RURAL ECONOMICS ASPECTS OF KENYA – AN OVERVIEW

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Abstract. *The purpose of the report is to analyse the main agricultural activities that are important in the rural economic context of Kenya. A critical aspect to note is that the most popular agricultural activities differ in the country due to different soil and climatic conditions. Also, the traditional agricultural practices are focused on local consumption and local markets, this being the most dominant type of agriculture in Kenya. In the highland areas are tea and coffee plantations which are designated mainly for export. The cereals (maize, sugarcane, rice, wheat) are the main agricultural crops followed by vegetables (eg. kale, spinach, cabbage, lettuce, cauliflower), potato and cassava. They are primarily produced for the satisfaction of the national demands. Fishing is an important branch of agriculture for the population's needs, Lake Victoria being the main source of fish. From an agricultural perspective, man-made fishing ponds supply the local market with fish, mostly in the central part of the country. Poultry and dairy farming are also important sections of the agricultural sector whereby the former is part of the base of the nation's food industry while the latter is based on forage crops that support the animals that produce milk, primarily for national consumption. Pastoralism is an activity that supports the people's livelihood in areas rich in permanent grasslands. The most popular animals that feed directly on grasslands are cows, goats, and camels. Furthermore, the coastal area of the country is defined by a small-scale farm production of coconut and palm oil for the local market. Other popular crops designated mostly for export are cut vegetables, aloe vera, hemp, avocado, bananas, mango, pineapple, watermelon, spices (cinnamon, cloves, black pepper), beans, hibiscus, and oranges. Kenya offers a wide range of conditions for numerous agricultural activities, an aspect that makes its rural economy diverse and rich.*

Keywords*: rural economics Kenya, main crops, agricultural activities, local market, export.*

INTRODUCTION

Kenya is a beautiful, tropical country that lies flat across the equator, on the Eastern part of Africa and boarders Uganda, Ethiopia, Tanzania, Somalia, and South Sudan (NYORO, 2019). Kenya's land area is approximately 580,728 km2 whereby about 89% of the land is classified as arid and semi-arid land (ASAL) (NYARIKI & AMWATA, 2019). The nation has a population of 46 million, and is most densely populated in the urban areas and cities of Nairobi (the Capital City), Mombasa (the Coastal city and holiday destination), Kisumu, and Nakuru. The national official languages are English and Kiswahili. However, there are 42 indigenous tribes who live peacefully and respect each other's cultural differences (NYORO, 2019). A large part of its land, especially in the north and east, is characterised as arid or semi-arid. Also, it has three climate areas: temperate subtropical climate in the west and southwest highlands (where Nairobi is located), hot and humid along the coast, and hot and dry in the north and east. In the highlands, we find the fine arable part of the country, where the agriculture is done (NYORO, 2019). Kenya's rural context is highly defined by the agricultural sector. An estimate of 31.3% of the sector makes the nation's Gross Domestic Product or GDP, with a further 27% emanating from manufacturing and 69.7% from the service and distribution sectors in relation to total export earnings. About 80% of the work force is from the rural areas with formal employment being about 15.5% (KNBS, 2018). It is estimated that by 2019, the marketed

agricultural production amounted to 465.7 billion Kenya shillings, with tea being at 104.1 billion, livestock and the involved products at 147.9 billion, horticulture at 144.6 billion, cereals at 35.8 billion, permanent industrial crops at 18.8 billion and temporary industrial crops at 18.8 billion (KNBS, 2020).

In Figure 1 is presented a map of the farming systems characteristic for Kenya, from there being noticed that the greatest surface o the land is dedicated to the agropastoral and pastoral farming systems, followed by extensive farming systems for mixed crops and livestock. From this perspective, the intensive agricultural farms are covering the smallest surface of the agricultural land.

