Investment Climate and Business Environment Research Fund

TRUSTAFRICA IDRC CRDI

Value Addition in Coffee Industry in Kenya: Lessons from Cut Flower Sector

By

Jacob Chege[1]

Kenya Institute for Public Policy Research and Analysis (KIPPRA)

Nairobi, Kenya

ICBE-RF Research Report No. 21/12

Investment Climate and Business Environment Research Fund
(ICBE-RF)
www.trustafrica.org/icbe

Dakar, June 2012

[1] Contact: jchege@kippra.or.ke or cjnganga@yahoo.co.uk

This research was supported by a grant from the Investment Climate and Business Environment (ICBE) Research Fund, a collaborative initiative of TrustAfrica and IDRC. It's a working paper circulated for discussion and comments. The findings and recommendations are those of the author(s), and do not necessarily reflect the views of the ICBE-RF Secretariat, TrustAfrica or IDRC.

Abstract

This paper analyzes the activities and distribution of value added in coffee and cut flower sectors value chains. The performance of the coffee sector has been declining since late 1980s, a complete contrast to the fast growth of cut flower industry, which is one of the leading foreign exchange earners in the country. By comparing the structures of value adding activities in the value chains of coffee and cut flower sectors, this paper highlights the constraints that hamper value addition in the coffee industry. There exist large differences in the role various actors play in coffee and cut flower value chains. Whereas farmers participate in almost all stages of the cut flower sector value chain, the processing and marketing processes in coffee industry are dominated by institutions that thrive on information asymmetry in the sector to maximize profits. There is excessive regulation in the coffee sector which curtails farmers' participation in coffee processing, making the distribution of value added to be highly skewed against the farmers. To improve value addition in coffee sub-sector the study recommends (i) better governance structures in cooperatives, millers and Coffee Board of Kenya, (ii) institutional reforms to increase farmers' participation in all stages of value chain (iii) incentives to encourage networks and alliances formation among coffee farmers, and (iv) adaptation of coffee branding particularly through single-origin identification i.e. the Geographical Indication (GI) of coffee which offers opportunities for contract farming and joint venture-ship.

Key words: Value added, Regulatory framework, Networks

Acknowledgements

The author acknowledges comments and suggestions from Chris Onyango, Policy Analyst KIPPRA. The author is grateful for the financial support from ICBE (joint project of TrustAfrica and IDRC).

Many thanks go to CUTS Centre for International Trade, Economics & Environment (CUTS-CITEE) for playing an important role in managing the research project.

Table of Content

Table of Figures

List of Tables

1. Introduction

The Kenya economic performance in 2000-2010 period was mixed, depicting an oscillating trend but impressively resilient after a wave of shocks. The economy's growth was 0.5 per cent in 2002, picked to reach 7.0 per cent in 2007 but declined to 1.6 per cent and 4.6 per cent in 2008 and 2010, respectively. The manufacturing sector also reported a similar trend, growing by 3.6, 1.3 and 4.4 percent in 2008, 2009 and 2010 respectively (KER 2011). Kenya exports are concentrated to narrow range of mostly semi-processed products that fetch low prices in the international market. Therefore, to revitalize the growth of Kenya economy this calls for promotion of industrial development, particularly diversifying the economy's industrial base towards more value-added manufactured products. Increasing value addition in agro-processing and mining industries is naturally the starting point towards improved manufacturing sector in the short run, with more concentration on export-oriented products. In the long run, manufacturing process may embark on production of machinery and high-technology based products. In addition, more efforts are required in products' branding, so that niche markets are focused in the highly competitive world and the Kenyan products to be well recognized in the international market.

In a natural resource-based production, the lowest economic value is generated if the resource is sold raw or semi-processed. It is important and economically plausible to add value close to the sites of harvest or production if a country is to get the most benefit from the products it exports. The production, harvesting, primary and secondary processing, packaging and shipment of agricultural produce (or minerals), constitute the value chain which a country may add value through adopting the best technologies and practices to reduce cost, preserve or increase quality and satisfy market requirements. A country may also gain more value if the product-specific activities done within its borders move up the value chain to include manufacturing processes. Productivity gains in manufacturing stage are likely to be higher than at any other level of the value chain.

1.1 Background

The agricultural sector contributes about 24 percent of Gross Domestic Product (GDP) and provides about 70 per cent of total employment in Kenya (KER 2009). About 85 per cent of Kenyan population relies on coffee, tea, maize, wheat, livestock and horticulture for their livelihood. Coffee and tea provide 45 per cent of the wage employment in agriculture, underscoring the importance of these sub-sectors to the economy. Kenya's position in the

global economy is declining across most of its export sectors. The country's export cluster map shows that most of her exports represent less than 0.10 percent of the world export share and have lost world market share over the past decade (Condliffe et al 2008). Kenya's exports as a share of GDP declined from 40 percent in 1960 to 26 percent in 2009 (World Bank, 2010).

Kenya coffee is rated as one of the best globally and 99 per cent of it is exported mainly to Germany, Sweden and Belgium, United States of America and Saudi Arabia (EPZA, 2005). Kenya produces quality Arabica coffee, globally recognized and usually used to blend and upgrade other relatively inferior brands (EPZA, 2005).The performance of coffee sub-sector has been declining since late 1980s. By 1978, coffee accounted for 9.5 percent of GDP but this share reduced to 0.6 percent by 2005 (World Bank, 2005). Coffee accounts for only about 4 percent of Kenya's exports (World Bank, 2010). Coffee production fell from 130,000 metric tons in 1987/88 to 50,000 metric tons in 2010/2011. Kenya has the potential to produce 200,000 metric tons of coffee beans. [2]

The dismal performance of the coffee sector in Kenya has been attributed to a number of factors. These include the collapse of 1989 international coffee agreement, global completion from countries like Vietnam and market glut. In addition, local factors such as incomplete liberalization process, growing inefficiencies in cooperatives, and structural challenges in the coffee supply chain have contribution to declining coffee performance (World Bank, 2006). These developments have resulted in poor producer prices, forcing the farmers to divest from the coffee sector[3].

The development in coffee sector is a complete contrast from the way the cut flower industry has performed in Kenya. With a relatively short history of commercialization in Kenya (mid 1980s), cut flower farming has grown to make the horticulture as the second leading foreign exchange earner in the country. The marketed production of cut flower in 2009 was valued at Ksh 30,815 million compared to that of coffee at Ksh 9,563.7 million. The growth in cut flower has had a phenomenal growth; in 2001, it produced 11 per cent of Kenya's total agricultural exports but by 2009, this share had grown to 26 per cent (KNBS 2008, KNBS 2010).

[2] Coffee Talk Blog, Gourmet Coffee Beans Online
[3] http://www.africanagricultureblog.com/2008/02/kenya-coffee-earnings-up-in-2007.html

1.2 Motivation of the study

Kenya aims to raise increase her regional market share for manufactured products from current 7 to 15 per cent and develop and develop a robust, diversified and globally competitive manufacturing sector (Kenya Vision 2030). The government recognizes that Kenya's competitiveness in manufacturing lies in agro-industrial exports and therefore targets to increase the capacity of value addition in agro-based industries. To achieve this, the country must first improve the quality of her products and brand them for 'specialty markets'. Coffee and tea are among the main products that the country exports in relatively raw form and would substantially gain if more processing and refining of the products is achieved. This study therefore focuses on identifying potential areas of, and challenges that stifle, value addition in coffee sub-sector. The study results can inform policy choices in promoting the coffee sub-sector in Kenya.

The study wants to answer two basic questions: (i) What determines the allocation of value adding activities (and hence distribution of value added) among the key players in the coffee and cut flower value chains, (ii) Do opportunities exist for coffee farmers to move up the value chain, particularly to agro-processing, and accumulate more value from the commodity? Cut flower industry is relatively new in Kenya but is one of the leading foreign exchange earners for the country. Structurally, the cut flower sector depicts an industry that performs relatively way ahead compared to other commodities in terms of employing efficient production methods, streamlining the markets process and adopting modern technology. Comparing the structures of the value chains in coffee and cut flower sectors may highlight constraints that stifle value addition in the coffee industry.

1.3 Objectives

The main objective of the study is to identify the potential areas of value addition in coffee sector. Specifically the study aims to:

1. Identify the value adding activities and respective actors within the value chains of coffee and cut flower sectors in Kenya
2. Find out the differences in the distribution of value added between actors within the value chains of coffee and cut flower sectors
3. Find out the bottlenecks that stifle value addition in coffee sub-sector
4. Draw policy lessons from cut-flower industry.

2. Review of Relevant Literature

The dependence of natural resources, and indeed on semi-processed agricultural produce for Kenyan exports, traces its history back to 1884 scrabble for Africa[4]. In integrating Africa in global trade, the continent was to produce raw materials and agricultural produce for industrial production and household consumption in European countries. For instance, Kenya would later become among the best producers of tea and coffee, Ghana would have cocoa as the main export earning commodity and Ivory Coast would be a player in international trade as supplier of fruits, particularly banana and pineapple. Nothing much has changed since then and today most African nations mainly depend on natural minerals and raw/semi-processed agricultural produce for their foreign exchange earnings.

2.1 The Coffee Industry in Kenya

The value adding activities that define the value chain of coffee industry influence the structure and performance of the coffee sector. How the production, processing and marketing of coffee characterizes the structure of the coffee industry is dependent on the historical context of the sector and policy interventions pursued over time.

2.1.1 Brief historical background of coffee

Coffee was first introduced in the country in 1893 by French missionaries. Thereafter, the British settlers invested heavily in coffee to the extent that it became a major Kenyan export. For farmers to collectively lobby the government, they formed Planters Union of Kenya in 1917 which was instrumental in making Kenya move up the value chain and export semi-processed coffee. The sharp declines in coffee production during the Great Depression saw the establishment of the Coffee Board of Kenya (CBK) in 1934 to help stabilize the local industry. The CBK was formed to regulate production and marketing of coffee upon enactment of the Coffee Act (1933). However, Kenyans were not allowed to own or manage coffee farms until 1934 when the British Colonial Board allowed Kenyans to manage small-scale coffee farms with limits on farm size, number of trees and farm location. In 1937, the Kenya Planters Cooperative Union (KPCU) was formed to represent the interests of small farmers. The mandate of KPCU went beyond lobbying when, in 1941, it purchased Nairobi Curing Company (Kinoti 2005; Condliffe et al 2008).

