July 2020

FEEM
FONDAZIONE ENI ENRICO MATTEI

Report

FEEM Approach to Supply Chain Analysis The coffee sector in Kenya

Lamya Adil Suliman Hussain, FEEM

Federica Inzoli, FEEM

Nicolò Golinucci, FEEM

Nicolò Stevanato, FEEM

Matteo Vincenzo Rocco, Department of Energy, Politecnico di Milano

Emanuela Colombo, Department of Energy, Politecnico di Milano

FEEM Approach to Supply Chain Analysis The coffee sector in Kenya

FEEM
FONDAZIONE ENI
ENRICO MATTEI

Table of contents

Table of tables

Table of figures

Abbreviations

CY – Coffee Year
KPCU – Kenya Planters Cooperative Union
CBK – Coffee Board of Kenya
CRF – Coffee Research Foundation
CBD – Coffee Berry Disease
CLR – Coffee Leaf Rust
BBC – Bacterial Blight of Coffee
CMB – Coffee Marketing Board
NCE – Nairobi Coffee Exchange
KCPTA – Kenya Coffee Producers and Traders Association
KALRO – Kenya Agricultural and Livestock Research Organization
KEPHIS – Kenya Plant Health Inspectorate Services
USDA – United States Department of Agriculture
CRI – Coffee Research Institute
AFA – Agriculture and Food Authority
ICE – International Coffee Exchange
KCTA – Kenya Coffee Traders Association
FOB – value Free on Board value
ComFund – Commodities Fund

01 Introduction

Kenya consists of 580,367 km^2 making it the world's 48th largest country by total area. It is made up of 47 semi-autonomous counties and has a population of more than 47.6 million people. Inland water bodies cover around 10,700 km^2, the bulk of which in Lakes Victoria and Turkana. The climate of Kenya varies from tropical along the coast to arid in the interior. Kenya's weather is generally sunny year-round, with the main rainy seasons being from March to May and from November to December.

The main economic activities in Kenya include agriculture, forestry, tourism, fishing, energy and manufacturing. These sectors contributed to an annual growth in national Gross Domestic Product (GDP) of about 5% between 2014 and 2018. Kenya GDP for 2018 was estimated to be $86 billion, making it the 69th largest economy in the world. The agricultural sector contributed on average to 21.9% of the Kenya's GDP between 2013-2017, with at least 56% of the total labour force employed in agriculture in 2017. Moreover, the agricultural sector contributes to 65% of Kenya's total exports, with tea, cut flowers, refined petroleum, coffee and legumes being the country's top exports. The 2017 exports were led by tea which represent 22.3% of the total exports of Kenya followed by cut flowers 11.2% and coffee accounting for 5.5%. The coffee industry contributes to growth in agriculture through foreign exchange earnings of around KShs 23 billion per year, employment creation, family farm incomes and food security (International Coffee Organization, 2019).

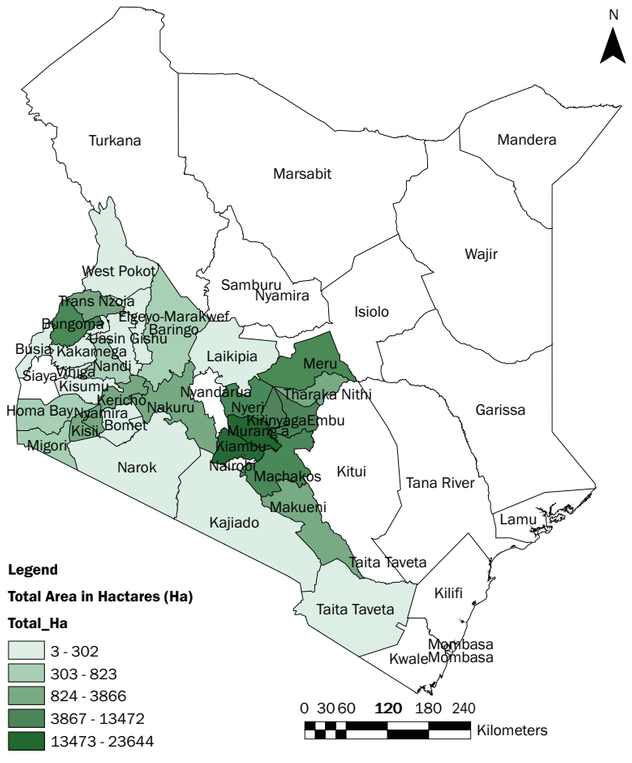
Coffee growing was introduced in Kenya in 1897 by the British. In 1910, the colonists started to plant coffee trees close to Nairobi county, in Kiambu and Thika and soon it became the biggest export crop. From that point, different changes were applied and after about 10 years some of the planters started the Thika Planters Cooperative Union. This was then changed to Kenya Planters Cooperative Union (KPCU) in 1937, to present the interest of small farmers (Muthoni, 2014). In 1932 the Coffee Board of Kenya (CBK) was born and was charged with the responsibility of carrying out regulation and marketing of coffee. In 1944, smallholders were required by law to join local growing cooperatives that were run by the Coffee Board in order to reduce the power of large estates in controlling the Board. In 1934 the coffee auction was established as a mode of selling Kenyan coffee. Furthermore, the colonial government allowed indigenous people to plant coffee under strict regulations, but it didn't work properly so from 1946 they encouraged Kenyans to start planting cash crops. After 1950 the smallholder sector picked up and after a while it dominated the KPCU. They started to build wet mills and in 1978 the smallholder sector surpassed the large estates in terms of production, and still accounts for more than 70% of the total production (Joakim, 2012).

Due to pressure from the World Bank, the Kenyan government took a series of steps to loosen its control over clusters between 1990 and 2001, this included:

i) 1991 - pulling out of cooperative management;
ii) 1995 - ending financial support to cooperatives (Kenya Planters Cooperative Union and the Coffee Research Foundation (CRF));
iii) 1999 - relaxing regulation of upstream processes and allowing growers to choose among pulping factories, millers, and marketing agents;
iv) 2001 - limiting the role of the CBK as a regulator;
v) privatizing the coffee auction and allowing a portion of coffee to bypass the auction and to be sold directly to exporters;
vi) 2006 - increasing the number of marketing licenses issued from three to twenty-five (Muthoni, 2014).

Coffee-growing areas are located within the Western, Rift Valley, Central Kenya and Mt Kenya regions, as shown in figure 1. Kenya grows Arabica coffee that is globally recognized normally blended and upgraded with other relatively inferior brands. Coffee is grown in the high potential areas between 1,400 and 2,200 metres above sea level, with temperature ranging from 15°C to 24°C , in red volcanic soils that are deep and well drained.

Figure 1. Coffee growing counties (Source: International Coffee Organization, 2019)

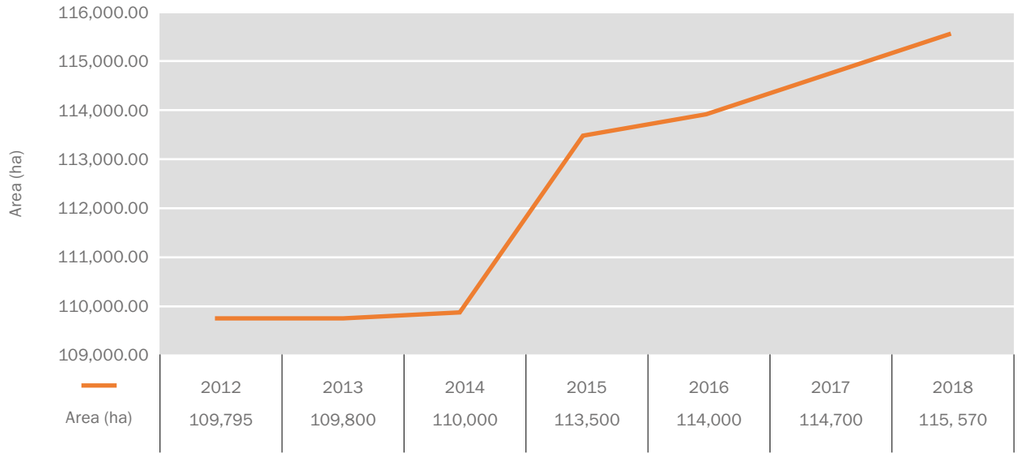


Over 99% of Kenyan coffee is Arabica, whose main varieties are SL 28, SL 34, K7, Ruiru 11, Batian and Blue Mountain.

- K7 is distinguished by its spreading habit on young laterals although older primaries tend to be drooping. It is resistant to some races of coffee leaf rust, has partial resistance to coffee berry disease and is suited for lower altitudes.
- SL 28 is suitable for medium to high altitude coffee growing zones.
- SL 34 is adapted to high altitude areas with good rainfall and produces high yields of fine quality coffee but is susceptible to Coffee Berry Disease (CBD), Coffee Leaf Rust (CLR) and Bacterial Blight of Coffee (BBC).
- Ruiru 11 is suitable for all coffee growing areas and comes into production early. In addition, it is resistant to coffee berry disease and leaf rust and is compact allowing farmers to intensity their production per unit land. Furthermore, it is planted at a density of 2500/3300 trees/ha compared to 1300 trees/ha for the traditional varieties, resulting in a higher production per unit area of land.
- Batian is the latest variety released by the CRF and is also resistant to coffee berry disease and leaf rust. It comes into production in the 2nd year while traditional varieties do so in the 3rd year or after, hence early flow of benefits. In addition, the cherries ripen earlier than SL28 and Ruiru 11. The variety is also high yielding with good bean and cup quality and is suitable for all coffee agro-ecological zones ("A Comprehensive Guide on Coffee Farming in Kenya," 2019).

Kenya's coffee is produced under two systems, comprising smallholder farmers affiliated to co-operative societies and coffee estates, which are individually managed coffee plantations. The total area harvested for coffee has increased by 5% from 2012 to 2018, as can be seen in figure 2. Moreover, a total of 115,570 ha of land was dedicated in 2018 to coffee production in 33 counties distributed as follows: smallholders 90,415 ha and estates 25,155 ha (International Coffee Organization, 2019).

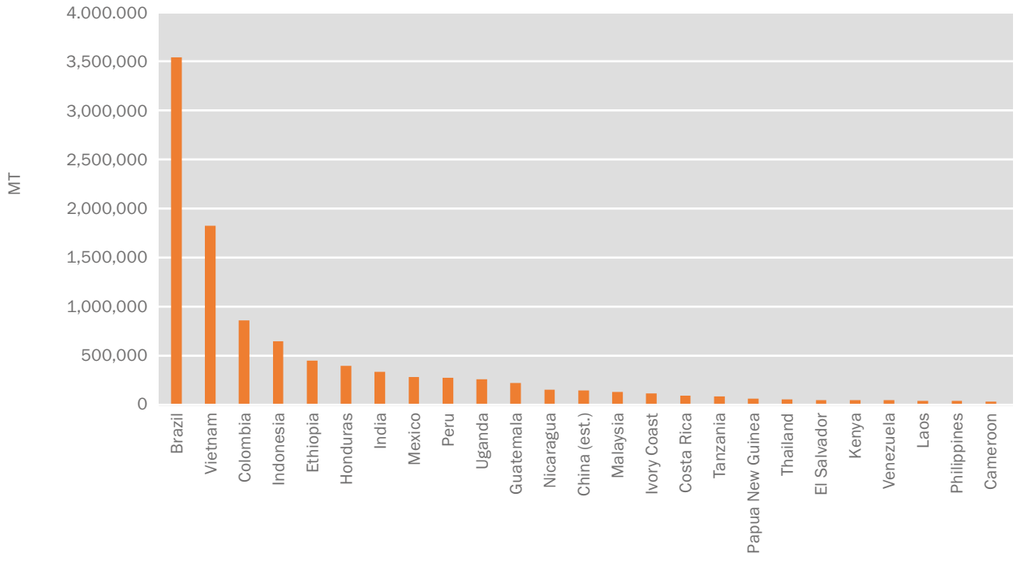
Figure 2. Coffee annual harvest area (Source: FAO, 2020)



In addition, the coffee industry is estimated to employ 30% (5 million people) of the agricultural sector labour force. Kenya also has a cooperative system for coffee milling as well as marketing, and auctions are held each Tuesday during the harvest season at the Nairobi Coffee Exchange. Land ownership is culturally dominated by men. However, women provide over 60% of the workforce in farms and coffee wet mills (International Coffee Organization, 2019).

Worldwide coffee is the second most traded commodity on the planet with more than 9 billion kg being produced annually. Figure 3 shows the top 25 ranked coffee producing countries in 2020. Brazil ranked 1st producing 3,558,000 MT and accounting for one third of the coffee world, followed by Vietnam producing 1,830,000 MT and accounting for 17% of the world coffee; then in 3rd place Colombia which produces 858,000 MT and accounts for 8% of the world production, while Kenya ranks 21st and accounts for 0.4% of the world coffee production (Milton, 2020).

Figure 3. Top 25 coffee producing countries in 2020 (Source: Milton, 2020)



02 Methodology

The aim of this study is to identify the bottlenecks of the Kenyan coffee value chain in order to allocate the most relevant inefficiencies of each step and try to find different and innovative solutions to overlap the difficulties that Kenyan coffee is facing. A literature study was conducted during the preparatory stage, in order to obtain a comprehensive understanding of the coffee value chain. This activity was followed by a field visit to coffee farms in Kenya, between August and September 2019. During this period a number of members in the coffee value chain were interviewed including farmers, wet/dry millers, millers, Coffee Research Institute, Coffee Directorate, Commodities Fund and the representative of these institutions for each coffee grower county.

03 Coffee Value Chain Analysis

3.1 Policies, Regulations and Core Processes

In 1971, Act 13 abolished the Coffee Marketing Board (CMB) and consolidated its function of coffee marketing with the regulatory functions of Coffee Board of Kenya (CBK).

In 2001, the coffee Act cap 333 was repeated and the coffee Act No. 9 of 2001 was enacted, establishing the Coffee Board as a statutory body under the Ministry of Agriculture, solely to regulate the coffee industry. The object and purpose of the board was to promote competition in the coffee industry, production, processing and value addition including branding of Kenya coffee locally and internationally, and generally to regulate the coffee industry in the public interest.

a) formulating policies and rules to regulate and develop the coffee industry in the consultation with the Ministry of Agriculture;
b) carrying out registration and licensing for coffee nurseries, growers, pulping stations, millers, roasters, packers, warehouse men, marketing agents, management agents, buyers and auctioneers to ensure adherence to standards;
c) providing advisory services related to coffee production and quality enhancement;
d) collecting, collating, analysing data, maintaining a database of the coffee industry and documenting and monitoring it through registration of persons dealing with coffee;
e) advising and guiding the Coffee Research Foundation regarding the carrying out of research in all matters related to the coffee industry;
f) representing the government abroad with regards to coffee matters;
g) arbitrating in case of disputes in the coffee industry;
h) carrying out other functions aimed at promoting the industry (Wikiprocedure, 2019).

In 2002, the coffee (General) rules gave an association the mandate to manage the Nairobi Coffee Exchange (NCE). Furthermore, in 2006, section 62 of the rules was further amended to specify Kenya Coffee Producers and Traders Association (KCPTA) as managers of the NCE, until July 2013. In 2012, through legal notice 111 section 44 of the coffee Act 2001 the NCE trading rules were established and stipulate the following functions for the NCE:

- managing all the operations of the exchange including the trading floor and the sample room;
- formulating policies, conditions of sale and setting regulations and any other instruments or regulations necessary for the operations of the exchange in consultation with stakeholders in the coffee industry and with the approval of the board;
- promoting and participating in matters that are related to or that affect trading at the exchange;
- promoting efficient, innovative and transparent marketing arrangements at the exchange, including coffee auctions and commodity exchange;
- complying with rules and directives made or provided by the board pursuant to section 44 (2) (d) of the Act;
- determining coffee volumes for auctions and price discovery mechanisms in accordance with the Act;
- providing the necessary facilities for operation, management and administration of the exchange;
- performing all acts necessary for the proper performance and operations of the exchange (Nairobi Coffee Exchange, 2014).

The crops (coffee general) regulations 2019 concerns various matters related to the production, processing, and trading of coffee. The purpose of these regulations is:

a) to give effect to section 40 of the crops Act 2013,
b) to provide for licences to be issued by the licensing authorities,
c) to provide obligations for the licence holders and service providers,
d) to recognize coffee grower as the owner of coffee until the coffee is sold and paid for,
e) to protect growers' rights along the value chain,
f) to provide for transparent and timely clearing and settlement of coffee sales proceeds to growers and service providers,
g) to provide for collection and maintenance of coffee related data,
h) to ensure better coffee standards, increased production, and support,
i) to regulate the coffee industry.

The regulations require every coffee grower to register with the county governments and the authority for purpose of data collection. Furthermore, county governments issue certifications and licences for various activities in the coffee industry, including operation of a coffee nursery. The Authority shall promote coffee certification schemes for Kenyan coffee and geographical indications. The Kenya Agricultural and Livestock Research Organization (KALRO) or its authorized agents who operate in coffee seed production units under their supervision, will issue certified coffee seeds or seedlings for multiplication in any coffee nursery for distribution to any other grower or for export. Moreover, in order to establish or operate a coffee nursery, the owner must obtain a license from the county government (FAO, 2019).

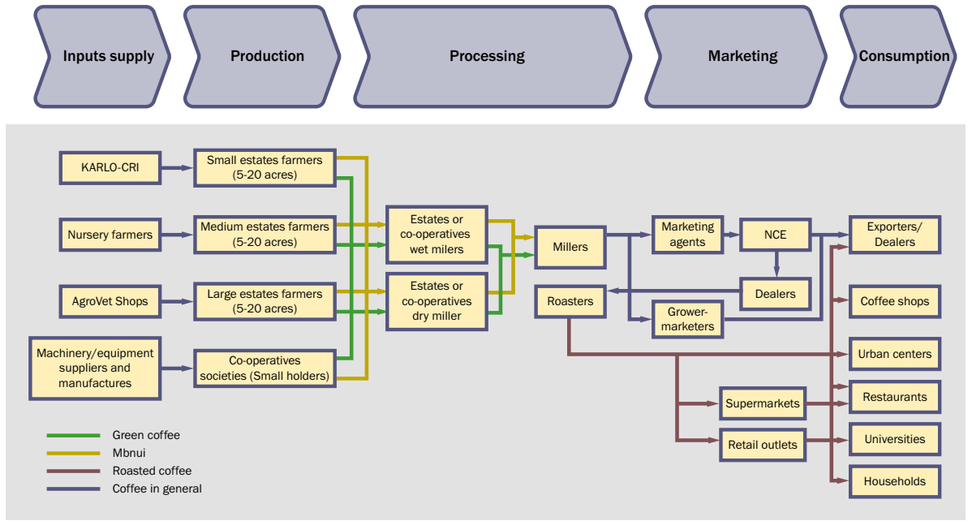
Export regulation

Coffee exports are regulated by the Coffee General Regulations 2002 and the Kenya Coffee Trading Rules 2012. Dealers/exporters must obtain annually a license from the Coffee Directorate to be eligible to export Kenyan coffee. In addition, a phytosanitary certification must be obtained by exporters from the Kenya Plant Health Inspectorate Services (KEPHIS) and Certificates of Origin from the Coffee Directorate. Exporters must also submit samples for quality checks to the Central Sample Room, that is managed by the NCE and the coffee directorate and approval of consignments is made by the directorate. Dealers are expected to file returns of all coffee exports to the coffee directorate, for monitoring and data collection purposes. Green coffee beans are not subject to export duty or tax as they are considered to be a raw material. However, roasted coffee exports are subject to a 16% Value Added Tax on the value added to the coffee exported (International Coffee Organization, 2019).