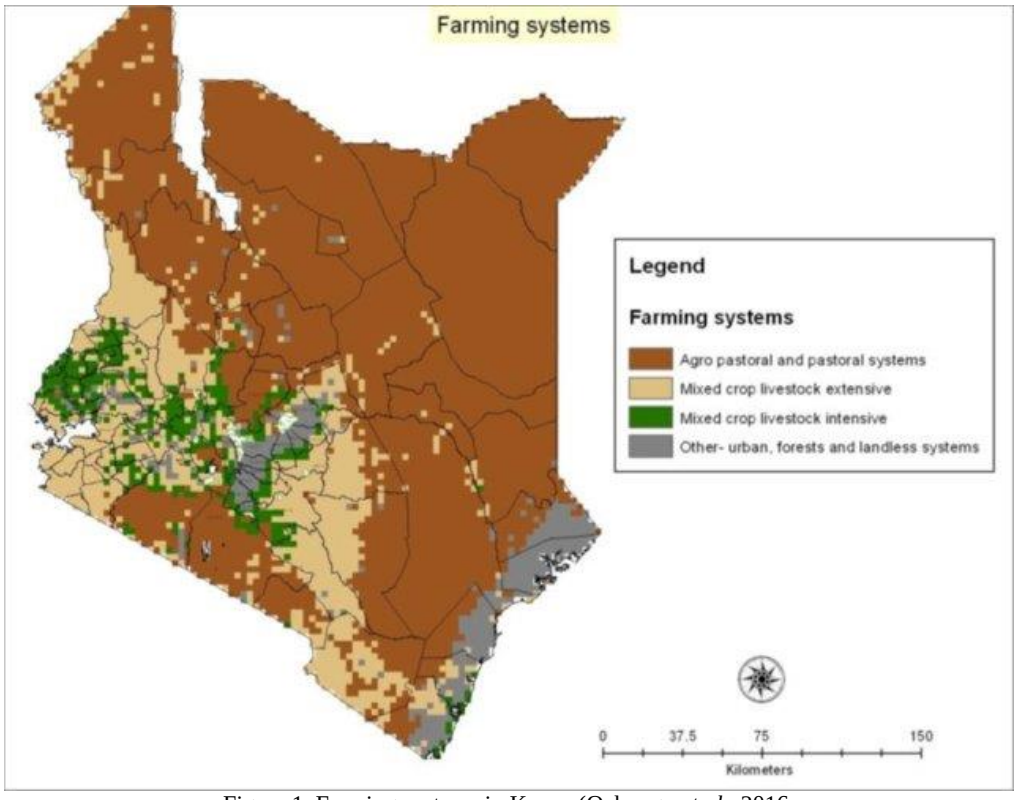

Figure 1. Farming systems in Kenya (Ochungo *et al*., 2016; https://www.researchgate.net/profile/Johanna-Lindahl/publication/306263163/figure/fig4/AS:667646190186501@1536190664146/Map-showing-farming-systems-in-Kenya-Derived-from-Robinson-et-al-12_W640.jpg, accessed on 14.11.2022)

The vision is that by 2030, the nation will have realized the relevance of agriculture in attaining a 10% rate increase of the average GDP on an annual basis. With that, the aim of the analysis is to present an overview of the rural economic aspects of Kenya by looking into diverse agricultural practices that include crop production, fishing, poultry farming, dairy farming, and pastoralism.

MATERIAL AND METHODS

The present work is a review of the data from literature referring to the agricultural resources from Kenya from the point of view of rural economics. The documentation was performed according with the rules of intellectual property and scientific documenting, the analysed information resources being cited in references.

RESULTS AND DISCUSSIONS

Crop Production

Although less than 8 percent of the land is used for crop and feed production and less than 20 percent is suitable for cultivation, farming is still a major part of the Kenyan agricultural economy (KNBS, 2020). Crop production mainly happens in the western and southwest highlands part of the country. The crops are generally divided into horticultural, industrial and food crops. As per the analysis in the 2018 Economic Survey Report, 72% of the agricultural GDP consisted of industrial crops. The primary industrial crops in the country are sugarcane, coffee, tea, coconut, bixa, tobacco, barley, sunflower, pyrethrum, barley and sisal, crops that make about 68% of the total agricultural exports. The leading export or earner of foreign exchange is tea (KNBS, 2020). However, it is perceived that from 2017 to 2019, the export value decreased to 104.1 billion and 147.3 billion Kenya shillings. Some of the crops whose production has declined over the years but still have immense potential include sisal, cashew nuts, pyrethrum, cotton, oil crops and coffee (KNBS, 2020). Horticulture also functions as an important industry in Kenya's rural economy that has experienced immense growth over the years. It is estimated that by 2019, the horticultural crops contributed 144.6 billion in relation to domestic exports, an estimate of 21.4% of the total agricultural production in that year (KNBS, 2020). Also, food crops make up about 32% of the GDP from the agricultural sector with 0.5% emanating from exports. A major challenge facing crop production in Kenya involves the irregular short and long rains as a result of climate production, an aspect that has lowered the production quantities in various areas.

