



Economic Impacts and Policy Implications of a Common External Tariff on Imported Edibles in the East African Community: Ex-Ante Simulation Analysis

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Abstract

As regards of the current global crises, On May 6th, 2022 East African Community (EAC) Member State Ministers adopted a maximum Common External Tariff (CET) of 35% imposed on edible oils imported from outside the EAC bloc as the fourth tariff band in effect since July 1st, 2022. To stimulate the sector, the edible oil industry will require protection from international competitors in the infancy stage until its maturity. This argument is commonly used to justify the imposition of trade protectionism such as tariff.

- This study examines the potential gains and losses from the implementation of the 35% CET on imported edible oils with a focus on prices, value added (production), trade (imports, exports, balance of trade), and welfare (allocative efficiency, terms of trade, income-savings, and GDP). This paper draws the following conclusions:
- As a result of the 35% CET on imported edible oils, prices are predicted to increase between the range of 0.192% to 0.621% in the EAC region. Imposing the levied tariff on imported edibles will make the foreign (non-EAC) edible oil more expensive and hence adds to the cost borne by domestic consumers in the importing EAC region. However, under free trade, competitive pricing will prevail leading to a decrease in edible oil prices paid by the domestic consumer by 0.131% within the EAC bloc.
- The imposition of the 35% CET on edible oils will stimulate local industries with a value-added of 283.9 Million USD for the EAC economic bloc. Increased tariffs will generate more revenues for the EAC region as imports enter the domestic market. It is also anticipated that the domestic edible oil sector will benefit from the reduction in the competition since import prices are artificially inflated to favor local industries. This, however, reduces efficiencies by allowing industries that would not exist in a competitive trade setting to operate. The big winners of rising tariffs on imported edible oils to 35% are Kenya and Tanzania.
- It can be noted that edible oil exports will increase by 7.11% while imports will decline by 13.1% as a result of the 35% CET. Our results indicate that export revenues will expand in Kenya and Uganda by respectively 24.5 Million USD and 19.2 Million USD while a decrease of 11.5 Million USD is predicted in Tanzania. In Rwanda, a small change in the export of edible oils is anticipated. The combined effects of reduced imports and increased exports translated into an improvement in the balance of trade across EAC countries.
- Overall, the different tariff policy regimes have the potential to increase intra-EAC and hence boost intra-Africa trade but with limited effects in resulting in a net trade creation with a strong possibility of a net trade diversion for the EAC and AfCFTA.
- The impact of the 35% CET on economic welfare and GDP is small. In absolute terms, welfare gains are estimated at 5.3 Million USD for the EAC bloc. Some countries like Tanzania and Rwanda will lose about 18.8 Million USD and 0.9 Million USD respectively while Kenya and Uganda will see their GDP increase by 0.094% and 0.015%.

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Firstly, this study calls for fast-tracking the implementation of the AfCFTA by encouraging the participation of African Members States. This requires negotiating and aligning existing trade policies on tariffs and rules of origin. Secondly, this study recommends the development of cost-effective investment schemes that could promote the edible oil industry value chains within the EAC region combined with an application of a CET that does not apply on African countries outside of EAC. Lastly, this study advocates for a preferential and neutral approach to eliminating existing tariff rates within Africa on edible oils by first consolidating and harmonizing tariff regimes to meet a free trade area on the continent. In the medium to long run, effective investments in research and improved technologies, infrastructure development, and economic diversification as part of the broader trade facilitation processes within the EAC bloc could be key to sustainably improve edible oil industries in reaching maturity and becoming competitive.

At a glance

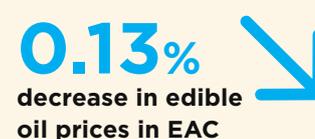
Price impacts

Simulations 1, 2, and 3.



The levied tariff on imported edibles will make the foreign (non-EAC) edible oil more expensive and hence adds to the cost borne by domestic consumers in the importing EAC region.

Simulation 4



under a full trade liberalization

Production impacts



The big winners of rising tariffs on imported edible oils to 35% are Kenya and Tanzania with value added

Without reciprocity, the increased tariff on edible oils results in value added for the EAC economic bloc

283.9 Million USD

Simulation 1

Simulation 1

139.6 Million USD

Kenya

Simulation 2

152.7 Million USD

Kenya

311.4 Million USD

Simulation 2

115.7 Million USD

Tanzania

124.2 Million USD

Tanzania



Edible oil exports increase

7.11%

Simulation 1

8.23%

Simulation 2

Imports decline

13.1%

Simulation 1

14.66%

Simulation 2

Welfare impacts

Simulations 1, 2, and 3.

Tariffs imposed under the different policy simulations have minor effects on welfare

-0.08%

Distributional impacts for the EAC bloc

The effect of the tariff increase in import-competing edible oil industries that are targeted explain the slight GDP contraction in all EAC countries

Simulation 4

Under trade liberalization

-0.02%

increase in GDP of welfare gain in the EAC bloc

1. Introduction

The East African Community (EAC) is a regional bloc formed to foster economic development and promote trade through enactment and operationalization of collective policies among member states (Kosgei, 2021). Originally founded at the end of the colonial era in 1967 as a preferential trading area consisting of Kenya, Tanzania, and Uganda, the EAC was dissolved in 1977 and then revived with a signed treaty for its re-establishment in 1999 (McIntyre, 2005). In 2007, Burundi and Rwanda became members followed by South Sudan in 2016 and the Republic Democratic of Congo in 2022 (EAC, 2022a).

Since its renaissance in 1999, the “new” EAC aims to achieve a deeper regional integration among its member states (Kosgei, 2021). The regional economic integration has been gradually transformed with the establishment of a customs union, and ultimately a common market, a monetary union, a political federation which are expected to revolutionize economic transactions and particularly trade and food supply among member countries (Kosgei, 2021; McIntyre, 2005). The formation of the customs union implies the removal of internal tariffs and establishes a common external tariff (CET), introduces rules of origin, and a variety of administrative arrangements including a harmonized customs administration, a customs valuation system, and customs procedures and documentation (McIntyre, 2005).

Although these progresses, intra EAC (EAC to EAC) imports account for less than 10% (3 Billion USD) of total EAC imports (Figure 1, Panel 1A). Kenya is the major importer from outside EAC countries with 16.5 Billion USD representing half of all EAC imports from non-EAC countries (Figure 1, Panel 1B). Also, Uganda is the leading importer from another EAC

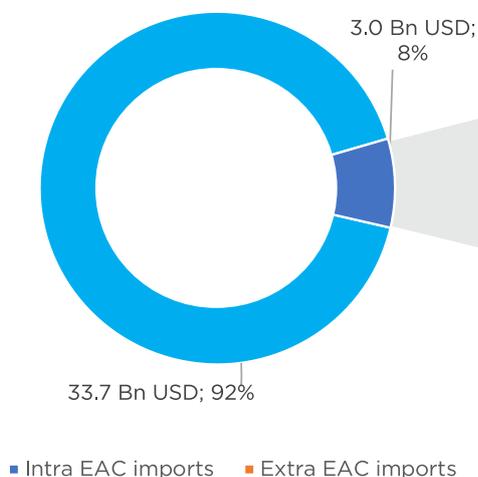
member accounting for over a third of the intra-EAC imports (1.1 Billion USD) (Figure 1, Panel 1B).

With the global Covid-19 pandemic compounded by the Russia-Ukraine conflict, global food supply and trade have been deeply disrupted resulting in a sharp rise in commodity prices in globally and more specifically in East Africa. Russia and Ukraine are major producers of cereals comprising wheat, barley and maize and also key suppliers of essential goods including energy, fertilizers, and edible oils. With the increased economic and political sanctions, African countries are left with impending food shortages and a potential food insecurity as a result of climate shocks.

As regards of the current global situation, EAC leaders have shown interest to tap into their internal markets to reduce reliance on imports of specific goods and particularly for edible oils. Member State Ministers unanimously adopted a maximum Common External Tariff (CET) of 35% imposed on edible oils imported from outside the EAC bloc as the fourth band on May 6th, 2022 which commenced on July 1st, 2022 (EAC, 2022b). According to the EAC Secretary General Hon. (Dr.) Peter Mathuki, “the adoption of the fourth band tariff is to protect the infant industries and foster economic growth in the EAC region”. The fourth band CET is expected to promote industrialization, spur intra-regional trade, economic development of member states, and contribute to the realization of the benefits of the African Continental Free Trade Area (AfCFTA) (EAC, 2022c).

Increasing tariff on edible oils could also increase import prices and create more demand for domestically produced goods while shifting the economy towards finished and value-added goods. This protectionist strategy may lead, however, to a decline in efficiency due to a reduction in competition from the artificially inflated prices.

Panel 1A: Shares of intra and extra EAC imports



Panel 1B: EAC countries' imports

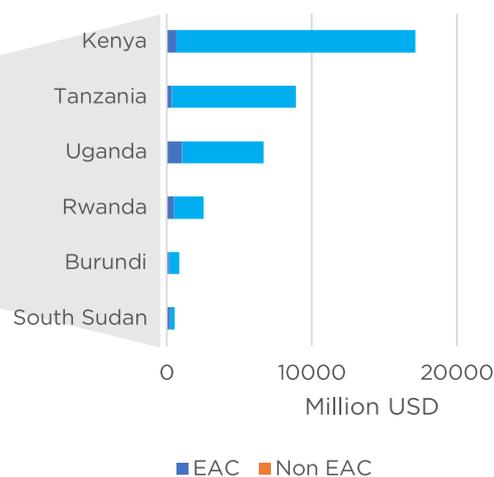


Figure 1. Intra and extra EAC imports for all products (average of 2017-2021)

Source: Authors' compilation from International Trade Center data (<https://www.trademap.org>; last accessed on August 31st, 2022).

This study is motivated by the interest to shed more light on the potential effects of the 35% common external tariff on imported edible oils that enter the EAC region. Additionally, there is need to understand how the fourth band CET, at 35 percent, will stimulate local production, catalyse local manufacturing industries, and strengthen economic inclusion among EAC member states. In other words, what are the economic and trade implications of the 35% tariff lines on edible oil products?⁴ There is need to answer questions, for example: What are the benefits and costs of this fiscal reform? What are the welfare implications? In order to answer these questions, we use an applied general equilibrium framework that allows a broader consideration of interactions amongst the relevant variables than is possible using either a partial equilibrium or a single country computational general equilibrium approach (Hertel, 1997). This study relies on the Global Trade Analysis Project (GTAP 9 Data Base) database on global trade, protection and production on which a multiregional computational general equilibrium model is constructed.⁵ It is expected that the results of this analysis will provide policy guidance and recommendations to inform the implementation of the policy reform in force in the EAC region since July 1st, 2022. More specifically, the results from the analysis will contribute to improving policymakers' understanding of the impact of the trade policy (35% CET) on selected measurement indicators including price, production, trade, and welfare outcomes. This will also help in identifying countries within the EAC, and whether their responses will lead to an economic growth or contraction as a result of the policy reforms due to the 35% CET on edibles.

