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Analysis of The Impact of Agricultural Policies on Food Security in Kenya

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Abstract

Agricultural policies consist of laws and regulations set by the government to control both domestic and foreign agricultural activities and the trade of agricultural and related products. The policies set by the government have both direct and indirect effects on the agricultural sector which affects the food security state. Kenya has been on the frontline in fighting food insecurity but it is far from becoming a food secure country. To help improve the agricultural sector towards fighting food insecurity, there has been an establishment of various key policies over time. Economic Recovery Strategy (ERS), Agriculture Sector Development Strategy (ASDS), Strategy for Revitalizing Agriculture (SRA), Poverty Reduction Strategy Paper (PRSP), and Vision 2030 are some of the key policies put in motion to help fight against food insecurity. Despite the effort put in place by government and private organizations, Kenya is still facing a lot of challenges in the agricultural sector such as land pressure due to increasing population, the inadequacy of agricultural research and agricultural extension services, climate change, insufficient stewardship of fishing grounds, pests and diseases, public expenditure, and infrastructure leading to high rate of food insecurity. The study uses secondary data to analyze the effects of various agricultural policies implemented over time on Kenya's food security. Also, the paper provides key recommendations that can help fight against food insecurity in Kenya.

Keywords: Kenya, Agricultural policies, Food security, Trade and consumption

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INTRODUCTION

Kenya is a developing country with a GDP of $95.5 billion. The agricultural sector plays a key role in Kenya's economy contributing 51 percent to the total GDP; 26% directly and around 26% indirectly (World Bank, 2019). The agricultural sector employs the highest number of Kenyans accounting for 60 percent of employed and 65 percent of Kenya's total exports. Despite of the agricultural sector being the largest employer, it is dominated by small-scale farmers who owns an average of between 0.2 and 3 hectares. In comparison with large-scale producers, small scale farmers' production is around 78 percent of the total agricultural production. Kenya's agricultural GDP is driven by cash crops and horticulture as compared to food crops such as cereals. The sector is dominated by mostly poor people trying to make a living and not necessarily for commercial productions.

Kenya’s agricultural sector has been classified to six major subsectors; food crops, horticulture, industrial crops, livestock, fisheries, and forestry. According to Government of Kenya Report (2017), horticulture is the largest subsect contributing around 33%, industrial crops 17%, food crops contribute 32%, the livestock subsector contributes 17% of Agricultural GDP. In terms of export share, horticulture subsector takes the largest share of 33$, livestock 7% while food crops contribute 0.5% of the agricultural GDP. The government has been in the frontline to fight against food insecurity through establishment of different types of policies but due to poor implementation methods most of these polices do not achieve the expected results. To introduce stability in agricultural production, advancement of marketing structures, commercialization of agriculture through agribusiness and to promote environment sustainability, several policies have been implemented over time. There are more than 130 legislation pieces in Kenya that affect the agricultural sector both directly and indirectly (Faling, 2020). On top of this, other draft policies such as the National Land Use Policy, National Irrigation Policy, National Seed Policy, National Agriculture Research Policy and National Horticultural Policy among others have been established (Government of Kenya Report, 2010).

METHODOLOGY

This study employed descriptive research designs. This design helps to answer the questions of who, what, when, where, and how a phenomenon is related to a specific research problem. Descriptive research also helps to get information on the existing problem under study and to describe “what exists” with regards to the study variables. The reason for this design is that the study used secondary data which is hard to manipulate, unlike primary data that can be manipulated easily. The data was collected by reviewing policy documents, journals, articles, and other relevant materials. The data was also obtained from Government of Kenya database, the Ministry of Agriculture, Fishery and Livestock, Planning and National Development Ministry, the Ministry of Agriculture and Rural Development, and the Food and Agriculture Organization of the United Nations.

RESULTS AND DISCUSSIONS

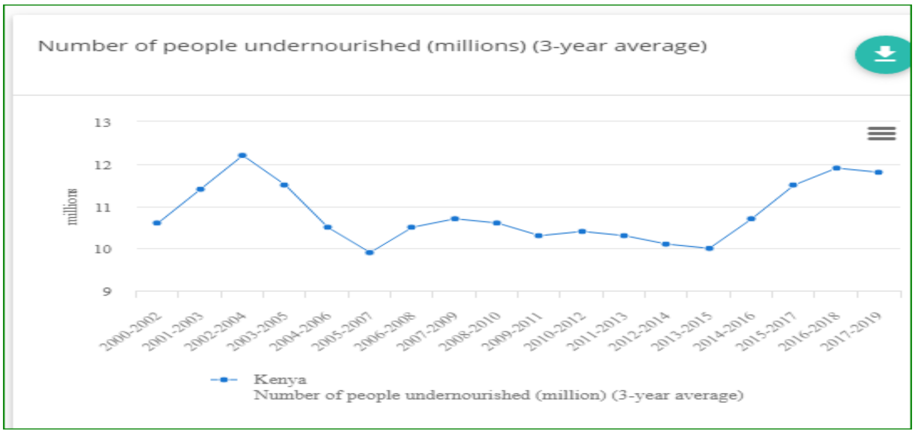
This section presents findings on economic impact of agriculture, food security state in Kenya and other East Africa countries, agricultural policies, agricultural production, trade and consumption, challenges as well as policy recommendations to achieving food security.