In relation to coconut farming, most of the coconut trees are found in the Coastal Counties, and Lake Victoria region and Tharaka Nithi (central region) (OYOO, 2021). The total area under coconut farming in Kenya is 200,000 acres and that 92% of the trees are between 20 and 60 years. The remaining 8% is beyond the economic age limit of 60 years, and are either low nut producers or non-productive at all. The coconut is used both as a cash crop and food crop and hardly any parts of the coconut palm are left unused. A list of the various coconut products and by-products produced in Kenya include: mature coconuts, virgin coconut oil, coconut cream and milk, brooms, door mats, tender coconut water, charcoal/ briquettes, and tooth picks (OYOO, 2021). There are two types of coconut palm in Kenya; the East African Tall (EAT) and the dwarf coconut. The classification is based on the height of a mature tree. Currently, farmers are encouraged to value add their primary produce to enhance their profits. Examples of value addition activities include; utilization of coconut fronds (makanja) to make makuti and brooms, making virgin coconut oil from fresh nuts, making husk fibre and ropes from husks and making coco-honey from fresh wine. Other popular crops designated mostly for export are cut vegetables, aloe vera, hemp, avocado, bananas, mango, pineapple, watermelon, spices (cinnamon, cloves, black pepper), beans, hibiscus, and oranges (GASTON, 2021). Kenya offers a wide range of conditions for numerous agricultural activities, an aspect that makes its rural economy diverse and rich.

Fishing

An important aspect of the Kenyan rural economy is the fisheries sector. Kenya boarders the Indian Ocean on her East Coast, and the Mombasa Port is the country's main port.

It serves not only Kenya, but land locked countries like Uganda, Rwanda, Burundi, and Eastern DRC and South Sudan. Although a lot of fishing is carried out in the coastal part of the country, 80% of the fish comes from the Western part of the country, where Lake Victoria lies (DZOGA et al., 2019). The Indian Ocean, Lake Victoria, Lake Baringo, and other man-made fishing ponds in the Central Part of the country provide fish that constitute an important source of food and livelihood for Kenyans. Traditional fishing methods are the main way in which fishing is carried out. For this reason, they play an important role in providing jobs to the people as well as food to the local communities (DZOGA et al., 2019). The fisheries sector in Kenya consists of marine and freshwater sources and with others emanating from aquaculture. It is estimated that about 150,000 tonnes make up the total fish production on an annual basis. Also, the sector makes up 0.8% of the overall GDP and about 5% of the GDP from the agricultural sector (DZOGA et al., 2019). The fisheries sector also offers income, employment and food to the population especially in those areas (DZOGA et al., 2019).

Marine fisheries in Kenya are mostly traditional, compromising an estimated 13,706 participants of the last census in 2012 (DZOGA et al., 2019). Following are some of the aspects of the fishing industries that have been captured in journal articles, again reflecting Coastal fishing statistics. They include statistics regarding yields and catches, seasonality, overfishing, and catch per unit effort. Research has shown that landing sites where seining is prohibited yielded a greater per fisher catch, showing that traditional fishing methods (called the Dema trap) were instrumental in protecting from overfishing, which happened when various large-scale and modernized fishing mechanisms were used (DZOGA et al., 2019). Seasonally, increased fish catches are documented along the Kenyan Coast during the dry and calm northeast monsoon season. During the Southeast Monsoon, when sea conditions are rough, fishing activities are restricted. (AURA *et al*, 2020). Among the challenges facing the fishery economy in Kenya are results of overfishing and pollution, and in man-made-ponds, challenges include high prices of fish feed, declining fish prices, and lack of finance to fund local farmers (AURA *et al*., 2020). The modern large-scale fishing practices have also contributed to loss of biodiversity in the coral reefs in the Coastal areas. Change of machinery to safer and environmentally safer equipment to farmers, as well as subsidies and financial cushioning from the government are starting points to see the fishing agriculture in Kenya continue to expand (AURA *et al.*, 2020). Finally, reducing the price of fish feed is a potential long-term solution to the fishing dilemma, as man-made ponds continue to increase in popularity and contribution to the national population.

Poultry farming in Kenya

Poultry farming is diverse in Kenya. It consists of chicken, turkeys, ducks, guinea fowl, quail, turkeys, and geese with chicken rearing being the most popular form of poultry farming. The chicken, in this case, are reared for meat and egg production (FIORELLA *et al*., 2021). Poultry farming, thus, largely functions as the key to food security and economic growth. Primarily, poultry farming is done on small scale and for domestic use. The types of Chicken in Kenya include layers, broilers and dual-purpose chicken. It is estimated that there are about 32 million poultry birds with 75%, 24% and 1% consisting of indigenous, broilers and layers, and other forms of poultry respectively (FIORELLA *et al*., 2021). In relation to the scale of poultry farming in Kenya, large scale farming consists of more than 10000 birds, medium scale farming entails about 1001 to 10,000 birds, while small scale farming entails a minimum of 1000 birds (FIORELLA *et al*., 2021). There are three main types of poultry farming in Kenya that include organic and inorganic poultry farming. Organic poultry farming entails rearing poultry without keeping them in cages while inorganic poultry farming entails rearing poultry in cages (suitable for commercial poultry) (Fiorella et al., 2021). A significant aspect to

note is that both types can be used for commercial purposes. In relation to context, poultry farming is mostly done near urban centres due to the large ready market while in the rural areas, chicken are reared using a culturally free-range system.

