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Kenya's Animal Feeds Manufacturing Competitiveness

Technical Report

Tim Njagi[+]

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[+]Tegemeo Institute of Agricultural Policy and Development, Egerton University

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Tegemeo Institute, Egerton University
4th Floor, Tetezi Towers
George Padmore Rd, Off Marcus Garvey Rd
P.O. Box 20498 -00200, Nairobi, Kenya.

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Tegemeo Institute

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Tegemeo Institute of Agricultural Policy & Development
George Padmore Road, Off Marcus Garvey Road
P.O. Box 20498, 00200, Nairobi, Kenya
Tel: +254 20 2717818/76; Fax: +254 20 2717819
E-mail: egerton@tegemeo.org
URL: http://www.tegemeo.org

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Acronyms

AKEFEMA	Association of Kenya Feed Manufacturers
ASTGS	Agriculture Sector Transformation and Growth Strategy
CET	Common External Tariff
DDGS	Distillers Dried Grains with Solubles
EAC	East African Community
GDP	Gross Domestic Product
GM	Genetically Modified
KEBS	Kenya Bureau of Statistics
KEPHIS	Kenya Plant Health Inspectorate Service
KMT	Kenya Markets Trust
NTBs	Non-Tariff Barriers
LMOs	Non-Living modified organisms

Summary

The animal feeds industry plays a significant role in determining competitiveness for livestock value chains in Kenya. The costs of feeds account for more than half the cost of production of primary livestock products in poultry, dairy and pigs enterprises. At present, livestock value chains are uncompetitive. They cannot compete with imports from neighbouring countries in the region, for whose products land at a price lower than the cost of production domestically. This study evaluated the level of competitiveness in animal feeds manufacturing in Kenya. The cost of animal feeds has risen astronomically over the past two years. This has driven both farmers and animal feed manufacturers out of production, and where possible, feeds from neighbouring countries are being imported into the country. The rise in the cost of animal feeds is driven by rising costs in raw materials such as soya, for which the country primarily imports. A key challenge is policies such as the ban on genetically modified products which stop the players in the country from accessing cheaper raw materials at the world market. A waiver of duty for raw materials and the ban to allow genetically modified raw materials to be imported for animal feed manufacturing are recommended to reduce the price of animal feeds. This should boost animal feed manufacturers and livestock farmers and help them remain in business as the country gears towards longer-term solutions.

1. Introduction

Kenya's livestock sub-sector plays an essential role in the country's economy through directly providing food, income and employment to millions of Kenyans and indirectly providing raw materials to the agro-processing industry. The livestock sub-sector contributes 16 per cent to agricultural Gross Domestic Product (GDP) and four per cent to the national GDP (KNBS, 2021). However, the livestock's contribution to agricultural GDP has been declining. The Big Four Agenda and the Agriculture Sector Transformation and Growth Strategy (ASTGS) 2019-2029, the two development blueprints that are currently guiding the country's investments in the agriculture sector, recognise the potential of livestock value chains to empower youth and women, grow incomes and move households out of poverty. The key to realising this potential is to make livestock farming more commercial by improving market productivity and efficiency in the livestock value chains.

Efficient livestock feed value chains are crucial for improving the livestock subsector's performance and transformation outlined in the Big Four Agenda and the ASTGS. Poor animal husbandry, mainly because of poor feeding practices, has led to low livestock productivity. In part, the high costs of commercial livestock feed, the unfriendly business environment for trade in livestock feed, and the weak regulatory environment have affected the availability, affordability, and utilisation of quality commercial feeds to grow the livestock value chains.

The high cost of production in livestock value chains has been cited in several studies as the main barrier to increasing production and productivity. For example, feeds account for an astronomically high proportion of the cost of production for value chains such as chicken and dairy milk. The cost of feed accounts for over 90 per cent of the total cost of production for eggs for smallscale farmers (Njagi et al., 2013), while the cost of feed and fodder accounts for 50 and 36 per cent of the total cost of dairy milk production in zero-grazing and semi-zero grazing systems, respectively (Tegemeo Institute and Kenya Dairy Board, 2021).

