyze and disseminate market information

The study was limited in some cases by the lack of data. Information asymmetry among market players distorts market prices, reduces producer margins, skews trade benefits toward middlemen and traders, and blocks entry of new market players while increasing the wide gap between the farm gate and market price.

This makes the sector non-transparent and effectively blinds value-chain participants to both national and regional market opportunities and encourages informal transactional trading systems. It also has negative impact on food security.

Ministry of Agriculture/Trade enumerator's, HCDA, FPEAK, National Bureau of Statistics already collecting data is one potential source of on-the-ground resources. Another source could be wholesale market managers and Municipal Councils who have a full-time presence in key markets and could provide the data to traders as an additional service to justify the fees they charge and to increase throughput.

Private sector and other partners could also establish a network of permanent market participants who could collect data as part of their daily job to ensure sustainability, increase frequency of data collection and improve quality and dissemination. This could be supported by training programmes .

Review and harmonise the regulatory and institutional framework to improve coordination and enforcement of food safety requirements.

In Kenya, the food safety control system is multi-sectoral in approach. There is no coordinated self-regulation mechanism among small producers on produce safety. The growers of produce destined for domestic markets are therefore not effectively regulated. This can partly be attributed to ineffective enforcement of legal and regulatory provisions.

The lack of basic standards and/or the lack of awareness of existing standards for most products make transactions less transparent and afford buyers/traders the opportunity to set their own standards and secure an advantage in the producer-buyer relationship, which breeds mistrust between value-chain participants.

Promoting consistency and harmonization of quality standards should help facilitate trade and promote greater transparency across the value chain. The benefits that accrue to producers from a more transparent quality standards system should be an incentive for smallholders to invest in production and will support the push for greater regional food security. This would involve engaging key horticulture stakeholders and national bureaus of standards and coordination with the EAC's Technical Standards Committee. Standards should be developed in conjunction with the Swahili GAP, currently in draft form, and under the ownership of FPEAK. Swahili GAP is a regional code of conduct aimed at increasing professionalism in the industry. Promoting the

consistent adoption among key value chain actors across the region will be essential and will involve the development of awareness materials for distribution to national partners.

Investment in packaging technology and cold storage is critical to the industry

Agro-processing and packaging technologies are relatively undeveloped in Kenya. Deliberate efforts need to be made towards investing in this area to increase produce shelf life, reduce post-harvest losses, and improve consumer acceptance both in the domestic and international markets.

Generally, few vegetables are packaged and handled properly. Transport and handling costs remain high due to their fragility, high perishability and extremely short shelf-life.

Product and produce branding of horticultural produce with unique attributes e.g. organic products, should be undertaken to promote local consumption and leverage on emerging middle class consumers and growing urbanization

Develop interventions to address wholesale market inefficiencies

As was discussed in detail above, the operational structure and performance of the region's wholesale markets has a significant impact on retail prices and the affordability of the vegetables. The costs borne by traders within wholesale markets are high and result from poor market management, insufficient service delivery and limited investment in infrastructure by municipal councils. Post-harvest losses during transport and off-loading are high and wholesalers, who already share a disproportionate amount of the risk within the value chain, set prices that reflect these losses. Wholesale prices also reflect the costs absorbed by wholesalers to pay for services that should be provided by market management such as sanitation, trash removal and security. Given the high level of dysfunction in most wholesale markets which drives up costs unnecessarily, there is an opportunity to design interventions that are focused on building efficiency and reducing costs within markets.

Stakeholders in the horticultural sub-sector should be encouraged to invest in cold chain facilities.

Establish mechanisms to enhance enforcement of laws and regulations.

Local legislation on standards, packaging, and hygiene measures exists but is almost never reinforced by municipal councils because they lack incentives and the resources to do so. The current legal and regulatory frameworks that govern the industry consist of Acts of parliament and subsidiary legislations. Where such laws exist, there is inadequate enforcement.

To address the problem of multiple cesses, levies, and taxes which has been a major problem of the industry, taxation should be carried out only at the point of sale for domestic market and point of exit for the export market. These measures are intended to ensure the country optimises returns from sale of produce while addressing safety, hygiene and product quality for the domestic market as well as reducing levels of taxation.

5 Recommendations for Foreign Producers of Fresh Vegetables to Put Their Product on the Kenyan Supermarket Shelf

Overall a large number of the challenges retailers and consumers face are related to shortcomings and inefficiencies in the predominantly small scale structure of Kenyan agricultural sector. Most significant constraints faced by retailers include lack of storage / cold, poor market infrastructure, and seasonality of supply, perishability and wholesale price fluctuation / volatility. Investors which bring in modern technologies and a more large scale approach should be able to bypass a number of issues and could grant them a rather competitive position in the market. Below are a couple of recommendations that result from the desk research and surveys.