The State of Food Security in Kenya

Agriculture remains the highest economic earner in Kenya. 75% of the population makes their income from Agriculture related activities (U.S Agency for International Development,2020). However, food security in Kenya is far from being sufficient. Poor access to financial services, current technology, and crises such as dry weather and foods make many families vulnerable. Despite having a large population involved in the agricultural sector, Kenya is far from attaining food security for all Kenyans. With a population of 50 million, 25% of this live in underdeveloped housing and suffer a lot from food insecurity and diseases. Kenyans who are most vulnerable to food insecurity live in Arid and Semi-Arid areas.

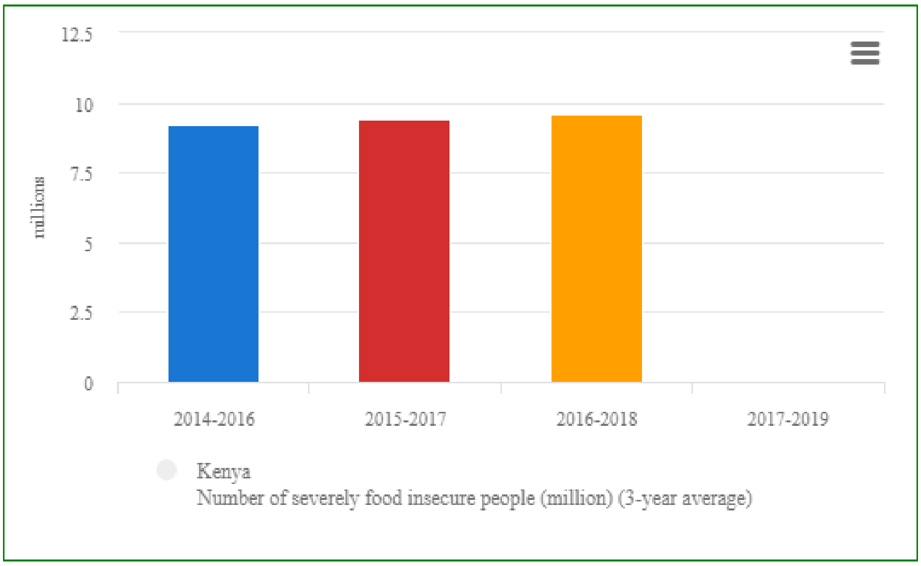
Kenya has a landmass of approximately 592,000 km^2 of which 80% is semi-arid and 20% is arable land. Kenya has a huge potential to improve agricultural productivity and move towards achieving food security.

The state of food Security in Kenya can be evaluated by looking at the number of undernourished people, as revealed in figure 1 and 2. Undernourished people do not have access to sufficient nutritious foods for the proper sustenance of their bodies. The three year average on the number of people malnourished has been fluctuating according to the data above. Between 2000 and 2005, this figure reached 12 million markets; however, between 2005 and 2014, and specifically during the 2006 and 2007 period, there was an improvement (FAO, 2020). However, data from 2015 through to 2019 point to a worrying trend of an increase in the number of undernourished people. Also, in the other graph presented above, the number of people who face acute food security has been on the rise between 2016 and 2018, almost reaching 10 million people (FAO, 2020).



Source:(FAOSTAT, 2020)

Figure 1. Kenya's Three Year Average of the Number of Undernourished People



Source:(FAOSTAT, 2020)

Figure 2. The Graph Showing the Number of People that Facing Severe Food Security Challenges

Lack of nutritionally differentiated food supplements and poor value addition processes in Kenya, which had failed to reach the levels it had reached in 2006, also contributes to low food security levels in the country. In 2020, delayed planting was occasioned by the fall of heavy rains in the country in February, leading to a potential delay in harvesting (FEWS.NET, 2020).

When harvesting is delayed, the country's existing food reserves are depleted, leading to a potential lack of food security as prices of basic staple food commodities like maize soar. The occurrence of heavy rains in April also leads to flooding. Flooding destroyed some crops that had reached knee height. The price of maize and other flours has been increasing, and the increase in the price of maize in 2020 has been higher than the overall increase in other years(FEWS.NET, 2020). As a subsistence farmer, if he cannot access the right market for his agricultural goods, he can be discouraged and shift to another economic activity. Kenyan farmers face unfavorable terms of trade and the loss of a major chunk of their revenue by selling food substances to the middlemen instead of urban centers.