[4] www.AfricaEconomicAnalysis.org

Even after independence, the CBK and KPCU continued to play a significant role in the performance of coffee industry. In addition, the government established the Coffee Development Authority (CDA) in 1964 to support cooperatives and small farmers, providing farmers with technical assistance to provide loans to coffee cooperatives. The World Bank Structural Adjustment Programs in mid-1980s saw a number of changes in the sector. The government pulled out of cooperative management and ended financial support to cooperatives, the KPCU and the Coffee Research Foundation (CRF). In 1999, regulation of upstream processes was made more liberal, allowing growers to choose among pulping factories, millers, and marketing agents. Similarly the year 2001 saw the reduced role of the CBK as regulator. In 2006, the coffee auction was privatized with a portion of coffee allowed to bypass the auction process and be sold directly to exporters. In the same year, number of marketing licenses issued increased from three to twenty-five (Condliffe et al 2008).

2.1.2 Coffee production

Production of Kenya coffee is at two levels, smallholder production organized into co-operatives and medium and large sized farms commonly referred to as estates. By 2005, there were 700,000 smallholders organized into nearly 600 co-operatives, and nearly 3,300 estates of 2 to 20 hectares (Kinoti, 2005). The acreage under coffee is 160 thousand hectares with cooperatives accounting for 75 percent of this acreage and producing 57 per cent of total coffee production (KNBS, 2010). The main coffee-growing regions are Nyeri, Murang'a, Kirinyaga, Embu, Meru, Nakuru, Machakos, Kisii, Bungoma, Nakuru, Ruiru, Thika, and Juja[5]. Coffee is grown in highlands that are between 1400-2000 meters above sea level. Kenya produces Arabica coffee of basically three types (that adapt well to different altitudes), namely SL 28 & 34 (medium to high altitude), K7 (lower altitude) and Ruiru 11 (all altitudes) (Kinoti, 2005.)

2.1.3 Coffee processing in Kenya

Coffee processing within the country consists of two parts; primary processing and secondary processing (milling). Primary processing generally involves removal of the outer layer of coffee berries and involves selection, pulping, fermentation, soaking, washing, skin drying and conditioning. The Coffee Act (2001) requires all smallholders to process their coffee through a cooperative.

[5] http://www.coffeehabitat.com/2008/03/coffee-growing-in-kenya.html

Milling involves hulling, polishing and grading the wet-processed berries to remove layers covering the green coffee. Coffee milling is managed by five mills, namely Thika Coffee Mills Ltd, SOCFINAF Co. Ltd, and K.P.C.U as commercial millers and Mbumi Coffee Mills and Komothai Coffee Growers Co-operative Society licensed as private coffee millers. By 2008, the KPCU was running the largest mill, controlling 70% of milling capacity in the country (Condliffe et al, 2008). The other four mills are run by private estates but were only allowed to process coffee from cooperatives in 1999. The millers pass on coffee to marketing agents who collect, prepare, catalogue coffee and provide warehouse services in readiness for auction.

2.1.4 Coffee marketing in Kenya

Nearly all of the coffee grown in Kenya is exported (World Bank, 2006). The marketing networks of coffee in Kenya consist of many players, loosely grouped as marketing agents, but are differentiated by the type of license they hold. In addition to cataloguing and providing warehouse services, marketing agents prepare and make available coffee samples for licensed buyers prior to auction, represent growers during the auction and finally collect and distribute proceeds to growers following final sales. The Coffee Board of Kenya issues different category of licenses related to marketing, namely; roaster & packers' license, warehouse license, coffee auction license and management agents certificate (EPZA, 2005). Notably, some players particularly Thika Coffee Mills Ltd, SOCFINAF Co. Ltd, and K.P.C.U. hold more than one license, getting licensed in almost categories, in addition to being licensed as commercial millers. Thus, the three firms are more dominant in milling and marketing stages of the coffee value chain.

Prior to 2002, the CBK acted as the sole marketing agent. After liberalization, it stopped participating in direct marketing, and limited its activities to licensing millers and "marketing agents". Only the marketing agents who hold coffee auction license are legally allowed to participate in the coffee auction, which is held weekly.

2.1.5 Coffee roasting

Kenya exports her coffee in partially raw form as green coffee. Prior to roasting, coffee beans are commonly referred to as green coffee. There are a number of possible reasons why Kenya opts to export raw coffee. One explanation that has been advanced is that 'large commercial roasters prefer to roast in facilities close to their consumption markets so that they can blend coffees from various origins before roasting, and adjust different blends and proportions

according to consumption and international coffee market signals and availability at source'[6]. However, this argument builds the case for Kenyan firms to create capacity for domestic roasting of coffee, given the high quality of Kenya Arabica coffee and possibilities of importing other less superior coffee from East African countries like Uganda and Burundi.

Secondly, it may be possible that the country lacks technical expertise on coffee roasting. A brief outline[7] of roasting process does not support this possibility. The roasters first extract caffeine from green coffee beans before roasting through what is referred to as decaffeination process. This involves contacting moistened green coffee beans with large quantities of carbon dioxide (CO_2) at a pressure of about 4,000 pounds force per square inch and temperatures between 90 and 100 °C (194 and 212 °F). This process removes about 97 percent of the caffeine from the beans. Decaffeination is also achieved through solvent extraction using oil. In this process, a solvent is added to moistened green coffee beans and this extract most of the caffeine from the beans. After the beans are removed from the solvent, they are steam-stripped to remove any residual solvent.

After decaffeination, coffee is roasted, a process that produces the characteristic flavor of coffee by causing the green coffee beans to expand and to change in color, taste, smell, and density. Roasting involves heating the roasters (horizontal rotating drums) from below and tumbling the green coffee beans in a current of hot gases. Green coffee beans are roasted for a period of time ranging from 3 to 30 minutes at temperatures of between 370 and 540 °F (188 and 282 °C) by using natural gas, liquefied petroleum gas (LPG), electricity or even wood. Following roasting, the beans are cooled using a vacuum system and stabilized i.e. degassing. After degassing, the roasted beans are packaged, usually in light-resistant foil bags fitted with small one-way valves to allow gasses to escape while protecting the beans from moisture and oxygen.

From the above description of roasting process, large scale coffee roasting is not a technically complicated process and Kenya may roast coffee locally before exporting it. This is demonstrated by the fact that there are few licensed small-sized coffee outlets that roast coffee for domestic consumption.

[6] Executive brief: Update 2011 **I** 8 http://agritrade.cta.int/

[7] For a comprehensive analysis of coffee processing process refer to en.wikipedia.org/wiki/Coffee roasting

Finally, the comments from major transnational roasters highlighted in coffee blogs tend to justify roasting coffee in importing countries on the basis that roasted coffee has a short shelf life.[8] Yet, the same advertisement blogs explain that roasted whole coffee beans can stay fresh for up to one month. Good packaging is what is needed to extend the useful life of roasted coffee which relies on maintaining of an optimum environment for the beans. Large scale roasting in importing countries uses vacuum packing as preservation technique which can also be done in Kenya. Thus, it is economically feasible to roast coffee and therefore add value within the country. As pointed by Karanja and Nyoro (2002), share of gross value added as percentage of retail price of roasted coffee in most importing countries is over 70 per cent. As a country, Kenya can substantially gain from her coffee exports by roasting it within the country.

2.1.6 Policy Initiatives in the coffee industry

To promote coffee industry in Kenya, the government has in the past initiated various forms of fiscal incentives. In 1990, the government requested for Stabilization of Export (STABEX) funds, from STABEX system agreed between European Community and the Africa Caribbean and Pacific (ACP) countries, to provide a financial pool for farmers' credit through a revolving fund account managed by the Cooperative bank. In the same period, International Development Agency (IDA) of the World Bank extended a credit facility, Second Coffee Improvement Project (SCIP II), to the Kenya government to improve infrastructural projects within the cooperative movement (Karanja and Nyoro 2002). The funds were targeted to rehabilitate roads in coffee areas, support research at Coffee Research Foundation and improve rural electrification of coffee factories. The overall objective of SCIP II and STABEX funds was to increase farm incomes through increased production and better coffee quality.

With fall of coffee prices globally since early 1990's, repayments arising from SCIP II and STABEX loan facilities have been a challenge for both farmers and the cooperatives. Not only have the cooperatives defaulted on payments, farmers sometime get no payments once proceeds from coffee sales are deducted to service the debts. To promote coffee production, the government waived a debt of Sh5.8 billion in 2004 and further waiver was earmarked in 2011/2012 budget.[9]

[8] Coffee Talk Blog, Gourmet Coffee Beans Online
[9] allafrica.com/stories/201102010193.htm

2.2 Dynamics of Coffee sector in a Global Context

The performance of coffee sector in Kenya, whether in production, processing and marketing stages, is heavily influenced by global developments related to coffee industry. Brazil, Vietnam, Colombia, Indonesia, Mexico and India are the world main producers of coffee. In Africa, Uganda and Ethiopia are the leading coffee exporters with Kenya being the 7th overall[10]. The coffee sector has a unique feature that impacts significantly on benefits that accrue to world coffee producers; the existence of the International Coffee Organization (ICO) that draws membership from both exporting nations and importing nations. Many of membership associations, including Oil Producing and Export Countries (OPEC) are characterized by definite membership of either producers or consumers. The ICO was formed to achieve a reasonable balance between the supply and demand of coffee through administering the clauses of the international coffee agreements and supervising the mechanisms in place.[11] Since the first coffee agreement in 1962, there have been six subsequent agreements, ratified in 1968, 1976, 1983, 1994, 2001 and 2007. By and large, the historical development of the sector in many coffee producing countries suggests that ICO operations have mainly benefited the importing countries.

The EU and Japan, who are the main importers of coffee particularly from African and Caribbean coffee producing countries, continue to impose high tariffs on imported roasted coffee (between 7.5% and 12%).[12] This acts as a great disincentive to roast coffee in coffee producing areas. On the whole, the coffee market is dominated by few multinational manufacturers - namely Sara Lee, Nestle, Proctor & Gamble and Kraft Foods - that control global coffee trade by commanding significant brand loyalty[13] in major consumer markets. Similarly global coffee trading is dominated by four main traders of green coffee- the Neumann Gruppe GMBH, Volcafe, Cargill and E.D. & F. Man. (EPZA, 2005). A USAID-funded website forum (Agrilinks) indicates that the ICO's mission 'is to strengthen the global coffee sector and promote its sustainable expansion in a market-based environment for the betterment of all participants in the coffee sector'[14]. This suggests that ICO should have addressed the imperfections in coffee market that results in a disproportionally small percentage of world prices being transmitted to farmers in developing countries. Indeed, as

[10] Executive brief: Update 2011 **I** 8 http://agritrade.cta.int/
[11] http://www.dti.gov.ph/dti/index.php?p=20
[12] Executive brief: Update 2011 **I** 8 http://agritrade.cta.int/
[13] Nescafé , Folgers, Maxwell House, Jacobs, Douwe Egberts
[14] http://agrilinks.kdid.org/about-agrilinks

World Bank (2005) report indicates, 'the tight regulation in today's Kenyan coffee market is a legacy of the structures created by the ICO'. As noted later in chapter four, the regulatory culture in Kenyan coffee market has largely been detrimental to coffee farmers.