Contract farming and promotion or formation of farmer organizations might be considered by an investor to increase farmer bargaining power and benefits from economies of scale as well as cushioning them from price fluctuations.

Value addition to vegetables may determine the competitiveness of an investor in the local and international markets. In Kenya, it is reported that farmers export semi-processed, low-value produce, which accounts for 91 per cent of total agriculture-related exports. The limited ability to add value to agricultural produce coupled with high production costs make exports less competitive. Investor could explore further value addition to vegetables in the Kenyan market as well. In line with international trends, seemingly, the Kenyan market has seen an increase of the on the move consumer which provides an opportunity for pre-packed and ready meals out of the most consumed vegetables.

Greenhouse production could be a good opportunity to curb the seasonality/price fluctuation and volatility of produce. The unavailability and seasonality of produce is one of the major imperfections that were brought up by both consumers and retailers. Larger greenhouse capacity might mitigate this and also respond to other opportunities in the market like improved quality of produce.

There seem to be plenty of opportunity in producing most consumed products such as tomato in sufficient quantities to ensure around the year excess supply of fresh and processor-quality tomatoes. Tomato is one of the most highly consumed vegetable in Kenya. It is grown for fresh market, processing and export market. During peak seasons most farmers sell their tomatoes at a throw away price while a substantial quantity also goes to waste because it is highly perishable. There is therefore an opportunity in processing tomatoes as a value added product such as tomato jam or tomato ketchup. Can and dried tomatoes can be economically important tomato processed products.

Other high value vegetables in terms of turnover and margin that are interesting for investors that focus on returns are tomatoes, kale, spinach, onions, cabbage, potato, carrot.

Transport is another issue with potential for improvement as appropriate fresh produce transporting vans (refrigerated Lorries) could curb the current transport in-adequacies. Horticultural produce requires to be stored and transported at the prescribed temperature and humidity levels for each produce. In addition, transport costs escalates produce selling price. Currently lack of storage facilities accounts for the majority of vegetable waste.

As supermarkets are the most popular purchase channel for vegetables for high end and middle income earners this may be the best entry point for investor farmers. The number of large supermarket chains in Kenya is still rather small and overseeable. It is recognized as a growing channel that moreover is expanding to the region (Uganda, Tanzania, Rwanda) opening up branches of Kenyan supermarket chains like Nakumatt, Uchumi and Tuskys.

6 Appendix I. List of vegetables

Vegetables

Amaranth	<i>Amaranthusspp.</i>
Artichoke	<i>Cynaracardunculus var. scolymus</i>
Asparagus.....	<i>Asparagus officinalis</i>
Sugar beet.....	<i>Beta vulgaris</i>
Broccoli/cauliflower	<i>Brassica oleracea var. botrytis</i>
Brussels sprouts	<i>Brassica oleracea var. gemnifera</i>
Cabbage.....	<i>Brassica oleracea .var. capitata</i>
Cantaloupe/ Muskmelon	<i>Cucumismelo</i>
Carrot	<i>Daucuscarota</i>
Celery / Celeriac	<i>Apiumgraveolens</i>
Chicory	<i>Cichoriumintybus</i>
Chinese cabbage	<i>Brassica chinensis</i>
Chervil	<i>Anthricuscerefolium</i>
Collards / Kale	<i>Brassica oleraceavarancephala</i>
Coriander	<i>Coriandrumsativa</i>
Cucumber	<i>Cucumissativa</i>
Dill	<i>Arethumgraveolens</i>
Eggplants	<i>Solanummelongena</i>
Endive	<i>Cichoriumendivia</i>
Garden cress	<i>Lespidiumsativa</i>
Karella	<i>Mormodicacharantia</i>
Kohlrabi	<i>Brassica oleracea var. gongylodes</i>
Leek	<i>Allium porrum</i>
Lettuce	<i>Lactucasativa</i>
Okra	<i>Hibiscus esculentus</i>
Onion	<i>Allium cepa</i>
Parsley	<i>Petroselinumcrispum</i>