This paper is organized as follows. This introduction is followed by Section 2, a brief description of the edible oils in the EAC region. This is followed by Section 3 presenting the methodology employed to estimate the ex-ante impact of the implementation of the 35% CET on imported edible oils. Section 4 provides the results of the analysis. The paper concludes with section 5 by drawing out policy implications of the findings and probable future directions that could incentivize, strengthen, and sustain edible oil value chains in the EAC.

4 The tariff lines in the 4th band include dairy and meat products, cereals, cotton and textiles, iron and steel, edible oils, and beverages and spirits, furniture, leather products, fresh-cut flowers, fruits and nuts, sugar and confectionery, coffee, tea and spices, textiles and garments, head gears, ceramic products, and paints.

5 For more information about the Global Analysis Project (GTAP) data bases and models, visit <https://www.gtap.agecon.purdue.edu/> (last accessed on August 31st, 2022).

2. Overview of the macroeconomic performance

The EAC economic integration has gained momentum over the years. Member states established closer economic links through a Free Trade Area (2001), a Customs Union (2005), and a Common Market (2010) deepening regional integration and trade within the region (Mafusire and Brixiova, 2013). This has some high payoff on countries' macroeconomic performance shown in the map.

Despite the negative impact of the Covid-19, EAC countries recovered some of the lost growth in 2021. The fastest real gross domestic product (GDP) growth countries are respectively Rwanda (10.9%), Kenya (7.5%), and DRC (5.7%) followed by Tanzania, Uganda, and Burundi which posted respectively 4.3%, 3.4%, and 1.8%. These growth rates have been associated with consumption as a major main driver of economic growth across EAC countries on the demand side.

On the supply side, the remarkable GDP growth in Rwanda has been driven by industry and services; the strong economic recovery from the 2020 recession reflects industrial production that expanded by 16.5 percent, favorable weather which led to a 6.8 percent rise in agricultural output, and the easing of mobility restrictions contributed to 11% rise in services (World Bank, 2022). After the economic contraction of 0.3% GDP growth from the effects of the Covid-19 pandemic in 2020, the Kenyan economy recorded its fastest growth since 2010 mainly driven by private consumption on the demand side and by services on the supply side (AfDB, 2022). In Tanzania, GDP growth was driven final consumption and investment on the demand side and by agriculture and services on the supply side (AfDB, 2022).

The impact of the Russia-Ukraine conflict is weighing on the economic Covid-19 recovery of EAC countries at risk of a further worsening from the current drought, which could have a large effect on per capita GDP and poverty. On the one side of the spectrum of the EAC economy are Kenya, Uganda, and Tanzania with respective GDP per capita at constant 2017 PPP \$ of 10,681 USD, 6,107 USD, and 5,635 USD translating into poverty headcount ratios of 37.1%, 41%, and 49.4% at \$1.90 a day (2011 PPP). Other EAC countries such as Burundi, South Sudan and DRC have more than 70% of their population living below the poverty line \$1.90 a day (2011 PPP).

The rebounds in GDP growth observed among EAC countries did not translate into gains in food security in 2021 (FAO et al., 2022). With the unfolding Russia-Ukraine conflict, the challenges to ending hunger and food insecurity are further growing. Alarming undernourishment and food insecurity prevalence are experienced among EAC countries. The

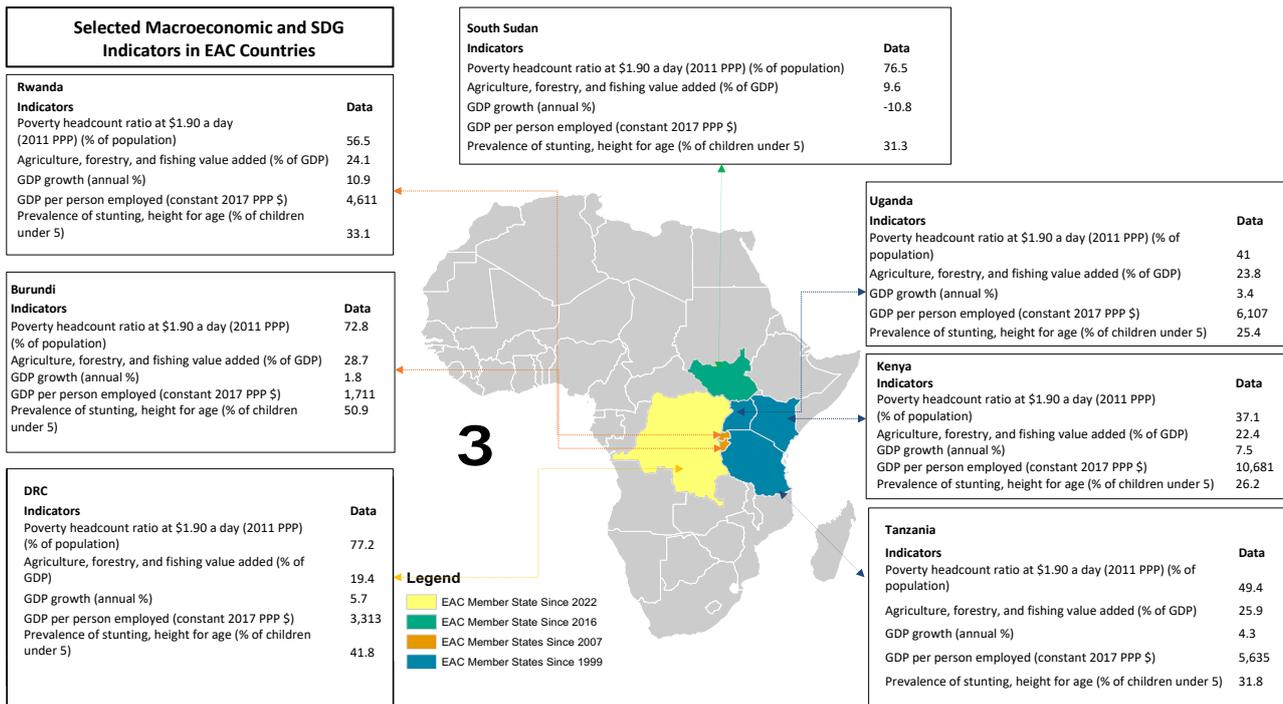


Figure 2. Map of the EAC bloc with selected macroeconomic indicators

Source: Authors' compilation using World Bank Development Indicators (<https://data.worldbank.org> ; last accessed on August 31st, 2022)

undernourishment prevalence is the highest in DRC at 42% and the lowest in Kenya and Tanzania at 25% which are all higher than the average rate of 22% in Sub-Saharan Africa (FAO et al., 2022). Also, the prevalence of food insecurity in South Sudan (62%), DRC (38.5%), and Kenya (25.7) tend to be higher than the Sub-Saharan Africa average of 24.8%.

With regards to agriculture, forestry, and fishing value added in the formation of the GDP, the contribution of Agriculture across all EAC countries is below 30%. For instance, Agriculture value added represents 28.7% of the GDP in Burundi while in South Sudan it represents 9.6%. For agriculture to thrive, increased enhance public and private investment finance to agriculture is needed.

Enhancing investment finance in agriculture, especially public expenditures in agriculture, is a fundamental instrument to achieve food security and reduce poverty (African Union, 2022). As part of the Malabo declaration two out the four African countries that met the 10% government expenditures on agriculture are in members of the EAC (Burundi and DRC) (African Union, 2022).

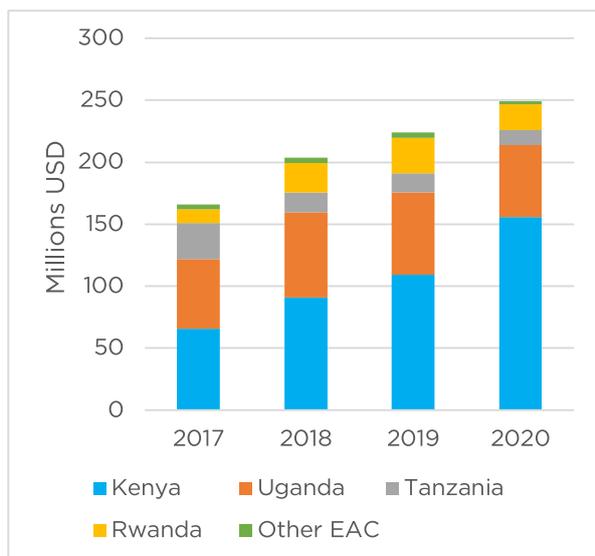
2. Edible Oils in the EAC

African demand for edible oils is rising rapidly, at about 2% per capita per year from 1999 to 2013 (Olabisi et al., 2018). The production of edible oils grew over 10 percent annually between 2006-2015, accounted for 34% of the growth in food imports representing the highest share of any food group in Africa (Olabisi et al., 2021). Over the same period, several EAC countries experienced a boom in the local production and processing of oil seeds. These are produced within the region from a wide range of crops including palm, sunflower, soyabean, sesame, olive, groundnut, cottonseed, coconuts, castor, melon, and line seeds.⁶

Figure 3 presents the annual values of edible oils exports between 2017 and 2020 (Panel 2A) and the average export shares over the same period (Panel 2B) after the joining of South Sudan to the regional EAC bloc. Almost half (49%) of the EAC edible oils are exported by Kenya followed by Uganda (29%), Tanzania (11%) and Rwanda (9%). Other EAC countries (Burundi and South Sudan) appear to be small exporters of edible oils accounting for about 2 percent of the EAC edible oil exports (Figure 3, Panel 2B). Also, the trends of edible oils for the different EAC countries show an increasing pattern most of which is driven by export growth of 136% between 2017 and 2020 (Figure 3, Panel 2A).

⁶ The exhaustive list of edible oil commodities is provided in Table A1 of the annexes.

Panel 2A: Export trends



Panel 2B: Average export share

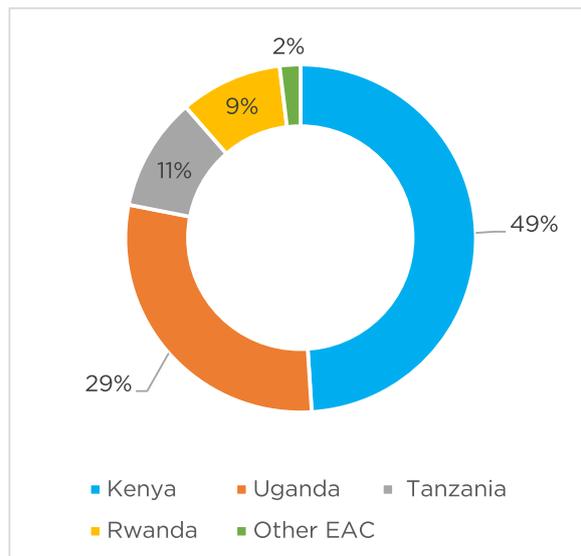


Figure 3. EAC exports of edible oils between 2016 and 2020

Source: Authors' computation from FAOSTAT data (<https://www.fao.org/faostat/en/#data/QI> ; last accessed on August 31st, 2022).