2.3 Cut flower Industry in Kenya

Though the cut flower industry has a short history in Kenya, relative to coffee, the value addition processes in the sector have been influenced by that history in terms of modern technology, more open economic system and increasing role of membership associations in influencing formulation and implementation of policies relating to the sector.

2.3.1 Brief historical background of cut flower

Cut flower production in Kenya dates back to 1970's but its formal commercialization started in 1980s, mainly concentrated on rose flower cultivation. The sector picked up in 1990's, shifting to higher-value flowers grown in greenhouses. By 2007, Kenya cut flower accounted for 6 per cent of world market share. The large scale cut flower farmers are owned by foreign private companies. Cut flower is one of the newly emerging export crops that have developed a fairly integrated chain structure (Hornberger et al, 2007*).*

A number of factors account for meteoritic rise in performance of cut flower industry, including political stability that guarantees land ownership and tenure, good infrastructure (roads, airport and cargo handling facilities, modern banking services, telecommunication supply), fair water resources management policies, market oriented economy, multiracial and non-secular society that encourages foreign investors (Hasit, 2007). By end of 2011, Kenya was the major exporter of cut flower to the European Union, contributing over 35 per cent of all flower sales, followed by Columbia with 17 per cent and Israel 16 per cent; exporting to Holland, United Kingdom, Germany, France, and Switzerland.[15]

2.3.2 Cut flower production

Of the overall horticulture export earnings worth Ksh 49.4 billion in 2009, cut flower contributed 62.4 percent. The industry experienced an upward trend in production from Ksh 2.9 billion in 2005 to Ksh 43.1 billion in 2007 (KNBS, 2010). However the post-election violence in 2008 impacted negatively on the industry with exports reducing to Ksh 30.8 billion in 2009. Cut flower farming in Kenya is mostly by large and medium scale growers[16]

[15] http://www.kenyaflowercouncil.org/marketdata.php

[16] HCDA categorize small scale (under 4 hectares), medium scale (between 10-20 hectares) and large scale (more than 50 hectares).

(numbering about 160) though there are several small scale growers with acreage of 0.16 acres, on average, under cut flower farming. Large and medium scale growers are mainly concentrated around Lake Naivasha, Thika, Limuru/Kiambu, Athi river plains, Nakuru, Eldoret, Nanyuki/Nyahururu and fewer areas around Mt Kenya region. The small scale farms are located mainly in Limuru/Kiambu region, Nyandarua and pockets in Laikipia, Western and Eastern provinces (Bolo, 2006).

2.3.3 Cut flower processing in Kenya

Cut flower processing is basically done in three integrated steps: sorting, packaging and cold storage. Transport logistics are central in these processes due to the perishable nature of cut flower. The post-harvest produce (after sorting and packing) from large scale growers follows a sophisticated cold-supply chain infrastructure that includes refrigerated trucks for transportation and cold rooms for storage at the airport. The produce from large scale growers is mainly handled by four air freight forwarders (mostly owned by farmers themselves). These forwarders also handle the produce from small scale farmers through informal merchants who act as middlemen, aggregating volume for transport to market. Small-scale growers also often use collective marketing agreements with bigger growers or exporters such as Nature grow Ltd. After export, the large scale exporters link up with their marketing arms (principally the sister companies) in Europe; ensuring a logistical infrastructure for direct distribution to the mass market retailers. Thus, these farmers are able to gather market information that improves their operations at farm level (Hornberger et al, 2007; Boro 2006).

The overall cut flower processing chain suggest that it is vertical integrated. At retail level, there exist a number of quality standardization institutions that include Fair Flowers Fair plants, Global GAP Ethical Trade Initiative and Max Havelaar, who are instrumental in advocating and enforcing standards. These institutions are largely informed by the quality requirements of the international markets like the TESCO Supermarket PLC, Flower Auctions in the EU, Japan and USA.[17] There are also cases where producer country firms establish a presence in consumer markets (Mather, 2008).

2.3.4 The regulatory institutions in cut flower sector

The regulatory role of the government in cut flower industry mainly rests with two bodies, namely the Horticultural Crops Development Authority (HCDA) and Kenya Plant Health Inspectorate Service (KEPHIS). HCDA was established in 1967 with a mandate to develop,

[17] KFC undated newsletter- Flower industry information

co-ordinate and facilitate the horticultural industry but its role has largely been that of registering farmers who want to engage in horticultural exports. KEPHIS was formed in 1996 to regulate quality control of plant exports and imports including seeds, cuttings, fresh fruits and flowers (Hornberger et al, 2007).

2.4 Summary of Empirical work on Value addition Analysis in Kenya

There exists substantial documentation on previous work, in Kenya, on value addition analysis in both coffee and cut flowers sectors. Value chain is an encompassing term for the activities that characterize production, processing and eventual marketing of a product. For this reason, value chain analysis is contextual in the sense that an analysis may focus on particular features of a value chain. Coincidentally, previous research on value addition analysis in Kenya has mainly focused on proportional contribution, in overall costs, of each value adding activity in various stages of value chain.

The World Bank (2006) report on value chain analysis in coffee sector profiles the value adding activities in small and large farms and compares the costs proportion of each activity among the two categories of farms. Bench-marking the costs pattern in small holding against that of large farms, the World Bank (2006) identifies the potential areas of increasing productivity among small-scale farmers and the constraints that farmers face in different stages of value chain. The report finds that the distribution of costs associated with value adding activities is similar between large plantations and cooperatives, but the actual cost for each stage of value adding activity is nearly 2.5 times more for cooperatives, who process and manage marketing smallholders coffee. Similarly, the report finds that policy distortions impose restrictive regulation that hamper the growth of coffee industry. Farmers also experience long delays in payment, high costs of inputs and inadequate market information. Though EPZA (2005) study on coffee and tea industries in Kenya is not specifically on coffee chain analysis, it documents organization structure of the coffee industry and an overview of the sectors performance.

In analyzing how commodities value chains in countries within the tropics fits in changing global trade regimes, Mather (2008) analyzes the Kenya cut flower value chain in terms of the conduct of various players participating in the product's routes to international markets. He observes that Kenya cut flower industry is characterized by increased product differentiation, more concentration of wholesale trading and vertical integration of actors of the value chain. Hornberger et al, (2007) maps out the cut flower value chain into five stages

which include farming, post harvest handling, transport to the market, distribution channels, retail and consumers. These stages are vertically integrated for large scale estates which leverage their scale economies and heavily invest in cold-storage infrastructure but small and medium scale have adhoc infrastructure in their supply chain.

2.5 Overview of the Coffee and Cut Flower Sectors in Kenya

The literature review highlights similarities and differences in developments of coffee and cut flower sectors in Kenya. Though both crops are not indigenous in terms of their origin, they have at different times played a signification role in the Kenyan economy. By and large, the GDP contribution of coffee industry in mid 1970s was generally in equal proportion with the contribution of horticulture in the 2010. Whereas the performance of coffee industry has worsened in last two decades, the cut flower industry experienced multiple-fold growth in same period.

The analysis of the value chains of the two commodities highlights major structural differences in their value adding activities. Whereas the activities are vertically integrated through networks between various actors in cut flower industry, the coffee sector depicts vertically disjointed mechanisms of processing and marketing the product. Similarly, notable differences exist in terms of regulatory structure, value adding activities undertaken before export and the number of intermediaries in marketing stage of the value chain. This possibly explains the difference between the two industries in terms of the growth path each has taken. Cut flower has a relatively short history in Kenya and has experienced phenomenal growth since late 1990s. In addition, the industry has had minimal government regulation and its value chain is largely driven by the private sector. Comparing the regulatory powers of Coffee Board of Kenya and Horticultural Crops Development Authority, cut flower industry is less regulated than coffee sector. Possibly, it is the high regulation in the coffee industry that allows emergence of non-core actors in the distribution and marketing end of the value chain. The existing regulation in the coffee sector may influence how various actors participate in value adding activities and consequently, the distribution of value added in the value chain. This study therefore explores how the distribution of value added in the two sectors is influenced by the activities that each actor participates in.

3. Theoretical Framework and Methodology

3.1 Theoretical Foundation

A value chain consists of value-adding activities involved in production, processing, delivery (transportation and marketing) and retailing of a product. Value chain therefore consist of a range of activities that are required to bring a product from its conception, through its design, sourcing of raw materials and intermediate inputs, its production, marketing and distribution to the final consumer (Humphrey and Schmitz, 2001). In more recent times, the post-consumption activities in form of waste management through, say, recycling, waste reduction and environment values are being integrated in value chain analysis. In economic terms, the "value" in value chain constitutes the sum total of payments made by industries to workers, profits, dividends, capital gains and indirect business taxes paid to state and local governments. Value-added, then, is the money that remains in an economy that may be used for household spending, saving, or capital investment. It represents the income and wealth available to the rest of the economy (Adrian 1991). This study adopts this definition in analyzing the value added in various stages of value chain.

At production level of an agricultural produce, value addition will involve enhancements or additions to a product that result in higher returns to the commodity seller, who is often the farmer (Eathington et al 2000). For instance, technological enhancements, labour-saving steps, or any other innovation that allows the producer to offer more of a commodity is a form of "input value-added" enhancements that reduce costs of production, thus returning value to the farmer. However, if the farmer grows specialty crops, engage in strategic marketing of commodities or she/he sells the product for a premium, this constitutes "output value-added" enhancements. In improving the gains from coffee farming, efforts should also be put in identifying factors that determine the distribution of benefits among agents involved in product's value chain since more value will accrue to a player who upscale her/his activities up the value chain.

At macro level, new classical thinking supposes that all transactions are completed through prices set by competitive and anonymous markets. However, lack of relevant information by some market players tilt the market power against them. Knowledge, including technical knowledge can move from one region (or country) to another but only at a price (Adrian 1991). This sets the stage for price setting through negotiations but the bargaining strength rests with those in possession of the knowledge. It is therefore reasonable to assume that at

the onset, a country experiences the problem of low value addition due to information asymmetry; countries/companies that possess the 'right knowledge' on input value-addition or output value-addition use it competitively to control price and reap the maximum benefits. This has an analogy with what Kaplinsky (2000) calls governance role in determination of income distribution both within and between countries i.e. there are those actors who influence the activities certain players will participates in and the capacities of particular participants to upgrade their activities. The options then for the farmers/entrepreneurs with limited information access are either to purchase the information or negotiate for information transfer. In light of the Kenya coffee sector, the relevant question is whether information constraints stifle value addition and what are the impediments to smooth information flow. A related question is whether there are lessons the sector can learn from cut-flower industry in Kenya? Whereas it is theoretically reasonable to expect cases of information asymmetry both in coffee and cut flower industry, the latter seems to have had some form of adjustment that corrects the market failure without hampering its growth.