Parsnip	<i>Pastinacasativa</i>
Pea	<i>Pisumsativum</i>
Pepper	<i>Capsicum spp.</i>
Pumpkin/Squash/Courgette	<i>Cucurbitapepo</i>
Radish	<i>Raphanussativus</i>
Rhubarb	<i>Rheum rhaponticum</i>
Rutabaga	<i>Brassica napus var. napobrassica</i>
Spinach	<i>Spinaceaoleracea</i>
Swiss chard	<i>Beta vulgaris</i>
Tomato	<i>Solanumlycopersicon</i>
Turnip	<i>Brassica rapa</i>
Potatoes.....	<i>Solanumtuberosum</i>
Chillies (green).....	<i>Capsicum frutescens</i>
Chillies (dried).....	<i>Capsicumfrutescens</i>
Pumpkins.....	<i>Cucurbita sp.</i>
Cowpeas (green) chora	<i>Vignaunguiculata</i>
Cluster bean (green	<i>Cyamopsistetragonoloba</i>
Courgettes and marrow	<i>Cucrbita sp.</i>
Dioscorea	<i>Dioscorea sp.</i>
Dudhi (kaddu	<i>Lagenariasiceraria</i>
Globe artichoke.....	<i>Cynaracardunculus var. scolymus</i>
Horseradish.....	<i>Armoraciarusticania</i>
Artichokes.....	<i>Helianthus tuberosus</i>
Loofah.....	<i>Luffacylindrica</i>
Mushroom.....	<i>Agaricusbisporus</i>
New Zealand spinach.....	<i>Tetragoniaexpansa</i>
Green maize.....	<i>Zea mays</i>
Sweet potato.....	<i>Ipomoea batatas</i>
Beet.....	<i>Beta vulgaris</i>
Rutabaga	<i>Brassica napobrassica</i>

Watercress..... *Nasturtium officinale*

Any other vegetables of economic value

7 Appendix II. Institutions in the Horticulture Industry

Government Institutions

Ministry of Agriculture

The Ministry is the lead agent in agricultural transformation in the country. The ministry provides overall policy, regulation and operational direction.

Other Government Ministries

Other ministries whose mandates directly impact on horticulture include Water and Irrigation, Public Health and Sanitation, Environment and Mineral Resources, Local Government, Cooperatives development and Marketing, Trade and Regional Development Authorities

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 horticultural industry in Kenya.

Kenya Plant Health Inspectorate service

The Kenya Plant Health Inspectorate Service (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 phytosanitary and seed matters.

Kenya Agricultural Research Institute

The Kenya Agricultural Research Institute (KARI) is established under the Science and Technology Act (Cap 250) with the national mandate of carrying out research in the fields of agriculture.

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.

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.

Kenya Industrial Research and Development Institute.

The Kenya Industrial Research and Development Institute (KIRDI) was established under the Science and Technology Act (Cap 250). It is mandated to undertake research and development in industrial and allied technologies.

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

National Environment Management Authority

The National Environment 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.

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.

Private sector organizations

There are many private sector organizations involved in supporting the horticulture industry in Kenya. The mention of the four below should not by any means be misconstrued to exclude or to ignore the roles of the other organizations involved in supporting the industry. Indeed, this policy recognises all legally registered organizations supporting horticultural activities in the country and the provisions for private sector organizations pronounced in this policy will apply equally to all organizations at all times.

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.

Kenya Flower Council

The Kenya Flower Council (KFC) was established in 1996. The Kenya Flower Council (KFC) is a voluntary association of independent growers and exporters of cut-flowers and ornamentals, whose aim is to foster responsible and safe production of cut flowers in Kenya. Administered through a dynamic internationally accredited quality management system, the KFC addresses compliance to good agricultural practice; social accountability; hygiene health and safety; capacity building; environmental protection and conservation. This forms the backbone of industry representation deemed necessary to sustain investments, secure and expand markets

Kenya National Federation of Agricultural Producers

The Kenya National Federation of Agricultural Producers (KNFAP) is the umbrella organization of agricultural producers. KNFAP lobbies for and advocates through representation of producer groups and commodity associations at local, regional, national and international levels.

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.

Seed Traders Association

The Seed Traders Association (STAK) is an association for seed traders that represent member seed trading companies operating in the country.

8 Appendix III. Government policies that impact the chain

There are various policies that have been produced and documented. These provide a framework and direction for the agro-food chain in Kenya. However it is important to note that some of these policies are yet to be gazetted although they are by and large being used for reference by the industry.

8.1 The National Food and Nutrition Security Policy (FNSP) 2011

Introduction

The new Food and Nutrition Security Policy (FNSP) 2011 provides an overarching framework covering the multiple dimensions of food security and nutrition improvement. Food quality and safety in all stages of the food chain are important goals of Food and Nutrition Security Policy (FNSP) and must be more actively embraced at all levels of the food production, processing, marketing and home preparation and handling chain by all those involved from the public and private sectors, and by consumers. It has been purposefully developed to add value and create synergy to existing sectoral and other initiatives of government and partners. It recognizes the need for multi-public and private sector involvement, and that hunger eradication and nutrition improvement is a shared responsibility of all Kenyans. The policy and associated actions will remain dynamic to address contextual changes and changing conditions over time. This policy is framed in the context of basic human rights, child rights and women's rights, including the universal 'Right to Food'.