3. Methodology and Simulations Assumptions

This study aggregates the global economy into six regions (countries within EAC) and four goods using the usual factors of production (land, labor, and capital):

The six regions comprise:

- 1). The Republic of Kenya (KENYA),
- 2). The Republic of Rwanda (RWANDA),
- 3). The United Republic of Tanzania (TANZANIA),
- 4). The Republic of Uganda (UGANDA),
- 5). The Rest of Africa (RESTOFAFRICA - including North and Sub-Saharan Africa but excludes the EAC countries), and
- 6). The Rest of the World (RESTOFWORLD - excluding Africa).

While the four commodities (sectors) are:

- 1). Edible oils (EDIBLES), and
- 2). Rest of Agriculture (RESTOFAGRICULTURE),
- 3). Manufacturing (MANUFACTURE), and
- 4). Services (SERVICES).

With the above aggregations (regions and sectors), we undertake four ex-ante impact assessments of the EAC adoption of a 35% tariff lines imposed on EDIBLES imported from RESTOFWORLD (excluding Africa) and RESTOFAFRICA (excluding EAC countries) with and without reciprocity (Table 1). By reciprocity, we mean that non-EAC countries retaliate with a similar policy intervention by imposing the same level of tariff rate on imported edible oils from the EAC (e.g., EAC edible oil exports).

In addition, we investigate the case of a trade liberalization on EDIBLES (zero tariff) in simulation 4 with reciprocity.

Table 1 provides a description of the different simulations undertaken as follows:

- **Simulation 1:** EAC countries apply a 35% tariff on edible oils imported (EDIBLES) from the rest of the world (RESTOFWORLD) only which excludes other African countries (RESTOFAFRICA);
- **Simulation 2:** EAC countries apply a 35% tariff on imported EDIBLES from all countries outside the EAC region (both RESTOFWORLD and RESTOFAFRICA);
- **Simulation 3:** EAC countries apply a 35% tariff on imported EDIBLES from RESTOFWORLD and RESTOFAFRICA with reciprocity (RESTOFWORLD and RESTOFAFRICA retaliate with a 35% tariff on imported EDIBLES from EAC countries).
- **Simulation 4:** full trade liberalization implying that EAC countries apply a 0% tariff on imported EDIBLES from both RESTOFWORLD and RESTOFAFRICA and vice versa.

Table 1. Simulations of the ex-ante impacts of a 35% tariff on imported dairy and meat products by EAC countries

	No reciprocity				Reciprocity			
	Simulation 1		Simulation 2		Simulation 3		Simulation 4	
	RoA	RoW	RoA	RoW	RoA	RoW	RoA	RoW
35% CET		x	x	x	x	x		
0% CET							x	x
Measurement Indicators	Price, Production, Import, Export, Balance of Trade, Allocative efficiency, Terms of trade, and Investment-Saving							

Note: RoA and RoW denote respective REST OF AFRICA and REST OF WORLD.

4. Results

4.1. Price impacts

Table 2 presents GTAP results of the impact of the different simulated tariff policies. Overall, with the implementation of the tariffs, EAC consumers pay higher edible oil prices; tariffs are paid in a form of a tax on the imported goods which are directly passed to consumers. Because domestic producers are not forced to reduce their prices, consumers will choose the relatively costlier and cheaper domestic edible oil.

As a result of the 35% CET on imported edible oils, median prices are predicted to vary between the range of 0.192% to 0.621% in the EAC region under Simulations 1, 2, and 3. The levied tariff on imported edibles will make the foreign (non-EAC) edible oil more expensive and hence adds to the cost borne by domestic consumers in the importing EAC region. Under a full trade liberalization in Simulation 4, competitive pricing will prevail leading to a decrease in edible oil prices paid by the domestic consumer by 0.131% within the EAC bloc.

- **Simulation 1:** There will be an increase in edible oil prices in the EAC domestic markets from the application of a 35% tariff on imported EDIBLES from the RESTOFWORLD only (no import tariff change on RESTOFAFRICA). The largest price impact is felt in Tanzania with an increase of 2.01% while Rwanda appears to show the lowest price change of 0.05%. In Kenya and Uganda, edible oil prices are expected to increase by 0.67% and 0.57% (Table 2).
- **Simulation 2:** Similar patterns of price changes are observed as in simulations 1. Implementing the CET with a 35% tariff on imported EDIBLES from both RESTOFWORLD and RESTOFAFRICA is expected to increase prices on the domestic EAC markets. The magnitudes of the price effects are largest in Tanzania with an increase of

2.16% followed by Kenya and Uganda with comparable price effects of 0.7%. Similar to Simulation 1, the lowest price change in edible oils in the EAC region is felt in Rwanda at 0.1% (Table 2).

In the short run, higher prices will reduce consumption of edible oils. Edible oil price increases predicted under Simulation 1 and Simulation 2 are expected to lead to a decrease in the demand of edible oils. However, as a consequence, the increased price will incentivize private sector to produce more. Nonetheless, whether the actual consumption of edible oils among EAC households is affected or a shift towards the consumption of other oil substitutes (e.g., animal fats) largely depends on household personal preferences and income. Compared to Simulation 1, Simulation 2 also shows higher price effects depicting the distortions resulting from the tariff rates applied on imported edible oils into the EAC.

- **Simulation 3:** Under the reciprocity assumption, mixed impacts are found on edible prices from introducing the 35% tariff on imported EDIBLES from both RESTOFWORLD and RESTOFAFRICA. With tariff reciprocity, edible oil prices are predicted to increase in Tanzania and Kenya by 0.73% and 0.40% while a price decline is expected in Uganda and Rwanda by 0.29% and 0.02% respectively (Table 2).
- **Simulation 4:** With full trade liberalization -the removal of tariff on imported edible oils from the RESTOFWORLD and RESTOFAFRICA under reciprocity, domestic prices will decline in EAC countries (Kenya by -0.158%, Rwanda by -0.103%, and Tanzania by -0.879%) as a result of the cheaper imports with the exception of Uganda (0.419%) (Table 2). The price increase in Uganda highlights the competitiveness of the edible oil industry in the country underlying its economic comparative advantage even without protectionist trade measures.

Table 2. Effects of the CET on market prices of edible oils (%)

	Simulation 1	Simulation 2	Simulation 3	Simulation 4
Kenya	0.671	0.741	0.400	-0.158
Rwanda	0.053	0.1	-0.016	-0.103
Tanzania	2.011	2.158	0.731	-0.879
Uganda	0.57	0.668	-0.286	0.419
EAC (Median)	0.621	0.705	0.192	-0.131

Source: Authors' compilation from run GTAP simulation results using GTAP 9 Data Bases

These price responses are expected to affect welfare in the regional and country level economy while enabling the emergence of a less competitive market for edible oils. However, while consumers will benefit from the lower prices, manufacturing in the EAC could suffer more, hence affecting investments and employment in the subsector. This will further be investigated in the production (value addition) analysis in the next section.

4.2. Production impacts

Table 3 and Figure 4 present respectively the percentage and the actual/absolute changes in the edible oil industry output value addition under the different tariff scenarios. The results indicate that the benefits of the different policies are uneven across the EAC countries.

Without reciprocity, the increased tariff on edible oils results in value added of 283.9 Million USD and 311.4 Million USD under Simulations 1 and 2 respectively for the EAC economic bloc (Figure 4). The application of tariffs will generate more revenues to the EAC region as imports enter the domestic market. It is also anticipated that the domestic edible oil sector will benefit from the reduction in competition since import prices are artificially inflated to favor local industries. This, however, reduces efficiencies by allowing industries that would not exist in a competitive trade setting to operate. Also, the big winners of rising tariffs on imported edible oils to 35% are Kenya and Tanzania with value added of 139.6 Million USD and 115.7 Million USD under Simulation 1, 152.7 Million USD and 124.2 Million USD under Simulation 2 (Figure 4).

- **Simulation 1:** The application of the 35% levy on imported EDIBLES from the RESTOFWORLD only would positively impact the domestic industry by spurring an increased production of edible oils with heterogeneous country level impacts. In absolute terms, the value added in the edible oil industry in Kenya and Tanzania are the largest and estimated at 139.6 and 115.7 million USD respectively which together account for almost 90% of the sectoral

value addition in the EAC bloc because of the policy (Figure 4). The results also predict little value addition in the edible oil industry for Rwanda at 1 million USD while the sectoral value added is estimated at 27.6 million USD in Uganda. In percentage terms, the value addition effects are highest in Tanzania and Uganda with respectively 14.3% and 12.6% increase in production of edible oils followed by Kenya (5.9%) and Rwanda (0.3%) (Table 3).

- **Simulation 2:** Similar impacts found under Simulation 1 are also observed under Simulation 2. The application of the 35% tariff on imported EDIBLES from both RESTOFWORLD and RESTOFAFRICA leads to an increased sectoral value addition ranging from 0.64% to 15.35% increase across EAC member states (Table 3). As for the case of Simulation 1, although Tanzania and Uganda will benefit the largest percentage changes in added value, in absolute terms Kenya and Tanzania edible oil sector will account for almost 90% (276.47 Million USD out of 311.07 Million USD) of the EAC bloc value addition (Figure 4).

As expected, without reciprocity, protectionist measures on edible oils sanctioned by a 35% levy on EAC imports will increase domestic prices and spur value addition in the industry by incentivizing local manufacturing to produce more while promoting the industrialization of the sector. The increased price is however at the expense of the consumer who will pay higher prices for the domestically produced edible oils.

- **Simulation 3:** The impact of introducing the 35% tariff on imported EDIBLES from both RESTOFWORLD and RESTOFAFRICA with reciprocity on EAC exported edible oils show negative effects in Rwanda (-0.047%) and Uganda (-6.284%) while positive in Kenya (3.75%) and Tanzania (2.93%) (Table 3). The total effect of the policy is predicted to be overall positive in the EAC bloc (98.9 Million USD), much lower than the scenarios with reciprocity as expected (Figure 4).
- **Simulation 4:** Liberalization of edible oil trade (imports and exports) will have a negative effect on the industry losing about -50.59 Million USD in the EAC bloc (Figure 4). Only in Uganda is the market for edible oil competitive with an increase of 9.58% corresponding to 21 Million USD in value addition with the removal of tariffs (Table 3, Figure 4).