Information flow may be constrained further by trade barriers (tariffs, laws, language, finance security, etc), which limit entry to value adding activities. Further, the more chain networks a sector has, the easier it becomes to access information due to new opportunities derived from infrastructure supply. Indeed, infrastructure underpins connectivity necessary for market expansion since it reduces transaction costs, facilitates trade and promotes economies integration.

The basis of comparing value addition in coffee and cut flower is anchored on Daly and Cobb, (1994) observation that "to which value is added is therefore inert, undifferentiated, interchangeable, and superabundant". Land is the primary input in the two sectors and reflects basic uniformity to which value is added. The value adding activities a player participates in the value chain dictates the distribution of added value among the actors in the value chain.

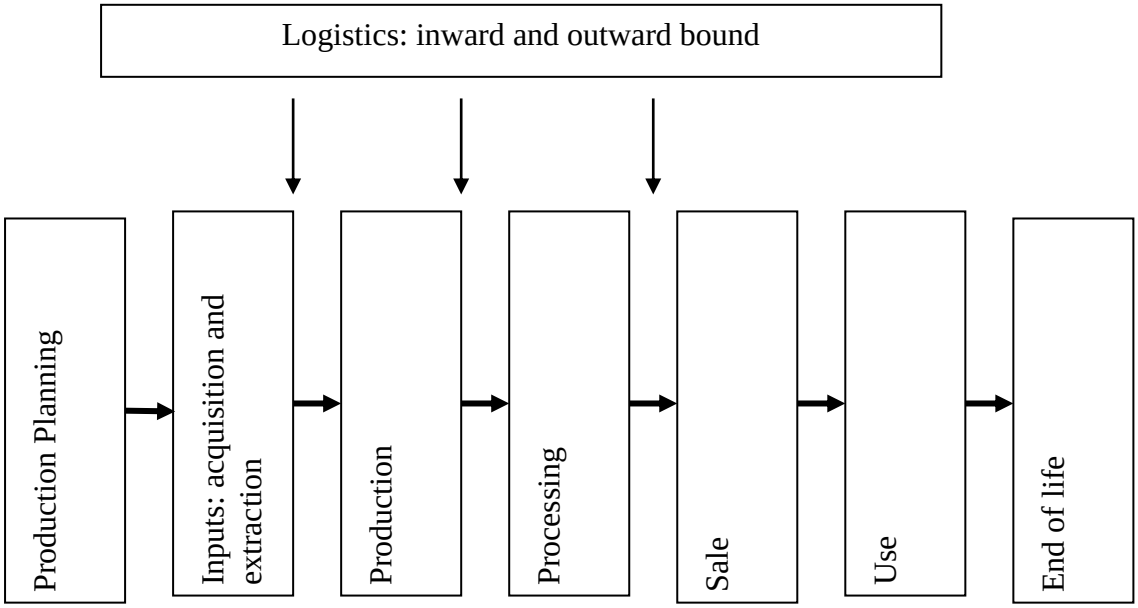
3.2 Methodology

In determining the approach to use to address the objectives, the study takes stock of Kaplinsky (2000) work on how the structure of the value chain, in terms of the roles of various actors, influences who benefits from globalization. He observes that there is mismatch between earnings transmitted to production points and earnings that accrue from global products markets, and contends that value chain analysis is a valuable methodological

tool to explain the skewed value distribution. This study borrows extensively from Kaplinsky (2000) conceptual orientation in the sense that the proportion of world price that accrues to a value chain player is related to the number of value adding activities he/she engages in. Since the value added per activity differs across the activities and the various stages in value chain, the choice on which activity a player participates is important. The study compares the value chains of coffee and cut-flower for purposes of identifying how activities in the value chains are distributed among various actors.

The value chain analysis involves a framework that encompasses the production, processing, distribution and marketing of a commodity and identifies the value adding activities and respective actors involved at each stage. The value chain framework may use to examine the factors that influence the distribution of value added among the actors. In mapping out the coffee value chain, the study uses the following generic value chain developed by Kaplinsky and Morris (2000) as shown in Figure 1.

Figure 1: Generic Commodity Value Chain



Source: Adopted from Kaplinsky and Morris, 2000

In the Global Value Chain (GVC) analysis, the focus may be on input-output analysis where respective contribution of value chain activity undertaken to overall output is analyzed. Alternatively, the focus may be on the 'value distribution' which measures the shares of the final retail price across nodes of production as the means for understanding the division of value added across a the value chain actors. The focus of this study is on value added

distribution to evaluate the possibilities for farmers to upscale their value adding activities which can ultimately make the country to fully process the coffee produce before exporting it. However, the study first identifies and compares the value adding activities in the value chains of coffee and cut flower sectors.

3.2.1 Data source

The study reviewed the existing documentation on production and processing of coffee and cut flower and identifies key differences in the value chains. The information from literature review was triangulated by survey data obtained through questionnaires administered to coffee and cut flower farmers in the month of May and June, 2011. The survey covered Nyeri South, Tetu, and Chinga districts where coffee farmers were sampled whereas Thika and Limuru districts provided the sampling frame for cut-flower farmers. The two areas were chosen on the basis of relatively high production levels in respective crops compared to other regions in Kenya and importance of capturing both small and large scale farmers in our analysis. The research team used the snowballing process to sample the farmers that were interviewed, based on the fact that the said individual farmers were likely to make referrals to other farmers who share same institutional facilities (particularly cooperatives) in the processing and delivery of the farm produce. The research team also conducted interviews with key informants in both sectors.

4. Dynamics of Value chains of Coffee and Cut Flower Sectors

A sample of 160 farmers, cooperatives, associations, institutions and private companies was targeted but the response rate was about 65%. In addition, some of the responses missed data on price and costs that was important for purposes of computing the value addition. Consequently, the research team ended with only 45 questionnaires - 30 coffee farmers (26 smallholders and 4 estates), 6 cut flower farmers (4 small-scale and 2 large farms) and 9 institutions that were useful for analysis - out of 104 responses.

4.1 Characteristics of Coffee Industry in Kenya

One of the objectives of this study was to identify the value adding activities and respective actors within value chains of coffee and cut flower sectors in Kenya. From the study findings, there are five main players in the coffee value chain. These are the farmers, cooperatives, farmers' business associations, regulatory institutions, milling and marketing companies.

4.1.1 The coffee farmers

Small-scale coffee farmers in the sampled areas have an average acreage of 1½ acres whereas the large-scale farmers (the estates) have 15 acres of land under coffee. The small-scale farmers in also grow food crops (mainly potatoes, maize and beans) mainly for home consumption. Only about 10 percent of small scale farmers employ permanent employees. The rest use family members, particularly the head of the household and the spouse. The two estates analyzed had more than 10 employees. All the small scale farmers interviewed engage in rain-fed production for all crops under-cultivation and are not connected to electricity. Though the two estates also use rainfall water for cultivation, they have piped water for processing. Small scale farmers take their coffee produce to cooperatives premises for processing.

Hand-pump and sickle constitute the only machinery and equipments used in production by 85 percent of the small scale farmers. About 8 percent of small scale farmers own no machinery or equipments but usually get them from neighbors free of charge or on hire. A few number of sampled small scale farmers (8%) use pressure pumps and protective gear. Drum pulper, electric motors, pressure pump and protection gear are the main machinery and equipments used by large estates for their production activities.

4.1.2 Cooperatives

All small scale farmers forward their produce to cooperatives to cater for processing and marketing of coffee produce. However, the sampled large farmers indicated that they sell coffee after primary processing to other relatively large farms that do the milling and sell it. This line of value chain for large farmers enhances information flow to farmers as those interviewed indicated that they are aware of auction prices and the importance of branding coffee as per area of origin. Indeed dealing with the miller directly is cited as one the competitive advantage large farmers have over the small scale farmers.

The small-scale farmers' participation in coffee value chain does not extend beyond forwarding the coffee to cooperatives. Thus, hardly any feedback mechanisms exist to assist small scale farmers to access information on markets or changing dynamics of consumers' needs.

4.1.3 The millers

Farmers, particularly small-scale farmers, are not in any way involved in milling process. There are three major commercial millers currently operating in Kenya. These are: KPCU,

Socfinaf and Thika Coffee Mills. The Coffee Act (2001) categorizes three types of millers: commercial, private and mini-mills. Private millers are licensed to process only their own harvest, while commercial millers provide milling services to other farmers through their cooperatives. The mini-mills include those that mill and roast coffee for direct consumption in coffee cafes.

Among the licensed millers, it was only Kofinaf Group that was response in agreeing to grant an interview. Kofinaf Group is a private company in Kenya that handles the milling and marketing of coffee at a fee to farmers. The company is a coffee grower, with a large plantation of coffee in Thika district. The research team was unable to secure an interview with KPCU which by the time of the study had been put under statutory management.

4.1.4 Membership associations in coffee industry

There are three coffee membership associations, namely Kenya Coffee Producers and Traders Association (KCPTA) and Kenya Coffee Producers Association (KCPA), the Kenya Coffee Traders Association (KCTA). On the basis of the institutions names, one would expect that KCPA focuses on producers, KCTA focuses on Traders, and KCPTA is an umbrella body for both. In-depth interviews with key officials of these institutions highlight their origin and missions that led to their formation.

The KCPA was founded in 1991 and was formed through the merging of the Kenya Coffee Growers Association (KCGA, 1991) and Kenya Coffee Growers and Employers Association (KCGEA). It indicates that its mission is to lobby for policy changes and helps in information sharing with respect to coffee producers. From the interview with the organization's officers, it was not clear how the KCPA promotes policy changes and facilitates information sharing with the farmers.

The KCTA was established in 2002 to address concerns of its members that include all member companies engaged in the coffee industry, either in the export trade or its related services. The officials of the organization indicated that the current members' register also includes millers, marketing agents, warehousemen and coffee equipment suppliers and transporters. By June 2011, KCTA had 21 full members and 16 associate members.

KCPTA is relatively new, having been established in 2005. It identifies itself as a voluntary body that helps members in coffee marketing through determining coffee volumes for each auction; make trading rules and regulations in the Nairobi Coffee Exchange and other price

discovery mechanism in accordance with Coffee Act, 2001. It draws it membership from cooperatives, estates, traders and millers of coffee. The other objective of KCPTA is to formulate sound standard forms of contract, conditions of sale, code of conduct, arbitration procedures and any other instruments or regulations deemed necessary in achieving the objects of the Association.