The FNSP addresses the synergy that links food and nutrition security with poverty eradication. The FNSP outlines the range of priority areas and principles for government interventions to ensure all citizens' right and access to food. It is formulated with a purposefully broad scope at a level that provides a policy basis for seeking resources, advocating higher priority interventions and developing operational and management strategies. These in turn are expected to allow action and intervention plans to not only be innovative and technically strong, but also to establish and maintain the necessary linkages within and across sectors, including the role of the private sector, to ensure effective and cost-efficient implementation. This is viewed as the best approach to achieving a healthy, agriculturally productive and hunger-free country with all sectors and citizens, on national, county and community levels, playing an active role.

Overall policy goal and objectives

It is the policy of the government that all Kenyans, throughout their life-cycle enjoy at all times safe food in sufficient quantity and quality to satisfy their nutritional needs for optimal health.

The broad objectives of the FNSP are:

- To achieve good nutrition for optimum health of all Kenyans.
- To increase the quantity and quality of food available, accessible and affordable to all Kenyans at all times.

- To protect vulnerable populations using innovative and cost-effective safety nets linked to long-term development.

Domestic Production

Policy Statement: *The Government will continue to advance appropriate measures to increase quality food production to meet the needs of the citizens at all times.*

The Agricultural Sector Development Strategy (ASDS), which is specifically dealt with in the paragraph 2.4.3, comprehensively addresses the many issues that determine domestic crop and animal production. The FNSP will help ensure that these efforts meaningfully address food availability and access concerns to improve the quantity and diversity of food to meet nutritional requirements. Amongst the key constraints that will be addressed are declining soil fertility and high input prices, losses due to pests and diseases, climate change, inappropriate land use and inadequate access to credit. Agricultural production systems in Kenya are largely rainfed, making them vulnerable to the threats of droughts and floods, despite great potential to increase the area under production. Expanded and purposefully linked agricultural and nutritional research and strengthened extension are needed to better develop and disseminate suitable technologies to sustainably address food security and nutrition.

In view of the agro-ecological diversity of Kenya, different interventions will be required to enhance production. In areas with relatively high production potential, where the highest absolute number of chronically food insecure live, continuous cultivation of soils, loss of forest cover and over-emphasis on maize production have led to a decline in soil fertility and yields. Production potential is often unexploited due to high input costs. Irrigation and water management techniques in these areas hold great potential. In Kenya's arid and semi-arid lands (ASALs), which comprise some 80% of the country and have the highest rate of food insecurity, natural resources are degraded by unsustainable land management practices. This has led to a significant loss of bio-diversity which has adversely affected traditional sources of food, income and other basic needs of many rural communities.

Urban and peri-urban agriculture (crops and livestock) is increasingly being practised and holds potential to improve food access and overall food security and nutrition conditions in these areas. However to date, there has been inadequate support, guidance and concerted effort to develop this potential. Additionally, regulatory guidelines are required to ensure the safety and quality of food produced, sold and consumed in urban and peri-urban areas.

Livestock productivity is affected by limited access to, or high cost of feed, veterinary services and other inputs. Poor infrastructure has increased transportation and storage costs for livestock inputs and most Kenyans cannot afford the price of milk and beef products. There is inadequate support for inland fisheries and aquaculture. Despite the vast potential for investment, marine fishery has been low because of poor infrastructure and inadequate fishing technologies

Over the past few years, demand for land for various uses has been increasing. Most of the urban areas have witnessed increased conversion of agricultural and livestock land into settlement areas. Human-wildlife conflict has also been blamed on competing land uses. Seed producers

have been seriously affected by competing land uses that have resulted in reduced isolation distances, with production of seed maize being most affected.

In order to ensure sustainable increase in food production that is diversified, affordable and helps meet nutritional requirements, the government will:

- i) Establish an Agricultural Development Fund that will focus on strategic issues and areas stipulated in vision 2030;
- ii) Increase funding to the food and agriculture sectors to 10% of the national budget;
- iii) Promote sustainable food production systems with particular attention to increasing soil fertility, agro-biodiversity, organic methods and proper range and livestock management practices;
- iv) Promote the production of nutrient-rich foods (crops, livestock, fisheries) by promoting diversification and exploring bio-fortification options;
- v) Promote and support sustainable irrigation and water management systems;
- vi) Support the role of markets and the private sector to provide agricultural inputs and financial services at affordable prices and favourable terms to farmers,
- vii) Develop special programmes to support those experiencing food insecurity through targeted subsidization of critical production inputs using appropriate mechanisms;
- viii) Support and promote agro-forestry, afforestation and re-afforestation to enhance livelihood systems and Kenya's environmental resources;
- ix) Support investments in infrastructure, including roads, water, power, communications and markets, throughout Kenya to increase production;
- x) Promote integration of climate change adaptation in agricultural development programmes and policies; and
- xi) Improve forecasting of climatic change and support communities to respond to new opportunities and challenges

Storage and agro-processing

Policy Statement: *The Government will initiate appropriate measures, including research, aimed at addressing post-harvest losses, food quality and safety including aflatoxin infestation.*

A significant proportion of the food produced is lost due to post-harvest spoilage and wastage, including in some cases from toxin causing micro-organisms. Losses are often substantial for grain and produce (fruits and vegetables) along with spoilage of animal products including milk, meat and fish. Inadequate storage constitutes a public health threat when people consume spoiled food, causes supply fluctuations and exacerbates prices, all of which are key causes of food insecurity and malnutrition.