Table 3. Effects of the CET on value addition of edible oils (%)

	Simulation 1	Simulation 2	Simulation 3	Simulation 4
Kenya	5.876	6.428	3.752	-1.269
Rwanda	0.305	0.643	-0.047	-0.647
Tanzania	14.307	15.351	2.931	-4.857
Uganda	12.593	14.823	-6.284	9.582
EAC	7.599	8.336	2.647	-1.354

Source: Authors' compilation from runGTAP simulation results using GTAP 9 Data Bases

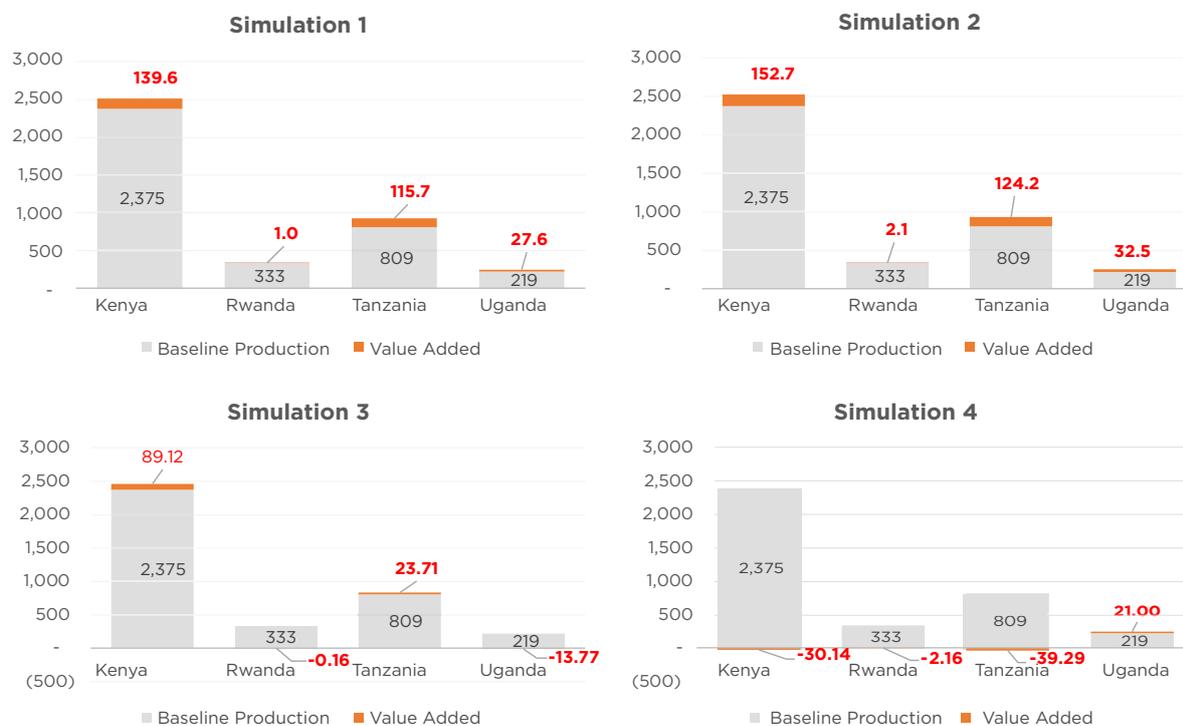


Figure 4. Effects of the CET on sectoral value addition of edible oils (Millions of USD)

Source: Authors own calculations using GTAP 9 Data Bases (<https://www.gtap.agecon.purdue.edu/>; last accessed on August 31st, 2022)

4.3. Trade impacts

This section examines the effects of different simulations on the values of exports by the trading partner and the volume of aggregate imports. The impacts of the CET policies on imports (CIF) and exports (FOB) are summarized in Table 4 (percent changes) and Figure 5 (absolute values) for the different tariff simulations.

Heterogeneous results are found from the different simulations on the EAC bloc. It can be noted that without reciprocity, edible oil exports increase by 7.11% and 8.23% while imports decline by 13.1% and 14.66% under Simulations 1 and 2 respectively. The negative signs of the impacts of the increased tariffs on edible oil imports are expected; a country that increases its tariffs is likely to reduce its imports. However, the increased exports as a result of the increased tariffs appear to result from substantial value additions experienced by EAC countries in the oil industries (Table 3, Figure 4).

- Simulation 1:** Exercising a 35% tariff on imported EDIBLES from RESTOFWORLD only (no import tariff change on RESTOFAFRICA) is expected to reduce its imports into EAC. In Table 2, it can be seen that increasing edible price tariffs led to an increase in the prices which causes a drop in imports. Depending on how the local edible oil industry will react, exports from EAC are also expected to improve as a result of the value added. GTAP results indicate a negative effect on imports with Kenya and Tanzania facing the largest import reduction respectively of 29.0% and 18.8% (Table 4). Imports of edible oils into Uganda and Rwanda fell down by 3.2% and 1.4%. On the other hand, exports of edible oils are anticipated to rise by 20.0% and 15.6% in Kenya and Uganda while in Tanzania and Rwanda a reduction of 7.0% and 0.2% is projected respectively (Table 4). The corresponding absolute changes in exports are shown in Figure 5 indicating an export increase of 32.1 Million USD in edible oils for the EAC bloc; Kenya (24.5 Million USD) and Uganda (19.2 Million USD) will improve their exports whereas Tanzania's exports

will reduce (11.5 Million USD) with a very small effect in Rwanda (Figure 5).

- Simulation 2:** The imposition of the 35% tariff on imported EDIBLES from both RESTOFWORLD and RESTOFAFRICA shows similar trade patterns as in Simulation 1. However, the size of the effects on both imports and exports tends to be more important under Simulation 2. The simulation results suggest a negative impact on edible oil imports with the largest reduction found in Kenya and Tanzania of 32.3% and 20.5% respectively and the lowest in Uganda (-3.4%) and Rwanda (-2.4%) (Table 4). In addition, exports of edible oils are anticipated to rise by 22% and 18.6% in Kenya and Uganda while in Tanzania and Rwanda a decrease of 7.2% and 0.5% is expected respectively (Table 4). Changes in edible oils export volume translate in an improve of 37.8 Million USD for the EAC bloc; Kenya (26.9 Million USD) and Uganda (22.8 Million USD) will improve their exports whereas Tanzania's exports will reduce (11.9 Million USD) with a very small effect in Rwanda (Figure 5).
- Simulation 3:** Under the assumption of reciprocity on imported EDIBLES from both RESTOFWORLD and RESTOFAFRICA and exports from EAC countries, the 35% levy will negatively impact trade of edible oils. The effects appear to be more important on exports with substantial reduction of exported edible oils in Rwanda (-80.7%), Tanzania (-71.5%), Kenya (-24.7%), and Uganda (-8.8%) (Table 4). These correspond to an export value loss of -160.3 Million USD for the EAC bloc (Figure 5).
- Simulation 4:** With the removal of tariff by EAC countries (0% tariff) on imported EDIBLES from RESTOFWORLD and RESTOFAFRICA under the reciprocity assumption of trade liberalization, total export values are predicted to increase by 81.5 Million USD for the EAC bloc (Figure 5) corresponding to 17.64% increase in exports (Table 4). This highlights the largest export and import opportunities that arise under free trade conditions with minimal trade barrier. Figure 5 also underscores the best bet option scenario for Tanzania's exports of edible oils which showed a net reduction in export except in the case of trade liberalization.

Table 4. Effects of the CET on aggregate values of imports (CIF) and exports (FOB) (%)

	Simulation 1		Simulation 2		Simulation 3		Simulation 4	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
Kenya	19.986	-28.969	21.972	-32.352	-24.673	-32.387	14.134	15.544
Rwanda	-0.220	-1.366	-0.484	-2.386	-80.672	-0.910	13.190	2.948
Tanzania	-6.966	-18.824	-7.193	-20.505	-71.518	-22.775	25.926	15.539
Uganda	15.654	-3.234	18.631	-3.396	-8.821	-1.137	17.319	16.349
EAC (Median)	7.114	-13.098	8.232	-14.660	-46.421	-14.302	17.642	12.595

Source: Authors' compilation from run GTAP simulation results using GTAP 9 Data Bases

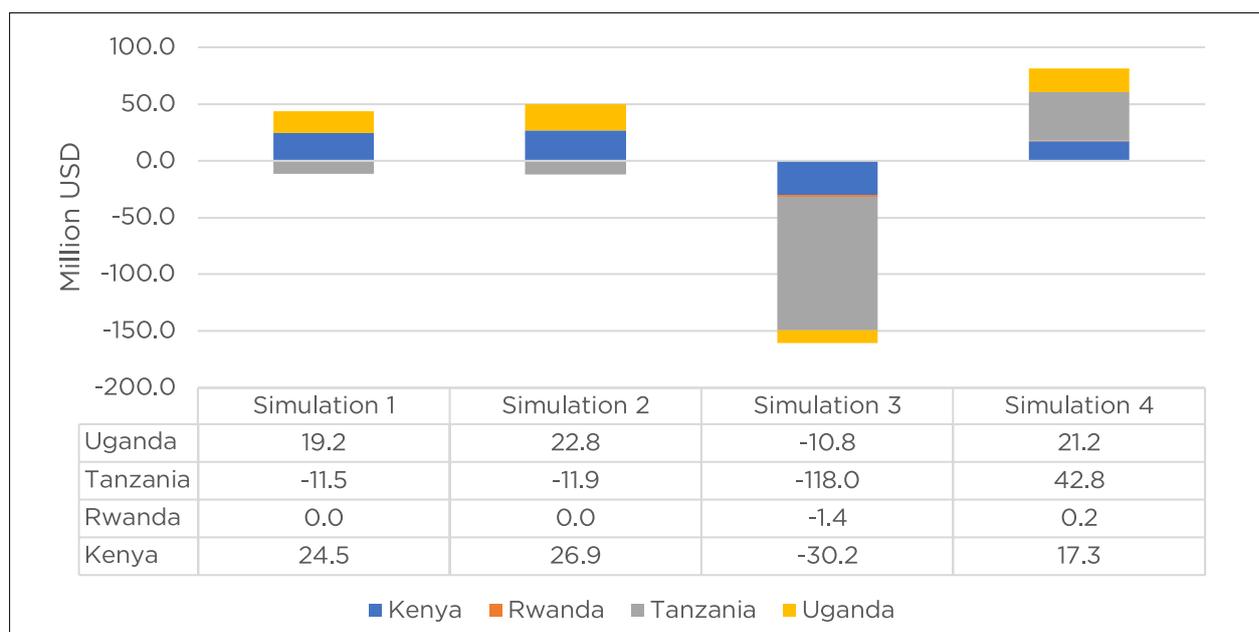


Figure 5. Effects of the CET on aggregate values of exports (FOB) (Million USD)

Source: Authors' compilation from runGTAP simulation results using GTAP 9 Data Bases

Equally important to the policy debate is the impact of the various tariff levels on the balance of trade (exports minus imports). Implications of the export growth and import reduction from Table 4 translate into improvement or deterioration of the balance of trade depending on the sign of net difference between export and imports. Table 5 presents the results on the trade surplus or deficit for edible oils for the different simulations.