Food lost and wastage is a key factor contributing to food insecurity not only in Kenya but also in the whole world. Graph 3 shows the percentage of the food commodity lost throughout the value chain is so high at production and so low at consumption. Among the Kenyan farmers, the losses attributed to the crop after the harvesting activities reduces the number of foods and the quality of food substances that reach the market. Reduced storage facilities and increased harvest causing an oversupply in the market, contribute to the post-harvest losses. Lack of technologies to ensure that the foods are available in periods of plenty and periods of plenty affects food security (Ridolfi, Hoffman & Siddharta,2018). According to FAO, 2020, about 14% of world's food is lost even before reaching to market. The total food loss and wastage is valued at around $400 billion annually. The World Food Programme (WFP), Food and Agriculture Organization and the UN Environment Programme (UNEP), have been leading the fight against food loss and wastage as it is a key contributor of food insecurity world. During the first international day of awareness of food loss and waste on 29 September 2020, FAO Director- General QU Dongyu, urged for strong partnerships between public and private investments to help fight food loss and waste with the main goal of improving food security and protecting the environment. According to QU Dongyu 2020, there is urgent need to train small-scale farmers, more application of technology and innovation to step up the fight against food loss and waste. In 2020, delayed planting was occasioned by the fall of heavy rains in the country in February, leading to a potential delay in harvesting (FEWS.NET,2020). When harvesting is delayed, the country's existing food reserves are depleted, leading to a potential lack of food security as prices of basic staple food commodities like maize soar. The occurrence of heavy rains in April also leads to flooding. Flooding destroyed some crops that had reached knee height. The price of maize and other flours has been increasing, and the increase in the price of maize in 2020 has been higher than the overall increase in other years(FEWS.NET,2020). As a subsistence farmer, if he cannot access the right market for his agricultural goods, he can be discouraged and shift to another economic activity. Kenyan farmers face unfavorable terms of trade and the loss of a major chunk of their revenue by selling food substances to the middlemen instead of urban centers. Among the Kenyan farmers, the losses attributed to the crop after the harvesting activities reduces the number of foods and the quality of food substances that reach the market. Reduced storage facilities and increased harvest causing an oversupply in the market, contribute to the post-harvest losses. Lack of technologies to ensure that the foods are available in periods of plenty and periods of plenty affects food security (Ridolfi et al., 2018).

General View of Food Security in Kenya and other East African Countries

Across East Africa, there are acute cases of food insecurity. In 2019, over 18.7 million people in East Africa were facing malnutrition. This is a rise from 16.9 million people in 2018. 12.5 million people in Kenya, Somalia, South Sudan, and Ethiopia face food shortages (World Food Programme, 2019). The main cause of food insecurity has been the extreme weather conditions, i.e., too much flooding in some areas and too many dry conditions in other areas. Within the region, at least 2.5 million people face severe food shortages as a result of the floods (World Food Programme, 2019). As indicated in the table below, Eastern Africa countries have high rate of food insecurity and it keep on increasing. The reasons that have contributed to food insecurity in East Africa can be classified into three; Climate shocks, economic shocks, political instability, and conflicts and insecurity. In Eastern Africa countries, despite having high percentage of their population living in Rural areas, participating in agriculture, there is no correlation with agricultural productivity. Agriculture productivity is still low and food produced is not able to meet food demand thus leading to food insecurity. Eastern Africa countries are still relying on agriculture as a major source of livelihood but the full potential of the agricultural sector in terms productivity and revenue generation. Also, the support offered to the agricultural sector by these countries is not much thus lack of enabling and conducive environment for agricultural activities and related businesses have contributed a lot to food insecurity.

Table 1. Food Crisis Levels in Eastern Africa

Country	Population (Millions)	% of people living in Rural and Urban Areas	Food-Insecure People In Need Of Assistance (Millions)	Food Insecurity Levels
Djibouti	0.927	22% Rural, 78% Urban	0.157 1	Crisis And Emergency
Ethiopia	112.1	80% Rural, 20% Urban	8.1	Crisis And Emergency
Kenya	46.3	73% Rural, 27% Urban	2.6	Crisis And Emergency
Somali	13.9	56% Rural, 44% Urban	2.7	2.2m Crisis 496 000 Emergency
South Sudan	11	81% Rural, 19% Urban	6.1	4.3m Crisis 1.7m Emergency 47 000 Catastrophe
The Sudan	43.9	66% Rural, 34% Urban	6.2	5.6m Crisis 601 000 Emergency
Uganda	44.2	77% Rural, 23% Urban	1.1	Crisis And Emergency
Rwanda	12.63	80% Rural, 20% Urban	1.8	Crisis And Emergency
Tanzania	53.5	70% Rural, 30% Urban	2.1	Crisis And Emergency
Burundi	11.53	87% Rural, 13% Urban	1.7	Crisis And Emergency

Source: Regional Focus on the Intergovernmental Authority On Development (IGAD) Global Report on Food Crises 2019