There is little on-farm and off-farm processing of products in rural areas. Kenya lacks sufficient infrastructure for effective transport, storage, refinement, preservation, distribution and marketing of many foodstuffs.

In order to promote storage and processing of agricultural produce, the government will:

- i) Promote and support safe and effective storage of foodstuffs by the private sector at national, county, community and household levels;

- ii) Put in place measures that facilitates renting of underutilized public storage facilities;
- iii) Enhance the capacity of the institutions involved in product development, standards establishment and monitoring of quality; and
- iv) Promote safe, small-scale rural and home processing and preservation of various farm produce

Access to and quality of markets

Policy Statement: *The Government will support investment in infrastructure to enable food to move quickly and at reasonable costs within local areas and from food surplus to deficit areas*

Poor physical infrastructure limits efficient food distribution and market access by farmers in areas with excess production. From the consumer perspective, many rural communities are cut off from food supplies and face high food prices. Emphasis should be on supplying local markets through local food production with a view to ensuring year-round availability of fresh and diversified foods, limit transactions costs and provide a reliable market to local farmers. Market space and facilities to handle food products in many markets in both urban and rural areas are insufficient, resulting in high levels of waste and spoilage. Many markets have insufficient management and maintenance, although local authorities often collect fees or levies. Despite recent improvements, market information systems remain inadequate to serve the needs of various users of agricultural information.

In order to ensure access to efficient and good quality food markets in both rural and urban areas, the Government will:

- i) Enhance farmer access to timely market information services
- ii) Support the establishment and strengthening of warehouse receipt systems and agricultural commodity exchange
- iii) Ensure that the urban development plans provide for additional and better functioning wholesale and retail markets; and
- iv) Ensure that counties invest an appropriate proportion of the revenue collections on market infrastructure development.

8.2 National Horticultural Policy 2012 and other policies affecting the horticulture value chain

Introduction

The overarching policy direction on the horticulture sub-sector is contained in the National Horticulture Policy of 2012. However it should be noted that although this document is being used for reference, it has not been gazetted. Other documents that support this policy direction are the Agricultural Sector Development Strategy 2010–2020 which identifies horticulture as an important sub-sector within the wider agricultural sector.

National Horticulture Policy of 2012 puts emphasis on the development of the domestic market with regard to production, food safety and post-harvest handling facilities, and the development of physical market infrastructure. Policy intervention areas are based on past experience characterised by a sub-sector that has not adequately addressed issues along the value chain

thereby affecting Kenya's competitiveness in international horticulture markets, among other things.

As recorded in the policy document, the broad objective of the policy is to accelerate and sustain growth and development of the horticultural industry in order to enhance its contribution towards food security, poverty reduction as well as employment and wealth creation. The specific policy objectives towards the broad objective are to:

- i) Facilitate increased production of high-quality horticultural produce.
- ii) Enhance provision of the sub-sector's support services like finances, insurance and technical advisory services.
- iii) Promote value addition and increase domestic and external trade.
- iv) Develop and improve infrastructure to support the horticultural industry particularly in major production areas.
- v) Establish, strengthen and entrench institutional, legal and regulatory framework in the horticultural industry.
- vi) Promote mechanisms for socio-economic and environmental sustainability while addressing cross-cutting issues.
- vii) Promote horticultural investment in the ASALS.

Policy Directions

In reviewing the policies that affect the horticulture value chain, policy directions have been identified along the broader stages within the value chain.

Planting Material

The subsector is characterised by imported and mostly unaffordable planting materials and inadequate locally produced certified material due to low investments. Indigenous materials are often of low quality in comparison to the imported variety. Breeding programmes undertaken by local research institutions are constrained by financial, human and physical resources. There are many small-holder commercial fruit tree nurseries spread all over the country but the majority do not meet standards that would ensure supply of quality-planting materials.

Policy Direction in regards to planting materials

- i) The Government will enhance the capacity of public research institutions through increased funding, and encourage local breeders to undertake breeding through partnerships and collaboration with regional and international research institutions.
- ii) Collaboration in research programs among institutions will be enhanced.
- iii) Partnerships with relevant public and private institutions will be promoted to increase funding for germplasm conservation and to protect plant varieties with potential for commercial value.
- iv) The Government will explore innovative systems that include best practices of producing and bulking planting material, and promote the up-scaling of successful systems.
- v) The private sector will be provided with incentives to enhance accessibility of planting material.