There is generally an improvement in the balance of trade across the countries and for the EAC bloc under Simulations 1 & 2 (Table 5). These improvements result from the combined effects of reduced imports and increased exports growths discussed in Table 4 following the tariff imposition on imported edible oils.

With the implementation of the 35% CET on imported edible oils, net trade revenues of 206 Million USD for Simulation 1 and 229.9 Million USD are expected for the EAC bloc with Kenya accounting for over half of the gains (Table 5).

If non-EAC countries retaliate by imposing the same tariff rates on edible oils exported by EAC countries, we observe a decrease to 36.9 Million USD in the trade balance under Simulation 3 and then a deterioration to -42.2 Million USD under Simulation 4 with the free trade for the EAC region (Table 5). Here also, Kenya contributes the most to the trade balance deterioration (over 60%) and Uganda is the only country to display a positive balance of trade (17.3 Million) due to the competitiveness of its edible oil industry (Table 5).

- **Simulation 1:** The effects of imposing a 35% tariff on imported EDIBLES from RESTOFWORLD (no import tariff change on RESTOFAFRICA) is expected to affect the balance of trade by reducing the imports into EAC while expanding exports from EAC as was discussed in Table 4. The difference between exports and imports edible oils will result in either an improvement (positive difference) or a deterioration (negative difference) in the trade balance. All EAC countries will improve their trade balance ranging from 0.6 Million in Rwanda to 105.3 Million USD in Kenya which accounts for over half of the trade balance improvement of the EAC region estimated at 205.9 Million USD. Tanzania and Uganda trade balances are respectively 79.3 Million USD and 20.7 Million USD (Table 5). This indicates that the aim of the EAC bloc to improve the balance of trade is achieved with positive benefits across all EAC countries (Table 2). However, these gains are at the expense of

consumers that will end up paying higher edible oil prices and the consequence of bringing and keeping in the market non-competitive edible oil industries.

- **Simulation 2:** With the application of a 35% tariff on imported EDIBLES from both RESTOFAFRICA and RESTOFWORLD by EAC countries shows positive effects on the trade balance. As in Simulation 1, Kenya and Rwanda display the largest and lowest trade balance improvements of 117.2 Million USD and 1.2 Million USD respectively among EAC countries; Tanzania and Uganda trade balances will also see gains in trade balances of 87 Million USD and 24.5 Million USD respectively (Table 5). The total trade balance for the EAC bloc is predicted to reach 229.9 Million USD (Table 5). The balance of trade improvements result from growing exports and lessening imports shown in Table 4. These findings indicate that by protecting the oil industry in the EAC, the trade balance will rise across all the countries with some disparity in the distribution of gains across the countries.
- **Simulation 3:** The 35% levy on imported edible oils under the assumption of reciprocity, only Kenya shows a positive trade balance at 59.8 Million USD which is large enough to drive the balance improvement for the EAC region to 36.9 Million USD. The remaining EAC countries show large deficits in trade balances varying between -11.4 Million USD for Tanzania and -0.7 Million USD in Rwanda (Table 5). This suggests that export growth in Tanzania, Uganda, and Rwanda were not large enough to bring some net trade gains in the economy. On the other hand, oil industries in Kenya appear to be more responsive to the levy effects transmitted through price signals.
- **Simulation 4:** Under trade liberalization with the removal of tariff (0% tariff) on imported edible oils with the reciprocity assumption, the EAC region balance of trade deteriorates at -42.2 Million USD implying that the bloc imports more edible oils that it exports in aggregate (Table 5). Uganda is the only EAC country to maintain a positive trade balance with free trade emphasizing the relative competitiveness of its edible oil industries compared to other EAC countries. Another implication that this finding underlines is the potential for Uganda to open up its markets for a fluorescent sector. In other EAC countries, the trade balance deteriorated substantially especially in Tanzania and Kenya where our findings predict 31.7 Million USD and 26 Million USD trade deficit for edible oils (Table 5).

Table 5. Effects of the CET on trade balance (exports minus imports) (Million USD)

	Simulation 1	Simulation 2	Simulation 3	Simulation 4
Kenya	105.308	117.18	59.758	-25.962
Rwanda	0.569	1.201	-0.66	-1.938
Tanzania	79.348	87.015	-11.374	-31.66
Uganda	20.715	24.551	-10.864	17.315
EAC	205.94	229.947	36.86	-42.245

Source: Authors' compilation from runGTAP simulation results using GTAP 9 Data Bases

Emerging results from the application of the 35% tariffs on imported edible oils (Simulation 1) that enter the EAC region indicate i) little price increases on edible oils, ii) increased value addition allowed by declined competitiveness and efficiencies of EAC edible oil industries, and iii) a decrease in imports but an increase in exports of edible oils resulting into positive trade balance. The implications of the other tariff policy regimes (Simulations 1, 2, and 3) underscore the importance and benefits of moving toward a gradual edible oil trade liberalization. The speed of freeing trade with the rest of the world will depend on priorities often set by policymakers to meet national, regional, and continental priorities. As such, it is critical to further explore the implications of these policy interventions on regional and continental trade improvement by investigating trade creation, trade diversion, intra-EAC trade, and intra-Africa (AfCFTA) trade resulting from the four policy simulations.

4.4. Impacts on intra-regional trade, trade creation, trade diversion - Implications for AfCFTA

Variations in the policy interventions on edible oils and the extent of tariff imposition are used to measure the impacts on intra and extra-regional trade, trade diversion, and trade creation and their implications for EAC and AfCFTA. The resulting tariff preferences are likely to increase intra-EAC and hence intra-Africa trade (trade creation) but also could lead EAC member states to substitute imports from the more cost-efficient producers in the RoW to inefficient producers in the EAC and RoA (trade diversion).

Our simulation findings show that the tariff policy regimes 1, 2, and 3 have limited effects in resulting in a net trade creation with a strong possibility of a net trade diversion for the EAC and AfCFTA consistent with previous studies in the region (Kassa and Sawadogo, 2021; Geda and Yimer, 2019). Under the tariff policy regime 4, our findings indicate a net trade creation as a result of the trade liberalization.

Table 6 shows the gains and losses of the different trade regimes about trade creation, trade diversion, and intra and extra-regional trade for EAC and RoA regions.

- Simulation 1:** The imposition of the 35% levy on imported EDIBLES from the RESTOFWORLD increases intra-EAC trade by 52.69 Million USD (Table 6), creates more imports of edible oils from RESTOFAFRICA to EAC by 28.36 Million USD, and reduces EAC's imports from the RESTOFWORLD worth 240.74 Million USD (Table 6). Similarly, RESTOFAFRICA will trade less with itself and will decrease its edible oil import from EAC worth 3.86 Million USD while increasing imports from RESTOFWORLD by 5.97 Million USD (Table 6). Combining these findings suggests that the likely effect of Simulation 1 for AfCFTA is a net trade diversion worth 184.73 Million USD highlighting huge opportunities for AfCFTA to tap into unexploited intra-markets. While there are signs of re-exports (RESTOFAFRICA imports more from RESTOFWORLD and exports more to EAC), compliance mechanisms should be put in place to track the rules of origin.
- Simulation 2:** The findings from imposing a 35% tariff on imported EDIBLES from both RESTOFWORLD and RESTOFAFRICA indicate an increase in intra-EAC trade by 60.05 Million USD and a net trade diversion for both EAC and Africa-AfCFTA as a whole worth 175.58 Million USD and 202.1 Million USD respectively (Table 6). This is suggestive that the EAC and African regions will increasingly become economically more integrated which could potentially contribute to more output growth, create more jobs, and promote local industries to flourish as a result of the increased exchange of edible oils. Under this tariff regime, RESTOFAFRICA's imports of edible oils will decrease from EAC but a marginal import increase from RESTOFWORLD.
- Simulation 3:** The tariff trade regime under Simulation 3 is net trade diverting for both EAC and AfCFTA worth 195.61 Million USD and 250.13 Million USD respectively. The application of a 35% levy on imported edible oils under the assumption of reciprocity increases intra-EAC by 59.58

Table 6. Effects of the CET on trade creation and trade diversion (Million USD)

	Simulation 1			Simulation 2					
		EAC	RoA	RoW		EAC	RoA	RoW	
Exporters	EAC	52.69	-3.86	-16.73	EAC	60.05	-4.29	-17.97	
	RoA	28.36	-0.25	-1.40	RoA	-15.21	0.25	-0.11	
	RoW	-240.74	5.97	-8.78	RoW	-220.42	2.83	-7.23	
	Simulation 3			Simulation 4					
		EAC	RoA	RoW		EAC	RoA	RoW	
Exporters	EAC	59.58	-61.92	-157.89	EAC	-26.48	66.12	41.84	
	RoA	-15.70	4.30	0.80	RoA	4.31	-3.82	0.56	
	RoW	-227.50	45.63	102.58	RoW	135.62	-43.70	-20.50	

Source: Authors' compilation from runGTAP simulation results using GTAP 9 Data Bases

Million USD and reduces EAC's imports from and exports to RESTOAFRICA and RESTOFWORLD (Table 6). This apparent deteriorating intra-Africa trade is reflected by the sharp increase in edible oil imports from the RESTOFWORLD to RESTOAFRICA (45.63 Million USD) and a net decrease in trade between the EAC region and the RESTOAFRICA region (77.62 Million USD).

- **Simulation 4:** Under free trade liberalization with the removal of tariff (0% tariff) on imported edible oils, intra-EAC trade decreases by 26.48 Million USD whereas this policy appears to improve intra-Africa trade by 40.12 Million USD (Table 6). Under this scenario, EAC's exports of edible oils will be more important than its imports from RESTOAFRICA (4.31 Million USD vs 66.12 Million USD). However, EAC will import more edible oils from RESTOFWORLD than it exports (135.62 Million USD vs 41.82 Million USD).

4.5. Welfare impacts

One of the main advantages of GTAP is the possibility to simulate welfare impacts using a money metric equivalent variation and decompose the effects into allocative efficiency, terms of trade, and investment-saving components, each of which relates to a quantity change interacting with the tariff distortion in the simulation (Huff and Hertel, 2001). The allocative efficiency effects measure the contribution that arises when the allocation of resources changes relative to pre-existing distortions. It is therefore the share of regional income from efficiency gains (or losses) caused by distortions resulting from the incidence of various trade policies on traded edible oils (Carvalho et al., 2019). The terms of trade – the relative price of exports over imports – measure the variation in export prices related to the cut or increase in tariffs. An improvement in the terms of trade implies that export prices are rising faster than import prices of edible oils which would subsequently result in a reduction in exports while imports of edibles will increase. If the tariff policy shock has a positive (negative) impact on household (regional) income through improvements in allocative efficiency and/or the terms of trade, a part of that extra income will be saved, hence increasing the capital stock (Mureverwi, 2016). Similarly, rising household income will increase demand for produced goods, pushing up factor re-

turns and thus attracting more investments.