Core processes and actors

Kenya's coffee value chain can be divided into 5 main steps, namely: inputs supply, production, processing, marketing and consumption. The main actors involved in each process are shown in figure 4, were arrows are used to indicate how inputs and products flow along the value chain. The roles of these actors will be described in the following sections.

Figure 4. Kenyan coffee core process and main actors



3.2 Farming

3.2.1 Current and forecast scenario and seasonality analysis

Kenya has a dual production system that consists of approximately 3,000 coffee estates and around 800,000 smallholder growers clustered under 500 co-operative societies.

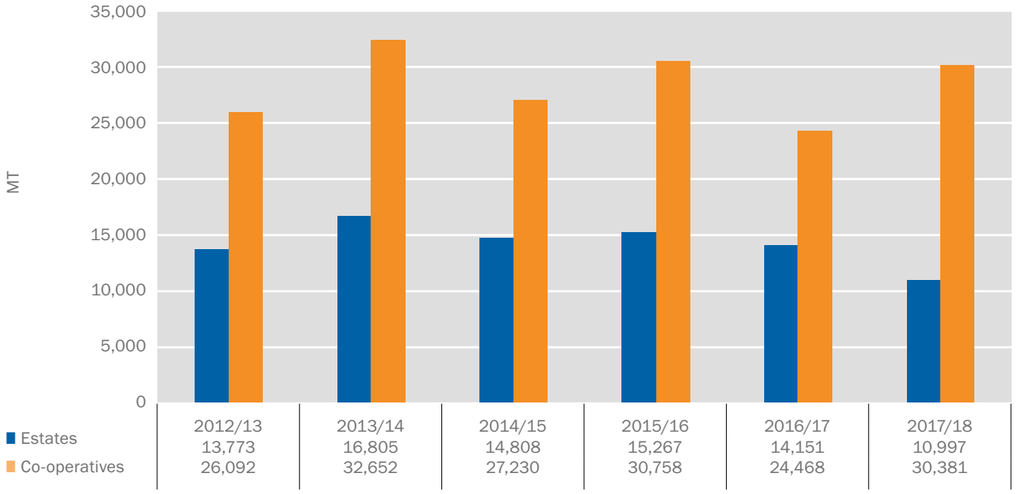
Table 1. Distribution of coffee holdings (Source: International Coffee Organization, 2019)

Sector	Size of acreage	Number of farmers
Small holder affiliated	Varies	800,000
Small estates	5-20 acres	2,400
Medium estates	20-50 acres	500
Large estates	Over 50 acres	100

Smallholder famers account for 75% of the coffee planted land but only slightly over half of the production. On the other hand, estates have a much higher yield due to the intensive use of fertilizers, pesticides, herbicides, fungicides and irrigation. Insufficient use of fertilization and spraying, mainly due to high costs contribute to poor yields in small holder production. For the year 2017/2018 Kenya's national productivity was 0.34 tons/ha for society and 0.44 tons/ha for estates, which is lower than Uganda's 0.6 tons/ha for smallholders. Studies in Brazil and Columbia demonstrated that Robusta coffee yields are almost one-third more per hectare than Arabica, and thus could be an explanation of Uganda's ability to increase its production at a higher rate than Kenya. The International Coffee Organization attributes the 40% increase in Robusta production in the past decade to the effects of global warming that made this variety more suitable to thrive but is adverse for Arabica (Agriculture and Food Authority, 2018).

According to the Agriculture livestock, Fisheries and Cooperative Cabinet Secretary, Peter Munya, Kenya experienced a steady decline in the coffee production from 130,000 MT of clean coffee in the 1980s to an average of 40,000 MT annually coupled with low productivity of 2 kg/tree per year against an annual potential of 35 kg/tree (Ndirangu, 2020). The trend of coffee production has oscillated between 40,000 to 50,000 MT from 2012 to 2018. Coffee production dropped by -16% in 2017 from 2016 and in 2018 the production increased by 7% from 2017. In 2018/2019 Kenya produced around 55,800,000 kg of coffee.

Figure 5. Estates and co-operatives coffee production (MT) (Source: International Coffee Organization, 2019)



The Kenyan government through the Big 4 Agenda plans to increase the coffee production from 40,000 MT of clean coffee in 2016/2017 to 100,000 MT clean coffee in 2022 through productivity improvements. According to the coffee yearbook 2017/2018, the coffee directorate projects an annual increase in production as shown in table 2 assuming the prevailing production factors are held constant (Agriculture and Food Authority, 2018).

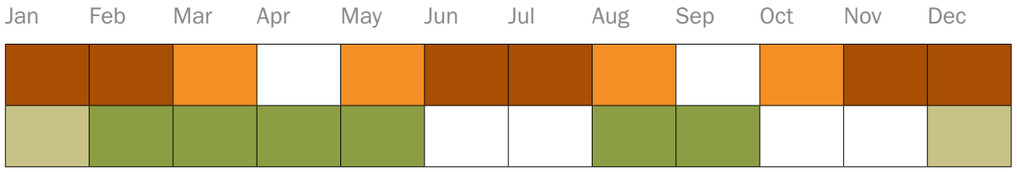
Table 2. Production projections (Source: Agriculture and Food Authority, 2018)

Coffee Year (CY)	Projected Production (MT)
2020/21	51,000
2021/22	55,000
2022/23	58,000
2023/24	63,000
2024/25	67,000
2025/26	72,000
2026/27	77,000
2027/28	82,000
2028/29	88,000
2029/30	95,000
2030/31	101,000

On the other hand, the US Foreign Agricultural Service/Nairobi stated the coffee production in Kenya is expected to significantly drop to 650,000 bags in the marketing year 2019/2020, representing a 13% drop from the 750,000 bags in 2018/19 and the lowest figures for Kenya since 1962-1963 according to United Sates Department of Agriculture (USDA) production data. This is mainly due to drought, low prices and persistent shift of coffee producers to less risky enterprises (Townsend, 2020).

Figure 6 shows the coffee harvest and shipping seasons in Kenya. Rainfall is distributed in a bimodal pattern in central Kenya, which results in two distinct flowerings each year, shortly after the beginning of the long rains in March/ April and October. In western Kenya, rainfall is more evenly distributed, resulting in five different Arabica coffees that compete with Jamaica blues. The main crop ripens from October to December, with the short rains crop harvest beginning in May (Monroy L., Mulinge W., 2013).

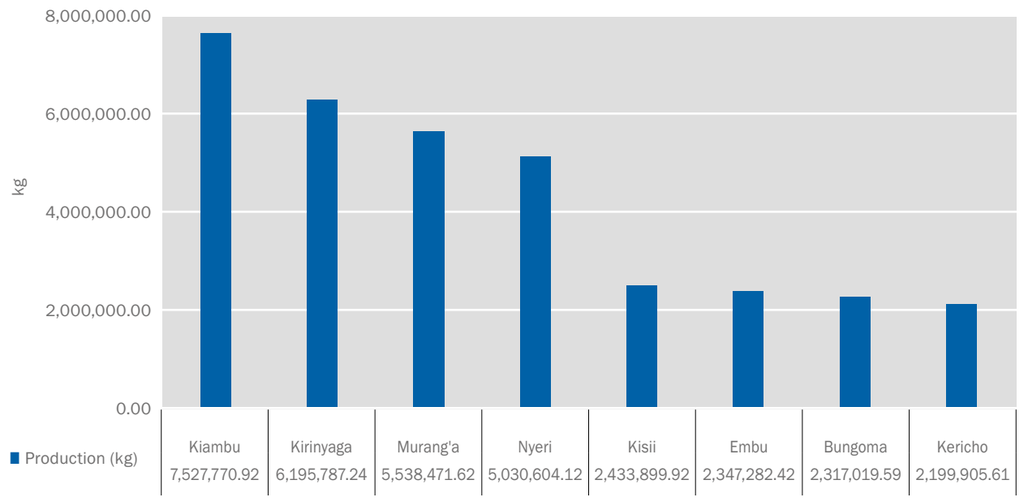
Figure 6. Coffee harvest and shipping seasons (Source: Baskerville, 2012)



3.2.2 Description of the farming process

Figure 7 shows the top 8 producing counties in Kenya for the coffee year (CY) 2017/2018. Kiambu was the highest producing county accounting for 18% of Kenya's total production, followed by Kirinyaga with 15%, Murang'a 13% and Nyeri 12% of the total production. Annex 6.1 shows the productivity rate of some counties in Kenya.

Figure 7. Top 8 producing counties (Source: Agriculture and Food Authority, 2018)



Farmers grow coffee seedlings in nursey bags for 6 to 7 months in which they reach a height of 20 to 25 cm, after that they are transplanted in the main filed. Seeds are planted at a distance of 3-5 cm in rows that are 15-20 cm parts. A coffee orchard is expected to produce coffee beans up to 60 years from its establishment.

Land preparation

The land is prepared in advance by digging out all tree stumps, roots, bushes and grasses, then giving 4 or 5 ploughing and harrowing to bring the soil to a fine tilth stage. Land cleared of trees within 6 months should not be used for coffee planting because of the risk of Armillaria, a fungal disease that causes root rot. Soil testing should be done to measure the soil fertility and its suitability. Then, based on soil test reports, the required nutrients should be added to the soil before planting the seedlings. Fertilizers such as phosphorus and lime should be added thoroughly in the soil by ploughing and disking the soil a few months before transplanting the coffee seedlings in the field. Table 3 shows the soil nutrition schedule, redacted by the Coffee Research Institute (CRI).

Table 3. Soil nutrition schedule (Source: Coffee Research Institute)

	Central Province (Nakuru, Nyeri, Bomet, Kericho, Baringo, Laikipia)	East of Rift (Meru, Kiambu, Muranga, Machakos, Makueni)	West of Rift (Uasin Gichu, Bungoma, Kisii, Trans Nzonia, Nandi)
January	Zinc Oxid or zinc sulphate and solubor Application @40-60g/20 L of water	Urea*** foliar application 1st round @200g/20 L of water	Zinc Oxid or Zinc Sulphate and Solubor application @60g/20L of water
	Liming* based on soil analysis	Epson Salt 1st round 100g/20 L of water	
February	Foliar** application high in Nitrogen and Potassium	Urea foliar application 2nd round 200g/20L of water	Liming based on soil analysis
March	Manure application 1-2 debes/tree every 2 y	Manure application 1-2 debes/tree	Manure application 1-2 debes/tree every 2 y
April	Nitrogen fertilizer: CAN or ASN @150g/tree	Compound fertilizer: NPK Fertilizer @250g/tree	Nitrogen fertilizer: CAN or ASN @150g/tree
May	Nitrogen fertilizer: CAN or ASN @150g/tree	Nothing	Nitrogen fertilizer: CAN or ASN @150g/tree
June	Foliar spray high in Nitrogen and Potassium	Nothing	Nitrogen fertilizer: CAN or ASN @150g/tree
July	Zinc Oxid or zinc sulphate and solubor Application 40-60g per 20 L of water	Zinc sulphate and solubor application @60g/20L f water	Urea foliar application:1st round at 200g/20L of water
	Urea Foilar application:1st round @200g/20 L (kg/ha)	Liming based on soil analysis	Epson Salt:1st round@100g/20L of water
	Epsom Salt:1st round @100g/20 L of water (around 2.5kg/ha)		
August	Urea foliar application:2nd round at 200g/20L of water	Manure application @1-2 debes/tree	Urea foliar application:2nd round @200g/20L of water
	Epsom salt: 2nd round@100g/20L of water		Epsom Salt:2nd round @100g/20L of water
September	Manure application @1-2 debes/tree	Manure application @1-2 debes/tree	Compound fertilizer: NPK Fertilizer @250g/tree
October	Compound fertilizer: NPK Fertilizer @250g/tree	Nitrogen fertilizer: CAN or ASN @300g/tree in two splits at an interval of 4 weeks	Nothing
November	Compound fertilizer: NPK Fertilizer @250g/tree	Nitrogen fertilizer: CAN or ASN @300g/tree in two splits at an interval of 4 weeks	Nothing
December	Nothing	Nothing	Soil and leaf analysis every 2 years

Planting

Before planting of seedlings, a layout should be made for the planting holes depending on the variety of seeds. Table 4 shows the planting holes spacing and population density for different varieties of coffee.

Table 4. Planting holes spacing and population density by coffee variety

Variety	Planting holes spacing	Population density
Batian	2.1 x 2.5 m (7 x 8ft)	1,905 trees/ha
Ruiru 11	2 x 2 m (6.6 x 6.6ft)	2,500 trees/ha
SL 34	2.74 x 2.74 m (9 x 9 ft)	1,330 trees/ha
SL 28	2.74 x 2.74 m (9 x 9 ft)	1,330 trees/ha
K7	2.74 x 2.74 m (9 x 9 ft)	1,330 trees/ha

Furthermore, planting holes should measure 60cm x 60cm x 60cm (2ft × 2ft × 2ft) and are dug during the dry season, at least three months before planting/onset of rains. Then, 1 month before planting, holes should be filled with the top soil mixed with a minimum of 1 "debe" (20 litre bucket) of well decomposed manure or well-rotten coffee pulp. In addition, 100g TSP or 200g SSP is added if the soil pH is below 4.4 and 100g of lime is added to the mixture, otherwise added as per soil test results.

Farmers obtain their coffee seedlings from KALRO - CRI or any licensed coffee nursery and purchase fertilizers and chemicals from AgroVet shops. Coffee planting is usually done during the rainy seasons, in the months of April and October. Young coffee plants need mulching in order to conserve moisture, suppress weeds and moderate soil temperatures. Mulch should be applied around the stem, while ensuring that it does not come in contact with it to avoid incidences of insect pest attack.

During dry spells seedlings should be watered at least two times a week until they are well established. Hand weeding is performed around the young trees, using implements like the half-moon jembe to weed in between the rows. If there are stubborn weeds like couch grass, seedlings are covered (with a bucket or bag) before weeds are sprayed with a suitable herbicide.

Harvesting and sorting

Traditionally coffee is harvested by hand, either by:

- strip picking - in which trees are harvested entirely at one time "stripping" all the beans off the branches, ripe as well as unripe cherries;
- selective picking – in which only well-ripened coffee berries/beans are picked and is the main harvesting method used.

Growers and pickers use their best judgement to select the highest quality coffee cherries. Once the coffee is harvested, they separate the good cherries from the bad cherries to ensure that only the best red ripe cherries are processed.

The participation of farmers in the processing of coffee cherries only involves initial removal of the fruit covering the seeds. Some amount of coffee cherry dry on the farms land after spontaneously falling from the trees, and farmers usually pack it at the farm and deliver it to the factory to be transported to the millers, this kind of already dried cherry is referred to by the name Mbuni.

Delivery

Smallholder farmers harvest and deliver cherries with a lorry or truck to their respective collection centres or mills for primary processing. Usually, the farmers would have to empty their bags at the point of delivery to sort

out unripe, overripe and CBD infected cherries. Then, a supervisor inspects the cherries, after which they are weighed, and the farmer is provided with a small up-front payment and a receipt for the amount collected.

3.2.3 Farmers payment rates and costs

Upon sale of the coffee, growers get paid directly, if they are estate farmers, or through cooperative societies. The timeframe until farmers are paid is largely dependent on the efficiency of the marketing agents and availability of buyers. Cooperative societies are required to pay at least 80% of sales proceeds to farmers. Table 5 shows the highest and lowest payment rates for cherries per kg by county and region. For 2017/2018 the highest payment rate was 105 KShs/kg at Nyeri and the lowest was 9 KShs/kg at Machakos.

Table 5. Cherry payment rates per kg by region and county (Source: International Coffee Organization, 2019)

	2015/2016		2016/2017		2017/2018	
Region/County	**Highest rate-KES**	**Lowest rate-KES**	**Highest rate-KES**	**Lowest rate-KES**	**Highest rate-KES**	**Lowest rate-KES**
CENTRAL/MT KENYA WEST	84.6	10.2	119.1	20	105	12.75
KIAMBU	65	25	75.76	25.8	93.43	30
KIRINYAGA	78.7	30.7	119.1	47.72	103	30.95
MURANGA	70.75	10.2	90.1	20	88.1	18.1
NYERI	84.6	20	105	29	105	12.75
MT KENYA EAST	74	14.2	104.88	12	97.45	9
EMBU	74.2	14.2	104.88	26.87	97.45	17.4
MACHAKOS	74	15	75	12	51	9
MAKUENI	56	15	56.5	44.63	34.83	17
MERU	53.23	18	62.05	28	76.4	18.5
TAITA	25	25				
THARAKA NITHI	63	35	73	29.5	72	14.04
NORTH RIFT	78	14	66.41	24.2	92.67	28
ELGEYO MARAKWET	44.2	44	44.36	34.62	50	29
NANDI	53	14	53.3	37.5	72	28
TRANS NZOIA	78.2	24	66.41	24.2	92.67	24
UASIN GISHU	27	27	28.13	28.13	34	34
WEST POKOT	48	34	48	37.83	48	37.5
NYANZA	50	10.7	55	17.19	55	9.55
HOMA BAY	50	25	50	30	40	25
KISII	37.75	10.7	54.42	17.19	48.55	9.55
KISUMU	13.5	13.5	55	55	55	55
MIGORI	45	33	54.3	41.5	53	33.8
NYAMIRA	35	15	52.4	29.22	44	12.38
SOUTH RIFT	55.92	14	81	25	78.9	17
BARINGO	43	28.5	64.15	38	45.2	35.54
BOMET	37	14	70.7	25		
KERICHO	54.43	31.7	81	31.57	78.9	17
LAIKIPIA	30	30				
NAKURU	55.92	29.11	70	44.22	59.4	41
NAROK	23	23				
WESTERN	55.7	14	71.31	27.5	77.5	31
BUNGOMA	55.7	14	71.31	27.5	77.5	31
KAKAMEGA	30	30	48	48		

Production costs for coffee vary with levels of productivity and between the varieties under establishment. Table 6 shows the average cost of production and revenues per year between 2013 - 2018.

Table 6. Average costs of production (Source: International Coffee Organization, 2019)

Production level	Low Mgt	Medium Mgt	High Mgt	SI Variety	SI Variety	Ruiru 11/Batian
Yield (tonne of clean coffee /ha)	0.27	0.4	0.81	0.95	2	3.57
Production/tree (kg of cherry)	1.42	2.11	4.26	5	10.53	10
Average price (USD/50 kg cc)	235.48	235.48	235.48	235.48	235.48	235.48
Gross revenue (Ksh/hectare)	128,708	194,030	389,995	459,671	967,729	1,727,396
Gross revenue (Ksh/tonne)	483,864	483,864	483,864	483,864	483,864	483,864
Cost of production/ha	98,367	148,853	258,741	271,678	136,735	106,931
Cost of production/tonne	369,801	371,204	321,018	285,977	68,368	29,953
Net Revenue per Tonne (Ksh)	17,291	15,887	66,073	101,115	318,724	357,139
Production per tree in kgs of cherry	1.4	2.1	4.3	5	10.5	10
Cost per kg of cherry	52.83	53.03	45.86	50.16	40.85	9.77
Average price per kg of cherry	69.12	69.12	69.12	69.12	69.12	69.12
Loss/profit per kg of cherry	16.29	16.09	23.26	18.96	28.27	59.35

Figures 8 and 9 show the production costs for different farming scales of estates and smallholder farmers, based on a study conducted in 2018, with 540 coffee growers in 20 counties (Coffee Management Services, 2018). For both estates and smallholder farmers the production costs included labour costs for pruning, weed control and picking as the main cost components. Furthermore, estates had additional costs of administration and processing which formed a part of their major costs but not found in smallholder farmers. For smallholders cost factors included labour, input costs and coffee varieties, with the bulk of the costs attributed to picking.