Certification processes will be streamlined through improving the capacity of the Kenya Plant Health Inspectorate Service (KEPHIS), and promoting use of clean material while embracing international standards and best practices.

Agricultural Inputs

The sub-sector also suffers from poor quality of inputs attributed to counterfeiting and adulteration; high cost of agricultural inputs; high percentage of untrained input dealers that are not able to adequately support farmers; under-utilisation of technologies such as organic farming; and dependence on imported fertiliser, pesticides and herbicides.

Policy direction in regards to agricultural inputs

- i) The Government will continue to offer incentives to the private sector to enhance distribution of farm inputs.
- ii) Mechanisms will be put in place to reduce the cost of inputs through appropriate programmes such as bulk purchasing and local manufacturing and subsidy to schedule horticulture commodities.
- iii) The Government and private sector will continue to undertake measures that will make inputs more accessible to farmers.
- iv) The Government will enforce compliance with quality standards for farm inputs.
- v) Strengthen surveillance institutions such as pests and products Board, KEPHIS to ensure regulatory.

Extension services

Though served by both the public and private extension services, this sector is still highly under-served as it requires specialised extension approaches and skills due to its dynamism and industry needs. The numbers of extension service providers is also small and often have low awareness of quality requirements for horticultural produce and few guidelines for good agricultural practices.

Policy Direction in regards to extension services

1. The agricultural sector has developed the National Agriculture Sector Extension Policy (NASEP). The policy seeks to promote pluralism in extension service delivery and institute mechanisms to coordinate extension services from both public and private sectors for improved quality. The National Horticulture Policy (2012) proposed extension services anchored on the NASEP and in line with the devolved governance system under the Constitution. These are:
 - I. To enhance horticultural production, the Government will strengthen and harmonize public extension services to offer specialized extension services.
 - II. The Government will facilitate the formation and strengthening of producer business groups and commodity associations to enhance technology transfer and marketing of produce.
 - III. The Government will build capacity of staff, farmers and farm input suppliers to improve and update their skills and knowledge. Due to the dynamic nature of the horticultural

- sub-sector, staff will be constantly updated on new technologies, market regulations and consumer demands.
- IV. To improve partnerships and collaboration, the value chain approach in extension will be encouraged.
 - V. The Government will encourage farmers, extension agents and suppliers to build quality into the products throughout the value chain.
 - VI. The Government will improve funding to extension services to cover all commodities and areas, and catalyse demand-driven extension.
 - VII. Capacity will be built among extension service providers on agribusiness and preparation of business plans. Refresher programs for extension staffing
 - VIII. Support development and regulation of private extension.
2. Due to stringent export requirements, Kenya has progressively implemented traceability measures that have included the development of internationally recognised local standards, such as KenyaGAP, KFC Silver Standard, HEBI Base Code and others, with effective certification procedures. Further, segmented markets that require value-added products have led to some farms specializing in organic farming. The Government will:
- i) Promote the adoption of modern technologies through improved provision of advisory services by the public and private sector extension service providers.
 - ii) Enhance compliance with standards and product safety through sensitization.
 - iii) Promote use of integrated pest and disease management.
 - iv) Facilitate the development of long-term plans and suitability maps/profiles for various eco-zones for horticulture investment.
 - v) Encourage the development and use of appropriate production packages for organic farming.

Marketing, Value Addition and Trade

The policy objective is to provide an enabling environment that facilitates marketing, value addition and trade with a view to enhancing competitiveness of Kenyan horticultural products in domestic, regional and international markets. To ensure the industry's competitiveness, focus will be on development, management and regulation of domestic fresh produce markets.

• Domestic Market

Domestic trade is an important source of livelihood for players in the horticultural value chain. The major actors involved in trade are producers, traders, middlemen, transporters and local authorities. The margins between farm gate prices and consumer prices are wide and indicative of suppressed profitability for the producer. Many markets have inadequate physical facilities and do not therefore provide facilities like storage and cold rooms, weighing equipment, loading/unloading and social amenities. Ship chandlers who dock at the Mombasa port presently purchase most of their produce from neighbouring ports.