Agricultural Policies in Kenya

Agricultural policies play a critical role in the development of the agricultural sector, empowering farmers, promoting marketing and trade of agricultural products, developing public investments supporting agriculture, and assisting in the accessibility of farm inputs and related services. In 2017, President Uhuru Kenyatta launched the “Big Four Agenda” that aimed at steering Kenya’s economy. The big four agendas; food security and nutrition, affordable housing, universal healthcare, and manufacturing. According to the President, the food security agenda objective is to ensure the country moves towards becoming a food secure country; all Kenyans to have access to physical, social, and economic access to safe, nutritious, and sufficient food that meets their dietary needs at all time. Food security and nutrition aim at enhancing large-scale agricultural production and at the same time empowering smallholders to improve and commercialize their products. To achieve this, the government has embarked on reforming the old policies, formulation, and implementation of new policies and strategies (Government of Kenya, Big Four Agenda Report, 2017). The government’s Food and Nutrition Agenda is a ten-year Agricultural Sector Growth and Transformation Strategy (ASGTS) plan aiming at achieving low agricultural product prices and empowering farmers by increasing accessibility to farm inputs, improving extension services, and investing more in research and technology. Since the establishment of ASGTS, government priorities have been shifting the key objective of fighting food insecurity to more politics which have even worsened food security states in Kenya (Government of Kenya, Big Four Agenda Report, 2017). In the 2020/2021 budget, the Government of Kenya increased finance allocation from 1.57 % of the total budget in 2019/2020 to 2.09% of the total budget. As indicated on the table 2, budget allocation to the agricultural sector is way too low hence contributing to poor performance of the agricultural sector in Kenya. Despite the effort Kenya is making, it continues to default the commitment made by the African Union in July 2003 in Maputo; The Maputo Declaration for country members to spend at least 10% of the total yearly budget on agriculture (Research Institute (IFPRI), 2013). Despite the important role the agricultural sector plays in Kenya’s economy, the total amount allocated to the agricultural sector in Kenya is less than 3% of the total budget as shown on table 2. This continues to hinder growth in the agricultural sector hence contributing to the increasing food insecurity rate in the country.

Table 2. Budget Allocation to the Agricultural Sector

Financial Years	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
Total Budget (Billion)	$20.5	$24.9	$22.9	$25.0	$32.0	$29.10
Total Allocated to the Agricultural Sector (Million)	$461	$452	$440	$450	$501	$607
Allocation Percentage	2.25%	1.82%	1.92%	1.80%	1.57%	2.09%

Source: The National Treasury https://www.treasury.go.ke/budget.html

The Economic Recovery Strategy (ERS) 2003-2007 was a draft strategy that was implement to develop both agriculture and manufacturing sectors. The strategy involved interventions such as enabling legislation of agricultural institutions, development of irrigation schemes, provision of more extension services and increasing credit accessibility by small scale farmers (Alila and Atieno, 2006).

The implementation of ERS 2003-2007, led to increment of agricultural production as many farmers could access credit. Registered institutions working toward provision of better agricultural services all over the country also plays a key role in ensuring easier accessibility of agricultural services by farmers which in the long run increases production. Kenya is known for overdependence on rainfed agriculture, introduction of policies supporting irrigation development schemes ensure sustainability in agricultural production during the dry season. Policies that were established under this strategy led to an increase of milk and maize production as farmers took credits to increase their dairy farming whereas others could access high quality inputs such as certified maize seeds and subsidized fertilizers which led to higher productivity. The Strategy for Revitalizing Agriculture (SRA) was drafted and endorsed by the government in 2004 spanning up to year 2014 with the objective of creating vibrant and a business oriented agricultural sector to increase employment rate in the sector and also boost participation in regional and international agricultural trades (Bazeley, 2005). The implementation of this strategy led to increment of agribusinesses and most people started appreciating agriculture as a business as policies under this strategy created an enabling environment for conducting businesses, reduction in tax rates, improved transport sector also helps in reducing transportation costs thus adding more profits to farmers. At the same time, youths started to embrace agriculture as a commercial activity as compared to early days, currently the number of youths inclusive of those holding university degrees venturing in agribusiness keeps on increasing. In 2010, this policy was replaced with Agriculture Sector Development Strategy (ASDS) even before its full objectives were attained as expected by year 2014. However, Agriculture Sector Development Strategy (ASDS) was a 2010-2020 policy plan objective was to empower agricultural sector to be able to achieve a 10 % annual economic growth which is envisaged under Vision 2030 economic pillar. Kenya Vision 2030 foresees a food secure country where no person will be left behind in terms of development. The strategy has been working even though not as expected to help small scale farmers to shift from subsistence farming to commercial agriculture (Muraya and Ruigu, 2017). To promote productivity and growth and lowering production costs by reducing agricultural inputs prices, the government of Kenya with collaboration with the World Bank launched a Poverty Reduction Strategy Paper (PRSP in 2005. The objective was to empower small scale farmers who contribute about 70% of marketed agricultural production. The collaboration with the World Bank has led not only to the improvement of agricultural research and extension services provided to farmers but also easier access of credits without requirements of collaterals. This strategy has led to development of insurance covers relating to agricultural sector such as crop and animal insurance covers against natural disasters like floods, drought, etc. Recently, there have been development of insurance covers against lower crop or animal production which have played key role in protecting farmers against great losses that used to occur (World Bank, 2015). Maize is the most consumed agricultural product in Kenya, its Kenyans' staple food. To protect maize production sector, the Government of Kenya established National Cereals and Produce Board (NCPB) to help pursue maize marketing policy objectives. The organization procure maize from farmers, store it and also sell at administratively determined prices while trying to fight against maize shortage in Kenya. NCPB also provides certified seeds to farmers and help in the distribution of subsidized fertilizers to farmers (Onono, et al., 2013). NCPB has been playing a key role to increase maize productivity in Kenya as it not only provide ready market for farmers but also helps in maize distribution across the country. On the negative side, the organization seems to benefit large scale farmers as compared to the benefits small scale farmers gain.

For small-scale farmers, it is very challenging to sell their produce to the board and also to obtain the subsidized fertilizers. Large scale farmers find it very easy to access all services provided by NCPB without much struggle. This has made it hard for NCPB to achieve its objectives and appropriate policies to control corruption in this board are yet to be implemented.