Figure 8. Estate farmers production cost per kg (Source: Coffee Management Services, 2018)

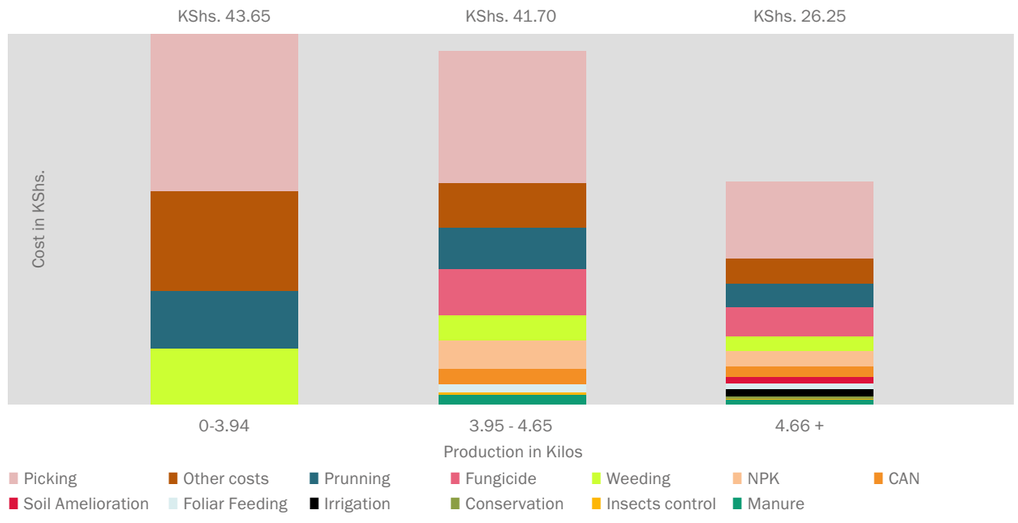
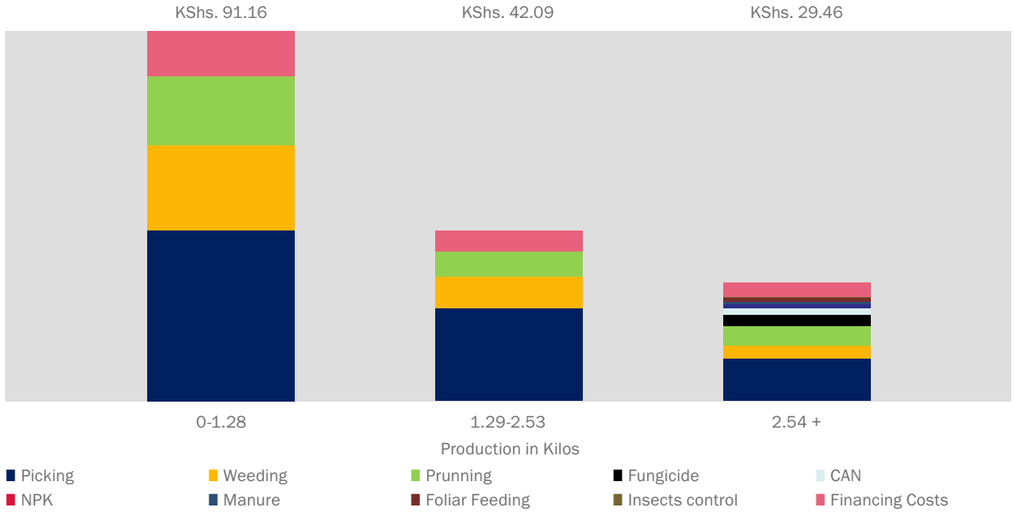
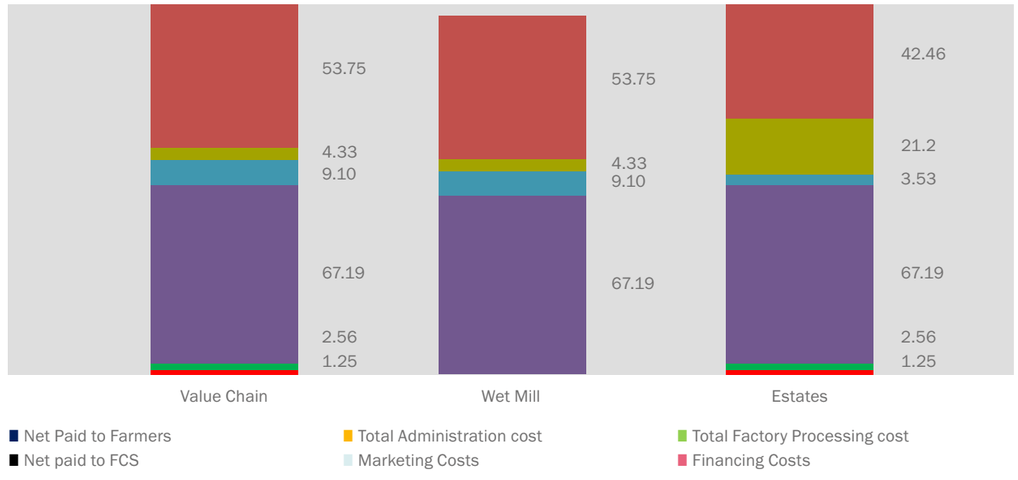


Figure 9.. Smallholder farmers production cost per tree (Source: Coffee Management Services, 2018)



For revenue calculation the study considered the average ex-auction rate to be 71 KShs/kg of cherry for the CY 2016/2017. Considering that all smallholder farmers aggregate their coffee at the wet mill the smallholder revenue was looked at from two perspectives: value chain and society level. From the value chain perspective, the marketing revenue which included milling component was only 3.86 KShs, leaving a total of 67.19 KShs that was transferred to the society level. The farmer received. 53.75 KShs and 13.43 KShs was retained at the society/wet mill level. On the other hand, from the society perspective, the society received 67.19 KShs that is shared between administration 4.33 KShs and factory expenses 9.10 KShs and the remaining 53.75 KShs is distributed to farmers. Moreover, for estates they must pay the marketing and milling costs after the amount is distributed throughout the value chain with estate farmers being left with 42.46 KShs after taking care of processing and administrative costs which includes cost of security and financing. Furthermore, the study indicated that although the processing costs are lower for estates their administration costs offset the gain thus, they earn less per kilo of cherry compared to smallholder farmers. However, due to their large volumes, the individual farmer can obtain a higher income.

Figure 10. Revenue distribution in Kenya Shillings per kg of cherry (Source: Coffee Management Services, 2018)



3.3 Processing

3.3.1 Current scenario

In Kenya 90% of the Kenyan coffee is wet processed at washing stations that are owned by co-operative societies and estate farmers, while the remaining 10% of coffee is dry processed into mbuni (dried coffee that has not undergone pulping). A wet mill is also called a factory in Kenya and is the primary processing of coffee that results in the production of parchments. According to a study conducted by the International Coffee Organisation in 2019, there are 1,001 co-operatives pulping stations and 3,000 estates pulping stations registered by the Agriculture and Food Authority (AFA) Coffee Directorate (International Coffee Organization, 2019). The Coffee Board of Kenya estimated in 2010 that co-operatives owned around 900 wet mills each with capacity of half a ton/hour and estates own around 3,300 wet mills of a capacity of half a ton/hour and the 3,300 small estates own at least one wet mill in each estate with a capacity of 1 ton/hour. Moreover, each of the 100 large estates contain a wet mill/s of around 3 tons/hour, thus the combined capacity of Kenya is around 8,553,600 tons/year. However, in 2017/2018 Kenya's total coffee exports was 43,289.6 tons, indicating that there is over capacity at the primary coffee processing level with a utilization of less than 1%.

Annex 6.2 shows the parchment and mbuni production by county for the CY 2017/2018. Kiambu was the biggest producer for parchment, producing 20% of Kenya's coffee parchments, followed by Kirinyaga with 15%, Murang'a 13% and Nyeri 11%. As for mbuni, Nyeri was the largest producer with 18% of Kenya's production, followed by Kisii and Murang'a with 15% and Kirinyaga with 14%. Table 7 shows the clean coffee production by county and sector for the CY 2017/2018 with a total of 41,375 MT (consisting of 47,667,704.22 kg of parchments and 9,612,475.65 kg of mbuni) compared to 38,620 MT in 2016/2017 (consisting of 46,174,074.55 kg of parchment and 7,957,665.95 kg of mbuni), thus increasing by 7%. For estates Kimabu was the largest producer of clean coffee producing 57%

of the total production of estates, followed by Murang'a with 8% and Nyeri 5%. As for societies, Kirinyaga produced 19% of the total production of societies, followed by Murang'a and Neyri with 15%.

Table 7. Clean coffee production by county and sector 2017/2018 (Source: Agriculture and Food Authority, 2018)

County	Area (ha)	Production-Estate	Production-Society
KIAMBU	23,147	6,317,343.37	1,210,427.55
KIRINYAGA	9,978	462,200.89	5,733,586.35
MURANG'A	14,017	905,233.71	4,633,237.91
NYERI	13,490	600,015.17	4,430,588.95
KISII	4,563	310,689.66	2,123,210.26
EMBU	6,855	106,200.16	2,241,082.26
BUNGOMA	5,452	54,713.24	2,262,306.35
KERICHO	4,318	278,101.00	1,921,804.61
MERU	8,582	166,142.20	1,560,909.40
NYAMIRA	2,501	392,545.91	1,190,872.06
MACHAKOS	7,607	330,087.68	1,057,788.21
THARAKA NITHI	3,667	61,962.83	772,931.24
NANDI	1,839	90,525.89	598,214.77
TRANS NZOIA	2,445	458,701.70	199,605.91
NAKURU	1,953	286,844.43	66,210.16
MIGORI	759	604.44	104,835.15
NAIROBI	135	99,172.00	0
MAKUENI	1,772	8,345.41	80,631.88
BARINGO	1,026	12,805.00	52,411.21
ELGEYO MARAKWET	148	6,616.00	39,130.00
HOMA BAY	422		37,815.00
KISUMU	24	20,801.00	5,519.00
KAKAMEGA	312	6,168.53	19,418.73
WEST POKOT	89		25,472.00
UASIN GISHU	153	17,487.14	1,098.35
LAIKIPIA	46		6,916.59
BOMET	193	353.61	3,904.46
VIHIGA	9		1,373.00
NAROK	29		47.48
Total	**115,531.00**	**10,993,660.97**	**30,381,348.84**

The milling process is performed for both parchment and mbuni. Currently in Kenya the secondary processing capacity is more than required and mills like Kirinyaga County Farmers Co-operative Union have stayed dormant for nearly six years. On the other hand, Robusta coffee market share is largely ignored in Kenya due to lack of lots to mill. According to Kenya's coffee directorate, in 2018 20% of the coffee mills were operating at their lowest level (Agriculture and Food Authority, 2018). Moreover, the International Coffee Organisation study in 2019, indicated that there are 17 coffee mills registered by the Agriculture and Food Authority (AFA)-Coffee Directorate (International Coffee Organization, 2019).

3.3.2 Description of the processing

Figure 11 shows the two primary processing methods used in Kenya, which are described below.

Wet Milling

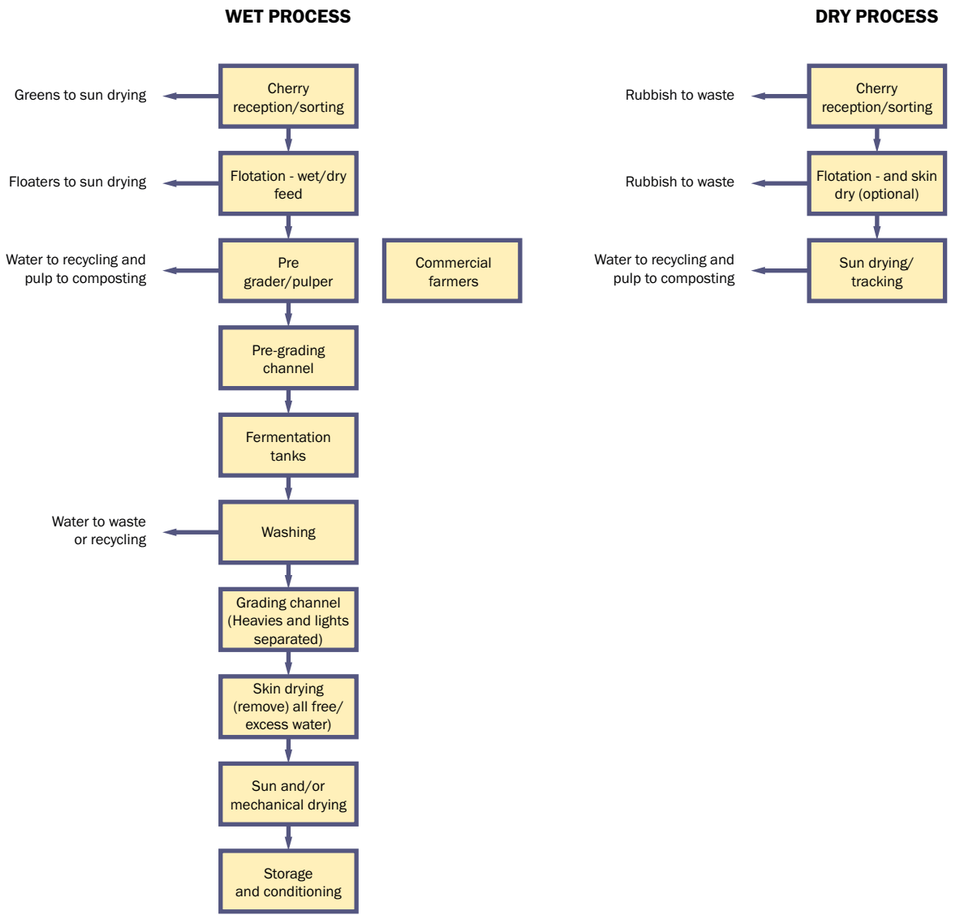
In the wet milling process, the skin and the pulp of the fresh coffee cherry are removed by a pulping machine, which consists of a rotating drum or disk that presses the coffee cherry against a sharp-edged or slotted plate, disengaging the pulp from the seed. A thin mucilaginous layer of the pulp clings to the coffee seed and is eliminated by fermentation. This is a form of digestion in which naturally occurring pectic enzymes decompose the pulp while the wetted seeds are held in tanks for one to three days. Washing clears all remaining traces of pulp from the coffee seeds, after which parchments of grade 1 are conveyed to fermentation tanks, while grades 2 and lighter are further processed through a smaller pulper called a re-passer. Pulped coffee has a moisture content of about 55%, so it is dried to reach a moisture content of 11% either by exposure to sunlight or by passing through hot-air driers. In Kenya sun drying is predominantly used and is used mainly by co-operatives. It involves spreading of coffee on wire mesh tables for several days (normally about 14 days), until fully dry and during rain the coffee is covered by a polythene sheets to avoid re-wetting. Some of the big commercial estates use mechanical drying. After drying, the pulped coffee is sorted by size and density and graded a parchment 1-3. Coffee is also evaluated for colour flaws, imperfections and damage which may occur during drying. The parchments are then weighed, packed into bags and stored until the milling time.

Dry Milling

This method is applied to Arabica coffee that is sorted out from the good cherry, the green coffee is placed on wire mesh tables and left to dry until the required moisture content of 11% is attained, after which it is stored. The coffee is later hulled in the milling process where the dry pulp and parchment are removed in a single operation.

In Kenya, storage is performed in good constructed stores, that allows good air circulation. Coffee is placed in sacks and stacked on wooden pallets that are 0.5 m above ground level and 0.5 m away from the walls and maximum care is taken to prevent the coffee from absorbing any moisture. The coffee is stored for a maximum of 6 months (FAO, 2000) and is transported by lorries to mills in order to attend the process.

Figure 11. Wet and dry milling process (USAID, 2010)

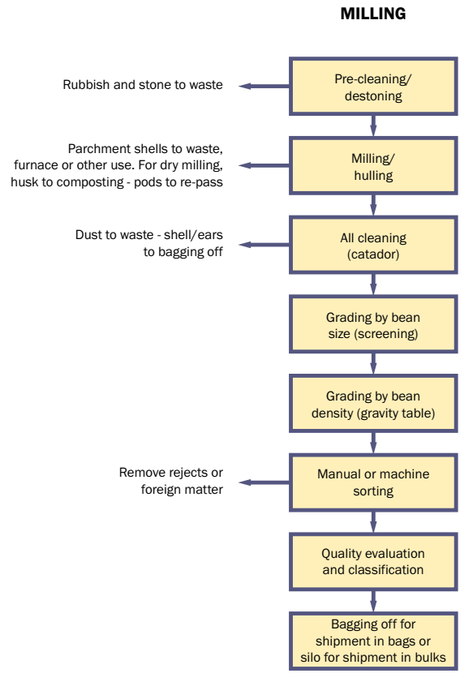


Secondary processing/Milling

Upon arrival to the mill coffee is weighted using a digital weighting machine and a quality analysis is done before the processing step (after sorting and primary processing). This involves a visual inspection of the size in a sample of 1 kg per bag of 50 kg and a moisture content check. For traceability an outturn number is assigned to each 50 kg coffee bag and this depends on the week the coffee is delivered within a coffee year. Figure 12 below describes the secondary processing undergone by the coffee in Kenya and is called milling. In mills coffee processing involves the following:

- **Hulling** – Machinery is used to remove the parchment layer (endocarp) from wet processed coffee. Hulling dry processed coffee refers to removing the entire dried husk, the exocarp, mesocarp and endocarp of the dried cherries.
- **Polishing** – It is an optional process where any silver skin that remains on the beans after hulling is removed by machine. Polished beans are considered superior to unpolished ones, however in reality there is little difference between the two.
- **Grading and Sorting** – This step is done by size and weight, and beans are also reviewed for colour flaws or other imperfections. Beans are sized by being passed through a series of screens. They are also sorted pneumatically by using an air jet to separate heavy from light beans. Finally, defective beans are removed either by hand or by machinery. Beans that are unsatisfactory due to deficiencies (unacceptable size or colour, over-fermented beans, insect-damaged, un-hulled) are removed. The aim of grading is to group the coffee beans homogeneously into commercial lots that meet defined quality standards and for pricing.