• Regional and International Markets

Kenya is a major exporter of horticultural produce mainly to the EU. Other destinations include USA, Middle East, Japan, Russia, and South Africa. Competition in these markets is stiff due to a

large number of suppliers such as Colombia, Ecuador, Ethiopia, Spain, Morocco, Israel, Egypt, India, and China. Imports include citrus, apples, pears and grapes from South Africa, Egypt and other countries. These imports have a major impact on the local market and adversely affect local production. With the local market opening up to horticultural imports, more so from COMESA and EAC member countries, there is risk of spread of diseases and pests that can be detrimental to local horticultural production. Kenya is a signatory to and has been implementing a number of international protocols. In the recent past, there has been increasing shift of horticultural investment to other competing countries and an increase in the number of non-tariff barriers to trade. Between 2007 and 2009, horticultural exports declined and imports of horticultural produce from the region increased.

Proposed Direction in regards to marketing

- i) A national marketing strategy of Kenyan horticultural products will be developed in an effort to consolidate existing markets and growth in emerging markets. Monitoring and analysis of trade flows will be encouraged so as to establish Kenya's comparative advantage.
- ii) The Government will have the Kenyan embassies aggressively promote the trade of horticultural produce in their countries of representation.
- iii) The government will give incentives to marketing bodies like FPEAK and KFC to play a more proactive role in marketing Kenyan horticulture regionally and internationally.
- iv) The government will strengthen capacity of institutions such as HCDA and EPC to effectively promote horticultural products in both domestic and export markets.
- v) Incentives will be provided to facilitate competitiveness of local produce.
- vi) The Kenya Plant Health Inspectorate Service (KEPHIS) and other regulatory agencies will be strengthened to effectively implement sanitary and phytosanitary regulations and curb sub-standard imports.
- vii) Enterprise diversification and value addition will be encouraged to broaden the product range to make Kenyan produce more competitive.
- viii) The Government will explore direct flights to non-traditional export destinations.
- ix) The Government will negotiate for and implement favourable trade protocols.
- x) A national data validation committee is in place involving many stakeholders.

Market Information systems

The horticultural industry requires accurate and timely information for planning purposes. National statistics on domestic horticulture and regional trade are not reliable. Conversely, the statistics on exports are fairly accurate but may not be capturing certain data. The unreliability of the domestic and regional trade statistics is attributed to lack of an effective data-capturing mechanism to monitor cross-border trade, trade in municipal markets and other market outlets. There lacks a harmonised system for data capturing among Government agencies and other stakeholders.

The traceability of produce is an important component of trade. Kenya has improved considerably in implementing measures for effective traceability. However, unfair trade practices like poaching are still common.

Policy Direction in regards to market information systems

The Government will collaborate with the private sector and development partners to develop an efficient market information system, and to build the necessary physical and human capacity to manage the system. Partnerships among key actors along the value chains will be enhanced to ensure effective traceability mechanisms are in place and operational.

Trade will be improved through harmonizing and adopting standards, improving product quality, and enhancing use of market information systems. Value addition will be encouraged at all stages of product value chains. These include:

- i) Gathering and exchanging market information through appropriate avenues by public and private sector players will be promoted.
- ii) The Government will regularize operations of market agents.
- iii) Contract farming and promoting formation of farmer organizations or groups will be encouraged to increase farmer bargaining power and benefits from economies of scale as well as cushioning them from price fluctuations.
- iv) The management and regulation of markets will be harmonized and streamlined.
- v) The Government through relevant ministries, local authorities and other public institutions will enforce laws and regulations that ensure adherence to safety, hygiene and other standards.
- vi) The Government will facilitate training in recommended best practices in pre- and post-harvest handling, packaging and transportation.
- vii) The Government will improve wholesale and retail outlets for fresh produce.
- viii) Involve private sector in provision of appropriate transport for fresh produce and installation.

Research and Development

Research and development is cross-cutting throughout the value chain. Current situation Horticulture research is undertaken by universities, the private sector and the Kenya Agricultural Research Institute (KARI). Research focus has been on on-farm production with very little attention to the whole value chain, contributing to poor performance of many enterprises especially in the market. The level of research in horticultural crops has remained low over the years. As indicated earlier, farmers continue to rely on imported planting material and other technologies to keep pace with constantly changing trends of production techniques and consumer demands.

Policy Direction in regards to Research and Development

The agricultural sector has developed the proposed National Agricultural Research Systems (NARS) policy and the Kenya Agricultural Research Organisation (KARO) Bill 2011 which seeks to harmonise the administration in terms of prioritisation, funding and coordination of research under the proposed Horticulture Research Institute. To address the constraints above, the following interventions will be undertaken.

- i) Horticulture Research will be financed through the Government of Kenya, private sector, development partners, trust funds, royalties and competitive grants.
- ii) To ensure relevance of research programmes and make them demand driven, collaborative research projects and stakeholder forums will be encouraged to set the research agenda.

