

Unlocking Opportunities in Edible Oil Crop Production and Market Dynamics to Accelerate Agricultural Investment in Kagera Region, Tanzania

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Abstract— Edible oil crops such as sunflower, oil palm, sesame, groundnuts, avocado and canola are one of the fastest-growing agricultural sectors for investment at global scale. Demand for edible oil currently at local and neighbouring countries indicate huge gap that is an opportunity for production. The oil crops are grown under varied agro climatic conditions and they are vital commodities in the trade and commerce of many economies globally. Edible oil imports account for 34 % of the growth in food imports in Africa of which palm oil contributes 65% of all imports in the continent. In East Africa countries; Tanzania, Kenya, Uganda, Rwanda, Burundi, Southern Sudan and DR-Congo and SADC countries the edible oil imports exceed US\$ 1 billion. Tanzania produces 290,000 MT of edible oil a year, which is not enough to meet its current annual demand of 650,000 MT, therefore, it is compelled to spend over US\$ 200 million annually for import to cover the shortage. Thus, there is great business opportunity for Kagera region which is endowed with a favourable equatorial climate for agriculture, extensive arable land of more than 24,953 sq. km. (water bodies of 11,885 sq. km. that is covered by Lake Victoria, Ikimba and Burigi Lakes, Kagera and Ngono rivers), forests and biodiversity. It is envisioning that if 10 percent of the land is put under oil seed, (about 249,600 hectares) under intensified production, more 249,600 MT of grains per season will be processed, employing many people along the value chain, hence addressing the income earnings instability, mask the climate and market instabilities. The oil seed crops are alternative processing crops with price stability, high demand elasticity and low substitutability to moderate prevailing instability in earnings from coffee and banana crops. It is concluded therefore that, the proposed crop diversification will shape a strategy to deal with climate variability by increasing a range of food and cash crops, that enhances productivity, encourages youth self-employment and incomes generation along the value chain in Kagera region.

Keywords— crop diversification, edible oil, climate variability, business.

I. BACKGROUND

Oil seeds are the principal group of crops which are source of edible oil and protein thus provide a nutritionally balanced diet (Sharma et al. 2011; Narayan, 2017; Negash et al. 2019). Oil crops account for approximately 23% of the world's croplands, but only 6% of these crops are directly used for food. It is one of the fastest-growing agricultural sectors in the global, including oil palm, coconut, cotton, soybean, groundnut, sesame, canola,

safflower and sunflower. The demand for oil crops is growing mainly being influenced by edible oil and livestock feed industries. The oil crops are boosting edible oil processing industries (Narayan, 2017) involving about 40 different plant species whose oil can be consumed but only a few are of significant for global trade (Sharma et al. 2011). Major plant oil sources of commercial importance out of the 40 documented for edible oil include soybean, sunflower, groundnuts, canola (rapeseed), coconut, and oil

palm (Nde and Foncha, 2020, NBS, 2021). These oil crops are grown worldwide under varied agroclimatic conditions and are of vital trade commodities for many nations including Indonesia, Malaysia, and Ukraine (FAO, 2021) to mention a few. The global production of vegetable oil has steadily increased from about 90.5 million metric tons in 2000/2001 to 207.5 million metric tons in 2019/2020 and these trends are expected to continue in the future proportional to the global population growth. This indicates the future areas of investment and markets. In Tanzania, edible oil seed crops are grown under diverse agro-ecological zone from the along the coastal to highlands, almost in more than 19 regions, although there are more favoured than others for examples the agriculture is highly productive in areas with reliable rainfall than areas characterized with semi-aridity and arid. Some areas also are characterized by poor rainfall distribution and high land pressure which obstruct large scale investment.

However, Kagera region is characterized with equatorial climate with bimodal rainfall patterns per year and therefore allows more than three crops growing per year and it has the land area that covers 40,838 sq. km of which 28,953 sq. km. is landmass and 11,885 sq. km., for waterbodies; whereas 86% of the landmass is estimated arable land that can grow diverse edible oil crops include sunflower, canola, sesame and oil palm, which offers plenty of future agriculture investment.

II. JUSTIFICATION

Kagera region unlike most of other regions has two - three advantages for agricultural investment, the opportunity that is not fully utilized. The region has a good equatorial climate characterized by having reliable rainfall throughout the year and farming can be done two to three folds a year. Second, it has abundant arable land (AGRA, 2021) of more than 24,000 sq. km which is suitable for growing all tropical crops including: cereals, oil crops, fruits and legumes to mention but few. Third, comparably to other regions of Tanzania, Kagera region has literate population who can take an opportune of edible oil market share if are well sensitized. Then, there is a ready-made edible oil market that is just waiting to be filled by whoever comes first to filling the shortage. The shortage in Tanzania is worthy US\$ 200 million, while the EAC market and SADC is more than US\$ 1 billion.