From the foregoing, one notes that the difference between the two producer organizations in terms of mandate and operations is blurred. In addition, none of the sampled coffee farmers indicated that he/she is a member of KCPTA or KCPA. Similarly, the existence of the two associations is not known to the farmers that were interviewed. Though the sampled farms are relatively few, these observations raise the issue of ownership and relevance of the producers' institutions in addressing the challenges in coffee industry.

4.1.5 Coffee Board of Kenya

With coffee Act in place in 1933, Coffee Board of Kenya was established in 1934 and was initially charged with the responsibility to carry out regulation and marketing of coffee. The coffee sector has, for a long time, been operating under Coffee Act 1933 regulatory framework but with its review in 1979, 1999 and 2000; it was finally replaced with Coffee Act (2001). With various regulatory changes having been done to the sector since 2002, the CBK regard its overall mandate as that of policy development and licensing; with the mission of 'providing an environment conducive for the growth of the industry through regulation, building partnerships, promoting competitiveness, value addition through branding to enhance quality/production for producers and consumer satisfaction'. In an interview with the research team, the management of CBK indicated that its effectiveness in achieving the mission is compromised by the Coffee Act (2001) in light of changing dynamics in coffee sector. For instance, despite the emerging of wider market for coffee and better prices, the CBK has no mechanism to deal with low production and poor quality of coffee which are critical challenges facing the sector.

4.2 The Coffee Value Chain

The coffee value chain illustrated in Figure 2 shows the value adding activities in production, processing and marketing stages of the coffee value chain.

4.2.1 Inputs: acquisition and extraction

In addition to labor input, coffee farming requires fertilizer, fungicides, herbicides and insecticides. The latter are all imported. The small-scale farmers primarily use the family labor and hence no wages are paid directly to workers. However, large plantations hire workers and in some instances provide them with transport.

4.2.2 Production

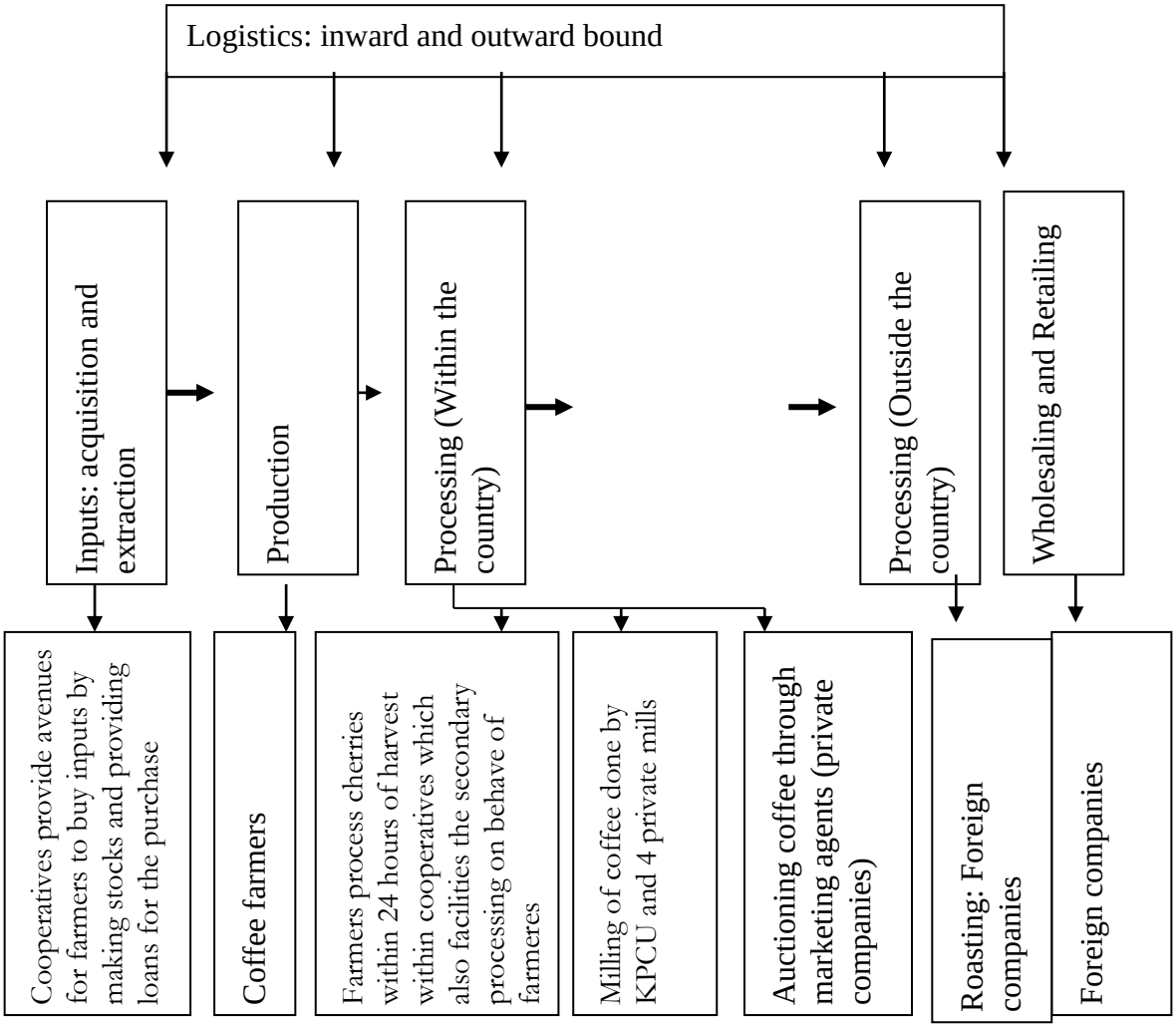
Coffee production in Kenya is at two levels, the smallholder production (those with less than five[18] acres) and estates who contribute 60% and 40% of total country's coffee output. Most of farmers' role in the value chain is limited to farm level activities that include land preparation, fertilizing, spraying, plant maintenance and harvesting. A report by Global Development Solutions indicate that smallholder farmers harvest 400 kg/ha yield (2.1 kg of cherry per tree) compared to large enterprises who obtain an yield of 1.76 tons/ha (8 kg of cherry per tree) of clean coffee on average. Findings from the survey suggest that this may attributed to rudimentary farm tools used, indicating limited uptake of recent technology. Insufficient use of fertilization and spraying, mainly due to high costs, also contribute to poor yields in small holder production. As noted in Section 4.1.1, most smallholder coffee farmers grow other crops, mainly maize and beans, to help supplement farm-based income and for use in personal consumption.

4.2.3 Processing (within the country)

Except in production stage, the farmer has a limited role in processing and marketing of coffee. The participation of farmers in processing coffee cherries only involves initial removal of the fruit covering the seeds. This processing of berries is done within the precincts of the cooperatives that farmers sell their produce to and subsequently the processing is not independent of cooperatives operations. The cooperative owns the equipment used by farmers for the basic processing where coffee cherries are sorted by immersion in water, requiring use of substantial quantities of water. Beyond this level of processing, it is the cooperative itself that completes the wet process; the washed cherries undergo ferment-and-wash process or a through a machine-assisted wet processing to remove any amount of the pulp clinging to the bean. However, some amount of coffee cherry dry on the farms and farmers usually pack it at the farm and delivered to the factory (referred by the name Mbuni) for onward transport to the millers.

[18] This is the categorization criteria of smallholder and large holding used by Coffee Board of Kenya

Figure 2: Coffee Value Chain



Source: Compiled by the author, based on Kaplinsky and Morris (2000) GVC model

Coffee processing at cooperatives ends with wet processing. Thereafter, the cooperatives pass the produce to KPCU or private millers who carry out the final steps in coffee processing namely hulling, polishing, and sorting and grading. Hulling is the process of extracting the last layers of dry skin and remaining leathery fruit residue from the now dry coffee. After hulling, the coffee undergoes polishing process in which any silver skin that remains on the beans after hulling is removed in a polishing machine. Finally, the milling process ends by sorting which is done in three stages, namely, sorting by size and density, sorting by color and grading. In grading, coffee beans are categorized on the basis of various criteria such as size of the bean, where and at what altitude it was grown, how it was prepared and picked, and how good it tastes, or its cup quality. The grade sizes range, in order from the largest to the smallest, are AA, AB, PB, C, E, TT and T.

4.2.4 Processing (outside the country)

Kenya exports her coffee as green coffee. As mentioned in section 2.2, the dealers who purchase coffee at the auction are agents of the four main international traders of green coffee namely: the Neumann Gruppe GMBH, Volcafe, Cargill and E.D. & F. Man. The private companies (marketing agents with auction license from CBK) sell coffee beans to foreign traders through the Nairobi Coffee Exchange. These private companies include Ibero (K) ltd, Diamond Coffee co. Ltd, Sangana Commodities Ltd, Africoff Trading Co. Ltd, SDV Transami (K) Ltd, Josra Coffee Co Ltd, Sondhi Trading co. Ltd, Kofinaf Group and Thika Coffee Mills.

4.2.5 Coffee marketing

As noted in the literature review section, a number of players licensed as roasters & packers, warehouse holders, coffee auction deals and management agents comprise the actors that participate in the marketing stage of the value chain. Following reforms in 2000, there are currently two coffee marketing systems in Kenya, namely, the central auction and the direct sale system. The central auction system operates within a market framework referred to as Nairobi Coffee Exchange. In the auction, the marketing agents sell the green coffee (un-roasted coffee) to exporters after cataloging, classification and setting reserve price. Both the marketing agents and the exporters (dealers) have to be licensed by the Coffee Board of Kenya. The exporters are required to pay, within seven days, the coffee proceeds to marketing agents who thereafter pay the growers after deducting marketing expenses and statutory deductions.

4.3 Distribution of Value Added Within the Coffee Value Chain

In analyzing the distribution of value added in the coffee sector, the various players in the coffee value chain are grouped in three categories, namely the farmers, cooperatives and institutions at milling and marketing levels of coffee. Overall, the farmers have to pay statutory charges amounting to 4.1%[19] of revenue to cover auction commission, CBK levy, County Council Cess and research levy. Other processing charges are shown in Table 1. Price for roasted differ from one importing country to another but averaged US$ 45 per kg in 2011 in wholesale market in European market[20], equivalent of Ksh3600.