The coffee sector has been negatively affected due to implementation of poor policies. Despite high potential to produce coffee in Kenya, coffee farmers have been forced to uproot coffee plantations to venture into other income generating activities. Policies such as high taxes imposed on farm inputs and withdrawal of farm inputs loan schemes have led to high coffee production costs. To add on poor policies, corruption and impunity in coffee cooperatives have contributed to low coffee prices leading to poor performance in the coffee sector (Kuguru 2016). Tea sector has been performing very well under the organization of Kenya Tea Development Authority (KTDA). The organization was established by the government to help boost tea productivity and also to expand international market for Kenya's tea. KTDA provides ready market for tea farmers thus eliminating lack of market challenges in the sector. Policies such as bonus incentives, fertilizer subsidies and provision of extension services educating farmers on best tea practices, profit maximization and importance of crop diversification has been put in place under KTDA. Despite of all the benefits offered by the organization and boosting Kenya's tea international markets, tea prices in Kenya remains low and farmers do not get good returns as from their efforts (Kirui, 2014). Potato farming occupies a huge part of agriculture in Kenya. To improve potato productivity, the government of Kenya developed the National Potato Industry Policy 2015 focusing on provision of appropriate research services, provision of certified seeds and marketing services for potato farmers. Through the National Government's Ministry of Agriculture and Irrigation 2019, they gazette new regulations requiring all potato packaging to be capped at 50kg. This has helped to reduced potato farmers' exploitation by middlemen and brokers (AGRA, 2019). Dairy Sector in Kenya has been growing over time but still there is a huge opportunity for growth as Kenya has high dairy farming potential. There are many players in the sector such as inputs and services providers, industries, development partners and consumers. However, dairy farming is more dominated by smallholder farmers. To protect the interest of all players involved, Kenya Dairy Board (KDB) was developed to ensure effectiveness in dairy sector. Under the organization, there have been establishment of different market agents, research and development organizations focusing on dairy farming, farmers group organizations, community based and non-government organizations. Other government ministries such us Ministry of Health, Agriculture, Trade, Industry, Cooperative Development, Kenya Agricultural Research Institute (KARI) and Veterinary Vaccine Production Centre(VVPC) have been working in collaboration to ensure high quality and health productivity in the sector (FAO. 2011). To further development of the livestock sector contributing about 2% of total country's earnings, National Livestock Policy was developed. The policy objective is to transform dairy farmers from subsistence to commercial dairy farmers aiming at improving their livelihoods. The policy also in in compliance with Kenya Vision 2030 as it focus on enhancing food and nutrition security for all Kenyans. On the other hand, the policy is working toward boosting industries dealing with livestock product processing which in return creates more employment opportunities. Agricultural Finance Corporation is a development financial institution fully owned by the government of Kenya. It has been in existence since 1963 with one key objective; helping in the development of agriculture as well as agricultural related industries. The organization has been providing credit and loans to farmers and agriculture related companies and provision of technical and managerial assistance to the loan beneficiaries. The agriculture, fisheries, and livestock sector account for a significant share of GDP and export. On the other hand, cereals such as maize, wheat, and rice are imported to meet the country's demand.

The major proportion of marketed agricultural and livestock production consists of horticultural produce and permanent industrial crops with 30.7% and 29.3% of the share to the total production, respectively. Some major crops and products and their recent years are as shown in Table 1 below. The horticulture sector has the largest share of total growth of gross marketed production (2012-2018) with a value of 71% in 2018, livestock and products (66.1%), permanent crops (23.4%), cereals (18.4%), and temporary crops (6.2%) respectively. Wheat (109.2%) and fruits (174.2%) experienced great growth whereas pyrethrum (54.1%) and sisal (30.2%) also lead to the growth of the crop categories. Other key agricultural products have been recording negative growth in the market. They include maize (-24.1%), sugarcane (-5.2%), coffee (-3.5), and sheep, goats, and lambs for slaughter (22.6). This shows that while some agricultural products have been recording positive growth in terms of quantity marketed locally and internationally, others have been recording negative growth.