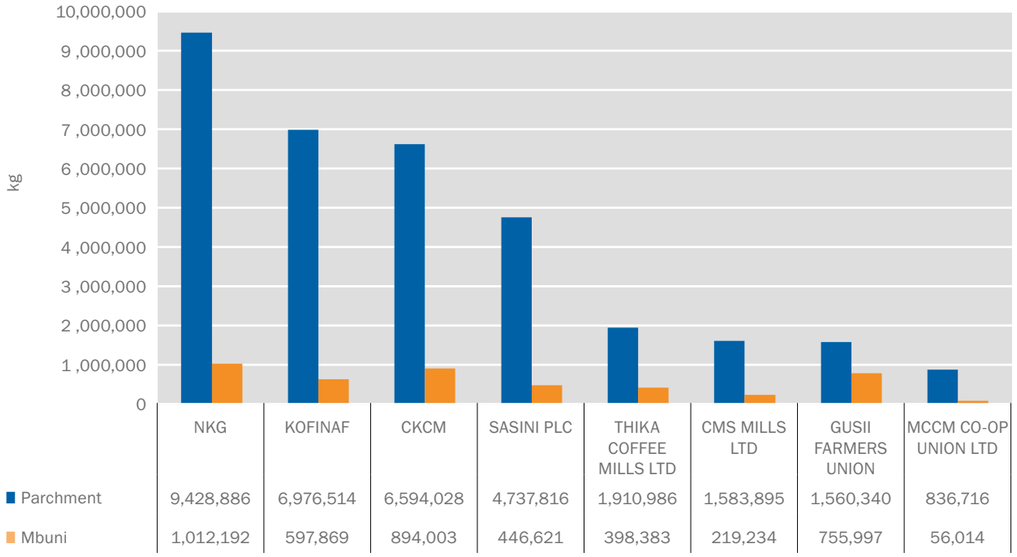
Figure 12. Coffee milling process (USAID, 2010)



3.3.3 Identification of the processing facilities and volumes of processing

For the CY 2017/2018, NKG mills processed the largest percentage of Kenya coffee compromising of 26% of Kenya's total produced parchment and 21% of mbuni. For parchments, the second largest processing mill was KOFINAF milling 19%, followed by CKCM 18% and SASINI PLC 13%. Regarding mbuni, the second largest processing mill was CKM with 18% of Kenya's milled mbuni, followed by GUSII Farmers Union 15% and KOFINAF 12%. Annex 6.3 show the quantities of mbuni and parchment coffee processed by other mills in Ghana.

Figure 13. Clean coffee top-8 producing mills (Source: Agriculture and Food Authority, 2018)



3.3.4 Mills charges

The charges for coffee millers in Kenya vary according to how they offer differentiated service. The services include milling, grading, handling, transportation fees, provision of exports bags and warehouse charges. Table 8 shows the charges of some millers for the CY 2017/2018, were the average cost per bag of clean processed coffee ranged between 13.42 USD/bag (1,381.99 KShs/bag) to 7.46 USD/bag (786.77 KShs/bag).

Table 8. Coffee millers charges (Source: Agriculture and Food Authority, 2018)

MILLER	MILLING CHARGES ($/TON)	HANDLING ($/TON)	EXPORT BAGS ($/BAG)	TRANSPORT TO WAREHOUSE ($/BAG)	AVERAGE COST($/BAG)
KPCU	65.00	79.68	3.00	-	13.42
OTHAYA FCS	57.00	-	3.00	3.30	10.40
GUSII	55.00	20.00	3.00	1.90	10.30
CKCM	45.00	25.00	3.40	1.25	9.69
KIPKELION	65.00	-	2.63	2.00	9.31
TCM	45.00	30.00	3.00	0.80	9.20
NKG	65.00	7.50	3.00	0.80	9.02
KCCM	66.00	-	3.00	1.10	8.86
LECOM	65.00	13.28	2.50	0.70	8.84
MERU	40.00	25.00	2.00	1.43	8.11
KOFINAF	65.00	-	3.00	-	7.68
SASINI	45.00	25.00	2.50	-	7.54
THARAKA NITHI	55.00	-	1.80	1.70	7.46

3.4 Coffee standards and quality

After coffee cherries pass through a pulper, they are classified by their density into 3 categories:

- Parchment 1 is the heaviest coffee
- Parchment 2 is the medium density coffee
- Parchment 3 or P-Lights is the lightest one

Table 9 shows the grades of processed coffee, with grades E, AA, AB and PB being regarded as the premium grades. Kenya AA is considered to be one of the world's finest specialty coffees. Grade AB consist of bean types A and B mixed together and is the most plentiful in a particular consignment and used to represent other grades. Other gradings include: SB (sorted beans), UG (ungraded) cherry and HE (hulled ears).

Table 9. Coffee grades and screen size (Source: Agriculture and Food Authority, 2018)

Grade and description	Screen size
E (Elephant) Two beans joint together	Retained by screen 21 (8.3mm)
AA (Flat bean)	Retained by screen 18/17 (7.2mm)
AB (Flat bean)	Retained by screen 16 (6.35mm)
PB (Peaberry-Oval bean)	Retained by screen 12 (4.76mm)
C (Smaller beans)	Retained by screen 10 (3.96mm)
TT (Lights from AA and AB)	Gravity separated
T (Smallest beans, broken, chipped)	Passing through 7 (2.9mm)

The grading of the coffee does not affect its quality, but rather its class instead. Kenyan coffee can receive a class ranging from 1 (worst) to 10 (best), this allows to further sort coffee within a grade (Nganga, 2019).

Mbuni coffee is graded as follows:

- MH (Mbuni Heavy – it depends on the density)
- ML (Mbuni Light – it depends on the density)

Table 10. Coffee standards available in Kenya, as determined by Kenya (Source: Kenya Bureau of Standards, 2004)

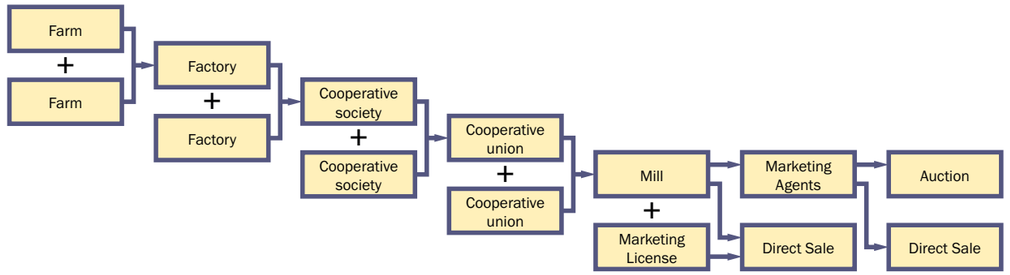
Standards	Description
KS CAC/RCP 69:2009	Code of practice for prevention and reduction of ochratoxin A contamination in coffee
KS ISO 20481:2008	Coffee and coffee products-Determination of the caffeine content using high performance liquid chromatography (HPLC)-Reference method
KS ISO 3509:2005	Coffee and coffee products-Vocabulary
KS 2366:2018	Coffee industry-Code of practice
KS 2221:2011	Coffee packaging-specification
KS ISO 6666:2011	Coffee sampling- Triers for green coffee or raw coffee and parchment coffee
KS ISO 18794:2018	Coffee-Sensory analysis-Vocabulary / Sensory Analysis
KS 173:2011	Glossary of terms used in coffee trade
KS ISO 6669:1995	Green and roasted coffee - Determination of free flow - Flow bulk density of whole beans (Routine Method)
KS EAS 130:1999	Green coffee beans - Specification
KS ISO 10470:2004	Green coffee- Defect reference chart
KS ISO 6673:2003	Green coffee - Determination of loss in mass at 105 degrees cilisious
KS ISO 6667:1985	Green coffee - Determination of proportion of insect-damaged beans
KS ISO 1446:2001	Green coffee-Determination of water content-Basic reference method
KS ISO 8455:2011	Green coffee — Guidelines for storage and transport
KS ISO 4149:2005	Green coffee-Olfactory and visual examination and determination of foreign matter and defects
KS ISO 4150:2011	Green coffee or raw coffee Size analysis Manual and machine sieving
KS ISO 6668:2008	Green coffee - Preparation of samples for use in sensory analysis
KS ISO 24114:2011	nstant coffee-Criteria for authenticity / Sensory Analysis
KS ISO 11292:1995	Instant coffee - Determination of free and total carbohydrate contents - Method using high performance anion exchange chromatography
KS ISO 8460:1987	Instant coffee - Determination of free flow and compacted bulk densities.
KS ISO 4072:1982	Instant coffee-Determination of loss in mass at 70 degrees cilisious under reduced pressure
KS ISO 3726:1983	Instant coffee - Determination of loss in mass at 70 under reduced pressure
KS ISO 6670:2002	Instant coffee - Sampling method for bulk units with liners
KS 175: 2017	Instant coffee - Specification (Specifies the requirements and the methods of test and sampling for instant/soluble coffee)
KS 1052:2011	Roasted coffee beans and roasted ground coffee - Specification
KS ISO 11817:1994	Roasted ground coffee - Determination of moisture content - Karl Fischer method (Reference method)
KS ISO 11294:1994	Roasted ground coffee - Determination of moisture content - Method by determination of loss in mass at 103 (Routine method)
KS 748-1:1988	Specification for coffee drying cloth - Part 1: Sisal cloth
KS 1274:1996	Specification for epoxy paint for coffee fermentation tanks
KS 1111-14:1993	Specification for household and similar electrical appliances - Part 14: Particular requirements for coffee mills and coffee grinders
KS 273:1999	Specification for woven bags (100 per cent) for clean coffee beans
KS EAS 817: 2014.	Stain remover for tableware - Specification

3.5 Co-operatives system and associations

The coffee industry of Kenya is noted for its cooperative system of production, processing, milling, marketing, and auction system. Per each county in Kenya there are many societies and the farmers are part of them. In order to form a co-operative society in Kenya, in case of a primary society it must consist of a minimum of 10 people (Scholar, 2018). In case of a co-operative union it should have at least two registered societies as its members. The cooperative system is organized as shown in figure 14 below:

- 2 or more farms rely on a factory.
- 2 or more factories form a co-operative society.
- 2 or more co-operative society form a cooperative union.
- 2 or more co-operative union can rely on a mill.
- A mill who has a marketing license can directly sell the processed coffee.
- The mill relies on the marketing agents to sell the coffee produced by different farmers or sells the coffee directly if it has a marketing license.

Figure 14. Cooperatives organization



In Kenya, coffee growers and some service providers are organized into associations, for the purpose of self-regulation and lobbying for facilitative policies and regulations. There are around 10 growers' unions, a Commercial Coffee Millers and Marketing Agents Association, the Kenya Coffee Producers Association (KCPA) and Kenya Coffee Traders Association (KCTA) within the coffee value chain (International Coffee Organization, 2019).

3.6 Marketing

Coffee is marketed either through the Auction System at the Nairobi Coffee Exchange (NCE) or Direct sales. The NCE accounts for over 80% of the total sales which is performed through an auction and the Direct Sales channel account for less than 20% of the total marketed coffee. Coffee marketing agents are contracted by farmers to sell their coffee to the highest bidder in the auction. The AFA Coffee Directorate license each year the marketing agents and dealers who can participate at the auction. Through the NCE coffee exporters/dealers buy coffee for both local and export sales, and payments are conducted within 7 days of purchase by the dealers and within 14 days to growers from the date of the auction. Direct sales are performed by grower-marketers who are coffee growers with a license to market their own coffee directly to overseas buyers. In 2019, there were 10 coffee marketing agencies

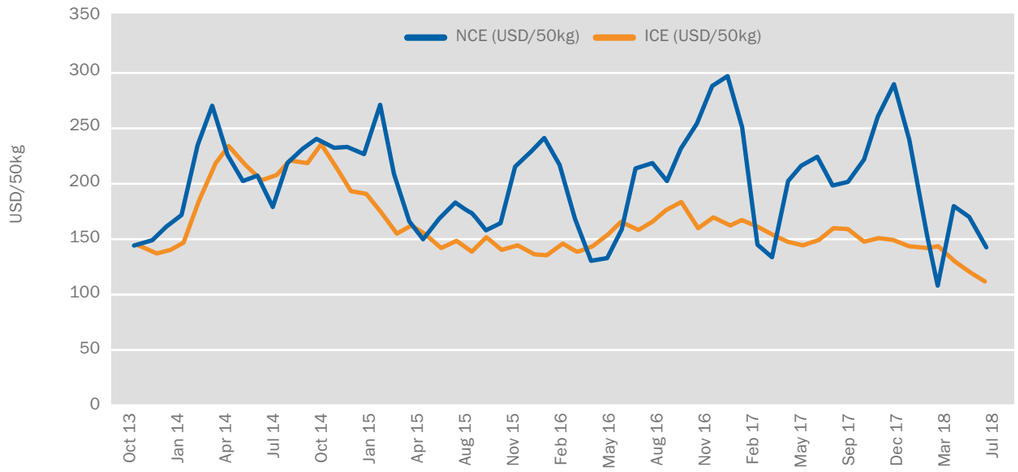
and 25 coffee marketers. If growers do not have the capacity to market their product directly, commercial marketing agents facilitate the process by drawing up sales agreements between producers and buyers and handling other marketing logistics. Table 11 shows the marketing agents at the NCE and Direct sales trade for 2017/2018 and their overall performance, were Tropical Farm Management, Coffee Management Services and Aristocrats Coffee & Tea controlled 72% of the coffee market share for both auction and direct sales.

Table 11. Overall marketing agents performance 2017/18 (Source: Agriculture and Food Authority, 2018)

MARKETING AGENT (MA)	FULL BAGS-50 kg BAGS	WEIGHT BOUGHT-kg	VALUE (USD)	PERCENT
Tropical Farm Management (K) LTD.	215,927	13,116,705	60,269,920.38	30%
Coffee Management Services	186,346	11,361,732	54,614,602.48	26%
Aristocrats Coffee & Tea	112,672	6,892,636	26,883,356.18	16%
Oaklands Coffee Marketing	63,584	3,903,246	15,909,402.14	9%
Sustainable Management Services	49,390	3,042,120	13,815,216.00	7%
Thika Coffee Marketing	37,438	2,305,264	8,367,352.14	5%
Kenya Cooperative Coffee Exporters	21,778	1,324,764	3,912,028.76	3%
Sucastainability (K) LTD	14,932	926,877	3,714,227.68	2%
Meru County Coffee Marketing	9,658	595,814	1,937,889.86	1%
Classic Coffee LTD	2,703	168,544	776,183.30	0%
Grand Total	714,428	43,637,702	190,200,178.92	100%

A comparative price analysis for both Nairobi Coffee Exchange and International Coffee Exchange (ICE) is presented in figure 15. The rates have been converted into equivalent trading units at the auction in NCE. Local prices at the NCE performed well compared to the ICE prices (the data are reported in Annex 6.5).

Figure 15. Price comparison NCE vs ICE (Source: Agriculture and Food Authority, 2018)



Auction

Figures 16 and 17 show the performance of the NCE over the last 20 years. Although there was a decline in the volume of coffee marketed through the NCE, its value has been increasing over the years. The decline in volumes may be attributed to shift of many foreign buyers in Kenya from volumes purchasing to purchase of certified and traceable coffee that is highly demanded in Europe and America. In the CY 2017/2018 Arabica coffee grades AA, AB and C dominated the auction. Annex 6.4 shows the auction sales for the various grades of coffee. The main coffee grades (AA, AB, C, E, TT, T, PB) contributed to 79.9% of the sales, while miscellaneous (HE, SB, UG, UG1-3) and mbuni (MH, ML) grades contributed to 21.1% of the sales.

Figure 16. Auction traded weight (kg) (Source: Agriculture and Food Authority, 2018)

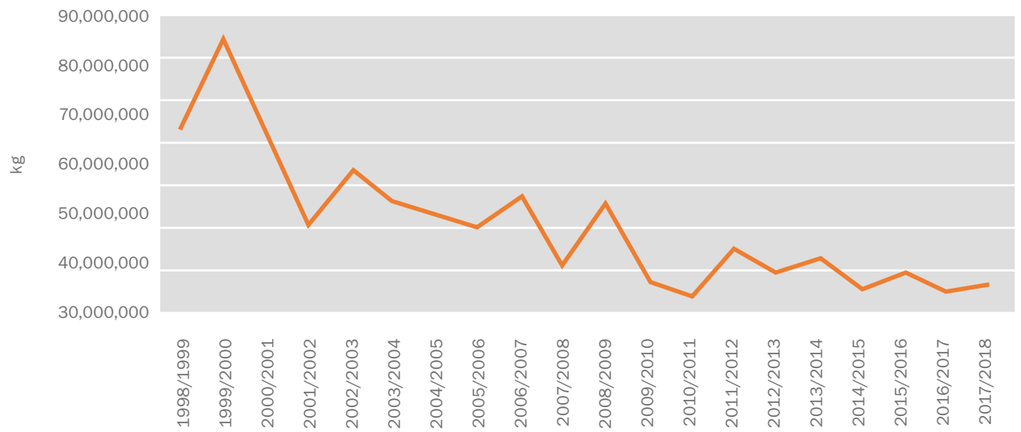


Figure 17. Auction values (Source: Agriculture and Food Authority, 2018)

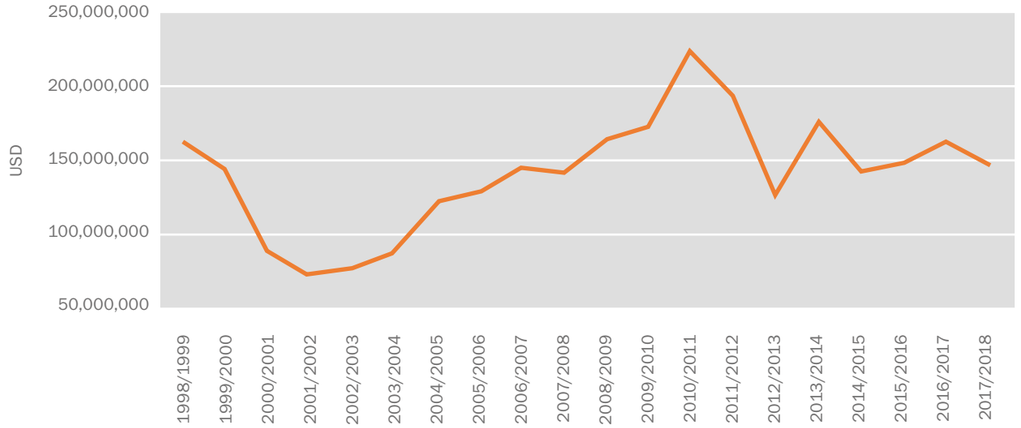


Table 12 shows the marketing agents performance in auction were Topical Farm Management, Coffee Management Services, Aristocrats Coffee & Tea and Oaklands Coffee Marketing sold 80% of the total sales in both the CY 2016/2017 and CY 2017/2018.