Table 5 presents the results of the welfare impacts by allowing the separation of how much of the gains are attributable to allocative efficiency, terms of trade, and investment-saving (capital accumulation) effects in a specific region as a result of the EAC common external tariff trade reform.

Overall, tariffs imposed under the different policy simulations have minor effects on welfare with a percentage change in GDP less than one. While welfare change is essential for aggregate policy decisions, the distributional impacts under Simulations 1, 2, and 3 are all negative at -0.08% for the EAC bloc. It can be noted that the effect of the tariff increase in import-competing edible oil industries that are targeted explain the slight GDP contraction in all EAC countries. Under trade liberalization in Simulation 4, there is a welfare gain in the EAC bloc of 0.021% increase in GDP (Table 5).

As earlier stated, the imposition of tariffs (Simulations 1, 2, and 3) will reduce efficiencies by allowing industries that are not competitive to operate since domestic edible oil sector will benefit from the rise in import prices that are artificially inflated to favor local industries. This is emphasized in Table 4 showing that increased tariffs lead to allocative inefficiency in the EAC bloc of about 66 Million USD for Simulations 1 and 2 but 76 Million USD for Simulation 3. One explanation of the inefficiency is that domestic resources are misused and misallocated in the production of edible oils making domestic edible oil industries less innovative and efficient and hence reducing their competition. This is anticipated to push up edible oil prices in the domestic EAC markets making consumers worse off.

The imposition of tariff increases imported edible oil prices (Table 2), stimulates production of local industries (Table 3), and improves the trade balance (Table 5) which is also likely to improve the terms of trade (Table 7). The extent of improvement in the terms of trade depends largely on the reciprocal de-

mand and supply of respective trading partners in the RESTOFAFRICA and RESTOFWORLD. Without reciprocity, the terms of trade are positive across the countries and the EAC bloc as a whole. With retaliation, the terms of trade show diverse signs resulting from supply and demand responses and their elasticities.

The investment-saving effects (capital stock contribution) summarizes the long-run welfare effects of changes in the stock of capital due to changes in net investment (Mureverwi, 2016). Imposing a tariff will affect the supply of savings for investment as well as the regional distribution of investments. If the CET reform policy has a positive effect on income through improvements in allocative efficiency and/or the terms of trade, a part of that extra income will be saved by households which will in turn expand the capital accumulation. At the same time, rising income will increase demand for edible oils, pushing up factor returns and thus attracting more investments (Hertel, 1997; Huff and Hertel, 2001; Mureverwi, 2016). These effects are shown in Table 7. Under Simulations 1 and 2, the capital stocks are all positive across the countries totaling 33.08 Million USD and 36.8 Million USD respectively (Table 7). With the reaction of foreign countries to retaliate with a reciprocal tariff imposition, the size of net investment shrinks to 16.1 Million USD under Simulation 3 and below zero at -8.76 Million USD with trade liberalization under Simulation 4 (Table 7).

The decomposition of the welfare gains and losses in absolute and percentage GDP terms shows that the contribution of allocative inefficiency resulting from resource misallocation is the largest contributor to welfare changes followed by the terms of trade.

While allocative efficiency and the terms of trade affect summarize the short-run effects of welfare changes across the countries, capital accumulation represents the long-run welfare effects of changes in the stock of capital due to changes in net investment.

All the tariff policy shocks for the different simulations are expected to affect the global supply of savings for investment as well as the regional distribution of investments. A tariff policy shock that positively (negatively) impacts household (regional) income through improvements in allocative efficiency and/or the terms of trade, a part of that extra income will be saved, hence increasing the capital stock. Also, rising household income will increase demand for edible oils, rising factor returns and thus attracting more investments.

- **Simulation 1:** GTAP results of the application of 35% tariff on imported EDIBLES from RESTOFWORLD (excluding rest of Africa) show positive impacts on the total welfare gains (15.35 Million USD) driven by larger improvements in the terms of trade (48.62 Million USD) and capital accumulation (income-savings) (33.08 Million USD) in a context of allocative inefficiency (-66.35 Million USD) (Table 7).
 - o Allocative efficiency effects are negative across all EAC countries. This implies that the levy will deteriorate the efficiency of resource allocation into less productive uses costing 66.35 Million USD to the domestic EAC economy. Over three fifth of the EAC bloc allocative inefficiency results from resource misallocation in Tanzania (43.46 Million USD) followed by Kenya (22.12 Million USD) (Table 7).
 - o On the other hand, the results show an improvement in the terms of trade - the relative price of exports over imports - in the regional EAC bloc by 33.08 Million USD with 95% explained by the changes occurring in Kenya and Tanzania. This improvement indicates that the index of export prices increases faster than the index of import prices implying that EAC countries can import more goods for the same amount of exports keeping constant changes in the exchange rate and changes in supply and demand. However, in Rwanda the terms of trade become negative as a result of the 35% tariff on imported edible oils possibly contributing to the negative total welfare loss of 0.88 Million USD in the country (Table 7).
- **Simulation 2:** the application of a 35% tariff on imported EDIBLES from both RESTOFWORLD and RESTOFAFRICA by EAC countries shows the same patterns of results as in Simulation 1. Positive effects are found on the total welfare with a GDP increase of 23.25 Million USD (0.028%) in the EAC bloc. The welfare gain in GDP is mostly driven by the negative contribution of allocative efficiency (-67.53 Million USD) but improvements in the terms of trade (53.98 Million USD) and capital accumulation (36.81 Million USD) (Table 7).
 - o Allocative efficiency effects are negative across all EAC countries implying that the levied tariff will result in resource misallocation into less productive uses across EAC countries costing 43.46 Million USD in Tanzania and 21.87 Million USD in Kenya which together account for over 95% of the EAC bloc allocative inefficiency (Table 7).

- o There is an improvement in the terms of trade in the regional EAC bloc with 95% explained by the terms of trade increases that occurred in Kenya and Tanzania by respectively 29.98 Million USD and 21.05 Million USD (Table 7).
- o The consequence of the improvements in the terms of trade is the rise in household income allowing more saving and also demand for edible oils will increase rising factor returns which will thus attract more investments. As a result, capital stock will increase; Kenya accounts for more than 80% of the EAC bloc saving with 30.75 Million USD (Table 7). Also, rising household income will increase demand for edible oils, rising factor returns and thus attracting more investments.
- **Simulation 3:** With policy retaliation by foreign countries on reciprocal edible oil tariff imposition, allocative inefficiency worsens but the terms of trade and the capital stock improve in the EAC bloc and across countries expect in Uganda compared to Simulations 1 and 2 (without reciprocity assumption). This implies some differential impacts on the extent to which GDP welfare changes in both absolute and percentage changes.

Table 7. Welfare effects of the CET on efficiency, terms of trade, income-savings, and GDP

	Allocative Efficiency (Million USD)	Terms of Trade (Million USD)	Income-Savings (Million USD)	Total Welfare Gains - GDP (Million USD)	Total Welfare Gains - GDP (%)
Simulation 1					
Kenya	-22.120	26.890	27.590	32.370	0.094
Rwanda	-0.160	-0.750	0.030	-0.880	-0.014
Tanzania	-43.460	19.430	5.270	-18.760	-0.079
Uganda	-0.610	3.040	0.190	2.630	0.015
EAC	-66.350	48.620	33.080	15.350	0.019
Simulation 2					
Kenya	-21.870	29.980	30.750	38.860	0.113
Rwanda	-0.670	-0.750	0.040	-1.380	-0.022
Tanzania	-44.420	21.050	5.800	-17.580	-0.074
Uganda	-0.570	3.690	0.220	3.340	0.019
EAC	-67.530	53.980	36.810	23.250	0.028
Simulation 3					
Kenya	-25.670	14.640	18.700	7.670	0.022
Rwanda	-0.770	-0.120	-0.010	-0.910	-0.014
Tanzania	-49.380	-0.690	-2.520	-52.580	-0.220
Uganda	0.140	-2.750	-0.080	-2.700	-0.015
EAC	-75.690	11.080	16.100	-48.520	-0.059
Simulation 4					
Kenya	2.380	-6.740	-7.510	-11.870	-0.035
Rwanda	0.420	-0.410	-0.030	-0.030	0.000
Tanzania	13.640	-7.730	-1.340	4.580	0.019
Uganda	1.210	3.760	0.120	5.100	0.029
EAC	17.650	-11.120	-8.760	-2.230	-0.003

Source: Authors' compilation from runGTAP simulation results using GTAP 9 Data Bases

- **Simulation 4:** Under trade liberalization, resources are efficiently allocated improving hence the allocative efficiency across all EAC countries with an absolute variation between 0.42 Million USD for Rwanda to 13.64 Million USD for Tanzania. However, the terms of trade are predicted to be negative across the countries except in Uganda probably depicting the oil industry competitiveness vis-à-vis foreign countries. This indicates that resources may shift from previously protected industries towards sectors where EAC countries have a better comparative advantage which will ultimately contribute to an increase in real GDP and economic welfare. The combined consequences of the changes in the terms of trade, allocative efficiency, and capital stock will determine the welfare GDP growth. GTAP results predict a welfare loss of 2.23 Million USD in the EAC bloc driven by Kenya that could experience a GDP decrease of 11.87 Million USD followed by Rwanda with 0.03 Million USD GDP loss. The results also anticipate a growth in welfare GDP in Uganda and Tanzania by 5.1 Million USD (0.029%) and 4.58 Million USD (0.019%) respectively.

5. Conclusions and Recommendations

In economic theory, the infant industry argument for the temporary protection of local emerging sectors dates back to Hamilton (1791) presuming the need for protection from international competitors in the infancy stage until their maturity. This argument is commonly used to justify the imposition of trade protectionism such as tariffs.

In this same vein, EAC Member State Ministers adopted a maximum Common External Tariff (CET) of 35% imposed on edible oils imported from outside the EAC bloc as the fourth tariff band on May 6th, 2022 which commenced on July 1st, 2022. The fourth band CET is expected to promote industrialization, spur intra-regional trade, spur the economic development of member states, and contribute to the realization of the benefits of the African Continental Free Trade Area (AfCFTA). This study examines the potential gains and losses from the implementation of the fourth tariff band on edible oils with a focus on the impact on prices, value added (production), trade (imports, exports, balance of trade), and welfare (allocative efficiency, terms of trade, income-savings, and GDP). Simulations are conducted employing a computational general equilibrium static framework relying on the GTAP social accounting matrix database and software (GTAP 9).