- iii) The Government will design innovative ways to disseminate research findings to beneficiaries that will include establishing research databases, use of ICT and promoting technology adoption.
- iv) To address the dynamism of the horticulture sector, the capacity of researchers and other stakeholders will be enhanced to match the changing industry needs.
- v) Research institutions will be encouraged to carry out more focused research on disease and pest management.
- vi) To promote sustainability of the sub-sector, conservation of germplasm of indigenous crops will be enhanced.
- vii) Plant Breeders Rights Regulations and the provisions of the International Union for the Protection of New Plant Varieties (UPOV) will be implemented to facilitate recognition and payment of royalties to breeders.

8.3 Agricultural Sector Development strategy 2010-2020

The Agricultural Sector Development Strategy (ASDS) is the overall national policy document for the sector ministries and all stakeholders in Kenya. The document outlines the characteristics, challenges, opportunities, vision, mission, strategic thrusts and the various interventions that the ministries will undertake to propel the agricultural sector to the future.

The new Agricultural Sector Development Strategy (ASDS) is intended to build further on the gains made by the Strategy for Revitalizing Agriculture (SRA) in 2004. It is intended to provide a guide for public and private sectors' efforts in overcoming the outstanding challenges facing the agricultural sector in Kenya. Besides ensuring food and nutritional security for all Kenyans, the strategy aims at generating higher incomes as well as employment, especially in the rural areas. Moreover, it is expected to position the agricultural sector as a key driver in achieving the 10 per cent annual economic growth rate envisaged under the economic pillar of Vision 2030.

Under the ASDS, agricultural sector ministries are expected to ensure that farmers, producers, processors and marketers of agricultural produce employ the most contemporary methods and technologies. This will require that all agricultural enterprises be highly productive, commercial in nature and competitive at all levels. The strategy also underscores the need to develop and prudently manage the factors of production such as land, water, inputs, and financial resources so that the cost of production is within international standards.

The Government shall also further reform and streamline agricultural institutions that provide services to farmers such as extension, training, research and regulatory services to ensure that they serve farmers efficiently and cost effectively. The government shall institute policy, legal and regulatory reforms so that individual farmers are encouraged to shift from subsistence to market-oriented production, and to adopt greater use of modern farming practices while increasing integration of agriculture with other sectors in the national economy

The vision of the ASDS is: A food-secure and prosperous nation. Since the agricultural sector is still the backbone of Kenya's economy—and the means of livelihood for most of the rural population—it is inevitably the key to food security and poverty reduction

The overall development and growth of the sector is anchored in two strategic thrusts:

- Increasing productivity, commercialization and competitiveness of agricultural commodities and enterprises
- Developing and managing key factors of production

8.4 Vision 2030

In June 2008, Kenya Vision 2030 was launched as the new long-term development blueprint for the country. The vision of this strategy is: A globally competitive and prosperous country with a high quality of life by 2030. It aims to transform Kenya into ‘a newly industrializing, middle-income country providing a high quality of life to all its citizens in a clean and secure environment’.

The vision is anchored on the following three pillars:

- *Economic pillar* that aims to achieve an economic growth rate of 10 per cent per annum and sustain the same till 2030 to generate more resources to address the MDGs
- *Social pillar* that seeks to create just, cohesive and equitable social development in a clean and secure environment
- *Political pillar* that aims to realize an issues-based, people-centred, results-oriented and accountable democratic system

Vision 2030 has identified agriculture as one of the key sectors to deliver the 10 per cent annual economic growth rate envisaged under the economic pillar. To achieve this growth, transforming smallholder agriculture from subsistence to an innovative, commercially oriented and modern agricultural sector is critical. This transformation will be accomplished through:

- Transforming key institutions in agriculture to promote agricultural growth
- Increasing productivity of crops
- Introducing land-use policies for better use of high- and medium-potential lands
- Developing more irrigable areas in arid and semi-arid lands for both crops and livestock
- Improving market access for smallholders through better supply chain management
- Adding value to farm products before they reach local, regional and international markets

Vision 2030 has identified four major challenges that continue to face the agricultural sector:

Productivity. Productivity levels for many crops are below potential and for some agricultural produce yield and value over a 5-year period have either remained constant or are on the decline.

Land use. Land in the high- and medium-potential areas as well as in arid and semi-arid lands (ASALs) remains under-exploited for agricultural production. Much of the available cropland remains under-used with smallholders using only 60 per cent of their land for agricultural production.

Markets. The productivity of the agricultural sector is constrained by inefficiencies in the supply chain resulting from limited storage capacity, lack of post-harvest services and poor access to input markets. Vision 2030 calls for proactive efforts to maintain existing markets and create new ones to increase Kenya’s bargaining power in global agricultural markets.

Value addition. In agriculture, value addition determines the competitiveness of the country’s produce in world markets. However, Kenyan farmers export semi-processed, low-value produce,

which accounts for 91 per cent of total agriculture-related exports. The limited ability to add value to agricultural produce coupled with high production costs make exports less competitive.