Table 12. Marketing agents performance in auction (Source: Agriculture and Food Authority, 2018)

	2016/2017			2017/2018		
Marketing Agent	**Weight (kg)**	**Value (USD)**	**Average Price USD/50 kg**	**Weight (kg)**	**Value (USD)**	**Average Price USD/50 kg**
Tropical Farm Management	9,368,230	48,062,400	256.52	10,513,547	49,818,103	236.92
Coffee Management Services	6,820,436	31,607,672	231.71	7,933,882	30,022,118	189.2
Aristocrats Coffee & Tea	5,721,824	26,757,901	233.82	6,873,739	26,730,895	194.44
Oaklands Coffee Marketing	5,478,310	22,875,611	208.78	3,389,929	13,030,213	192.19
Sustainable Management	3,072,061	14,652,689	238.48	2,566,456	10,379,668	202.22
Thika Coffee Marketing	1,580,805	6,593,068	208.54	2,305,264	8,367,352	181.48
Kenya Cooperative Coffee	895,595	3,621,941	202.21	661,636	1,956,475	147.85
Meru County Coffee Marketing	861,842	3,720,279	215.83	595,814	1,937,890	162.63
Classic Coffee Ltd	282,945	1,283,282	226.77	82,930	431,293	260.03
Sucastainability (K) Ltd	10,046	36,335	180.84	752,252	2,546,017	169.23
Grand Total	**34,092,094**	**159,211,178**	**233.5**	**35,675,449**	**145,220,024.44**	**203.53**

Direct Sales

The direct sales strategy, if properly executed, can promote single origin Kenyan coffee with clear traceability and quality checks; indeed, it is possible to increase the returns from coffee and help address some of the market access challenges faced by local grower marketers. Figures 18 and 19 show the trends for direct sales quantities and values, the sales have increased throughout the years. Moreover, there seems to be a pattern every two years as sales decrease in one year and increase the year after and the average sales value per kg of coffee between 2013/2014 and 2017/2018 was 5.67 USD/kg.

Figure 18. Direct sales weight (kg) (Source: Agriculture and Food Authority, 2018)

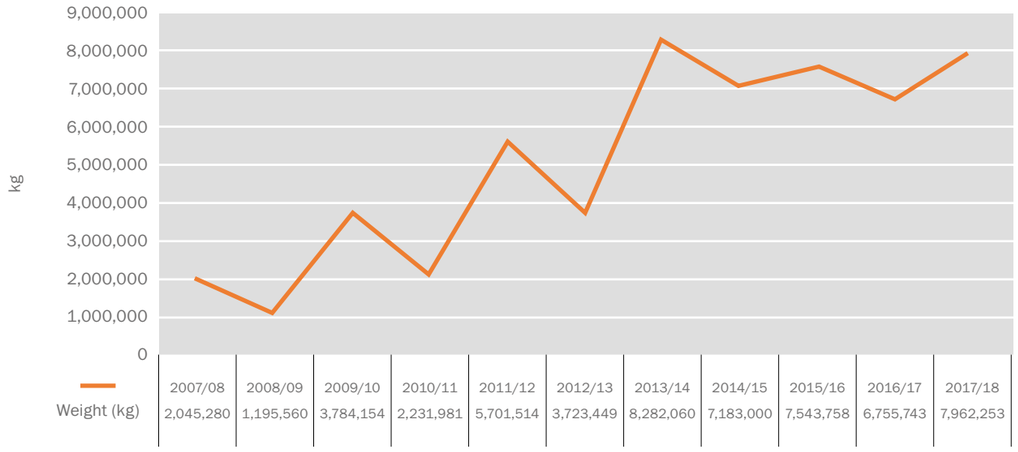
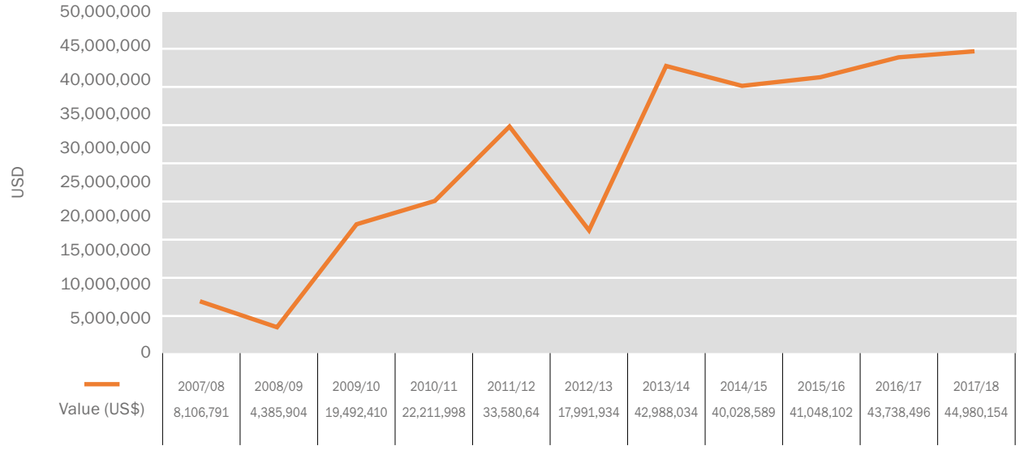


Figure 19. Direct sales values (USD) (Source: Agriculture and Food Authority, 2018)



The quantities sold, sales value and sales price for marketing agents direct sales in the CY 2017/2018 are reported in figures 20, 21 and 22. Coffee Management services sold the largest quantity of coffee through direct sales, however in terms of average sales value Aristocrats Coffee & Tea obtained the highest value of 403.4 USD/50 kg compared to 358.72 USD/50 kg for Coffee Management services. Moreover, the direct sales volume for 2017/18 increased by 18% from 2016/2017 while the value increased minimally by 3%. The average price per 50 kg bag was USD 282.46 in 2017/2018 compared to USD 323.71 in 2016/17.

Figure 20. Marketing agents direct sales weight (kg) (Source: Agriculture and Food Authority, 2018)

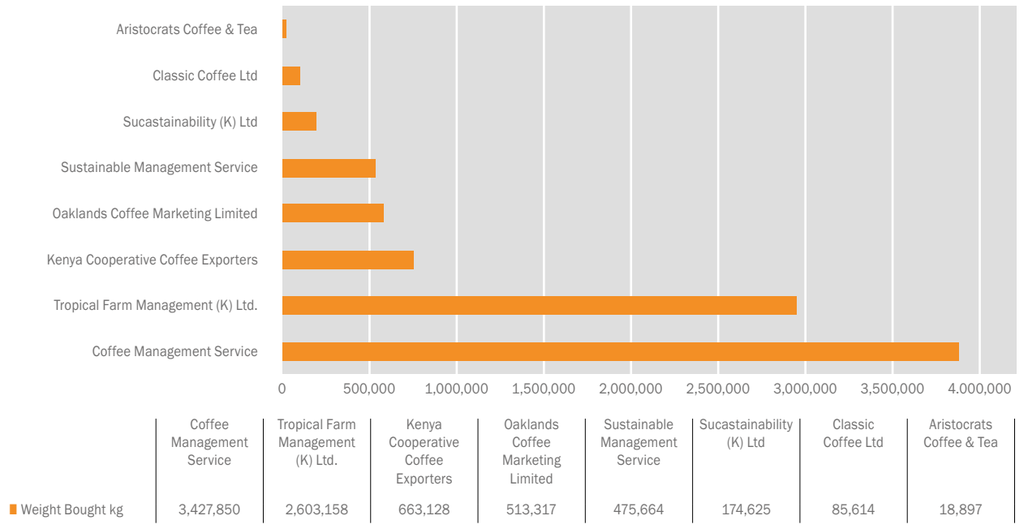
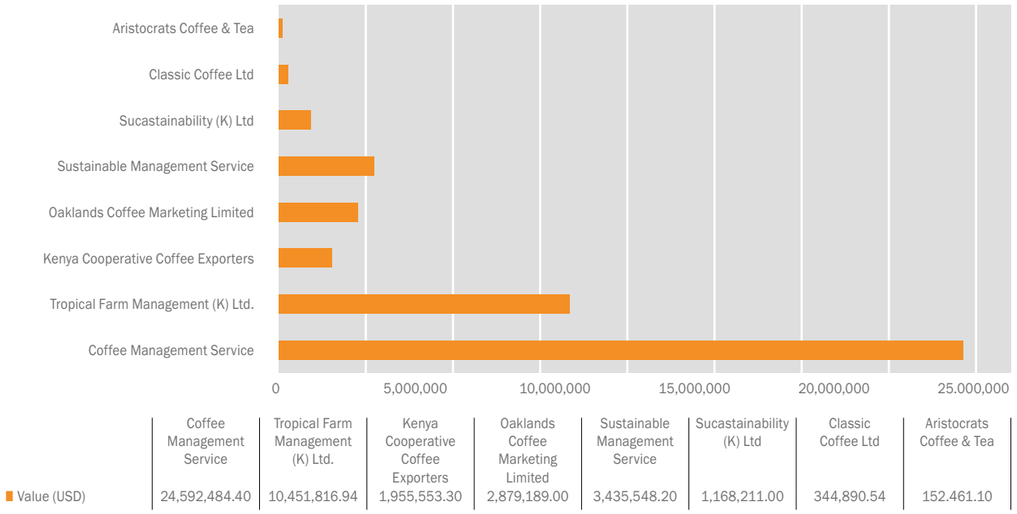
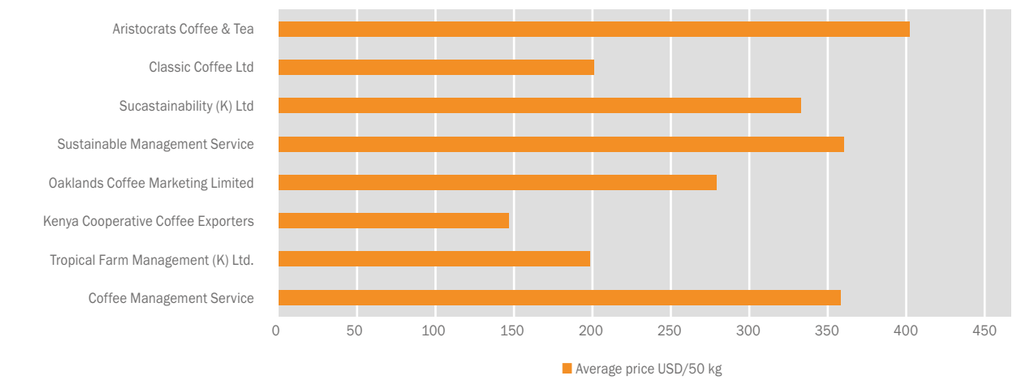


Figure 21. Marketing agents direct sales value (USD) (Source: Agriculture and Food Authority, 2018)



	Coffee Management Service	Tropical Farm Management (K) Ltd.	Kenya Cooperative Coffee Exporters	Oaklands Coffee Marketing Limited	Sustainable Management Service	Sucastainability (K) Ltd	Classic Coffee Ltd	Aristocrats Coffee & Tea
Value (USD)	24,592,484.40	10,451,816.94	1,955,553.30	2,879,189.00	3,435,548.20	1,168,211.00	344,890.54	152.461.10

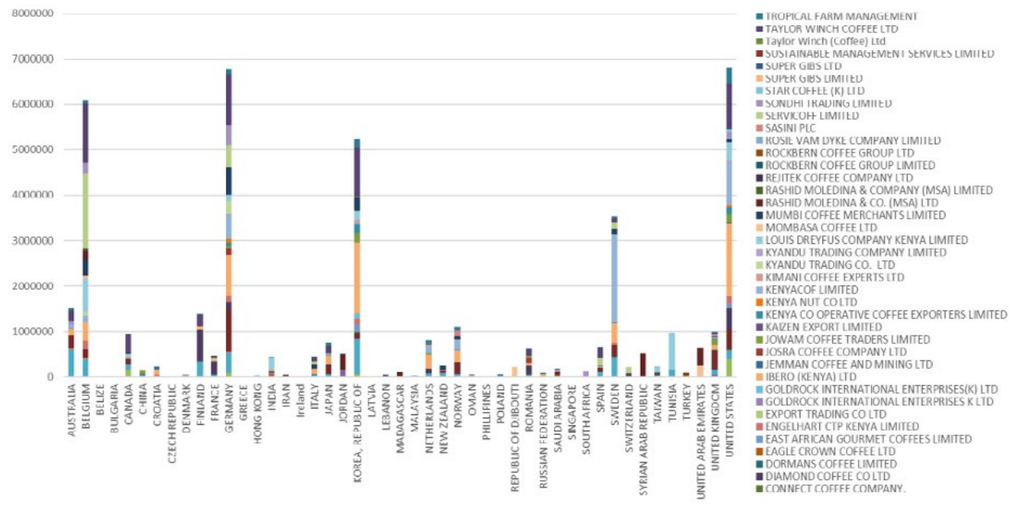
Figure 22. Marketing agents average direct sales prices USD/50 kg (Source: Agriculture and Food Authority, 2018)



3.7 Exports

Both Kenya and the international coffee markets depend heavily on coffee traders/exporters to supply green coffee for roasting and packing. Almost 95% of the Kenya's coffee is exported in green form every year, and only 5% is exported in roast and ground form mainly within the Africa. This is because the consuming countries prefer freshly ground and brewed coffee. In the CY 2017/18, around 38 dealers exported coffee compared to 45 who participated in the NCE. This implied that 7 dealers purchased coffee to sell it in the local market and for roasting/ packing. Kenya's coffee trade is dominated by renown industry leaders affiliated to Neumann Kaffee Gruppe, ED&F Man, Volcafe ltd and ECOM (Agriculture and Food Authority, 2018). Figure 23 shows dealers and marketing agents export performance for 2017/18 by importer while the data are reported in the Annex 6.6. Ibero (K) Ltd, Taylor, Kenyacof and C Dorman were the top exporters for the CY 2016/2017 and CY 2017/2018.

Figure 23. Coffee exports by destination and dealer for CY 2017/2018



Figures 24 and 25 show Kenya's coffee export quantities and FOB value for the range of years 2012/13 – 2017/18. Although the exports volumes have declined, their value have increased. The total exported quantity in 2015/2016 was 2% more than 2017/2018, while the total export value was 12% less. The FOB export values were 4.64 USD/kg in 2015/16, 5.25 USD/kg in 2016/17 and 5.30 USD/kg in 2017/18.

Figure 24. Exports net weight (kg) (Source: Agriculture and Food Authority, 2018)

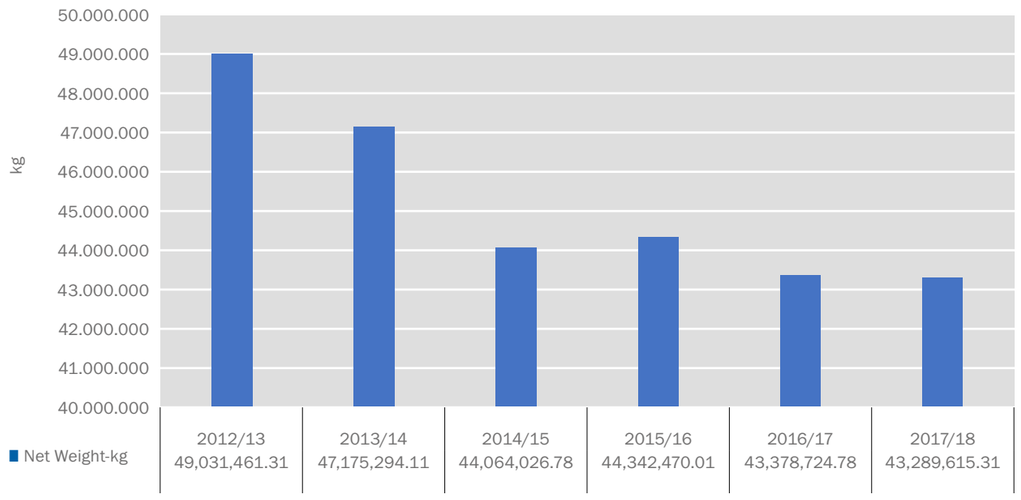
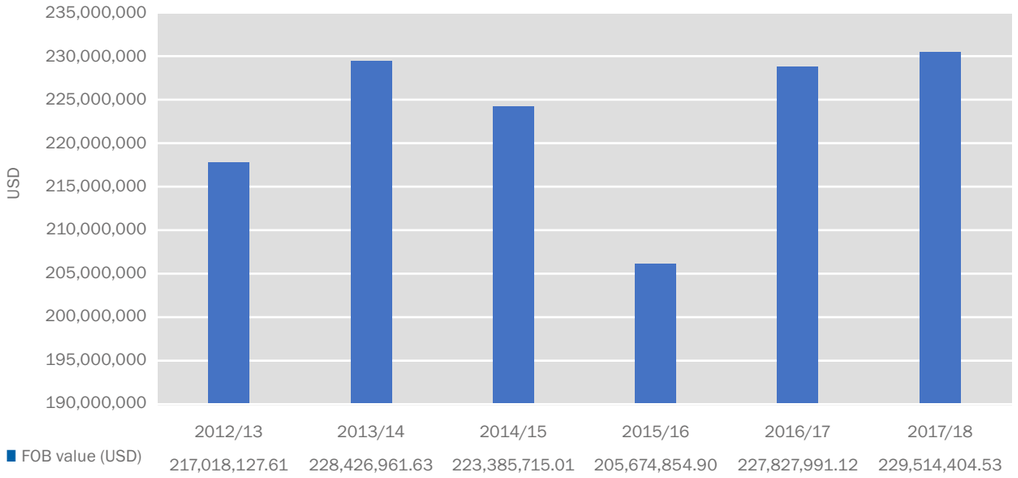
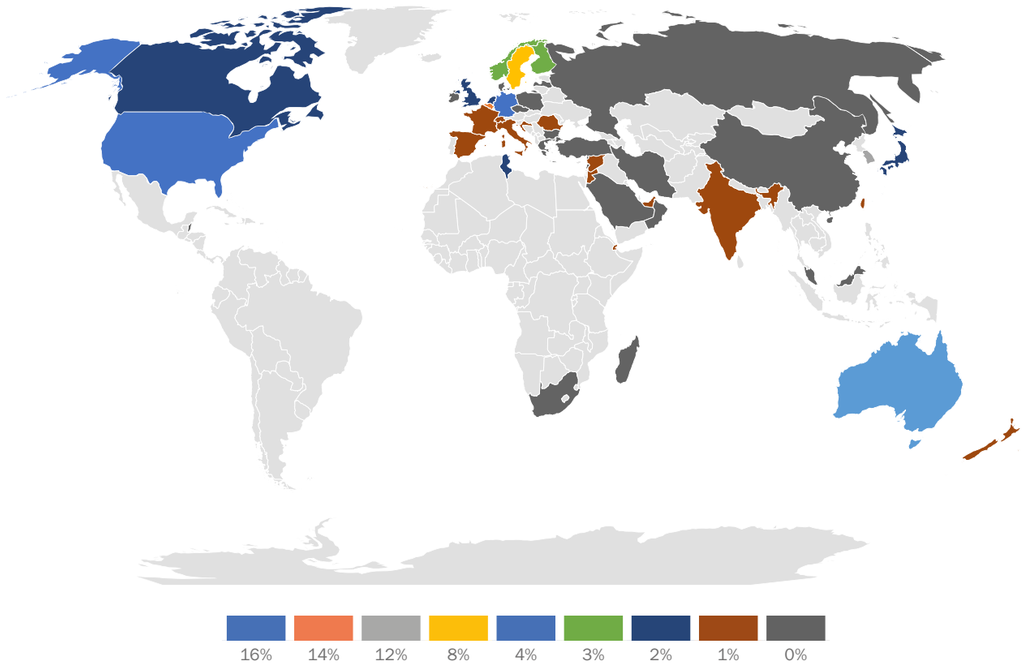


Figure 25. Exports FOB Value (USD) (Source: Agriculture and Food Authority, 2018)



The US, Germany and Belgium were the three top export destinations for 2016/2017 and 2017/2018. The number of export destinations increased to 47 in 2017/2018 from 44 in 2016/2017, with quantities and values of exports by destination are shown in Annex 6.7.