The following can be drawn:

- Imposing import tariffs on edible oils increases marginally domestic prices which will make the foreign edible oil more expensive and hence adds to the cost borne by domestic consumers in the importing EAC region.
- Import tariffs on edible oils will inhibit its imports since it relatively costs more to bring edible oils into the EAC bloc. As a result, the supply of edible oils to EAC will fall which will induce a price increase of the imported edible oils; high imported prices will in turn reduce its demand.
- The application of the 35% tariff on edible oil imports into the EAC bloc results in value addition of over 283.9 Million USD. The increased tariff will reduce competition since import prices are artificially inflated to favor local industries. The reduced competition translates into efficiency losses allowing oil industries that would not exist in a competitive trade setting to remain. Also, the big winners of rising tariffs on imported edible oils to 35% are Kenya and Tanzania with value added of 139.6 Million USD and 115.7 Million USD under Simulation 1, 152.7 Million USD, and 124.2 Million USD under Simulation 2.
- Heterogenous results are found in the edible oil trade with an increase of 7.11% and 8.23% in exports while imports declined by 13.1% and 14.66% under Simulations 1 and 2 respectively. A country that increases its tariffs is likely to reduce its imports. However, the increased exports as a result of the increased tariffs appear to result from substantial value additions experienced by EAC countries in the oil industries. Implications of the export growth and import reduction on the balance of trade underscore disproportionate trade improvement for Kenya followed by Tanzania and Uganda under Simulations 1 & 2. With retaliation on the tariff rates, the trade balance shrinks across all the countries with only Kenya maintaining a positive net trade difference for edible oils. Moving towards free trade without any tariff imposed, the EAC bloc trade balance deteriorates, all countries show a negative sign on the trade balance except for Uganda underlining its potential to open up its markets for a fluorescent sector in a competitive setting for edible oils.
- The different tariff policy regimes 1, 2, and 3 are found to boost intra-EAC with some positive implications on AfCFTA particularly under simulations 1 & 2. The CET is more likely to result in a net trade diversion with limited effects on trade creation for the EAC and AfCFTA. Only under the tariff policy regime 4, do our findings indicate a net global trade creation as a result of the trade liberalization.

- Levied tariffs imposed under the different simulations have minor effects on welfare and GDP with a percentage change of less than one. While welfare change is essential for aggregate policy decisions, the distributional impacts under Simulations 1, 2, and 3 are all negative at -0.08% for the EAC bloc.
- It can be noted that the effect of the tariff increases in import-competing edible oil industries that are targeted explains the slight GDP contraction in the EAC region. Under trade liberalization in Simulation 4, there is a welfare gain in the EAC bloc of a marginal 0.003% increase in GDP (Table 7).
- The decomposition of the welfare gains and losses in absolute and percentage GDP terms shows that the contribution of allocative inefficiency resulting from resource misallocation is the largest contributor to welfare changes followed by the terms of trade.
- Although increased tariffs will increase government revenues that can be used to the benefit of the economy, this study recommends a reduced protectionist policy on edible oils which can bring the highest welfare to the economy. Policies that reduce non-tariff barriers to spur intra-EAC trade currently at 8% should be favored.
- One potential and effective pathway to improving edible oil industries in the EAC could be a combination of policies that simultaneously address productivity constraints to boost production and supply with trade policies that harm less consumers.
- EAC countries will benefit on a varying scale from increases in labor demand, capital accumulation, terms of trade, and allocative efficiencies. These results also highlight that some EAC countries will experience huge revenue losses from trade liberalization (0% on import tariffs).

This study recommends the development of cost-effective investment schemes that could promote the edible oil industry value chains within the EAC region combined with an application of a CET that does not apply to African countries outside of the EAC. To succeed, African Member States should be encouraged to participate in the AfCFTA, negotiate and align their tariffs and rules of origin with key trading partners. Also, this study calls for a preferential and neutral approach to eliminating existing tariff rates within Africa on edible oils by first consolidating and harmonizing tariff regimes under the framework of the AfCFTA. In the medium to long run, effective investments in research and improved technologies, infrastructure development, and economic diversification as part of the broader trade facilitation processes within the EAC bloc could be key to sustainably improve edible oil industries in reaching maturity and becoming competitive.

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Annexes

Table A1. List of edible oils in the GTAP databased

Edible oil	Description
Oil Seeds	Oil seeds and oleaginous fruit; soybeans, copra.
Vegetable Oils	crude and refined oils of soya-bean, maize (corn), olive, sesame, groundnut, olive, sunflower-seed, safflower, cottonseed, rape, colza and canola, mustard, coconut palm, palm kernel, castor, tung jojoba, babassu and linseed, perhaps partly or wholly hydrogenated, inter-esterified, re-esterified or elaidinised. Also, margarine and similar preparations, animal or vegetable waxes, fats and oils and their fractions, cotton linters, oilcake and other solid residues resulting from the extraction of vegetable fats or oils; flours and meals of oil seeds or oleaginous fruits, except those of mustard; degreas and other residues resulting from the treatment of fatty substances or animal or vegetable waxes.

Source: GTAP 9 Data Bases

	Kenya	Tanzania	Uganda	Rwanda	Burundi	South Sudan	DRC
Poverty headcount ratio at \$1.90 a day (2011 PPP) (% of population)	37.1	49.4	41	56.5	72.8	76.5	77.2
Agriculture, forestry, and fishing value added (% of GDP)	22.4	25.9	23.8	24.1	28.7	9.6	19.4
GDP growth (annual %)	7.5	4.3	3.4	10.9	1.8	-10.8	5.7
GDP per person employed (constant 2017 PPP \$)	10,681	5,635	6,107	4,611	1,711		3,313
Prevalence of stunting, height for age (% of children under 5)	26.2	31.8	25.4	33.1	50.9	31.3	41.8
Poverty headcount ratio at national poverty lines (% of population)	36.1	26.4	20.3	38.2	64.9	82.3	63.9
GDP per capita growth (annual %)	5.1	-1	0.3	8.2	-1.2	-12.1	2.5
Prevalence of undernourishment (% of population)	25	25		35			42
Prevalence of severe food insecurity (% of population)	25.7	24.7	21.7			62	38.5
Manufacturing value added (% of GDP)	7	8	16	9	9	4	17

Figure A1. Selected macroeconomic and SDG indicators using most recent data

Source: Authors' compilation using World Bank Development Indicators (<https://data.worldbank.org> ; last accessed on August 31st, 2022)

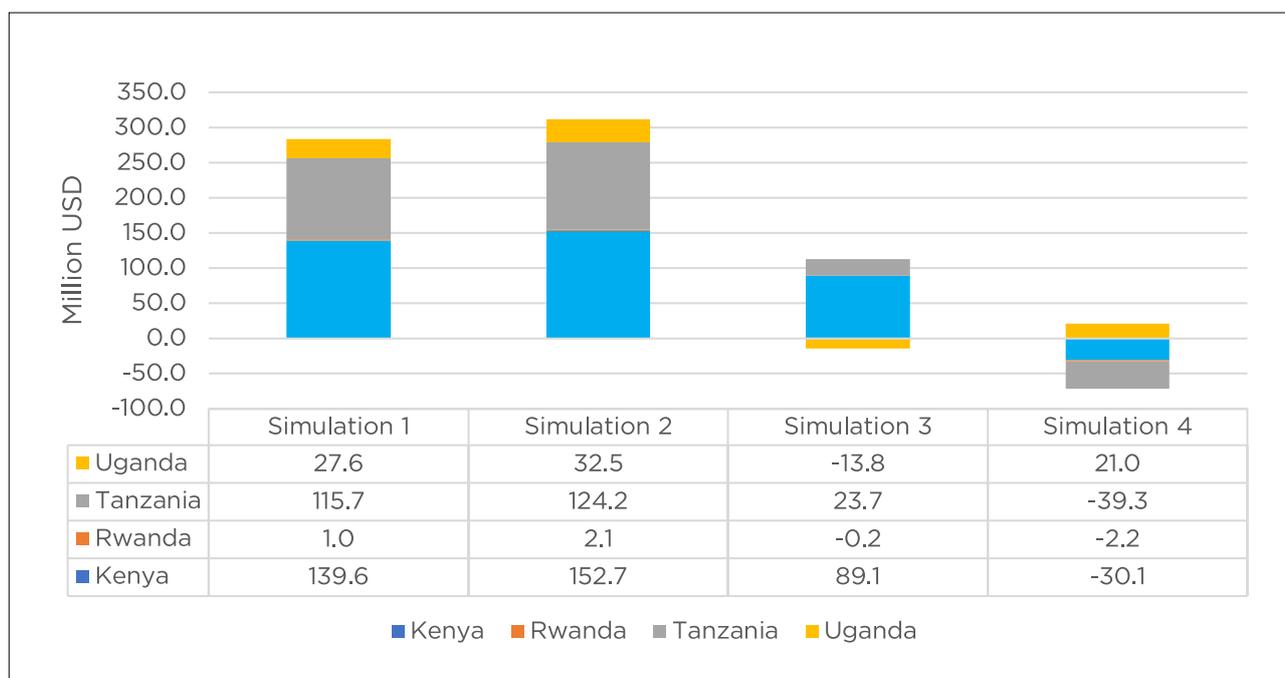


Figure A2. Effects of the CET on sectoral value addition of edible oils (Million of USD)

Source: Authors' compilation from runGTAP simulation results using GTAP 9 Data Bases

Raw Data⁷

Table A2. Export sales of edibles across countries (Million USD) – Simulation 1

		Importers of edible oils					
	qxs	Kenya	Rwanda	Tanzania	Uganda	RestOfAfrica	RestofWorld
Exporters of edible oils	Kenya	0.00	-0.07	24.92	2.35	-1.58	-1.17
	Rwanda	0.00	0.00	0.00	0.00	0.00	-0.01
	Tanzania	4.65	-0.11	0.00	0.19	-1.36	-14.86
	Uganda	17.18	-0.10	3.68	0.00	-0.92	-0.69
	RestOfAfrica	11.24	0.10	16.96	0.07	-0.25	-1.40
	RestofWorld	-109.10	-0.68	-127.43	-3.53	5.97	-8.78

Source: Authors' compilation from runGTAP simulation results using GTAP 9 Data Bases

Table A3. Export sales of edibles across countries (Million USD) – Simulation 2

		Importers of edible oils					
	qxs	Kenya	Rwanda	Tanzania	Uganda	RestOfAfrica	RestofWorld
Exporters of edible oils	Kenya	0.00	0.20	27.23	2.49	-1.75	-1.29
	Rwanda	0.00	0.00	0.00	0.00	0.00	-0.01
	Tanzania	5.33	-0.08	0.00	0.20	-1.46	-15.86
	Uganda	19.57	1.10	4.01	0.00	-1.08	-0.81
	RestOfAfrica	-7.83	-2.14	-5.06	-0.18	0.25	-0.11
	RestofWorld	-101.81	-0.65	-114.51	-3.45	2.83	-7.23