Table 3. Kenya's Marketed Agricultural Production and Growth

Sectors	Products	Gross Marketed Production (Million in dollar)		Share (%)		Growth of gross marketed production (2012-2018)
		2012	2018	2012 (%)	2018 (%)	
Cereals	Wheat	56.13	117.44	1.6	2.3	109.2
	Maize	131.53	99.87	3.8	2.0	-24.1
	Rice (paddy)	23.23	27.11	0.6	0.5	16.7
	Barley	10.81	9.08	0.3	0.1	-16
	Other Cereals	23.16	36.48	0.6	0.7	57.5
	Cereal total	**244.87**	**290.00**	**6.9**	**5.6**	**18.4**
Horticultural	Cut flowers	649.63	1131.65	18.8	22.7	74.2
	Vegetables	202.25	276.85	5.8	5.5	36.9
	Fruits	46.80	128.31	1.3	2.5	174.2
	Horticultural total	**898.68**	**1536.81**	**25.9**	**30.7**	**71.0**
Temporary crops	Pyrethrum	0.17	0.26	0.0	0.0	54.1
	Sugar-cane	216.76	205.50	6.3	4.1	-5.2
	Tobacco	47.0	2.73	0.1	0.0	-42.1
	Cotton	12.35	12.36	0.3	0.2	0.2
	Other temporary crops	7.13	5.32	0.2	0.1	-25.4
	Temporary crops total	**241.12**	**22,6.17**	**6.9**	**4.4**	**6.2**
Permanent Crops	Coffee	153.75	14,8.38	4.45	3.0	-3.5
	Sisal	29.15	37.94	0.8	0.7	30.2
	Tea	1002.62	1276.69	29.0	25.6	27.4
	Permanent crops total	**1185.52**	**1463.01**	**34.2**	**29.3**	**23.4%**
Livestock & Products	Cattle and Calves for slaughter	541.41	1002.49	16.7	20.1	85.2
	Sheep, goats and lambs for slaughter	100.25	77.59	3.0	1.5	-22.6
	Pigs for slaughter	10.79	23.24	0.3	0.4	115.4
	Poultry and eggs	64.82	120.69	1.8	2.4	86.2
	Wool	0.03	0.0029	0.0	0.0	-90.0
	Hides and skins	15.25	17.16	0.4	0.3	12.5
	Dairy products	151.44	227.05	4.4	4.5	49.9
	Livestock and products total	**88,4.01**	**146,8.22**	**26.6%**	**29.2%**	**66.1%**

Source: FAOSTAT (2018)

Major Trading Agricultural Goods

Kenya relies most of its exports on commodity trade. The value-addition to commodity has not been seen extensively. The value of tea export is the highest in Kenya and its value is also the fourth highest in the world (FAOSTAT 2018). The cut flowers and coffee are also ranked among the highest in their trading volumes in the world. Kenya's top 10 exports accounted for around 83.6% of the overall value of its total exports. The oil seeds subsector recorded the fastest growing rate of up to 24-% from 2018 exports (Daniel W. 2020)

Table 4. Kenya's Top 10 Exports in 2019

Products	**Value (**million)	**% of the total exports**
Live trees, plants, cut flowers	US$779.4	22.6%
Coffee, tea, spices	$612	17.8%
Clothing, accessories (not knit or crochet	$303.7	8.8%)
Ores, slag, ash	$272.6	7.9%
Fruits, nuts	$241.3	7%
Vegetables	$225	6.5%
Knit or crochet clothing, accessories	$191.4	5.6%
Vegetable/fruit/nut preparations	$116.4	3.4%
Tobacco, manufactured substitutes	$70.6	2%
Oil seeds: $65.2 million	$65.2	1.9%

Trade and Consumption

Consumption and trade of agricultural productions in Kenya varies due to seasonal nature of agricultural production and over reliance on rainfed agriculture. Maize is Kenyan's staple food but its productivity have been lagging behind Kenya's population growth rate. Increasing urban population has led to increment in maize demand but domestically produced maize has not been able to meet the demand. Since 2000, there has been deficit in maize production in Kenya which forces importation of maize from neighboring countries like Uganda and Tanzania. In year 2017, due to drought and political instability in the country, there was a huge deficit in maize production. In response, the government of Kenya issued permits lowering maize import to increase maize importation to 6 million 90kg bags to increase maize supply in the market. To ensure all people had access, the government provided a subsidy on maize flour stabilizing prices at Ksh.45 per/kilogram (Kiptanui, 2019). Since then, the government has been implementing policies such as provision of subsidies on fertilizers and certified maize seed to help boost maize production.

Wheat is a key component of Kenya's domestic food production and it constitutes a large part of Kenya's diet. In 2019, wheat production was at 320,000 tonnes compared to domestic wheat consumption of 2,450,000 tones (FAOSTAT, 2019). There is a huge deficit in the sector which is substituted by importing wheat from Russia, Ukraine, the United States and Argentina (Kamwaga et al., 2016).

Rice farming is a key agricultural activity that most small scale farmers depend on to meet their basic needs. Most urban dwellers consume more rice as compared to Kenyans living in rural areas. For low-income consumers, rice accounts 3.9% of the total food expenditure compared to 10.7% of wheat and 11.5% of maize of their total expenditure on food. Rice consumption rate as of 2019 was at 949,000 metric tons per year. Annual rice production in Kenya in 2019 was recorded at 180,000 metric tons making Kenya to have a huge rice deficit. To meet the rice demand, Kenya import most of the rice from Far East Pakistan accounting for the highest percentage of the total rice imports, other countries included Vietnam, Thailand, India, and Egypt. To develop rice production in Kenya, there have been development of different policies and strategies such as National Rice Strategy-1, 2008 – 2018 and as National Rice Strategy-2- 2019-2030. With collaboration with other private organizations like International Rice Research Institute (IRRI) there have been introduction to high quality rice, subsidies on inputs and also provision of certified seeds and market by National Cereals and Produce Board of Kenya (Atera et al., 2018).