Figure 26. Export volumes by destination (Data Source: Agriculture and Food Authority, 2018)

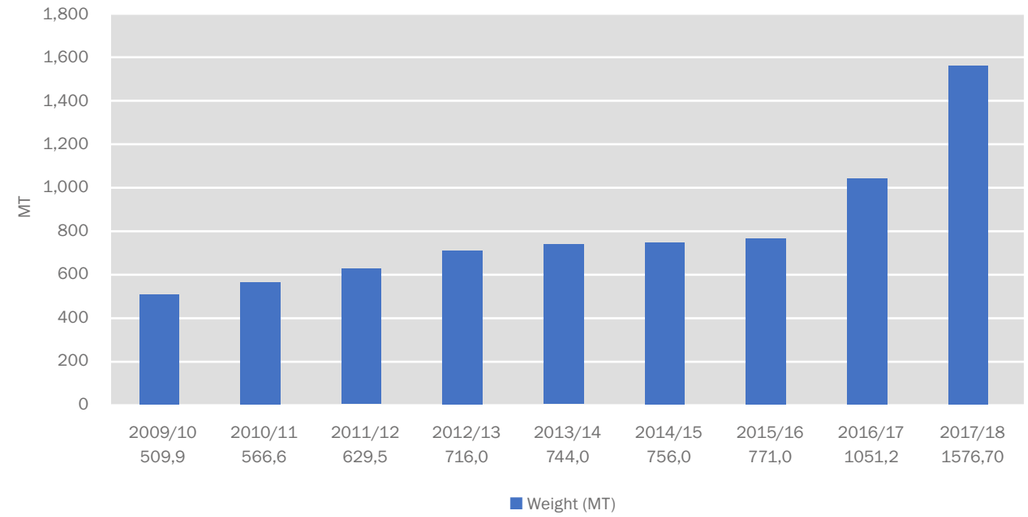


Kenya export market is segmented into traditional, specialty and emerging markets. Around 60% of the coffee is exported to the traditional market which is made up mainly of countries in the European Union. An amount of 20% is exported to the speciality market that is led by the USA and includes Japan, Canada and some countries from the European Union. The emerging market imports 15% of Kenya's coffee and includes the Gulf region, China, Korea, Malaysia among others and have developed affinity for Kenyan grades T, C, MH, ML, and UGs.

3.8 Domestic markets

In the CY 2017/2018 the local coffee consumption increased by 49% from 2016/2017 to reach 1,576.7 MT.

Figure 27. Domestic coffee consumption (Source: Agriculture and Food Authority, 2018)



According to the International Coffee Organization report published in 2019, there were 25 roasters in 2019, of which 4 are grower marketers and 1 university. The growers and private roasters are licensed to roast, pack and market Kenyan coffee locally and internationally. Coffee is purchased through auction and after roasting is retailed in major urban centres and coffee shops. The number of coffee shops in Kenya increased from 14 in 2001 to 206 in 2015 and 278 in 2017. The domestic market consumes both locally produced and imported coffee products. The locally produced coffee brands include Java, Dormans and Gibsons coffee and are sold in retail outlets in Uganda, Tanzania and Rwanda. Furthermore, the domestic market is highly diversified from mainstream coffee blends to informal coffee hawkers, a number of independent coffee shops exist alongside big chains such as Java coffee shop, Savannah, Café Deli & Delicatissen, Artcaffe and Bakery ltd, and Avanti Group of restaurants among others.

3.9 Development plans

Coffee Revitalization Project - On the 20/04/2020 the Kenyan government launched the coffee revitalization project that aims to

increase coffee production. It is a partnership between the Ministry of Agriculture and World Bank with a loan of KShs 1.5 billion in phase one of the two years. The Agriculture livestock, Fisheries and Cooperative Cabinet Secretary, Peter Munya stated during the launch that the programme will also improve the efficiency of farmers co-operatives, support research development and technology and development of alternative coffee markets. The first phase of the project is a pilot and will include the 8 main coffee producing counties (Kiambu, Machakos, Muranga, Nyeri, Embu, Tharaka Nithi, Kirinyanga and Meru). These counties account for approximately 70% of the national production and they have a potential for quick wins through productivity. Moreover, the counties agreed to invest in the project with the smallest producers of Tharaka Nithi and Machakos investing with KShs 50 million, while the big producers will invest KShs 100 million. 20% of the fund will be directed towards the provision of subsidized fertilizers, propagation of seeds and distribution of planting materials. Moreover, 60% of the fund will be used to improve the efficiency of the primary processing infrastructure and the quality of coffee by automating co-operatives systems and modernizing equipment. Furthermore, KShs 150 million will be used to strengthen co-operatives institution and governance and another KShs 150 million will support integration of data base, backstopping and monitoring (Ndirangu, 2020).

3.10 Services

Coffee Research Institute (CRI) – CRI falls under the Kenya Agriculture Research and Livestock Organization (KARLO) and is responsible for carrying out coffee related research. It provides recommendations regarding good agricultural and manufacturing practices. The institute conducted a major research to ensure sustainability of production through an efficient value chain and climate mitigation measures. In addition, it develops technologies coffee varieties and carries out research on disease and pest management. Moreover, CRI developed two improved varieties of coffee namely Ruiru11 and Batian, which are resistant to Coffee Berry Disease and Leaf Rust Disease, thus lowering the cost incurred in the control by fungicides.

Coffee extension services – Following the promulgation of the Kenya Constitution 2010 provision of extension services, these services were devolved to the county governments. They promote the coffee sector by providing subsidized inputs, such as fertilizers, and coffee seedlings. Moreover, the Coffee Directorate in collaboration with other relevant stakeholders provide capacity building to the counties' agricultural staff and other coffee value chain players. The collaborating private agencies include Technoserve, Solidaridad, certification bodies (UTZ, 4C, Fairtrade) and management services providers.

Kenya's coffee sector is funded by the national and counties government, banks, SACCOs and development partners.

Commodities Fund (ComFund) – ComFund was established under Crops Act 2013 (amended May 2016), Article 9 (1). The Fund is the successor of Coffee Development Fund and Sugar Development Fund which was part of Kenya Sugar Board. Around 100,000 farmers have received loans since this credit facility was established. Table 13 shows the types of loans that are provided by the commodities fund for various actors in the coffee supply chain.

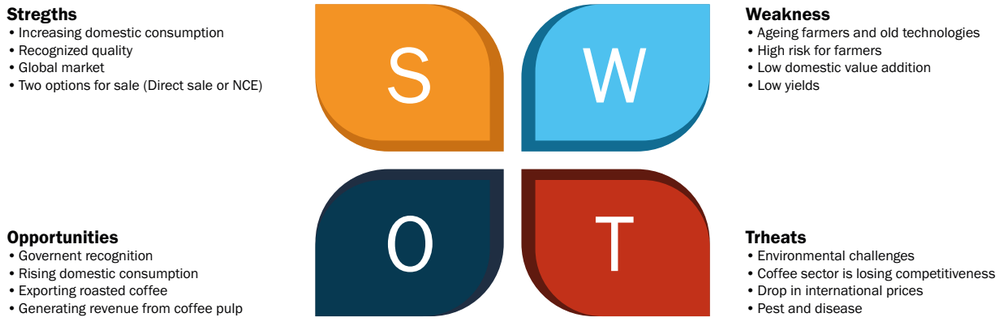
Table 13. Commodities fund loans for the coffee industry (Source: Commodities Fund, 2019)

TERM	TYPE OF LOAN	PURPOSE	PAYMENT DURATION	Interest rate
Short term Loans	Coffee Advances (ADV)	To finance primary production/ processing of crops.	12 months	10%, reducing balance
	Coffee Processing loans (CPL)	Cooperatives and estates who want to install or replace obsolete processing units	8 months	10%, reducing balance
	Cherry Advance (CHADV)	Picking of cherry (Labour), Processing of cherry, Transport of cherry	8 months	5%, reducing balance
Medium terms Loans	Extended Advance (EXADV)	For producers in need of rehabilitating their crop by purchase of farm inputs, financing Farm operations such as labour and transport	Up to 18 months	10%, reducing balance
	Bulk Acquisition of Farm Inputs (BAFI)	Target: Cooperative societies; to improve quality and quantity of coffee produced through organized and purchase of inputs in bulk.	Up to 18 months	5%, reducing balance
	Value addition Loan (VA)	Agro–Processing Loan facility for borrowers who are engaged in processing or value addition to agricultural products through processing before selling	Up to 24 Months	10%, reducing balance
	Wholesale Lending (WSL)	Targeted at farmer based Saccos, unions, marketing and milling agents and financial institutions involved in agricultural financing, as a means to increase Commodities Fund's outreach by leveraging on the above institutions' local presence	18 months	2.5%, Flat rate
Long terms Loans	Coffee Establishment Loan (CEL)	For producers who want to establish new crops or change season, as well as increase acreage	Up to 60 months	10%, reducing balance
	Coffee Machinery and Equipment Loan (CMEL)	To facilitate borrowers acquire machinery and equipment.	Up to 60 months	10%, reducing balance
	Infrastructure Loans	This loan facility is meant to assist producers undertake critical construction works.	Up to 60 months	10%, reducing balance
	Water Development/ Irrigation Loans	This loan facility is aimed at assisting borrowers' access water on the farm/premises and also installation of irrigation system.	Up to 60 months	10% reducing balance

04 SWOT Analysis

Figure 28 shows the strengths, weaknesses, opportunities and threats identified in the Kenyan coffee industry and are discussed in detail in the following sub-sections.

Figure 28. Coffee SWOT analysis



4.1 Weaknesses identified and how to improve the sector

High risk for farmers

Kenya's policies and legal frameworks leaves farmers at high risks even when they are incapable of bearing them. Farmers without a marketing license must contract and authorize marketing agents to sell their coffee through the NCE and they only get paid after exporters purchase the coffee which may take up to 5-6 months. This is because Kenya's coffee sector rules state that a batch of coffee belongs to the farmer up to the point of sale. Thus, the farmers are obliged to the risks at all stages of marketing including quality deterioration, theft and exchange rate volatility. In addition, their earning is cut by intermediaries - marketers and millers to sell their product through the NCE. One way to overcome this is for farmers to exploit the presence of direct sales, which creates an opportunity for them to increase their earning by cutting out the intermediaries and allocating the extra earnings as contingencies to overcome risks. This is because direct sales promote single origin coffee with clear traceability and quality checks. Moreover, nowadays multinational coffee chains as Starbucks do not only require quality coffee but also coffee that is grown in an ethical and sustainable manner. This is due to mounting pressure from consumers and governments to have ethically sourced goods and services.

Organisations may suffer reputational damage if they are found to be sourcing from suppliers that use exploitative labour. In additions they may face legal sanctions if their suppliers are found to be involved in corruption or bribery (CIPS, 2013). Moreover, traceability systems are an integral part of food safety management in many countries, including the European Union and a legal requirement for food business operations. It is also an important compliance criteria in many standards adopted at all stages of the food supply chain, including international standards such as ISO 22000 and private voluntary standards such as Global Good Agricultural Practice on farm and standards for food producers (traders, processors, etc.) such as the British Retail Consortium Global Standard Food and International Food Standard (United Nations Industrial Development Organisation, 2013).

Low domestic value addition

Only 5% of Kenya's exported coffee is roasted and the remainder is exported as clean coffee, thus Kenya misses out on the added value from the sales of roasted and packaged coffee. Moreover, the transport, transaction costs and conversion of coffee beans into the final product by exporters mostly in Europe and America increase the cost of the coffee for the final consumer. In 2019, coffee imports in Africa were 1.1% of the world imports, with a value of 634.2 USD million. The values of some importers are shown in table 14.

Table 14. Import values in Africa (Workman, 2020)

Importer	Coffee Imports (USD)
Morocco	102,572,000
South Africa	79,596,000
Libya	32,804,000
Egypt	28,370,000
Tunisia	20,062,000
Algeria	13,613,000
Mauritius	4,328,000
Madagascar	2,062,000

This issue creates an opportunity for Kenya to extend its value addition down the value chain by investing in roasteries, to increase its involvement in the sale of roasted and packaged coffee to African countries, especially considering that Kenyan coffee is considered as a specialty and is known to be one of the best coffees in the world, characterised by its rich flavour along with a deep, wine-like acidity and pleasant aroma. In fact, Kenya's AA coffee is regarded as a premium coffee in the world. The Kenyan coffee is broadly used for blending coffees and regarded as the most balanced and the most complex of coffee origins. In addition, Kenya is the main coffee logistic hub in Eastern Africa, where all the main international coffee traders are represented. Furthermore, Kenya has a huge pool of coffee expertise from farming to marketing, logistics, and trading. In 2017, three Kenyan factories were ranked among the world's best speciality coffee producers, with Kabare AA, produced by the Kabare farmers' cooperative society ranked as the fourth on Coffee Review's list of Top 30 with a score of 97 points out of 100 (NGUNJIRI, 2018)

Ageing farmers and old technologies – A large age gap exists in the coffee production, since most of the coffee farmers are elders, with more than 50% of the farmers above the age of 60. Thus without millennial aged farmers, the future of Kenya's production may be further compromised (Ngibuini, 2019). Thus, there is need to promote youth into the coffee farming by encouraging innovation and modifying society regulations to allow landless youth to lease coffee trees instead of having to own a land to be admitted into the society. Furthermore, coffee farmers are reluctant to adopt new technologies resulting in a reduction

in the coffee production despite opportunities for profitability and access to expansion. Thus, it is necessary to create awareness about the benefits of new technologies with examples to demonstrate to farmers, particularly for commercial coffee producers who can reduce their picking costs which is the highest cost generator by mechanizing the picking activity. Moreover, there is a need to upgrade most wet mills equipment which are obsolete, thus leading to the production of poor quality and high inefficiency in fact in 2018, 20% of the coffee mills were operating at their lowest level. This leads to high production costs, according to a study conducted by the USAID in 2010, Kenyan wet mills have the highest processing costs in the region.

Table 15. Comparative wet mill costs for cooperatives/small-holders (Source: USAID, 2010)

Country	Cost USD/kg Cherry
Kenya	0.108
Ethiopia	0.033
Tanzania	0.025

Upgrading wet mills equipment's will allow them to obtain best quality, improve their efficiency and thus lower their cost. In addition, this will allow the coffee to be sold at a higher price and farmers to obtain a higher share from the sales price.

4.2 Competitive advantages and threats and opportunities

The coffee sector in Kenya is faced with several challenges, according to the US Foreign Agricultural Service/Nairobi, coffee production in Kenya is expected to significantly drop in 2019/2020 due to effects of crystalizing drought (Townsend, 2020). Moreover, climate changes such as unreliable and erratic rains with shorter seasons are expected to pose challenges to the coffee production. High erosion levels due to heavy rains have caused loss of soils and leaching of nutrients, leading consequently to soil infertility. Unpredictable rainfall patterns are also posing challenges to patterns of cherry ripening and parchment drying (International Coffee Organization, 2019). Furthermore, coffee prices in the world markets have been declining since November 2018 were, it reached 113 cents per pound and 98 cent per pound in March 2019; this caused coffee earnings to drop by 13% in the four months to January 2019 compared to the same period in the year before. Data from the coffee directorate shows that farmers earned $41 million from September to December 2018 against $47.7 million for the same period in 2017 (Ministry of Food and Agriculture, 2019). Factors affecting the worldwide coffee prices were related to high yields in Brazil and Vietnam, creating a huge surplus of coffee in the market, especially Arabica and lowering prices. Other factors include political uncertainty in Brazil that lead to a drop in its currency value and fluctuations in markets exchange rates and speculators which led to the decline of international coffee prices (Ghirardelli, 2019).

Furthermore, the coffee sector in Kenya is losing competitiveness due to the increasing costs of production factors such as fertilizers, spraying chemicals, labour, irrigation water and electricity. Also, coffee farmers must deal with the delay in the supply of fertilizers for purchase and the low availability of seedlings. Driven by low prices and climate changes farmers are shifting towards producing other products instead of coffee. For instance, the Machakos county co-operative union head Martin Muliya, stated that more than three quarters of the 200,000 farmers active in the 1980s have given up coffee production to produce banana, macadamia and avocado trees (Mersie, 2019). Also, in Kirinyaga county a group of coffee farmers have switched towards the production of banana as it is less labour intensive and provide them with a higher income. On the other hand, the Kenyan government recognizes the significant contribution of coffee to Kenya as is it employs around 30% (5 million people) of the labor force in the agricultural sector. In addition, it is a key foreign exchange earner, with earnings of around KShs 23 billion per year. Therefore, the Kenyan government is displaying its commitment towards the coffee sector by initiating in 2019 the Coffee Revitalization Program which aims at increasing Kenya's coffee production to 100,000 MT of clean coffee in five years. By providing farmers with subsidized fertilizers, affordable farm inputs, training on best agricultural practices and adoption of improved coffee varieties, farmers will be able to reduce their production costs and increase their production volumes, thus increasing their earnings and promoting more farmers to produce coffee. In addition, the modernization of the primary processing equipment and automation of co-operatives systems will result in an increase in efficiency and quality, which will lower processing costs and increase farmers share of export price. The government is also keen to enhance availability of affordable credit to coffee growers to promote the production of coffee.

Kenyan's have also started to adapt a culture for coffee drinking due to the emerging urbanized middle class which will continue to stimulate demand for consumer goods, including coffee. In fact, the local consumption of coffee increased from 8,498 bags (509.90 MT) in 2009 to reach 12,405 bags (744 MT) in 2013/2014 and it reached 18,396 bags (1,103.76 MT) in 2017/2018. This have also been reflected by the increase in the number of roasters and coffee shops, were the number of coffee shops rose from 14 in 2001 to 278 coffee shops in 2017. To promote coffee, farmers co-operatives and county governments are setting up small scale roasting plants and coffee houses in rural areas and multitasking machines that mill, roast and brew ready to drink coffee are being introduced into counties by their governments. Also, the coffee directorate conducts several promotions and campaigns to target youth in universities including: Jomo Kenyatta University of Agriculture and Technology, Moi University, ICC-124-7 23 Kenya ICO Coffee Profile University of Eldoret, Multimedia University, Kenyatta University, United States International University-Africa, Dedan Kimathi University, Machakos University and Mount Kenya University and Egerton University. This will result in an increase in the local consumption of coffee, creating an opportunity for local roasters to increase their production and generating more value along the supply chain and increasing earnings of farmers.

Coffee berry disease and leaf rust remain a major factor affecting cost/yields for most varieties grown in Kenya. Most coffee in Kenya is still produced with two cultivars developed in the 1950s and a third cultivar was developed before 1960 is used on lower altitudes. All these are susceptible to coffee leaf rust and coffee berry disease, which necessitates the use of fungicides. A resistant variety, Ruiru 11 was introduced around 1985, but it has not proved popular because it appears to produce an inferior quality coffee. Creating more

awareness regarding the benefits of Batian compared to other varieties, can promote farmers to switch towards using it as it allows them to obtain high yields, reduce their costs and thus increase earnings. This is because Batian is resistant to coffee berry disease and leaf rust, in addition it comes into production a year earlier than traditional varieties and its berries ripen earlier than SL28 and Ruiru 11, resulting in early flow of benefits to farmers. Moreover, it provides high yield with a good bean and quality and is suitable for all coffee agro-ecological zones.