To achieve productivity growth and market connections, while enhancing resilience to climate change is to unlock agricultural potentials by making the region participate fully in the “trillion-dollar opportunity” of agricultural markets in the country, regional (ECA, SADC) and in the world. Kagera has a potential to become a country and

regional player in the industry of oil crops, there is a need to focus on positioning the domestic edible oil sub-sector. The edible oilseeds can increasingly become important commodities in the development of the region in terms of food security, import substitution, foreign currency earning, employment creation and domestic technology development.

In addition, edible oilseeds have strong linkages with the domestic animal sub-sector as they provide vital input in animal feed production. The livestock sector is estimated to grow by 3 to 4% (GAFSP, 2016) with a corresponding sunflower seed cake increase for poultry feed (Kilimo Trust, 2017), supported by broiler and hybrid poultry market. Notwithstanding the significance of the crops, there has been limited production. It is for this reason that authors have sought to come up with this catalytic paper that present rarely seen vision and so kickstart the discussion with strategic edible oil stakeholders along the commodity value chain and facilitate making choices for investment. The edible oil market is there and it is booming up.

The overall objective: is to unlock opportunities by enhancing edible oil seeds production, industrial competitiveness and economic development for improving income earning opportunities in Kagera region and beyond.

Global Business of Edible Oil

Edible oil from oil seed crops is one of the highest trade shares (42%) of production of all agricultural commodities (OECD-FAO, 2019) in the World. The global edible oil market is estimated to grow at 3.6% from a market value of US\$ 96.878 billion in 2019 to attain a market value of US\$ 119.571 billion by the end of 2025. Developing regions of the world are predicted to contribute to increasing the market growth for vegetable oil during the forecast period. In the coming years, vegetable oils with low cholesterol, fat, and calories are likely to gain high response due to growing health awareness among people across the world. This share is expected to remain stable throughout the outlook period, with global vegetable oil exports reaching 91 MT by 2026

Demand of Edible Oil in Africa

Edible oil imports account for 34% of the growth in food imports in Africa, the highest share of any food category (Olabisi et al. 2018). Palm oil accounts for about 65% of all edible oil imports to the continent. The EAC imports edible oils reaching nearly \$1 billion (UIA, 2021). The demand for seed cake increases at an average annual growth rate of 117% in EAC. The business potential for edible oil is thus clear because there is an opportunity for import substitution (Kilimo Tust, 2017)

Demand for Edible Oil in Tanzania

Tanzania looks much like the rest of Africa in terms of the rapid growth in edible oil consumption and imports. Currently, Tanzania produces about 290,000 MT of edible oil a year, which is not enough to meet its annual demand of 650,000 MT. The country is thus compelled to spend over US\$ 200 million annually for import to fill the shortage gap. However, the Government of Tanzania (GoT) is keen to reduce the dependence of imports of edible oil by setting interventions that stimulate, boost and promote the domestic oil seed production and downstream oil processing capacity (Balchin, 2018; Mgeni et al. 2019). The country stands out for its dramatic rise in local production and processing of sunflower oil. The production of sunflower is growing due to demand, available land for expansion and Government will to support sunflower production and processing (BOT, 2017). For instance, sunflower production has increased as much as 10 times, placing the country second in Africa after South Africa (FAO, 2018). In addition, to ensure the sustainability of the edible oil sub-sector, the use of improved seeds, inputs, and appropriate agronomic practices should be coupled with assured markets for the edible oil products (Mgeni et al. 2019).

Edible Oil is a Contemporary Opportunity in Kagera Region

Agriculture contributes over 80 percent of the Kagera region economy and more than 90 percent of the of working population is involved on crop production, livestock keeping and fishing for subsistence and income. The Kagera region is famous for coffee, tea and tobacco as key cash crops whilst bananas, beans, maize, paddy and cassava serve as main food crops. In most cases the food crops grown serve as cash crops too. However, Kagera farmers except for coffee and sugar cane, produce and sell their crops independently hence have little bargaining power over buyers due to lack of strong formal organization. For successful edible oil crop production, farmers need to form cooperatives and linked them to formal markets or practice contractual farming. Following the coffee style of production and marketing, it is envisioned that edible oil crops are coming as a game changer. The oil crops: sunflower, oil palm and canola or rapeseed are climate smart crops and also have limited diseases. It is envisioned that when farmers are well organized and linked to financial institutions, investment to tap the huge market of edible oil can be realized. The consideration is that there is entire full chain of the commodity production to marketing and processing.

Kagera stand out to have comparative advantage because of the big land available and a very good reliable

equatorial climate where for short times crops like sunflower, two crops can be grown per year. This is crucial for sustainable and continuous supply of industrial raw materials. Kagera has been known as an agricultural region with exports of coffee, but of recent there are investment of large plantations for avocado production leading to investing the facilities for processing of edible oil (TIC, 2021). Also, the area is potential for production of sunflower (NBS, 2021) which has a growing demand particularly for edible oil and seed cake and this expands opportunities of farmers to increase production (Tibamanya et al. 2021). Important to note that the oil seed crops are getting credit in Kagera region because of their increasing monetary value associated with relatively low cost of production.