Source: Authors' compilation from runGTAP simulation results using GTAP 9 Data Bases

Table A4. Export sales of edibles across countries (Million USD) – Simulation 3

		Importers of edible oils					
	qxs	Kenya	Rwanda	Tanzania	Uganda	RestOfAfrica	RestofWorld
Exporters of edible oils	Kenya	0.00	0.08	26.50	-0.13	-31.74	-24.83
	Rwanda	0.00	0.00	0.00	0.00	-0.10	-1.26
	Tanzania	6.07	-0.01	0.00	-0.05	-8.90	-115.14
	Uganda	20.81	2.15	4.16	0.00	-21.18	-16.66
	RestOfAfrica	-7.91	-2.18	-5.40	-0.20	4.30	0.80
	RestofWorld	-103.77	-0.68	-123.17	0.12	45.63	102.58

Source: Authors' compilation from runGTAP simulation results using GTAP 9 Data Bases

Table A5. Export sales of edibles across countries (Million USD) – Simulation 4

		Importers of edible oils					
	qxs	Kenya	Rwanda	Tanzania	Uganda	RestOfAfrica	RestofWorld
Exporters of edible oils	Kenya	0.00	-0.53	-9.47	-4.86	30.36	1.79
	Rwanda	0.00	0.00	0.00	0.00	0.21	0.01
	Tanzania	-1.12	-0.02	0.00	-0.65	14.57	30.01
	Uganda	-4.56	-3.80	-1.45	0.00	20.97	10.04
	RestOfAfrica	-1.71	3.40	2.55	0.07	-3.82	0.56
	RestofWorld	47.63	2.97	75.22	9.80	-43.70	-20.50

Source: Authors' compilation from runGTAP simulation results using GTAP 9 Data Bases

⁷ For additional datasets, refer to: <https://www.gtap.agecon.purdue.edu/databases/default.asp>

Table A6. Edible oil imports from EAC and rest of Africa by their sources (Million USD)

	EAC imports from EAC	EAC imports from RoA	EAC imports from RoW	Net Trade	RoA imports from EAC	RoA imports from RoA	RoA imports from RoW	Net Trade
Simulation 1	52.69 ¹	28.36 ¹	-240.74 ²	-159.68 ⁴	-3.86 ²	-0.25 ²	-8.78	-12.89 ⁴
Simulation 2	60.05 ¹	-15.21 ²	-220.42 ²	-175.58 ⁴	-4.29 ²	0.25 ¹	2.83 ¹	-1.21 ⁴
Simulation 3	59.58 ¹	-15.70 ²	-227.50 ²	-183.62 ⁴	-61.92 ²	4.30 ¹	45.63 ¹	-11.99 ⁴
Simulation 4	-26.48 ²	4.31 ¹	135.62 ¹	113.46 ³	66.12 ¹	-3.82	-43.70	18.59 ³

¹, ², ³, and ⁴ are respective trade creation, trade diversion, net trade creation, and net trade diversion effects.

Source: Authors' compilation from runGTAP simulation results using GTAP 9 Data Bases

Raw Data⁸

Table A7. Value of commodity i output in region r (Millions of USD)

VOA	1 Kenya	2 Rwanda	3 Tanzania	4 Uganda	5 RestOfAfrica	6 RestofWorld	Total
1 Land	852.9	226.4	745.7	363.5	29,871.1	631,245.6	663,305.2
2 Labor	14,073.1	2,955.4	10,885.4	7,732.8	750,754.9	25,361,090.0	26,147,491.5
3 Capital	15,340.0	1,870.9	6,368.3	7,034.6	689,977.8	23,256,002.0	23,976,593.6
4 NatRes	173.0	156.4	110.8	575.6	84,386.6	857,039.8	942,442.2
5 EdibleOils	2,443.5	333.1	808.8	218.2	30,507.8	660,596.7	694,908.1
6 RestOfAgric	32,561.5	2,942.7	10,149.0	6,970.8	636,125.0	10,961,082.0	11,649,831.0
7 Manufactures	11,151.5	1,750.6	4,926.7	4,740.4	1,179,820.9	44,683,832.0	45,886,222.2
8 Services	28,606.5	4,435.1	20,157.8	14,683.4	1,724,463.9	79,618,048.0	81,410,394.7
9 CGDS	7,234.3	1,292.0	8,575.8	3,926.4	435,195.2	16,339,121.0	16,795,344.8
Total	112,436.3	15,962.7	62,728.3	46,245.8	5,561,103.2	202,368,057.0	208,166,533.3

Source: GTAP 9 Data Bases

Table A8. GDP from the expenditure side (C+I+G+X-M) (Millions of USD)

GDPEXP	1 Consumption	2 Investment	3 Government	4 Export	5 Import	Total
1 Kenya	28,287.4	7,234.3	6,397.5	9,211.1	-16,817.0	34,313.3
2 Rwanda	4,757.6	1,292.0	507.4	1,387.7	-1,536.6	6,408.2
3 Tanzania	15,729.3	8,575.8	3,895.4	6,194.6	-10,523.7	23,871.6
4 Uganda	12,334.0	3,926.4	1,835.4	4,201.0	-4,693.0	17,603.8
5 RestOfAfrica	1,249,328.3	435,195.2	324,540.5	633,925.1	-646,564.1	1,996,424.9
6 RestofWorld	40,814,460.0	16,339,121.0	12,221,836.0	19,500,556.0	-19,475,342.0	69,400,631.0
Total	42,124,896.6	16,795,344.8	12,559,012.2	20,155,475.6	-20,155,476.4	71,479,252.8

Source: GTAP 9 Data Bases

Table A9. GDP from the sources side (Millions of USD)

GDPSRC	1 Factor Income	2 Tax	3 Depreciation	Total
1 Kenya	27,418.9	3,874.4	3,020.1	34,313.3
2 Rwanda	4,849.2	1,199.1	359.9	6,408.2
3 Tanzania	15,757.2	5,761.4	2,353.0	23,871.6
4 Uganda	14,703.3	1,897.2	1,003.3	17,603.8
5 RestOfAfrica	1,374,014.9	441,434.8	180,975.5	1,996,425.1
6 RestofWorld	40,854,104.0	19,295,252.0	9,251,273.0	69,400,629.0
Total	42,290,847.4	19,749,418.9	9,438,984.7	71,479,251.0

Source: GTAP 9 Data Bases

⁸ For additional datasets, refer to: <https://www.gtap.agecon.purdue.edu/databases/default.asp>

Table A10. Capital Account (S-I=X-M) (Millions of USD)

CAPITALACCT	1Saving	2Investment	Total
1 Kenya	-3,391.7	-4,214.3	-7,605.9
2 Rwanda	784.3	-932.1	-147.9
3Tanzania	1,893.8	-6,222.8	-4,329.0
4Uganda	2,701.3	-2,923.1	-221.8
5 RestOfAfrica	241,582.2	-254,219.7	-12,637.6
6 RestofWorld	7,113,068.0	-7,087,848.0	25,220.0
Total	7,356,637.9	-7,356,360.1	277.8

Source: GTAP 9 Data Bases

Table A11. Current Account (Millions of USD)

CURRENTACCT	1 Export	2 Import	Total
1 Kenya	9,211.1	-16,817.0	-7,605.9
2 Rwanda	1,387.7	-1,536.6	-148.9
3 Tanzania	6,194.6	-10,523.7	-4,329.0
4 Uganda	4,201.0	-4,693.0	-492.0
5 RestOfAfrica	633,925.2	-646,564.2	-12,639.0
6 RestofWorld	19,500,556.2	-19,475,341.3	25,214.9
Total	20,155,475.9	-20,155,475.7	0.1

Source: GTAP 9 Data Bases

Table A12. Decomposition of exports at world prices (Millions of USD)

	1Kenya	2Rwanda	3Tanzania	4Uganda	5RestOfAfrica	6RestofWorld	Total
1 EdibleOils	122.4	1.7	165.0	122.3	3,135.7	184,135.2	187,682.3
2 RestOfAgric	3,361.1	174.6	1,779.5	1,095.9	50,919.0	1,523,782.0	1,581,112.1
3 Manufactures	2,265.3	945.7	2,535.1	2,149.1	492,633.1	13,759,734.2	14,260,262.3
4 Services	2,800.9	259.0	1,198.6	817.0	78,848.6	3,266,393.6	3,350,317.8
Total	8,549.7	1,380.9	5,678.2	4,184.3	625,536.4	18,734,044.9	19,379,374.5

Source: GTAP 9 Data Bases

Table A13. Decomposition of imports at market prices (Millions of USD)

	1Kenya	2Rwanda	3Tanzania	4Uganda	5RestOfAfrica	6RestofWorld	Total
1 EdibleOils	135.4	1.7	183.4	139.9	3,704.6	224,902.3	229,067.4
2 RestOfAgric	3,946.4	196.0	1,990.1	1,221.7	59,461.3	1,759,558.3	1,826,373.9
3 Manufactures	2,572.9	969.0	2,756.8	2,242.5	523,722.1	14,696,811.5	15,229,074.7
4Services	2,800.9	259.0	1,198.6	817.1	78,849.3	3,266,420.4	3,350,345.4
Total	9,455.7	1,425.7	6,129.0	4,421.1	665,737.4	19,947,692.5	20,634,861.4

Source: GTAP 9 Data Bases

About HAPA

Across African countries today, there is a need for better, more timely use of evidence, and more targeted approaches, to improve the quality of policymaking by governments. The Hub for Agriculture Policy Action (HAPA), is a Unit within AGRA that provides policy advisory services to governments seeking to reform, refine, and/ or develop a more clearly defined policy direction. The approach recognizes the urgent need for timely policy support to the agriculture sector, which plays an important role in ensuring inclusive growth. It also recognizes the demands for political expediency and the need to ensure that a particular policy direction is anchored in evidence.

The purpose of the Hub for Agriculture Policy Action (HAPA) is to support AGRA to catalyze and sustain an inclusive agricultural transformation in Africa to increase incomes and improve food security of millions of Africans. The creation of HAPA was in response to a noticeable gap in the utilization of evidence within the policy-making cycle to drive policy change. Through Consolidation and Translation (C&T) of evidence, HAPA's work entails collating existing evidence, expertise and best practice that are relevant to a government request for policy support and processing these into a set of rationalized and costed policy options. Through HAPA, AGRA aims to increase the use of evidence to inform decisions for policymaking and implementation. HAPA works with local partners such as research actors to collate existing data and evidence, expertise, and best practices that respond to a government request for policy support and package these into a set of actionable policy recommendations.

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