[19] Computed from milling and marketing tariffs schedule (2010/11 coffee season) from Kofinaf Group

[20] www.pineteacoffee.com.au/_.../Coffee_Wholasale_Price_List_Dec_2

Table 1: Distribution of Value Added across the Coffee Value Chain, 2011

Item	Rate in US$	Unit costs	Per kg in US$	Per kg US$	Per kg KSH
Average Price of roasted coffee		kg	45	45	3600 (=3025 for green coffee equivalent weight)**
Price of coffee at auction level	378.10[21]	Per 50 kg		7.562	**604.96**
Marketing charges (auction and direct)	50	Per clean ton	0.05		
Milling charges	60	Per clean ton	0.06		
Re-grading for Estate cured coffee	35	Per clean ton	0.035		
Export bags		Per bag	0.025		
Total costs			**0.170**		
Statutory charges	4.1% of revenue	4.1% of 7. 562	0.31		
Total marketing and milling costs including statutory charges				0.48	38.4
Payment of cooperatives					94.50
Value added at milling marketing stage				5.813	465.06
Payment to farmers					76.50[22]
Revenue at cooperative level					18
Expenses incurred for wet processing by cooperative itself					-
Value added at cooperative stage					-
Cost analysis of farmers' expenditure composition on inputs					35
value added at farmers' level (Production stage)					41.50

**1 kg of roasted coffee = 1.19 kg green coffee

Source: Compiled by the Author from data given by respondents

Data available from Nairobi Coffee Exchange show that the average price for main coffee grades is US$378.10 per 50 kg which is equivalent to US$ 7.562 per kg (KSH 604.96). This implies that the overhead charges amount to US$ 0.31 per kg of coffee (4.1% of 7. 562). Adding the marketing and milling charges (table 1), a kg of coffee is charged US$ 0.48 (0.31+0.17), equivalent to KSH 38.4[23].

[21] Computed average price for all grades
[22] Price for primary processed coffee
[23] Computed at exchange rate of 1 US$=KSH 80

4.3.1 Value addition at farmer's level

Farmers, particularly smallholders, are basically only involved in production. The value adding activities at production stage include land preparation, fertilizing, spraying, tools maintenance and harvesting. For large farms, facilities maintenance and irrigation constitute additional activities.

Cost analysis of farmers' expenditure composition on inputs related with these activities indicates that they, on average, spend Ksh 35 on a kg of coffee. With payment of Ksh 76.50 per kg from cooperatives, this implies that the value added at farmers' level is Ksh 41.50. This figure does not take on board any loan-servicing costs met by farmers who have borrowed from banks or other institutions due to challenges related to determining how much of the loan was particularly used on coffee production as most farmers also grow other crops.

4.3.2 Value addition at cooperative level

The primary processing of coffee is done by cooperatives. Most of the sampled cooperatives (75%) that responded were established between 1960 and 1975 whereas the rest were established in 1950s. As of December 2010, farmers received Ksh 76.50 on average for a kilo of coffee from cooperatives. For purposes of computing the value addition we assume that this is the 'buying' price for the cooperatives. Cooperatives indicated that they received Ksh 94.50 for a kg of coffee. Notably the millers carry out the milling on behalf of the farmers and either handle the auction process or pass the produce to marketing agents. On average then, the value addition at cooperative level is Ksh 18 (94.50 - 76.50) minus what they incur for wet processing.

4.3.3 Value Addition at milling and marketing stages

The millers and middlemen are a critical component in coffee value chain and mainly consist of private companies that participate in milling and marketing of coffee. Computation of value added at this level requires computation of milling and marketing costs (Ksh 38.4), and payments to cooperatives (Ksh 94.50) from the market value of a kilogram of green coffee [US$7.562 per kg = (Ksh 604.96)]. The net is thus Ksh 465.06 **(**US$ 5.813). This implies that the value added that accrue at milling and marketing level is therefore more than 10 times compared to that at farmers' level which is 7 per cent of the market value (auction price).

Notably, the price of roasted coffee (Ksh 3025 per kg) is more than five times the auction price of green coffee (Ksh 604.96). Though data on roasting costs was not available to the

research team, the roasting process, described in section 2.1.5, is unlikely to be more than the auction price of green coffee. Hence, the bulk of value added along the coffee value chain accrues to participating actors outside the country.

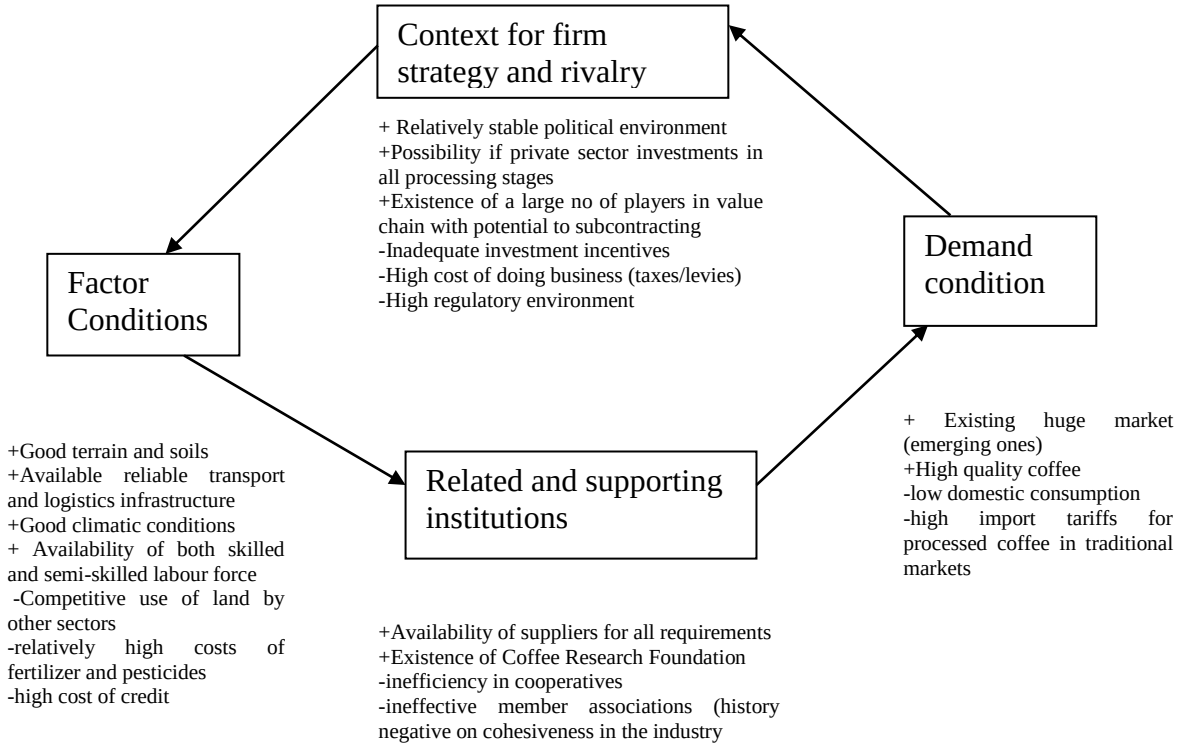
The figures used in the study suffer from inconsistencies related with conversion rates (a kilo of primary processed coffee beans does not convert to a kilo of green coffee) and they need to be interpreted with a lot of caution. However, taking the calculations as rough estimations of actual distribution of value addition among players in coffee industry, the findings show a highly skewed distribution of value added in coffee sector in Kenya. Indeed, the findings tend to correspond with what the Technical Centre for Agricultural and Rural Cooperation (CTA) observes, in its *Agritrade* article, that inequalities in supply chain hold back transmission of global prices to producers in Kenya, with local coffee supply 'cartels' refusing to transfer the full benefits of export price increases to farmers.[24]

4.4 Factors that influence Value addition in Coffee Sector

During the field survey, a number of constraints and challenges facing the coffee sector were highlighted by farmers and various institutions in the sector. In addition, key informants, particularly the Kenya Flower Council and Coffee Board of Kenya outlined areas where the sector has significant potential in improving its competitiveness. The study uses the Porters diamond analysis, illustrated in Figure 3, to contextualize these challenges and opportunities, to create an understanding of the resource and market environment that faces the coffee sector. In addition, the role of support institutions particularly those dealing with access to inputs and information is analyzed to identify networks crucial in enhancing the productivity in the sector. As Porters (2007) put it, a sound macroeconomic, political, legal and social context creates the potential for competitiveness of a sector, though it should be augmented by firms operations and strategy as well as quality of supporting institutions.

[24] Executive brief: Update 2011 **I** 8 http://agritrade.cta.int/

Figure 3: Strengths and Weakness that characterize the Coffee Sector



Source: Compiled by the author based on Porters Diamond

There are several developments in Kenya that the coffee sector can leverage on to increase value added and competitiveness. The country still has soils and terrain, as well as climatic conditions that favour coffee production. Since 2003, road networks in the country have improved, new information communication technologies have sprang up and the political environment is generally stable. Kenya Arabica coffee is globally acknowledged as high quality coffee. Further, coffee demand in Middle East countries as well newly industrialized countries like China is increasing. The existence of well-established cooperative movement and large private investors in the coffee industry creates huge potential of improving logistical infrastructure and inter-firm subcontracting. The availability of both skilled and semi-skilled workforce in Kenya is important for the coffee industry which is largely labour-intensive sector.

However, a number of challenges facing the coffee sector will have to be addressed to improve value addition in the industry. Poor governance and inefficiencies in cooperatives result in delays in inputs supplies, credit processing and produce payments to farmers. High costs of fertilizer and pesticides has, in some cases, forced the farmers to reduce application

of these inputs, resulting in delivery of low quality cherries and substantial loss of small cherries during pulping stage in processing. The farmers get their earnings once a year, making it difficult for them to meet periodic expenses they incur and expenditure emergences. In addition, there is still tight regulation in today's Kenyan coffee sector. The regulations not only all require smallholders to process their coffee through a cooperative, but prohibit direct purchase from farmers. Farmers also have limited information on coffee market and existing member associations are structurally weak to act as feedback mechanism to farmers. Amidst these challenges, coffee production has gone down in recent years as farmers divest from the industry. In addition, coffee growing in peripheral areas of major towns like Nairobi and Nyeri has slowly been transformed into real estate development.

4.5 Characteristics of Cut-flower Industry in Kenya

In Kenya, the cut flower value chain is characterized by four models of supply channels. First, there are large-scale farmers who grow cut-flower and export directly. Second, some of these large scale farmers buy produce from medium and small scale farmers and export as their produce. Third, there exist middlemen who consolidate produce from medium and small scale farmers and handle the marketing on commission. Finally, there are farmers who form flower hubs and export as a group.