Poultry Farming methods in Kenya are diverse. One of the methods is the free-range system that entails a traditional way of raising chickens, and the poultry are kept for eggs and meat. The other method is the deep waste system whereby poultry are kept indoors all the time and integrate large system structures that enable free movement of poultry. Food and water are also constantly provided to the chicken. In the battery system, each chicken is kept in a cage and individually supplied with food and water (food kept in front of the cage). The system entails chicken being kept in folds in which the feeding and water troughs are located outside each layer and birds are fed on a wire mesh. Problems facing poultry farming in Kenya include the occurrence of disease outbreaks that kill large number of birds, means of transportation not adequately developed in certain areas and that poultry feeds and medicines are expensive.

Dairy Farming

Kenya's dairy sector is predicted to account for 14% of the country's agricultural GDP. Smallholder dairy farmers generate the majority of milk, accounting for 56% of total production. The other 44% is obtained from large scale commercial farmers (MAKAU *et al*., 2018). There are an estimated 1.8 million smallholder farmers in the sector (80%). Also, there are three basic production systems: intensive production where animals are completely housed or zero-grazed, open grazing where animals wander fields, and semi-intensive production where animals are partially zero-grazed and then taken to fields. In terms of milk output, Kenya is thought to have the greatest per capita milk output in Sub-Saharan Africa. It also boasts over five million dairy cattle, which provide an estimated four billion litres of milk every year. Furthermore, it is estimated that by 2050, milk production will increase by 150% (MAKAU *et al*., 2018). Regardless, there are significant challenges that face dairy farming in Kenya.

One of the challenges entails the rising costs of commercial feeds which have led to the increase of the production cost. The argument is that feed costs have increased despite the government waiving import duties on raw materials and that regulations like the one against genetically modified foods prevent feed producers from accessing more affordable raw materials (WILKES *et al*., 2020). Access to capital for farmers and value chain participants, which prevents crucial investments in the industry, and poor road infrastructure that negatively impacts milk collection and delivery, especially during the rainy seasons, are other challenges. Animal health maintenance is also important because it affects both the productivity of milking heads and the quality of milk (WILKES *et al.*, 2020).

Pastoralism

Historically, ASAL areas are viewed as sites of famine, hardship and poverty (LIND *et al.* 2020). Pastoralism that is nomadic or semi-nomadic is the most prevalent variety. Long-term exposures to starvation, war, and drought have forced the evolution of tactical measures like shifting one's location. To grasp changes in their surroundings, people frequently rely on their own experiences. Additionally, pastoral systems utilize dryland conditions by working with rather than against their inherent variability (NYARIKI *et* AMWATA, 2019). According to Nyariki *et* Amwata (2019), livestock can access resources across wide geographic areas through free-ranging movements. Pastoralism is seen to be under danger. According to a UNEP assessment from 2021, 2020 was one of the warmest years (GRAHAM *et al*., 2021). Over 50 million people were thought to have been directly impacted by floods, droughts, or storms around the world in addition to the COVID-19 epidemic (GRAHAM *et al.*, 2021). It is proposed that food insecurity among pastoral households is a result of climate change. Due to the

severity and intensity of droughts, floods, livestock diseases, wars, the growth of small guns, locusts, and the COVID-19 pandemic, climate change has exacerbated environmental uncertainties (Graham et al., 2019)). The bulk of drylands are comprised of rangelands, and land stress brought on by climate change undermines the current food and livelihood systems (NYARIKI *et* AMWATA, 2019).

Pastoralism is primarily an input in agriculture. In pastoral areas, manure sales are rising. This is explained by the fact that it is challenging to locate food pastures due to the drought. Because of this, pastoralists sell manure to cover expenses. Because it helps keep carbon from being released into the sky and helps store it in the soil, manure is important in agriculture and helps communities reduce emissions that contribute to climate change (BOLES *et al.*, 2019). According to a 2017 Report by the Thomson Reuters Foundation, 40 cows in Kenya's Kajiado County produce 8 tonnes of dung per month (NJAGI, 2017). The manure is purchased for Ksh. 36,000 (US$360) per tonne and used to fertilize a tea plantation that is 1.5 acres (0.6 ha) in size in central Kenya. A tea plant typically yields 1.5 kg of leaves per year, but when manure is added, the yield increases to 3 kg (NJAGI, 2017). Therefore, it is assumed that using manure will result in a 100% increase in tea production.