The country is currently experiencing drought for the short rain season. Ten Arid and semi-Arid Counties have been significantly affected, with an estimated 2.4 million people facing acute hunger and needing humanitarian assistance. In September 2021, the President declared the drought a national disaster. The costs of animal feeds were rising in 2021, with the price increases attributed to a shortage of raw materials such as soya and oil cakes seeing the most significant price increases. According to the Association of Kenya Feed Manufacturers (AKEFEMA), the price of soya and oil cakes increased by more than 60% in 2021[1][2]. The immediate impact of the rising feed prices has been losses by farmers amidst sticky output prices. As a result, farmers are cutting back production, and as a consequence, animal feed manufacturers are also being adversely affected.[3] Amid reports of farmers abandoning livestock enterprises such as poultry, AKEFEMA also reports the folding of small scale feed

[1] https://mkulimatoday.com/why-you-will-pay-more-to-feed-your-animals-in-2021-as-manufacturers-close-shop/
[2] https://www.businessdailyafrica.com/bd/markets/commodities/animal-feed-prices-successive-month-3255080
[3] https://allafrica.com/stories/202109080781.html

manufacturers amid rising costs and increasing losses leading to massive job losses. Furthermore, animal feed wholesalers and retailers are increasingly importing animal feeds from neighbouring countries to maintain demand from livestock farmers.[4]

In October 2021, the President ordered a framework for reducing the cost of feed to be put in place by the Ministry of Agriculture, Livestock, Fisheries and Cooperatives. The Ministry has already requested a waiver of duty for imported raw materials as a strategy to bring down the cost of feed.[5][6] The Ministry has granted duty waivers for importing corn (yellow maize) in the past. In deliberating these types of incentives, several considerations must be considered. First, the country operates the Common External Tariff (CET) for the East African Community (EAC), where a 50% tariff is applied for maize imported outside the EAC region. A country must therefore seek a waiver from EAC to waive the tariff. Second, the government has a total ban on Genetically Modified (GM) products. This means that the duty waiver is only for non-GM raw materials. Finally, there is debate among industry stakeholders on how competitive the feed industry is and whether the proposed interventions can realise the objectives being pursued.

This brief sets to contribute to the ongoing debate on the competitiveness of the feeds industry. Specifically, the cost of production for feeds is analysed, closely evaluating the costs components. Finally, the sources of raw materials are discussed in light of the proposed interventions, and finally, the policy implications are drawn.

[4] https://farmbizafrica.com/market/3420-kenyan-wholesalers-now-opt-for-ug-tz-cheaper-available-animal-feeds
[5] https://www.businessdailyafrica.com/bd/markets/commodities/ministry-seeks-duty-waiver-animal-feeds-yellow-maize-3612264
[6] https://reliefweb.int/report/kenya/kenya-plans-tax-waiver-animal-feeds-raw-materials