The sugar industry in Kenya plays a significant role in the economy; income generation to many small scale farmers, creating employment opportunities and generating revenue for the government. Sugar consumption has been growing steadily due to increasing population growth and growing standards of living. Despite high potential for Kenya to be sugar self-reliance producing country, high cost of production leads to lower productivity. To meet sugar demand, Kenya is forced to import sugar from COMESA countries. Higher production cost is associated with high inputs' cost and higher electricity cost in sugar milling companies. The regional trade and multi-lateral treaties associated with East Africa Communities (EAC), COMESA and World Trade Organization (WTO) has made it easier for Kenya to import sugar from member countries at a minimal or zero tariffs. Imported sugar goes at a lower cost as compared to locally produced sugar, this pause a huge threat to sugar industry in Kenya. For example, Mumias Sugar Company Limited used to be the largest sugar company but due to high production costs, it has failed and gone into huge debts.

The coffee industry for the past years has been a key pillar of Kenya's economy unlike today where the sector performance is not as before. The coffee sector has been a source of livelihoods for many Kenyans, provision of jobs and earning foreign exchange. The government of Kenya (GOK) has, with the support of its development partners, initiated new programs to revamp the sector. Increasing yields, modernization of processing plants, and streamlining of governance in marketing cooperatives, remain crucial to the recovery of Kenya's once key export commodity sector. Domestic coffee consumption is still low compared to other coffee producing countries like Ethiopia. Despite production of high quality coffee, Kenyans prefer tea to coffee, out of the total coffee produced in Kenya, only about 4% of it is consumed locally, therefore, Kenya's coffee relies heavily on export markets. To protect coffee industry, the government of Kenya has placed a 25% tariff on imported coffee thus encouraging consumption of locally produced coffee. Kenya Coffee Producers Association (KCPA) was developed to presented farmers' interests to Coffee Board of Kenya as there have been a lot of exploitation to coffee farmers. Policies in the sector have been all through using top-bottom approach where policies are made without even consulting famers. Therefore, KCPA campaigns for a bottom-top approach where farmers being the key stakeholders in the sector will be included in the development of government interventions in the sector. To promote coffee consumption in Kenya, Coffee Directorate has partnered with Kenya's universities aiming at promoting coffee-drinking culture among youths (International Coffee Organization 2019).

Tea is one of the most popular beverages consumed not only in Kenya but also in the whole world. Kenya is the leading tea exporter in Africa and according to the latest tea export report, Kenya is ranked 3rd tea exporter worldwide after China and India (Kiprotich et al., 2019). Tea coverage are in Kenya is 157,720 hectares, with an average production of 345,817 metric tons per year of which over 325,533 metric tons is are exported. Tea sector has a huge contribution to Kenya’s economy as it constitute about 26% of total foreign exchange and contribute around 4% GDP. The growth of the tea sector is associated with different initiatives and policies by the government and Kenya Tea Development authority (KTDA).

Kenya’s dairy sector is key to development of agriculture in Kenya contributing around %8 of GDP with an annual milk production of 3.43 billion litres. Kenya is the largest milk produced in Sub-Saharan Africa. The dairy sector plays an important role of enhancing food security especially for those communities living arid and semi-arid regions in Kenya. On the other hand, red meat is highly consumed in Kenya constituting of 80% of domestic meat consumption. Cattle and sheep are Kenya’s main source of red meat. Over the past two decade, Kenya has recorded high increase in meat consumption, from 1990 to 2015, beef consumption has increased from 200,000 tons to 500,000 tons. White meat consumption includes pig meats and poultry accounts for 20% of total meat consumed in Kenya. According to FAO (2019), milk consumption is averaging 121 litres, 16kg of meat and 45 eggs per person per year. In 2018, meat, milk and dairy sector recorded a higher turnover of ksh.146 billion from ksh.135.6 billon because of support provided by the National Government, County Government and by private organizations.

Cash Transfer Policy is an intervening policy implemented since 2017 that aims to enable the older adults to receive cash in their pockets as they lack the youthful energy that enabled them to carry out farming. Although this policy is intended to increase food availability to older adults, it is riddled with accountability issues.

Challenges Contributing to Food Insecurity in Kenya

Land and population pressures

Population growth is driving a steady fall in the average farm size in Kenya. Average farm size is falling and land distribution is becoming more concentrated, leading to significant constraints on production, particularly for smallholders. Limited land for agricultural activities have will with no time led to lower agricultural productivity. Also, land degradation have been increasing overtime lowering land productivity rate (Olwande et al., 2015).

Agricultural research and development and agricultural extension

Agricultural extension services are yet to be fully implemented in Kenya. The proportion of farmers accessing extension services is not only low but also accessible to people who are able to afford their services. Extension service officers tend to favor the rich farmers as compared to poor farmers. Budget allocation on agricultural research and extension has been decreasing over time. In a survey conducted in 38 out of 47 counties in Kenya, only 21 % of sampled households accessed extension services, and 59% used the public extension system (Beintema et al., 2018).

Climate change

Climate change has been a great threat to agriculture not only in Kenya but also in the whole world. Kenya agriculture depend on rainfall, thus, due to variability of rainfall which recently rainfall patterns have been changing due to climate change. Lower rainfall lead to shortage in agricultural production whereas during rainfall seasons, floods caused due to higher rainfall also destroy crop plantations.