Wet milling results in the release of 200,000 tons of pulp into the environment every day in Kenya, which translates into missed opportunities towards environmental and economic benefits for farmers and wet mills (Gituma & Fuchaka, 2017). Coffee cherry waste that ends up in fields and waterways decomposes, releasing harmful mycotoxins that seep into the soil. Coffee pulp can be used instead for several purposes, it can be dried and recycled as mulch for sale as it serves as a very good all-purpose manure or used to replace fertilizers to reduce farmers costs. Also, coffee biomass can be utilized to produce bioethanol which is a biofuel that can be used as an energy source. Furthermore, coffee pulp can be used to produce coffee flour which is a gluten free alternative for grain based flour that is nutritious (see figure 28), with a tiny bit of caffeine and no taste of coffee but instead it has the floral citrus and roasted fruit notes in its flavour. Coffee flour is currently being manufactured by a company called The Coffee Cherry Co. which is operating in Hawaii, Nicaragua, Guatemala, Mexico and Vietnam. The coffee flour contains more per gram iron than spinach, fibre than whole grain wheat flour, and less fat than coconut flour, more protein than fresh kale, potassium than banana and antioxidants than pomegranate (Markham, 2016). The coffee flour is being sold now online on websites including Amazon at a price of $9.95 for 226 grams. Production of coffee flour from pulp will generate additional revenue for farmers and wet mills and will support in the generation of new jobs and reduction of greenhouse gas emission.

Figure 29. Nutritional information for coffee flour (The Coffee Cherry Co., 2020)

Nutritional information per 100g of ingredient (Tipical averaged value, does not equal 100%					
Calories	**144.9 kcal**	**Vitamins & Minerals**		**Moisture**	12% Max
Total Fat	**2.3 g**	Vitamin A	505.3 I.U.	**Caffeine**	530 mg
Saturated Fats	0.5 g	Vitamin C	< 0.1 g	**Antioxidants**	22 nmol
Unsaturated Fats	0 g	Calcium	425 mg		
Cholesterol	< 5 mg	Sodium	15.7 mg		
Protein	**11.4 g**	Magnesium	333 mg		
Total Carbohydrates	**66.3 g**	Phosphorus	391 mg		
Sugars	2.9 g	Potassium	11,808 mg		
Added Sugars	None	Copper	4.1 mg		
Total Dietary Fiber	51 g	Sulfur	527 mg		
Soluble Fiber	8.4 g	Zinc	4.5 mg		
Insoluble Dietary Fiber	42.5 g	Iron	49.6 mg		
		Manganese	8.5 mg		

05 Conclusion

Coffee is considered as a strategic crop in Kenya, contributing to the employment of around 5 million people and is one of Kenya's main exports since its introduction in 1897. Accounting to 5.5% of Kenya's exports in 2017 and 0.4% of the world coffee production in 2019. In addition, the coffee industry contributes to growth in agriculture through foreign exchange earnings of around KShs 23 billion per year, family farm incomes and food security. Although the total area harvested decreased by 32% from 170,000 ha in 2004/2005 to reach 115,570 ha in 2017/2018, production volumes remained within 40,000 MT and 50,000 MT during these periods. In the CY 2017/2018 the four counties of Kiambu, Kirinyaga, Murang'a and Nyeri contributed to 58% of Kenya's total coffee production. Moreover, 90% of the Kenyan coffee is wet processed at washing stations that are owned by co-operative societies and estate farmers, while the remaining 10% of coffee is dry processed into mbuni.

The coffee sector is faced with several obstacles including climate changes that poses challenges to the patterns of cherry ripening and parchment drying, declining world prices that reduces earning and high costs of inputs. That are causing the coffee sector to lose competitiveness and some farmers to switch to the production of other crops. Moreover, Kenya had a primary processing capacity around 8,553,600 tons/ year in 2017/2018, which is much higher than Kenya's total production volumes, with a level of utilization of less than 1%, causing wet mills to acquire high costs due to inefficiency. Secondary processing facilities face the same issue of overcapacity which caused mills to remain inactive for years. Moreover, Kenyan coffee is regarded as one of the best coffees in the world and exported to 47 countries, with grade AA considered as a premium causing export values to increase in the past years despite the decline in exports volumes. The Coffee Revitalization program is expected to increase coffee production to 100,000 MT in 2024 through fertilizers subsidies, training, and adoption of best practices. In addition, it will involve modernization of the primary processing equipment allowing higher quality and efficiency to be obtained, lower cost and to obtain a higher export price for coffee. Furthermore, several opportunities exit that can be exploited by Kenya's coffee industry including roasting of coffee for export to African countries whose imports value was 634.2 million USD in 2017. The value addition from roasting will result in the creation of new jobs and higher earnings for coffee farmers. Also, the utilization of coffee waste to produce various products including manure, biofuels and coffee flour resulting in both economic, social and environmental benefits. The growing local market for coffee in Kenya also, creates an opportunity for local roasters to increase their production, generating more value along the supply chain and increasing earnings of farmers. As a result, more farmers can be attracted in the production of coffee.

06 Annex

6.1 Coffee production and productivity for some counties

Table 16. Coffee production and productivity for some counties (Source: Agriculture and Food Authority, 2018)

COUNTY	SOCIETY	CHERRY PRODUCTION (kg) 2017/18	# TREES	PRODUCTIVITY (kg/TREE)
KIRINYAGA	THIRIKWA FCS	1,100,906	286,982	3.84
	MIRICHI FCS	137,153	667,440	0.21
	MUTIRA FCS	3,054,357	751,920	4.06
	KIBIRIGWI FCS	2,304,940	1,711,884	1.35
NYERI	OTHAYA FCS	2,492,201	1,100,690	2.26
	GIKANDA FCS	1,703,776	567,000	3.00
	RUMUKIA FCS	2,188,918	995,904	2.20
	TEKANGU FCS	1,380,294	750,000	1.84
	RUGI FCS	2,205,513	979,897	2.25
	NYERIHILL ESTATE	766,248	390,038	1.96
MURANGA	KANGUNU	1,231,801	251,596	4.90
	IYEGO FCS	2,851,144	680,091	4.19
	KAHUHIA	1,156,775	400,000	2.89
EMBU	KIBUGU FCS	1,959,652	662,430	2.96
	KANJUGU FCS	380,030	119,553	3.18
MERU	KAGURU FCS	505,823	89,897	5.63
	MUKARIMU ESTATE	10,865	20,000	0.54
	NTIMA FCS	208,801	117,720	1.77
T/ NITHI	KIRIANI	383,552	90,000	4.26
	CIRIGWA	240,000	500,000	0.48
	NEW MAGUMONI	199,786	300,000	0.67
KIAMBU	NEW GATUKUYU	299,759	999,330	0.30
MACHAKOS	KAMBUSU FCS	798,795	807475	0.99
NANDI	KAPSAOS	700,500	500,000	1.40

6.2 Parchment and mbuni production by county

Table 17. Parchment and mbuni production by county 2017/2018 (Source: Agriculture and Food Authority, 2018)

COUNTY	PARCHMENT	MBUNI	TOTAL	PERCENTAGE
KIAMBU	9,601,004.00	647,024.00	10,248,028.00	18%
KIRINYAGA	7,034,516.00	1,362,753.00	8,397,269.00	15%
MURANG'A	6,284,593.00	1,401,481.00	7,686,074.00	13%
NYERI	5,409,201.82	1,763,467.15	7,172,668.97	13%
EMBU	2,803,942.60	298,769.00	3,102,711.60	5%
BUNGOMA	2,751,566.00	406,590.00	3,158,156.00	6%
KERICHO	2,611,186.00	381,469.00	2,992,655.00	5%
KISII	2,106,289.70	1,404,296.50	3,510,586.20	6%
MERU	2,159,634.00	286,223.00	2,445,857.00	4%
NYAMIRA	1,688,534.00	585,240.00	2,273,774.00	4%
MACHAKOS	1,722,225.00	210,208.00	1,932,433.00	3%
THARAKA NITHI	1,007,720.00	157,370.00	1,165,090.00	2%
NANDI	716,958.00	230,047.00	947,005.00	2%
TRANS NZOIA	729,624.00	208,223.00	937,847.00	2%
NAKURU	424,917.60	95,965.00	520,882.60	1%
MIGORI	132,504.00	26,875.00	159,379.00	0%
NAIROBI	131,912.00	10,145.00	142,057.00	0%
MAKUENI	93,706.00	12,515.00	106,221.00	0%
BARINGO	64,587.00	32,092.00	96,679.00	0%
ELGEYO MARAKWET	48,020.00	16,705.00	64,725.00	0%
HOMA BAY	39,150.00	13,459.00	52,609.00	0%
KISUMU	28,293.00	8,441.00	36,734.00	0%
WEST POKOT	25,302.00	11,634.00	36,936.00	0%
KAKAMEGA	25,197.00	15,226.00	40,423.00	0%
UASIN GISHU	21,583.00	5,214.00	26,797.00	0%
BOMET	4,066.00	2,811.00	6,877.00	0%
KPCU SWEEPINGS*	1,472.50		1,472.50	0%
VIHIGA		2,860.00	2,860.00	0%
LAIKIPIA	-	15,275.00	15,275.00	0%
NAROK	-	98	98.00	0%
GRAND TOTAL	**47,667,704.22**	**9,612,475.65**	**57,280,179.87**	**100%**

6.3 Mills production

Table 18. Mills clean coffee production CY 2017/2018 (Source: Agriculture and Food Authority, 2018)

COUNTY	PARCHMENT	MBUNI	TOTAL	PERCENTAGE
KIAMBU	9,601,004.00	647,024.00	10,248,028.00	18%
KIRINYAGA	7,034,516.00	1,362,753.00	8,397,269.00	15%
MURANG'A	6,284,593.00	1,401,481.00	7,686,074.00	13%
NYERI	5,409,201.82	1,763,467.15	7,172,668.97	13%
EMBU	2,803,942.60	298,769.00	3,102,711.60	5%
BUNGOMA	2,751,566.00	406,590.00	3,158,156.00	6%
KERICHO	2,611,186.00	381,469.00	2,992,655.00	5%
KISII	2,106,289.70	1,404,296.50	3,510,586.20	6%
MERU	2,159,634.00	286,223.00	2,445,857.00	4%
NYAMIRA	1,688,534.00	585,240.00	2,273,774.00	4%
MACHAKOS	1,722,225.00	210,208.00	1,932,433.00	3%
THARAKA NITHI	1,007,720.00	157,370.00	1,165,090.00	2%
NANDI	716,958.00	230,047.00	947,005.00	2%
TRANS NZOIA	729,624.00	208,223.00	937,847.00	2%
NAKURU	424,917.60	95,965.00	520,882.60	1%
MIGORI	132,504.00	26,875.00	159,379.00	0%
NAIROBI	131,912.00	10,145.00	142,057.00	0%
MAKUENI	93,706.00	12,515.00	106,221.00	0%
BARINGO	64,587.00	32,092.00	96,679.00	0%
ELGEYO MARAKWET	48,020.00	16,705.00	64,725.00	0%
HOMA BAY	39,150.00	13,459.00	52,609.00	0%
KISUMU	28,293.00	8,441.00	36,734.00	0%
WEST POKOT	25,302.00	11,634.00	36,936.00	0%
KAKAMEGA	25,197.00	15,226.00	40,423.00	0%
UASIN GISHU	21,583.00	5,214.00	26,797.00	0%
BOMET	4,066.00	2,811.00	6,877.00	0%
KPCU SWEEPINGS*	1,472.50		1,472.50	0%
VIHIGA		2,860.00	2,860.00	0%
LAIKIPIA	-	15,275.00	15,275.00	0%
NAROK	-	98	98.00	0%
GRAND TOTAL	**47,667,704.22**	**9,612,475.65**	**57,280,179.87**	**100%**

6.4 Auction sales per grade and prices

Table 19. Auction sales per coffee grade CY 2017/2018 (Source: Agriculture and Food Authority, 2018)

Grade	Full Bags Bought	Weight Bought-kg	Min Price	Max Price	Avg Price USD/50kg	Value USD/50kg	Percent
Main Coffee Grades							
AA	81,149	4,996,069.00	20.00	679.00	345.52	34,525,167.50	14.00%
AB	212,701	12,922,595.00	10.00	501.00	247.17	63,882,804.08	36.22%
C	110,661	6,793,312.00	5.00	309.00	171.48	23,298,068.92	19.04%
E	1,081	68,951.00	80.00	320.00	252.52	348,232.08	0.19%
PB	24,001	1,502,258.00	15.00	540.00	219.26	6,587,649.88	4.21%
T	20,689	1,290,018.00	7.00	160.00	84.04	2,168,258.60	3.62%
TT	15,076	941,892.00	10.00	350.00	155.61	2,931,285.34	2.64%
Sub-Total:	**465,358**	**28,515,095.00**	**5.00**	**679.00**	**234.51**	**133,741,466.40**	**79.93%**
Miscellaneous Coffee							
HE	5,460	337,344.00	20.00	150.00	87.49	590,277.18	0.95%
SB	1,868	96,641.00	6.00	67.00	28.84	55,750.64	0.27%
UG	3,370	204,234.00	11.00	151.00	65.23	266,459.86	0.57%
UG1	16,473	1,009,883.00	10.00	350.00	95.99	1,938,699.76	2.83%
UG2	11,896	734,666.00	5.00	250.00	69.15	1,016,038.06	2.06%
UG3	693	43,088.00	11.00	123.00	47.17	40,645.78	0.12%
Sub-Total:	**39,760**	**2,425,856.00**	**5.00**	**350.00**	**80.55**	**3,907,871.28**	**6.80%**
Unwashed Coffee							
MH	60,246	3,652,121.00	10.00	130.00	87.10	6,361,902.04	10.24%
ML	17,523	1,082,377.00	7.00	103.00	55.84	1,208,784.72	3.03%
Sub-Total:	**77,769**	**4,734,498.00**	**7.00**	**130.00**	**79.95**	**7,570,686.76**	**13.27%**
Grand Total:	**582,887**	**35,675,449.00**			**203.53**	**145,220,024.44**	**100.00%**

6.5 Local vs International coffee prices

Table 20. Local and international coffee prices (Source: Agriculture and Food Authority, 2018)

Month	NCE (USD/50kg)	ICE (USD/50kg)	ICE (cts/lb)
Oct-13	140.29	142.59	129.36
Nov-13	148.40	136.30	123.65
Dec-13	159.56	140.17	127.16
Jan-14	170.17	146.00	132.45
Feb-14	230.89	182.65	165.70
Mar-14	265.56	214.85	194.91
Apr-14	225.75	229.24	207.96
May-14	199.55	214.89	194.95
Jun-14	204.29	201.75	183.03
Jul-14	179.26	203.16	184.31
Aug-14	216.31	217.61	197.41
Sep-14	227.55	217.08	196.93
Oct-14	236.88	230.27	208.90
Nov-14	228.01	212.51	192.79
Dec-14	228.87	192.12	174.29
Jan-15	225.29	189.09	171.54
Feb-15	267.39	173.47	157.38
Mar-15	206.14	153.68	139.42
Apr-15	166.11	160.75	145.83
May-15	149.87	153.50	139.25
Jul-15	167.74	142.64	129.40
Aug-15	181.20	146.61	133.00
Sep-15	172.86	139.93	126.94
Oct-15	155.46	151.38	137.33
Nov-15	165.06	141.65	128.50
Dec-15	212.99	142.20	129.00
Jan-16	225.67	136.69	124.00
Feb-16	238.25	136.13	123.50
Mar-16	215.44	145.94	132.40
Apr-16	167.77	140.27	127.25
May-16	130.64	143.08	129.80
Jun-16	132.70	154.87	140.50
Jul-16	159.88	164.24	149.00
Aug-16	212.32	158.46	143.75
Sep-16	216.04	165.07	149.75
Oct-16	202.43	174.69	158.48
Nov-16	229.84	180.12	163.40
Dec-16	251.68	160.22	145.35
Jan-17	284.42	167.87	152.29
Feb-17	292.49	161.33	146.36
Mar-17	246.43	164.61	149.33
Apr-17	144.79	159.49	144.69
May-17	133.91	152.67	138.50
Jul-17	202.07	147.53	133.84
Aug-17	213.98	144.51	131.10
Sep-17	221.71	149.80	135.90
Oct-17	197.55	158.57	143.85
Nov-17	202.56	156.87	142.31
Dec-17	219.70	149.05	135.22
Jan-18	256.30	150.02	136.10
Feb-18	284.62	146.66	133.05
Mar-18	236.33	142.90	129.64
Apr-18	151.36	140.86	127.79
May-18	107.58	142.73	129.48
Jul-18	177.23	130.27	118.18
Aug-18	167.63	120.69	109.49
Sep-18	143.14	112.50	102.06

6.6 Coffee export volumes and FOB values by destination for 2017/2018 and 2016/2017

Table 21. Coffee export volumes and FOB values by destination for 2017/2018 (Source: Agriculture and Food Authority, 2018)

DESTINATION	NO BAGS	NET WEIGHT-kg	FOB VALUE ($)	%
UNITED STATES	113,406	6,804,346.80	42,020,595.99	16%
GERMANY	112,917	6,775,017.40	36,384,785.25	16%
BELGIUM	101,235	6,074,113.00	31,370,405.96	14%
KOREA, REPUBLIC OF	87,111	5,226,660.00	25,129,162.36	12%
SWEDEN	58,824	3,529,429.80	20,020,999.94	8%
AUSTRALIA	25,278	1,516,682.00	9,545,978.94	4%
FINLAND	23,076	1,384,560.00	6,667,018.26	3%
NORWAY	18,344	1,100,630.00	7,554,350.60	3%
UNITED KINGDOM	16,599	995,939.00	7,619,340.59	2%
TUNISIA	15,945	956,720.00	2,364,784.63	2%
CANADA	15,599	935,930.00	5,676,682.26	2%
NETHERLANDS	13,412	804,709.00	4,764,372.73	2%
JAPAN	12,587	755,226.51	5,342,535.45	2%
SPAIN	10,637	638,220.00	3,641,816.71	1%
UNITED ARAB EMIRATES	10,454	627,240.00	1,303,651.22	1%
ROMANIA	10,220	613,200.00	3,433,881.12	1%
SYRIAN ARAB REPUBLIC	8,720	523,200.00	988,200.00	1%
JORDAN	8,411	504,660.00	2,105,790.00	1%
FRANCE	7,747	464,820.00	1,289,510.33	1%
INDIA	7,096	425,760.00	995,404.44	1%
ITALY	6,751	405,052.00	1,223,143.75	1%
SWITZERLAND	4,360	261,600.00	1,323,982.08	1%
NEW ZEALAND	4,052	243,108.00	1,359,062.68	1%
CROATIA	3,840	230,400.00	488,781.12	1%
TAIWAN	3,839	230,348.80	1,751,498.77	1%
REPUBLIC OF DJIBOUTI	3,720	223,200.00	308,760.00	1%
SAUDI ARABIA	2,869	172,140.00	1,094,694.66	0%
CHINA	2,447	146,807.00	921,103.90	0%
SOUTH AFRICA	1,843	110,593.00	565,870.15	0%
MADAGASCAR	1,680	100,800.00	252,000.00	0%
TURKEY	1,324	79,440.00	239,375.55	0%
RUSSIAN FEDERATION	1,215	72,900.00	287,635.17	0%
OMAN	989	59,340.00	155,106.90	0%
POLAND	930	55,800.00	100,440.00	0%
DENMARK	678	40,680.00	351,540.77	0%
IRAN	647	38,800.00	139,405.00	0%
MALAYSIA	600	36,000.00	55,908.00	0%
LEBANON	462	27,747.00	79,675.24	0%
HONG KONG	414	24,840.00	157,228.28	0%
BULGARIA	320	19,200.00	121,339.33	0%
GREECE	320	19,200.00	62,976.00	0%
SINGAPORE	250	15,000.00	108,030.00	0%
LATVIA	188	11,280.00	92,587.00	0%
PHILLIPINES	100	6,000.00	36,068.40	0%
CZECH REPUBLIC	18	1,090.00	7,537.00	0%
BELIZE	15	900	7,038.00	0%
IRELAND	5	286	4,350.00	0%
TOTAL	**721,494**	**43,289,615.31**	**229,514,404.53**	**100%**