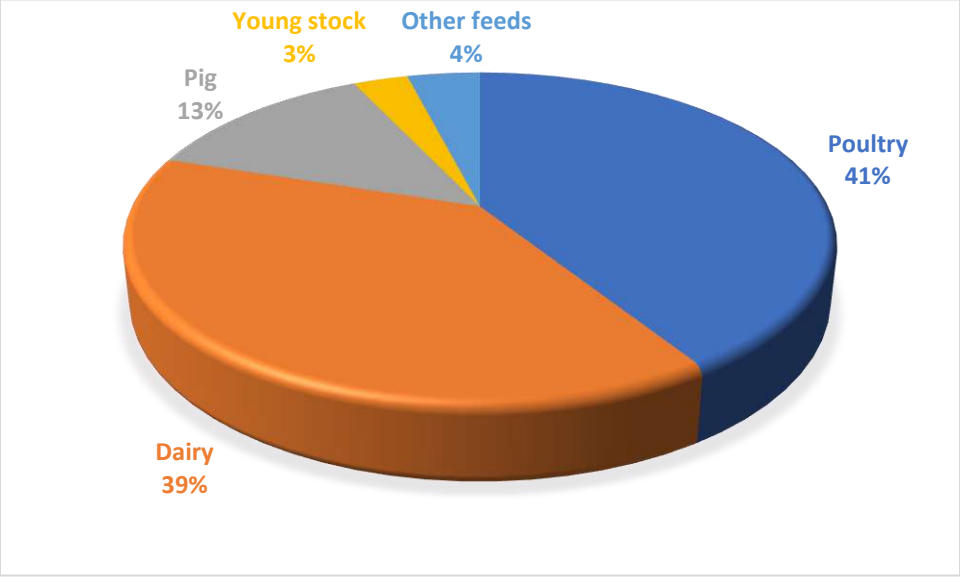
2. Feed manufacturing in Kenya

2.1 Characterising animal feed manufacturing

Kenya has over a million tons installed capacity to manufacture animal feeds (AKEFEMA, 2017). However, the annual production of animal feeds is estimated at 800,000 tons. The reasons for not utilising the total capacity include the constrained supply of raw materials and inadequate skilled human resources such as resident millers and quality control specialists (animal food/nutrition scientists). There are about 307 registered animal feeds manufacturers (Kenya Markets Trust - KMT, 2017), and this number has been rapidly increasing. About 90% of these are classified as small scale manufacturers processing one thousand tons or less a month. Medium-scale manufacturers, who process above one thousand tons but below 5,000 tons, account for seven per cent. In contrast, large scale manufacturers, doing over 5,000 tons a month, account for three per cent. Altogether, the registered animal feed manufacturers account for 60% of the local demand, with the unregistered animal feed manufacturers thought to account for the difference (AKEFEMA, 2017). Unregistered animal feeds manufacturers are also considered to be small scale.

Figure 1 shows the types of feeds produced by the registered feeds manufacturers. According to a study by KMT in 2016, feeds for poultry and dairy account for 80% of the total feeds produced. This finding is expected as farmers have adopted intensive production systems for these two value chains. Unsurprisingly, feed manufacturing is concentrated within the major production areas for these two value chains, with most manufacturers in Nairobi and Central Kenya regions. Pigs account for 13%, while the young stock and other feeds account for 7%. Due to the dominance of the poultry and dairy feeds, this study focuses on feeds for these two value chains in the analysis presented in later sections of this brief.