4.5.1 The cut-flower farmers

Data findings show that large and small scale farmers not only differ in distribution channels of their product but also on utilization of land. All sampled small scale farmers indicated that they also grow food crops for home consumption and on commercial basis; mainly maize and vegetables. Large and medium sized farmers have generally specialized on growing specific types of cut-flower and mostly use irrigation to grow flowers under green houses. In small scale farms, rain water is the major source of water for farming.

4.5.2 Membership associations in cut flower industry

There are two main membership associations in cut flower industry, namely the Kenya Flower Council (KFC) and Fresh Produce Exporters Association of Kenya (FPEAK). Unlike KFC, FPEAK covers the wider horticultural sector. These associations have played active role in representing the interest of cut flower farmers by lobbying the government on business environment and co-partnering with it in various forums particularly through KEPLOTRADE in the Ministry of Trade and on the negotiation with EU on the Post Lome IV import tariff agreement. Currently, cut flower exports to the EU enjoy preferential market access under the

Cotonou Partnership Agreement and lately, the Interim Economic Partnership Agreement between the European Union (EU) and the East African Community (EAC).

The KFC also provides an avenue for self-regulation and it has developed a Code of Practice that is fully bench marked to Global Good Agricultural Practices (GAP). In addition, KFC groups membership according to information needs and introduces them to networks that are sources of information. Further, KFC has proactively increased the sale of cut flower in local market, through working with vendors association in improving retailing of flowers. Similarly, the FPEAK has introduced Kenya GAP, to be benchmarked against the Global GAP in its efforts to embed codes of practice for self-regulation among members. Within the networks of FPEAK and KFC, the large and medium scale farmers interact through attending both local and international exhibitions like the HORTEC (Kenya), and HORTFAIR (Netherlands) where they share information on market information and new technologies.

4.6 The Cut flower Value Chain

The structure of cut flower value chain not only involves the various participating actors but also the value adding activities in production, processing and marketing stages of the chain as Figure 4 illustrates.

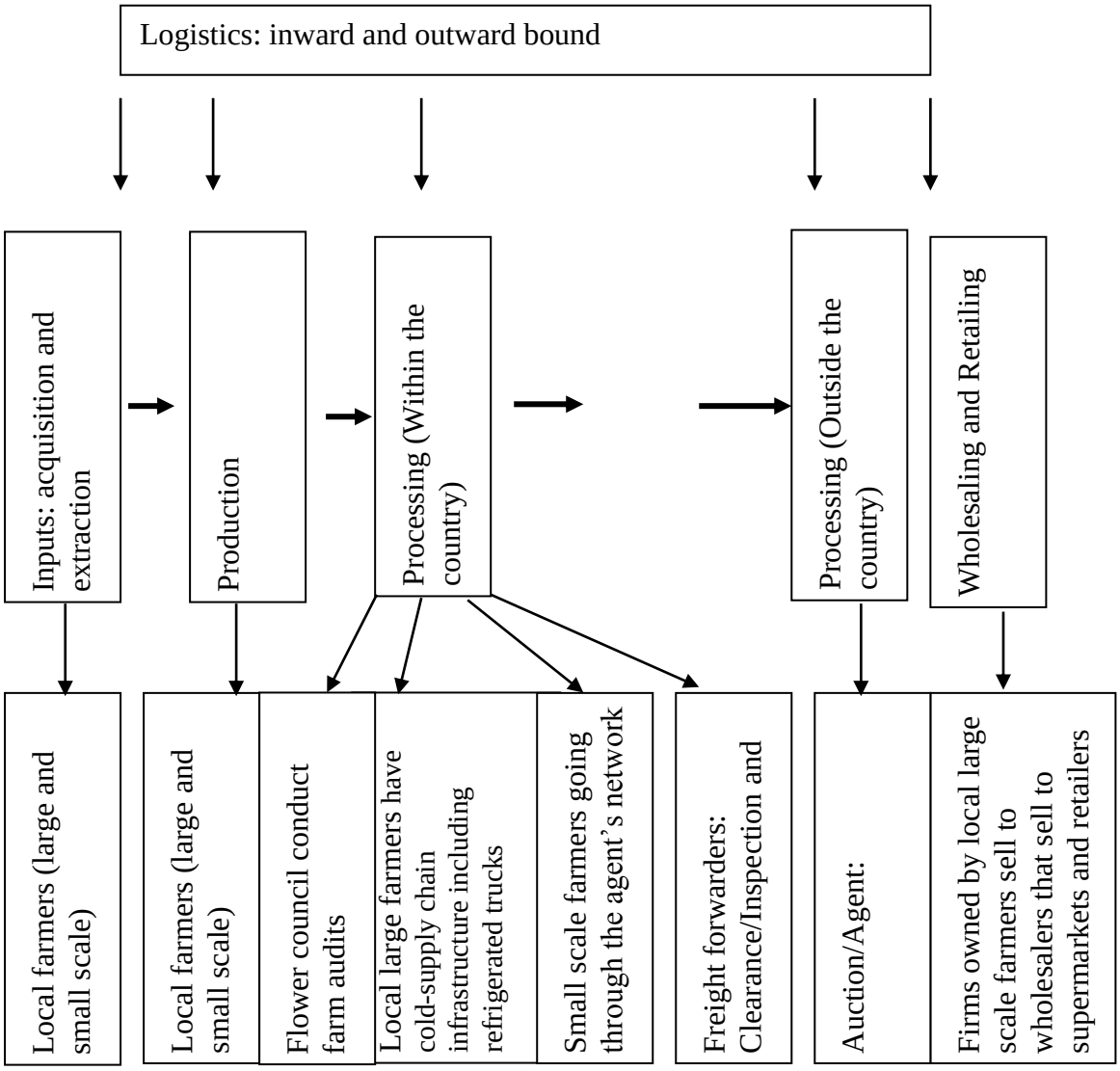
4.6.1 Inputs: acquisition and extraction

The use of fertilizer and pesticides is widespread among the cut-flower farmers. Some inputs used in cut flower sector such as greenhouse materials, chemicals and fertilizer are imported. For seeds, the two large scale farmers that were interviewed indicated that they buy seeds from some large scale farmers who locally breed their own plant stock but there are cases when they import from outside. All the small scale farmers that were sampled indicated that they import their seeds from foreign breeders.

4.6.2 Production

Production of cut flower may be categorized into two types. The first category is large scale production where flowers are grown in greenhouses mainly through irrigation. In this category, there is substantial investment of irrigation systems and imported greenhouse materials as well as widespread use of chemicals and fertilizer. The large scale farmers are also highly specialized in production of specific types of cut flower. The other category of cut flower producers is small holding production which largely use rain water for farming and there also combination of open fields and relatively less sophisticated greenhouses.

Figure 4: Cut Flower Value Chain



Source: Compiled by the author, based on Kaplinsky and Morris (2000) GVC model

4.6.3 Processing (within the country)

Beyond inputs acquisition and production, the cut flower value chain involves processing stage which encompasses all those activities required to get the flowers ready for export. Processing activities covers sorting, cleaning and grading of flowers. This is followed by inspection of the same to ensure that flowers meet the required standards. After inspection of flowers, packaging is done in consultation with the auction buyers or supermarkets. For instance, some buyers opt for packaging that makes the flowers ready for the shelf. The large farmers, particularly those that grow cut-flower and export directly, have invested in pre-cooling and cold storage facilities, making it possible to maintain the high standards of their produce for export as required by the market. These farmers use their own refrigerated trucks

to deliver cut flowers to warehouses that house the cold storage facilities. The delivery to warehouses is usually done four hours prior to freight departure.

From the warehouse the next stage in processing involves airlines bookings and custom clearance, inspection, cargo handling (from warehouses to cargo flights) and freight to destination. These activities are carried out by freight forwarders. Flower producers make advance booking with freight forwarders, detailing destination, weight and number of boxes of flowers and details of consignee.

4.6.4 Processing (outside the country)

On arrival at destination points, the clearing agent, based in importing country, handles the distribution of flowers. The flowers are first inspected by custom and health officials after which they are released to the distribution outlets. The distribution channels are mainly the auction floors, wholesalers, supermarkets and florist shops. Some wholesalers, with produce also bought from auctions, re-export flowers to other parts of Europe US and Japan. The clearing agent handles the charges that covers all costs once the cargo arrives at its destination. Such costs include, clearing costs, airline handling charges, transport from airport to auction, warehousing charges and document and processing fees.

4.7 Distribution of Value Added Within the Cut Flower Value Chain

The vertically integrated network in production, processing and marketing of cut flower, where farmers participates in almost all the stages of the value chain, make it difficult to analyze the distribution of value added among the chain actors. The price of cut flowers normally differs, depending on the type of cut flower and what point in distribution channel the sale is done. For instance, by 2007 a kg of cut flower fetched Ksh209 in Dutch auction in Holland but earned higher in Germany (Ksh 282), France/Belgium (Ksh 303), UK (Ksh 325) and Sweden (Ksh 437) where it is sold in supermarkets or directly to consumers (Hornberger et al, 2007*)*.

On the basis of the interview with by KFC, small scale farmers that sell to other farmers or middlemen are paid an average of Ksh10 per stem and the average price per stem (for cut flowers) in Euros was 0.22 equivalent of KSH 24.2 in 2010. Since the research team did not get consistent data to compute the costs component associated with transportation, cooling, forwarding and freight transport of cut flowers, the figure of Ksh10 may be used as proxy for

all costs incurred per stem at firm level. From informal discussions with farmers, a kg of flowers constitutes 10 stems. This translates to price of Ksh100 per kg of flowers.

Using these estimations, it implies that at least 42 per cent of global price for cut flower is transmitted to production level (farmer's level). Hence, the proportion of value added that accrues to farmers, particularly the medium and large scale farmers, is likely to be more than 42 per cent since they participate in distribution and marketing stages of the cut flower value chain.

4.7.1 Challenges facing value addition in cut flower industry

Despite the good performance of cut flower industry since 1990's, its growth has resulted in new challenges to the sector. The cut flower is a perishable product and therefore the sector is heavily reliant on airlines as a mode of transport. This predisposes the industry to risks associated with performance of airlines. For instance, in 2010 airports in Europe were closed due to the volcanic ash clouds originating from the Icelandic volcano. This brought substantial losses to farmers. The effects of climate change have not been felt significantly by the cut flower industry due to its use of irrigation for farming. However, there have cases when Kenya has experienced excessive spell of dry weather, impacting negatively on cut flower industry as the level of water table get lower, increasing the irrigation costs. Kenya Flower Council also notes that the continued dependence on foreign breeders is not healthy to the industry as the competitiveness of the industry will be dependent of developing specialty product.