Table 22. Coffee export volumes and FOB values by destination for 2016/2017 (Source: Agriculture and Food Authority, 2018)

DESTINATION	NO BAGS	NET WEIGHT-kg	FOB VALUE ($)	%
UNITED STATES	147,846	8,870,757.80	54,677,941.23	20%
GERMANY	138,139	8,288,360.00	40,145,963.19	19%
BELGIUM	99,295	5,957,720.00	31,821,911.87	14%
SWEDEN	61,453	3,687,200.00	20,592,971.46	9%
KOREA, REPUBLIC OF	41,581	2,494,845.60	12,674,192.50	6%
FINLAND	24,760	1,485,600.00	7,337,307.61	3%
UNITED KINGDOM	19,564	1,173,839.00	7,964,024.33	3%
NORWAY	18,627	1,117,602.00	7,277,733.94	3%
FRANCE	16,341	980,450.00	2,803,088.37	2%
AUSTRALIA	16,314	978,841.00	6,156,357.56	2%
SPAIN	14,602	876,120.00	4,155,924.63	2%
CANADA	13,533	811,960.00	4,629,647.21	2%
JAPAN	12,839	770,360.00	4,940,041.66	2%
SYRIAN ARAB REPUBLIC	11,950	717,000.00	1,316,304.00	2%
NETHERLANDS	10,460	627,600.00	3,740,219.14	1%
SAUDI ARABIA	7,987	479,220.00	1,460,118.04	1%
UNITED ARAB EMIRATES	7,367	442,000.00	1,143,863.00	1%
TAIWAN	5,900	354,014.80	1,690,667.90	1%
INDIA	5,483	328,980.00	529,476.60	1%
DENMARK	5,062	303,694.58	1,722,844.85	1%
NEW ZEALAND	5,018	301,080.00	1,466,311.74	1%
TUNISIA	5,000	300,000.00	1,225,626.60	1%
ITALY	4,932	295,900.00	1,247,808.63	1%
ROMANIA	4,540	272,400.00	1,721,128.80	1%
JORDAN	4,084	245,040.00	1,034,173.00	1%
RUSSIAN FEDERATION	2,720	163,200.00	333,223.92	0%
SWITZERLAND	2,560	153,600.00	639,744.00	0%
TURKEY	1,637	98,220.00	284,475.10	0%
CHILE	1,600	96,000.00	164,280.00	0%
GREECE	1,600	96,000.00	341,184.00	0%
MOROCCO	1,600	96,000.00	164,760.00	0%
CHINA	1,448	86,870.00	671,798.02	0%
IRELAND	1,285	77,100.00	471,364.95	0%
ISRAEL	1,280	76,800.00	268,393.69	0%
SOUTH AFRICA	1,075	64,500.00	317,050.80	0%
SOUTH SUDAN	960	57,600.00	107,520.00	0%
LEBANON	640	38,400.00	78,600.00	0%
MALAYSIA	521	31,260.00	105,781.39	0%
OMAN	327	19,620.00	51,764.20	0%
BELIZE	316	18,930.00	159,874.80	0%
IRAN	300	18,000.00	67,800.00	0%
NIGERIA	272	16,320.00	67,674.00	0%
SINGAPORE	100	6,000.00	31,572.39	0%
HONG KONG	62	3,720.00	25,482.00	0%
TOTAL	**722,979**	**43,378,724.78**	**227,827,991.12**	**100%**

6.7 Dealers and marketing agents export performance for 2017/18 and 2016/2017

Table 23. Dealers and marketing agents export performance for 2017/18 (Source: Agriculture and Food Authority, 2018)

EXPORTER	NO. OF BAGS (60 kg)	NET WEIGHT-kg	FOB VALUE (US$)	%
IBERO (KENYA) LTD	107,096	6,425,760.20	32,906,170.01	14.8%
TAYLOR WINCH COFFEE LTD	104,886	6,293,184.00	27,777,900.29	14.5%
KENYACOF LIMITED	69,718	4,183,105.00	24,581,194.57	9.7%
C DORMAN LTD	69,152	4,149,117.80	25,857,344.31	9.6%
COFFEE MANAGEMENT SERVICES LIMITED	59,019	3,541,128.80	28,846,144.14	8.2%
LOUIS DREYFUS COMPANY KENYA LIMITED	46,600	2,796,020.00	10,419,553.76	6.5%
SERVICOFF LIMITED	44,820	2,689,200.00	18,853,849.92	6.2%
DIAMOND COFFEE CO LTD	33,395	2,003,700.00	9,217,872.00	4.6%
RASHID MOLEDINA & CO. (MSA) LTD	28,422	1,705,300.00	4,241,436.00	3.9%
MUMBI COFFEE MERCHANTS LIMITED	28,243	1,694,580.00	6,484,611.86	3.9%
TROPICAL FARM MANAGEMENT	18,928	1,135,680.00	5,757,837.44	2.6%
SONDHI TRADING LIMITED	18,308	1,098,493.00	5,244,396.64	2.5%
ENGELHART CTP KENYA LIMITED	12,900	774,000.00	3,368,607.36	1.8%
JOWAM COFFEE TRADERS LIMITED	11,860	711,600.00	4,161,458.40	1.6%
AFRICOFF TRADING COMPANY LIMITED	11,612	696,737.00	3,889,225.00	1.6%
MOMBASA COFFEE LTD	8,564	513,840.00	813,433.68	1.2%
KENYA CO OPERATIVE COFFEE EXPORTERS LIMITED	8,310	498,593.00	3,826,452.93	1.2%
KYANDU TRADING CO. LTD	8,049	482,962.00	1,928,989.82	1.1%
JOSRA COFFEE COMPANY LTD	4,630	277,783.00	1,932,618.56	0.6%
EAST AFRICAN GOURMET COFFEES LIMITED	4,200	252,000.00	1,841,987.93	0.6%
ALANWOOD LIMITED	3,700	222,020.00	977,124.00	0.5%
SASINI PLC	2,801	168,060.00	1,201,324.19	0.4%
AFRICA GOLD COFFEE LIMITED	2,330	139,800.00	630,204.00	0.3%
KENYA NUT CO LTD	1,972	118,320.00	892,233.66	0.3%
KIMANI COFFEE EXPERTS LIMITED	1,965	117,910.00	732,586.40	0.3%
GOLDROCK INTERNATIONAL ENTERPRISES(K) LTD	1,747	104,805.00	445,053.10	0.2%
EAGLE CROWN COFFEE LTD	1,605	96,300.00	439,548.12	0.2%
ROSIE VAM DYKE COMPANY LIMITED	1,135	68,100.00	387,830.00	0.2%
CONNECT COFFEE COMPANY.	960	57,600.00	512,568.00	0.1%
AFRICA TEA AND COFFEE CO. LTD	900	54,000.00	72,900.00	0.1%
STAR COFFEE (K) LTD	840	50,400.00	375,120.00	0.1%
EXPORT TRADING CO LTD	772	46,346.00	109,636.47	0.1%
REJITEK COFFEE COMPANY LTD	643	38,567.00	144,250.00	0.1%
CLASSIC COFFEE LIMITED	405	24,300.00	145,175.00	0.1%
JEMMAN COFFEE AND MINING LTD	333	20,000.00	184,000.00	0.0%
SUPER GIBS LTD	271	16,246.00	78,270.00	0.0%
ROCKBERN COFFEE GROUP LTD	206	12,389.00	122,863.25	0.0%
SUSTAINABLE MANAGEMENT SERVICES LIMITED	110	6,600.00	69,328.32	0.0%
COFFEE EXPORTERS (K)LTD	61	3,652.00	23,738.00	0.0%
KAIZEN EXPORT LIMITED	16	930.00	8,649.00	0.0%
DORMANS COFFEE LIMITED	8	486.51	10,918.40	0.0%
GRAND TOTAL	**721,494**	**43,289,615.31**	**229,514,404.50**	**100.0%**

Table 24. Dealers and marketing agents export performance for 2016/17 (Source: Agriculture and Food Authority, 2018)

EXPORTER	NO. OF BAGS (60kg)	NET WEIGHT –kg	FOB VALUE (US$)	%
IBERO (KENYA) LTD	107,362	6,441,724.00	31,180,612.14	14.80%
TAYLOR WINCH COFFEE LTD	93,133	5,587,972.00	26,976,258.40	12.90%
KENYACOF LIMITED	72,732	4,363,932.00	22,808,636.81	10.10%
C DORMAN LTD	59,121	3,547,270.00	23,035,657.35	8.20%
ENGELHART CTP KENYA LIMITED	43,396	2,603,770.00	12,601,944.59	6.00%
LOUIS DREYFUS COMPANY KENYA LIMITED	38,170	2,290,229.80	10,364,591.86	5.30%
DIAMOND COFFEE CO LTD	34,307	2,058,400.00	9,158,892.00	4.70%
SERVICOFF LIMITED	32,586	1,955,160.00	14,558,195.21	4.50%
RASHID MOLEDINA & COMPANY (MSA) LIMITED	23,331	1,399,840.00	3,263,869.00	3.20%
MUMBI COFFEE MERCHANTS LIMITED	22,122	1,370,520.00	4,792,604.32	3.20%
SONDHI TRADING LIMITED	11,832	709,920.00	3,983,367.09	1.60%
MOMBASA COFFEE LTD	9,80	589,800.00	1,012,046.00	1.40%
EAST AFRICAN GOURMET COFFEES LIMITED	9,60	576,000.00	3,600,356.92	1.30%
AFRICOFF TRADING COMPANY LIMITED	9,341	560,440.00	2,811,342.00	1.30%
KYANDU TRADING COMPANY LIMITED	9,229	553,730.00	1,531,676.08	1.30%
REJITEK COFFEE COMPANY LTD	8,640	518,400.00	1,075,680.00	1.20%
KENYA CO OPERATIVE COFFEE EXPORTERS LIMITED	7,567	454,014.80	3,666,713.52	1.00%
JOWAM COFFEE TRADERS LIMITED	6,320	379,200.00	2,144,010.00	0.90%
JOSRA COFFEE COMPANY LTD	4,837	290,220.00	1,869,018.51	0.70%
AFRICA GOLD COFFEE LIMITED	3,055	183,320.00	400,236.00	0.40%
AFRICAN COFFEE ROASTERS EPZ LTD	2,797	167,818.58	1,136,844.78	0.40%
ALANWOOD LIMITED	2,548	152,880.00	735,413.00	0.40%
SANGANA COMMODITIES LTD	2,541	152,432.00	817,042.23	0.40%
M. A. PANJU & BROTHERS LTD	1,963	117,804.00	812,092.88	0.30%
EXPORT TRADING COMPANY LTD	1,480	88,800.00	185,767.92	0.20%
MERALI DEWJI & SONS (K) LTD	1,432	85,940.00	470,591.72	0.20%
EAGLE CROWN COFFEE LTD	1,274	76,440.00	598,890.78	0.20%
KENYA NUT COMPANY LTD	1,000	60,000.00	468,579.93	0.10%
STAR COFFEE (K) LTD	912	54,720.00	305,810.00	0.10%
SUPER GIBS LIMITED	760	45,600.00	296,514.00	0.10%
KIMANI COFFEE EXPERTS LIMITED	663	39,780.00	268,038.93	0.10%
WAYLITE ENTERPRISES LIMITED	640	38,400.00	78,600.00	0.10%
EXPORT TRADING CO LTD	320	19,200.00	92,359.68	0.00%
PROSPECTS INTERNATIONAL LIMITED	320	19,200.00	44,544.00	0.00%
KUTTUM LIMITED	311	18,660.00	26,124.00	0.00%
GLOBAL AFREA COMPANY LIMITED	105	6,270.00	43,124.70	0.00%
DORMANS COFFEE LIMITED	18	1,101.60	26,501.26	0.00%
ORION EAST AFRICA LIMITED	4	216	97.2	0.00%
COFFEE MANAGEMENT SERVICES LIMITED	63,000	3,780,016.00	29,150,820.97	8.70%
TROPICAL FARM MANAGEMENT	13,596	815,770.00	3,411,057.08	1.90%
SASINI LIMITED	12,370	742,200.00	5,325,917.76	1.70%
OAKLANDS COFFEE MARKETING LIMITED	5,760	345,600.00	1,941,399.36	0.80%
CLASSIC COFFEE LIMITED	1,049	62,925.00	397,401.53	0.10%
SUSTAINABLE MANAGEMENT SERVICES LIMITED	885	53,089.00	358,749.61	0.10%
GRAND TOTAL	**722,259**	**43,378,724.78**	**227,827,991.10**	**100.00%**

References

A Comprehensive Guide on Coffee Farming in Kenya. (2019). Retrieved from https://farmerstrend.co.ke/coffee-farming-guide/

Agriculture and Food Authority. (2018). Coffe Year Book 2017/2018.

CIPS. (2013). Ethical and Sustainable.

Coffee Management Services. (2018). Coffee Economic Viability Study.

FAO. (2000). POST HARVEST HANDLING AND PROCESSING OF COFFEE IN AFRICAN COUNTRIES. Retrieved from http://www.fao.org/3/x6939e/X6939e11.htm

FAO. (2019). Crops (Coffee) (General) Regulations, 2019 (L.N. No. 102 of 2019). Retrieved from http://www.fao.org/faolex/results/details/en/c/LEX-FAOC187959/

Ghirardelli, E. (2019). Coffee Prices Decline, Why It Happened And How To Stop It. Retrieved from https://coffeebi.com/2019/01/07/coffee-prices-decline-why-it-happened-and-how-to-stop-it/

Gituma, K., & Fuchaka, W. (2017). Enhancing benefits from biomass wastes within small-medium scale coffee processing factories in Kiambu County, Kenya. African Journal of Environmental Science and Technology, 11(4), 198–206. https://doi.org/10.5897/ajest2016.2243

Kenya Bureau of Standards. (2004). Coffee Standards. Retrieved from http://onlinecatalogue.kebs.org/webquery.dll

International Coffee Organization, 2019. COUNTRY COFFEE PROFILE KENYA, (March).

Joakim, P. (2012). Kenya General Information. Retrieved from https://nordicapproach.no/2012/05/20120520kenya-general-information/

Markham, D. (2016). This company converts coffee cherry pulp into a nutritious (flourless) flour. Retrieved from https://www.treehugger.com/green-food/company-converts-coffee-cherry-pulp-nutritious-flourless-flour.html

Mersie, A. (2019). Kenya's coffee crop nosedives due to high temperatures, low prices. Retrieved from https://www.reuters.com/article/us-climate-change-kenya-coffee/kenyas-coffee-crop-nosedives-due-to-high-temperatures-low-prices-idUSKBN1YE1EK

Milton, J. (2020). 25 Top Coffee-Producing Countries in 2020. Retrieved from https://elevencoffees.com/top-coffee-producing-countries/

Monroy L., Mulinge W., W. M. (2013). Analysis of Incentives and Disincentives for Coffee in Kenya July 2013, (July).

Ministry of Food and Agriculture. (2019). MEDIUM TERM EXPENDITURE FRAMEWORK (MTEF).

Muthoni, M. P. (2014). Coffee Value Chain Analysis in Kenya (A case of Kenya Planters Cooperative Union), 6(5), 207–215.

Nairobi Coffee Exchange, N. (2014). Nairobi Coffee Exchange, 8. Retrieved from http://nairobicoffeeexchange.co.ke/phocadownload/General/NCE-2014-2017-Strategic-Plan.pdf

Ndirangu, W. (2020). Government Launches Coffee Revitalization Project. Retrieved from https://www.kenyanews.go.ke/government-launches-coffee-revitalization-project/

Nganga, J. N. (2019). Kenya Coffee Grading. Retrieved from https://espressocoffeeguide.com/gourmet-coffee/arabian-and-african-coffees/kenya-coffee/kenya-coffee-grading/

Ngibuini, D. (2019). What's Causing The Generation Gap in Kenyan Coffee Production? Retrieved from https://perfectdailygrind.com/2019/12/whats-causing-the-generation-gap-in-kenyan-coffee-production/

NGUNJIRI, J. (2018). Kenyan coffee ranks among the world's top beans. Retrieved from https://www.nation.co.ke/lifestyle/smartcompany/Kenyan-coffee-ranks-among-the-world/1226-4255704-2dbddf/index.html

Scholar, L. (2018). Formation and Regesteration of Co-operative Societies. Retrieved from https://legalscholarsite.com/formation-and-registration-of-co-operative-societies-kenya/

The Coffee Cherry Co. (2020). Coffee nutritional information. Retrieved from https://coffeecherryco.com/nutrition/

Townsend, S. (2020). Kenya Coffee Annual Kenya Coffee Sector to Decline as Reforms Fall Short.

United Nations Industrial Development Organisation. (2013). Traceability Manual : Traceability in the Green Coffee.

USAID. (2010). KENYA COFFEE INDUSTRY VALUE CHAIN ANALYSIS, (May).

Wikiprocedure. (2019). Kericho - Obtain Coffee Warehouseman Certificate. Retrieved from https://www.wikiprocedure.com/index.php/Kericho_-_Obtain_Coffee_Warehouseman_Certificate

Workman, D. (2020). Coffee Imports by Country. Retrieved from http://www.worldstopexports.com/coffee-imports-by-country/

The **Fondazione Eni Enrico Mattei (FEEM)**, founded in 1989, is a non profit, policy-oriented, international research center and a think-tank producing high-quality, innovative, interdisciplinary and scientifically sound research on sustainable development. It contributes to the quality of decision-making in public and private spheres through analytical studies, policy advice, scientific dissemination and high-level education. Thanks to its international network, FEEM integrates its research and dissemination activities with those of the best academic institutions and think tanks around the world.

Fondazione Eni Enrico Mattei
Corso Magenta 63, Milano – Italia

Tel. +39 02.520.36934
Fax. +39.02.520.36946

E-mail: letter@feem.it
www.feem.it

FEEM
FONDAZIONE ENI ENRICO MATTEI