Figure 1: Types of Feeds Produced



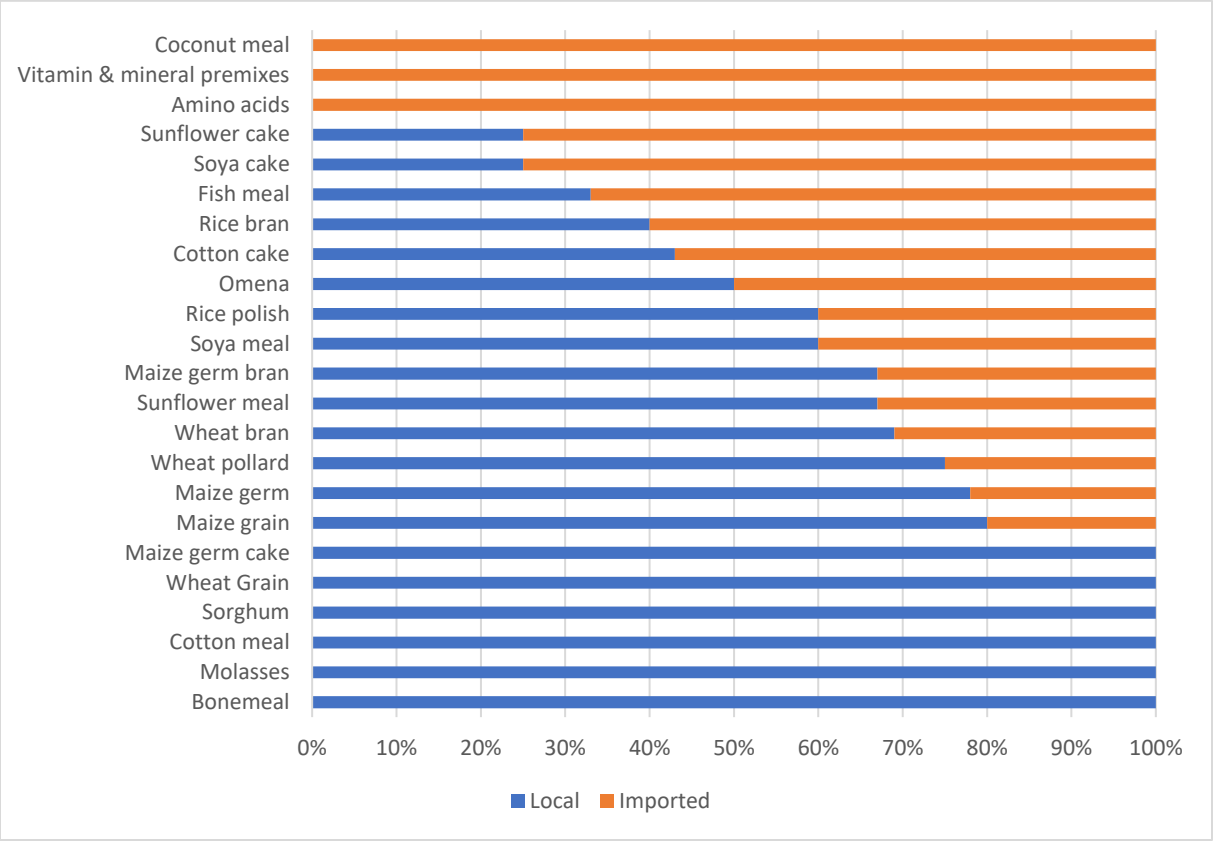
Source: Kenya Markets Trust (KMT), 2016

Figure 2 shows the sources of raw materials used for manufacturing animal feeds, whether local or imported. Maize germ, wheat grain, sorghum, cotton meal, molasses, and bonemeal are locally sourced. On the other hand, vitamin and mineral premixes and amino acids are exclusively imported. Feeds manufacturers import at least 50% or higher protein sources such as sunflower cake, soya cake, fish meal, cotton cake, and *omena* (silver cyprinid - *Rastrineobola argentea*). In addition, the feed manufacturers import in smaller volumes (less than 50% of consumption) energy sources such as rice polish, maize bran, maize germ, maize grain, wheat germ, and wheat pollard.

Figure 3 shows the source countries for the imported raw materials. Vitamins, mineral premixes, and amino acids are mainly imported from Asia and South Africa, with China being a key source country in Asia. Most feed manufacturers rely heavily on importing raw materials from the EAC for the other imported raw materials. For example, maize germ, wheat grain, wheat pollard, rice bran, rice polish and millet were sourced from Uganda. Soya bean, Soya meal, groundnut cake were sourced from Tanzania. Sunflower meal, cotton meal, and *omena* were sourced from Uganda and Tanzania.