Insufficient Stewardship of Fishing Grounds

Fishing sector is yet to be fully exploited in Kenya. Illegal, unlicensed and unregulated fishing has been a major challenge. Fish farming volumes have been decreasing for the past few years due to competition from imported cheaper fishes. According to Kenya Marine and Fisheries Research Institute, Kenya has a potential to produce between 150,000 and 300,000 metric tons per year. However, in 2015, total fish production was just 9,000 metric tons. Poor policies have led to insufficient stewardship of fishing grounds. Also, pollution from industries and household wastes to water sources have been observed to affect fishing volumes negatively.

Pests and Diseases

Lack of information, inputs, technology and finance access makes it hard for small scale farmers to manage crops and livestock pest and diseases. Majoring of pest and diseases are manageable but most farmers fail to practice the required control measures. Pest and diseases cause crop loss, lower quality and quantity of crops and livestock which in return leads to lower income. For example, in December 2019, there was invasion of desert locust in many parts of Kenya destroying crops that could have feed thousands of people. According a findings by (FAO, 2020) about 175,000 hectares of crop and pastureland were affected by these locusts which affected almost 164,000 households.

Public Expenditure

The public expenditure allocated in agriculture has been low despite huge contribute of agricultural sector to total GDP. According to 2019/2020 financial year budget, there was an increase in budget allocation in agriculture from Ksh.45 billion to Ksh.52 billion which is 2.9% of the total budget. Kenya is a member of Malabo declaration compromising African Heads of States which requires every country member to commit at least 10% of its total budget to Agriculture with an objective to achieve a 6% growth in agricultural sector.

Infrastructure

Poor and inadequate infrastructure is a major problem facing the agricultural sector in Kenya for a long time. The poor state of transportation, communication, irrigation, markets and storage facilities affect agricultural productivity negatively. Poor infrastructures affects service delivery such as access to extension services, markings, information, education, financial services and education.

CONCLUSION AND RECOMMENDATIONS

The agricultural policies set by the government have both direct and indirect effects on the agricultural sector which in return affects the food security state in a country. The food security agenda established in 2017 by President Uhuru Kenyatta aims at ensuring that the country moves towards becoming a food secure country; all Kenyans have access to physical, social, and economic access to safe, nutritious, and sufficient food that meets their dietary needs at all time. In combination with previously implemented policies and strategies, there has been the development of new policies working toward achieving a food secure country by 2030 in line with Kenya Vision 2030 strategy. Policies such as high taxes on farm inputs (fertilizers, pesticides), and withdrawal of the Farm Inputs Loans Scheme, higher requirements for securing agriculture base loans has led to low productivity in the agricultural sector. The key challenges facing the agricultural sector in Kenya include; land and population pressures, climate change, pests and diseases, inadequate agricultural research and agricultural extension, lower public expenditure, poor infrastructure.

To achieve a food secure country by 2030 as per Kenya Vision 2030's plan policies and incentives need to be implemented to help small scale farmers to shift from subsistence farming to commercial farming. More financial institutions providing agricultural loans and credits by the government need to be put in place, thus, farmers who have not been able to shift to commercial farming due to lack of funds will be in a position to. Kenya has a big potential to produce all the imported agricultural products if efficient policies can be implemented. For instance, there is much potential to produce sugar but due to higher production costs which are caused by higher taxation on inputs, higher electricity costs, and poor transport infrastructures. Reduction of tax on inputs, provision of subsidies on inputs, and purchase support will help in improving all agricultural sectors. The government should work more on the implementation side to increase this policy's effectiveness in low-income areas. For instance, more expansion of the cash transfer program to all areas of the country and increased accountability will benefit more people from the program. The food product subsidies policy, which aims to reduce maize prices for the low-income earners, should be implemented strictly. Its application should be made in consultation with the budget allocation, amount of taxes collected so that the program is sustainable.

Over-reliance on rainfed agriculture is a major issue contributing to food insecurity in Kenya. Irrigation systems need to be developed to boost productivity all year long, offering education to farmers on how to go about it, provision of required facilities will improve agricultural productivity. There should be the introduction of technologies that will contribute to water harvesting which will make other farming practices like irrigation possible.

Promotion of crop diversity and sensitizing the populace on the importance will reduce the reliance people have on maize. One way of promoting other crops' consumption is by adding value and encouraging farmers to grow these crops by paying them promptly once these farmers have delivered this product to the factory for processing. To improve maize's food quality, fortify maize with other nutrients, and develop better seed varieties is a strategy that should be explored.

The government needs to provide subsidies and cut taxation costs on basic food products. This will lower the costs of these products thus making them accessible to people. Also, despite curfew and lockdown, the government agencies should put in place measures ensuring agricultural products are transported to markets at the right time. Market accessibility will create markets for farmers' produce thus sustaining their earnings and at the same time making food available to the people.

Another way the government will help in improving food security is by setting urgent policies that will keep in check the price of agricultural produces as most businesses in the food supply chain are taking advantage of high demand and low supply to overprice basic agricultural products.

Achieving a food secure country will require more than the current budget allocation in the agricultural sector. The government needs to increase money allocations to the agriculture and food sectors. Also, there should be the development of bottom-top-based policies where members of the public especially those participating in agriculture and related activities have a say as it creates critical opportunities to push for the creating of a fair and sustainable food system.

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Author Contributions

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Conflict of Interest

The authors confirm that there are no conflicts of interest.

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