4.8 Differences in the value Chains of Coffee and Cut flower Sectors

There exist large differences in coffee and cut flower value chains, in relation to way actors participates in value adding activities and how this influences the distribution of value added among the actors in the sectors. For instance, the largest portion of cut flower processing is done within the country and farmers are involved in almost all stages of the processing. However, farmers in coffee industry are only involved in primary production, fully missing out in the crucial processing of coffee, mainly milling and roasting. Coffee roasting is done in consumer markets outside the country. The structure of the coffee market is such that, beyond milling, it is dominated by a few global corporations in the final processing and retailing.

Another difference is the inability of coffee farmers to sell directly to exporters or buyers at retail level. The Coffee Act (2001) recognizes the auction method as the only legalized mode of selling coffee, which must be done through a marketing agent. This significantly reduces

value addition at farmers' level with millers and marketing agents receiving more than ten times, of value added, what farmers get. Though most of cut flower produce is done through the auction outside the country, cut flower farmers have no restriction on whom to sell to and often sell to wholesalers and supermarkets in consumer countries and in individual retailers within the country. Thus, within the coffee value chain, there is lack of a clear mechanism that can facilitate the flow of information to farmers. There exists no forum for marketing agents to give feedback to small scale farmers regarding quality and auction prices of coffee.

Comparing the two value chains, it is notable that, given supervisory powers vested in Coffee Board of Kenya by the coffee act, coffee sector in Kenya is overly regulated. For instance, Coffee Board of Kenya continues to be the only licensing agent for millers and marketing agents. There exist many players in distribution and marketing of coffee and this possibly explains the long payment cycle for smallholder farmers. Similarly, the regulatory structure provided fertile ground for extracting of rents through taxes and licensing by government as illustrated by statutory charges in form of auction commission fees, CBK levy, county council 'cess' and research deductions. This observation corresponds with findings in World Bank (2005) report. Therefore, excessive regulations in the coffee industry stifled value addition in the sector. Given the scope of the regulatory roles of Horticultural Crops Development Authority (HCDA) and Kenya Plant Health Inspectorate Service (KEPHIS), regulations in cut flower industry are relatively less restrictive.

Despite the existence of two coffee membership associations, they are ineffective as mediums for self-regulation. The study noted that these associations lack clear focus on their mandates and ownership by farmers. The history of regulation in coffee industry and the performance of the sector in Kenya, illustrate that the choice to use statutory agents to regulate growth of the industry has had a negative impact on the sector. This necessitates policy reforms that will address how specific regulation affects distribution of the gains and value created within the value chain. This in contrast to associations in cut flower sector which have played active role in representing the interest of cut flower farmers by lobbying the government on business environment and instituting self-regulation for compliance to standard specifications and conduits of information feedbacks.

4.9 Conclusions and Recommendations

The cut flower industry in Kenya is characterized by a number of features which results in relatively large proportion of value added accruing to farmers. The vertically integrated value

chain make the sector adjusts and responds quickly to changing consumer preferences and international competition. The sector has invested heavily in new technologies (e.g. in greenhouses, machinery, irrigation systems, robust cold storage facilities) which enhances value addition in the sector. The regulatory system plays a facilitative and largely supportive role, with the HCDA playing a very limited interventionist role in the value chain. The associations in cut flower are not only strong lobbies but have developed self-regulating industry 'Codes of Practice' that are benchmarked to international codes. The Fresh Produce Exporters Association and the Kenya Flower Council work closely with government in promoting an enabling environment conducive for development of the sector.

These developments in cut flower sector contrasts sharply with features that characterize coffee value chain. The coffee sector in Kenya is excessively regulated, limiting the role of small scale farmers to production level. Restrictive regulation permits opportunistic behavior by licensed marketing agents and the regulatory authority to maximize rent seeking and inefficient operations by cooperatives. Consequently, value additions along the coffee value chain have been dismally low and skewed against the farmer who gets 7 per cent of the market value, which is hardly a tenth of what accrues at milling and marketing stage in the value chain. In addition, the bulk of value added accrues at roasting stage of the value chain.[25] Further, whereas producer associations in cut flower sector have played a key role in self-regulation, information dissemination and lobbying for better business environment, associations in coffee sector lacks ownership legitimacy among small scale and have been ineffective in addressing the challenges facing the coffee industry.

To improve value addition in coffee sub-sector the study recommends:

(i) New governance structures in cooperatives, millers and coffee board of Kenya

There is need to restructure the cooperatives and coffee marketing institutions. The coffee sector can borrow the vertical coordinated networks model from the cut flower chain where farmers are involved throughout the commodity value chain, from the input stage/distribution systems, to the farm level and then to processing and marketing/distribution systems. This may involve transforming cooperatives to cooperate bodies with ownership remaining with farmers but management hired on performance basis.

[25] The value added at retail end of value chain may be possibly higher but comparison data was not available.

(ii) Regulation reforms to increase private participation

There is still tight regulation of coffee processing and marketing in Kenya as Coffee Board of Kenya continues to be the only licensing agent for millers and marketing agents. The relevance of Coffee Board of Kenya should to be revisited to allow greater dynamic role of private sector in the coffee value chain. Specifically, individual farmers should be allowed to sell directly to consumer markets.

(iii) Networks and alliances formation among coffee farmers

The government should support formation of effective membership organizations that self-regulate the coffee farmers in areas of compliance to standard specifications, environment preservation and integrity with respect to all stakeholders. This helps to have certain levels of productivity, efficient use of inputs, uniform application of labor laws and enhanced quality of coffee.

(iv) Incentives to encourage coffee branding

Coffee branding through the Geographical Indication (GI) for single-origin coffee[26] is relatively new incentive to improve value addition along the supply chain. Coffee branding according to the zones of origin widens the market through segmentation. The farmers could use this incentive and strategically position themselves, through partnership, to reduce price spread between producer and retail level. This may be achieved through joint ventures in investment that allows local roasting and packaging of the product before exportation. Further, the partnership can take the form of contract farming. Contract farming has ancillary benefits in form of credit arrangement for critical inputs and may also embrace insurance schemes. For such developments to be useful to farmers, the government may need to play a role in mediating and establishing the ground rules for these arrangements. The government also should pursue aggressive marketing of Kenyan coffee and offer fiscal incentives to encourage foreign investors to engage in contract partnership with coffee farmers.

[26] Starbucks to Sell Exclusive Rwanda Coffee In Europe,' PLANET ARK, 10 March 2008

References

Adrian W. (1991) "Value Chain: an economists perspective", Paper presented at the Spreading of the Gains Workshop, IDS, University of Sussex, England

Boro M. (2006) "Knowledge, Technology and Growth: The Case Study of Lake Naivasha Cut flower Cluster in Kenya", World Bank Institute, World Bank.

Condliffe K., Kebuchi W., Claire L. and Ruparell R. (2008) Kenya Coffee: A cluster Analyis. Havard Business School

Daly, H. and Cobb J. (1994) For the Common Good, Boston: Beacon Press. 2nd edition,

Dolan, C. and Humphrey, J., (2000) Governance and trade in fresh vegetables: the impact of UK supermarkets on the African horticulture industry, *Journal of Development Studies, Vol. 37 No 2: 147–76*

Eathington L., Swenson D. and Otto D. M, (2000) "Employment Growth in Iowa's Agricultural Commodity Processing Industries", 1992-98, Iowa State University, Department of Economics

EPZA (2005) "Tea and coffee industry in Kenya", Report prepared by PKF Consulting Ltd for Export Processing Zones Authority, Nairobi, Kenya.

Fintrac Inc. (2005) Summary Report, Baseline Survey of Kenyan Smallholder Flower Sector. Nairobi, Kenya

Hasit S. (2007) "Kenyan Horticulture, The challenges 50 years down the line". Paper presented in conference on The IPC – Sustainability & Trade, Nairobi Kenya October, 2007.

Hornberger K., Ndiritu N., Ponce-Brito L.,Tashu M., and Watt T. (2007) Kenya's Cut lower Cluster, Microeconomics of Competitiveness Paper, Harvard University

Humphrey, J. and Schmitz, H., (2001) Governance in global value chains, IDS Bulletin, 32, 3.Sussex, U.K.

Kaplinsky, R. and M. Morris, (2000) A Handbook for Value Chain Research, IDRC, Ottawa, Canada

Kaplinsky R. (2000) Globalisation and Unequalisation: What Can Be Learned from Value chain Analysis? Journal of Development Studies, 37(2), 117-146

Karanja A. M. and Nyoro J. K. (2002) "Coffee Prices and Regulation and Their Impact on Livelihoods of Rural Community in Kenya" Tegemeo Institute of Agricultural Policy and Development, Egerton University

Keane J. (2008) "A 'New' Approach to Global Value Chain Analysis" Working Paper 293 Overseas Development Institute 111 Westminster Bridge Road London SE1 7JD

Kegode P. (2005) 'Economic Governance of Coffee Sector- Focus Central Province' Report Submitted To Center for Governance and Development

Kinoti J. (2005) "Opportunities for Investment in Coffee Sector", Paper presented to USA-Africa Business Summit in Baltimore, Maryland USA, June 2005 by Coffee Board of Kenya

KIPPRA, (2011) Kenya Economic Report 2011: Transforming Institutions for Effective Delivery of Kenya Vision 2030, Nairobi: Kenya Institute for Public Policy Research and Analysis

KIPPRA, (2009) Kenya Economic Report 2009: Building a Globally Competitive Economy, Nairobi: Kenya Institute for Public Policy Research and Analysis

KNBS (2010) Economic Survey, Government Printer, Nairobi. Kenya National Bureau of Statistics

KNBS (2008) Economic Survey, Government Printer, Nairobi: Kenya National Bureau of Statistics

Mather C. (2008) "Value Chains and Tropical Products in a Changing Global Trade Regime, ICTSD Project on Tropical Products", Issue Paper no.13, International Centre for Trade and Sustainable Development, Geneva, Switzerland

Porter M. (2007) "Global Competitiveness: Implications for Kenya", Paper presented at Strathmore Business School, Nairobi, Kenya, 25 June 2007

Wijnands J. and Hack M. (2000) "Dutch flower business: competitiveness and Marketing strategies", Acta Hort. 536 ISHS ed. J.P Ogier Proc. XIVth International Symposium on Horticultural Economics.

World Bank (2010) Kenya Economic Update- Running on one engine Poverty Reduction and Economic Management Unit, Africa Region

World Bank (2006) "Value Chain Analysis of Selected Sectors in Kenya." prepared by Global Development Solutions, Washington, DC.

World Bank (2005) "Kenya: Growth and Competitiveness", Report No. 31387-KE

World Bank (2004) "Opportunities and challenges for developing high-value Agricultural exports in Ethiopia", Poverty Reduction and Economic Management, Country Department for Ethiopia, Africa Region.