Oil Seeds for Crop Diversification in Kagera region

Oil seed crops are perfectly okay for diversification as they form an effective strategy for profit maximization through reaping the gains of complementary and supplementary relationships or in equating substitution and price ratios for competitive products (Barman et al. 2022). Oil seed crops act as a powerful tool in smallholder farming that can contribute significantly to livelihoods, improved health and nutrition, household food security, and ecological sustainability income growth, poverty alleviation and employment generation (Waha, 2018, Mango et al. 2018) especially if the farmers are linked to the oil processing industries, hence assured markets. Many crops can be used in crop rotation but also can be used in crop intercropping, maximizing use of agricultural land but also help to control some pests and diseases apart from improvement soil fertility. Crop diversification is also associated with increased agricultural income (FAO, 2018) and can also provide a buffer against price fluctuations because cultivating several crop species helps to manage both price and production risks (Mango et al. 2018; Heumesser and Kray, 2019). Increasing crop diversification is vital for improving food security, nutrition and diets and also has important socio-economic and climate-resilience benefits (Mango et al. 2018). Therefore, crop diversification using oil seed crops is the best resilience of an agricultural system to climate change and can give range of crop of economic value in agricultural production, biodiversity and livelihoods.

Current Oil Seed Production and Market Dynamics

It is estimated in Tanzania that close to 4 million farmers are involved in oilseeds farming (GAFSP, 2016). The area cultivated and increase use of modern farming practices have driven oilseeds production to increase over four-year period in the country from 674,327 MT in 2016/2017 to 1,583,669.28 MT in 2019/2020 (URT, 2021). This shows

that, production of oilseeds in Tanzania increases rapidly at the compound annual growth rate (CAGR) of over 14% per annum. Tanzania is ranked as one of the top ten sunflower producers in the world (GAFSP, 2016) and the recent sources position the country as the top producer of sunflower in the continent. Globally, the overall market of edible oil crop products has dynamics of prices in the international market which are conditioned by the relationship between demand and supply. The increase in consumption of comestible oils in domestic and international markets and intensification of livestock production have led to increased demand for oil crops. The oil palm supplies about 40% of all traded vegetable oil (Kilimo Trust, 2017, Murphy et al. 2021). Currently, the domestic market and global market conditions of edible oil following the COVID-19 pandemic, Ukraine–Russia conflict with negative impact on countries which form world sunflower triangle (Ukraine, Russia and Argentina) and additional problem attributed to climate change have left beyond spillover effects on edible oil supply. This has resulted into shortage of edible oil and price increase of palm, soy and rapeseed oils (OECD/FAO, 2021; FAO, 2022). This is an interesting area for investment with assured market.

The Edible Oil Market Opportunities

Kagera region has an attractive diverse environment supporting a number of oil seed crops. The region shares land borders with Uganda, Rwanda, and Burundi and a marine border with Kenya on Lake Victoria (KEPRO, 2015, URT, 2019), which expands the market of whatever is produced in the region. It is also within easy reach of South Sudan and DRC. Considering that the region borders four East African Community (EAC) member states hence the region is strategically located for potential cross-border trade (URT, 2019). The increasing number of countries in EAC, increasing population, economic growth and industrial development result into increase of the demand of edible oil in these countries. Thus, the sector is experiencing strong growth, drivers of this growth from the demand side include national economic growth as well as population growth. This makes the oil seed crops be among the competitive crops in the region. The increase in prices of palm oil in the world market is providing the space in the domestic market to produce the edible oil. The economic and population growth in Kagera region of about 3.5 % per annum calls for increasing demand for edible oil today and in the near future. There is growing recognition of the strategic role of edible oilseeds by the Government by supporting scalability of technologies which make production attractive and profitable.

III. CONCLUSION

This review shows that there is edible oil deficit that is being filled through imports using forex. More than US\$ 200 million is used for the edible oil imports. This money could be investing in Kagera region which has an ample land and retain the money in the country and create huge badly needed employment to different categories along the edible oil value chain. Additionally, from the edible oil supply side, show that the Government and other stakeholders including NGOs, financial institutions and private investors have contributed significantly to the growth of the sector. Global demand for edible oils has increased competitiveness of domestic oil sources. Concerted efforts by national and international development organizations is needed and necessary to promote the crops under value chain approach. National campaign on sunflower and oil palm has added impulses into the sunflower and oil palm production particularly through access to seeds and mechanization. The edible oil sector supports livelihoods of many households from production, transport, processing and marketing of edible oil. It also has potential to contribute to foreign exchange generation on the regional markets for oil and international markets for seedcake. Therefore, efforts gear towards contributing to investing in special regions such as Kagera region should be recognized and supported for it aims to local self-sufficient of edible oil and the excess for export market.

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