CONCLUSIONS

In brief, the report aimed to present an overview of the rural economic aspects of Kenya by looking into diverse agricultural practices that include crop production, fishing, poultry farming, dairy farming, and pastoralism. Other popular crops designated mostly for export are cut vegetables, aloe vera, hemp, avocado, bananas, mango, pineapple, watermelon, spices (cinnamon, cloves, black pepper), beans, hibiscus, and oranges. The main idea is that agricultural activities and production largely define the nation’s rural structure. Kenya offers a wide range of conditions for numerous agricultural activities, an aspect that makes its rural economy diverse and rich and is yet to experience immense growth in the integration of agricultural extension activities to improve the wellbeing of the farmers and the overall agriculture sector.

BIBLIOGRAPHY

AURA, C. M., NYAMWEYA, C. S., OWILI, M., GICHURU, N., KUNDU, R., NJIRU, J. M., & NTIBA, M. J. (2020). Checking the pulse of the major commercial fisheries of Lake Victoria Kenya, for sustainable management. Fisheries Management and Ecology, 27(4), 314-324.

DZOGA, M., SIMATELE, D. M., & MUNGA, C. (2019). Climate variability and small-scale fisheries in Kenya: Characterization of current socio-economic conditions of artisanal fishing communities in Ungwana Bay and the Lower Tana Delta. International Journal of Environmental Sciences & Natural Resources, 17(5), 147-153.

FIORELLA, K. J., BAGEANT, E. R., MOJICA, L., OBUYA, J. A., OCHIENG, J., OLELA, P., ... & OKRONIPA, H. (2021). Small-scale fishing households facing COVID-19: The case of Lake Victoria, Kenya. Fisheries Research, 237, 105856.

GASTON, O. A., DANIEL, N. S., ARNOLD, N. O., GASTON, O. A., DANIEL, N. S., & ARNOLD, N. O. (2021). Physico-chemical properties of kernel from coconut (Cocos nucifera L.) varieties grown at the Kenyan Coast. African Journal of Food Science, 15(8), 313-321.

GRAHAM, M. W., CHELANGA, P., JENSEN, N. D., LEITNER, S. M., FAVA, F., & MERBOLD, L. (2021). A framework for assessing the effects of shock events on livestock and environment in sub-Saharan Africa: The COVID-19 pandemic in Northern Kenya. Agricultural Systems, 192, 103203.

KNBS. (2018). Economic Survey. Kenya National Bureau of Statistics, Government of Kenya.

KNBS. (2020). Economic Survey. Nairobi: Government of Kenya.

MAKAU, D. N., VANLEEUWEN, J. A., GITAU, G. K., MURAYA, J., MCKENNA, S. L., WALTON, C., & WICHTEL, J. J. (2018). Animal and management factors associated with weight gain in dairy calves and heifers on smallholder dairy farms in Kenya. Preventive Veterinary Medicine, 161, 60-68.

NJAGI, K. (2017). Maasai manure helps Kenya's drought-hit herders fight hunger. Thomas Reuters Foundation, https://www.reuters.com/article/us-kenya-drought-farming-livestock-idUSKBN1941G2.

NYARIKI, D. M., & AMWATA, D. A. (2019). The value of pastoralism in Kenya: Application of total economic value approach. Pastoralism, 9(1), 1-13.

NYORO, J. K. (2019). Agriculture and rural growth in Kenya. Tegemeo Institute.

OCHUNGO P., LINDAHL J.F., KAYANO T, SIRMA A.J., SENERWA D.M., KIAMA T.N. & D. GRACE (2016) Mapping aflatoxin risk from milk consumption using biophysical and socio-economic data: A case study of Kenya, African Journal of Food, Agriculture, Nutrition and Development 16(03), 11066-11085.

OYOO, M. (2021). Improvement of Coconut Production in Kenyan Coast for Income Generation. Kenya Policy Briefs, 2(2), 69-70.

WILKES, A., WASSIE, S., FRAVAL, S., & VAN DIJK, S. (2020). Variation in the carbon footprint of milk production on smallholder dairy farms in central Kenya. Journal of Cleaner Production, 265, 121780.

https://www.researchgate.net/profile/Johanna-Lindahl/publication/306263163/figure/fig4/AS:667646190186501@1536190664146/Map-showing-farming-systems-in-Kenya-Derived-from-Robinson-et-al-12_W640.jpg, accessed on 14.11.2022).