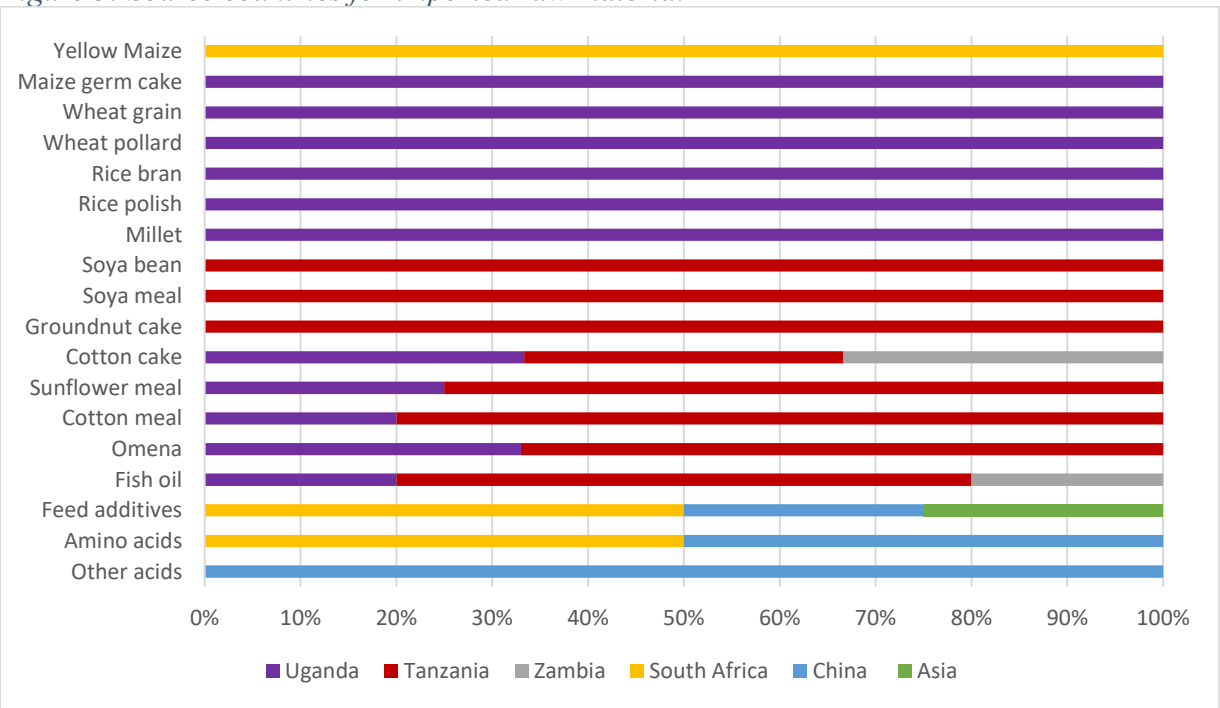
It is plausible that the cost of logistics influences the source country for these imports. It is cheaper to organise purchasing, storing, and transportation from neighbouring countries. However, some of the policies, such as the Common External Tariff (CET) and the ban on GM products, also affect the source of the raw materials. In addition, restriction of trade due to Non-Tariff Barriers (NTBs) and other bureaucratic measures often constrain trade in raw materials such as sunflower cake, cottonseed cake, and *omena* in the EAC regional market, as found by a study by Kilimo Trust in 2017.

Figure 2: Sources of raw materials used for animal feeds



Source: KMT, 2016

Figure 3: Source countries for imported raw material



Source: KMT, 2016

2.2 Cost of production for feeds

Data for the costs of processing animal feeds in Kenya is not readily available. However, anecdotal evidence suggests that the cost of raw materials heavily influences the cost of animal feeds. Table 1 shows the costs of producing a standard dairy meal using data from AKEFEMA in 2021. The total cost of raw materials per ton was Ksh 26,268, translating to Ksh 1,839 per 70 kg bag. Maize, inform of grain and germ, accounts for 40% of the cost of raw materials. Rice polish accounted for 29%, suggesting that energy sources account for 69% of the cost of raw materials. Oil cakes account for 26%.

Table 1: Costs of production for a standard dairy meal

	Kgs/ton	Ksh/kg	Ksh/ton	% of the cost of raw material
Maize	100	31	3,200	12%
Maize-Germ	274	27	7,398	28%
Rice polish	365	22	7,665	29%
Sunflower Cake	137	35	5,480	21%
Cotton Seed Cake	21	60	1,260	5%
Salt	11	15	165	1%
Lime	90	7	630	2%
Premix	1	210	210	1%
Toxiban	1	260	260	1%
	1000		26,268	
Cost of producing a 70Kg bag			**Ksh/70Kg bag**	**% of cost per 70 kg bag**
Material Cost/bag			1,839	81%
Operations cost @3.85/Kg			270	12%
Bag@0.57/Kg			40	2%
Transport / Handling			100	4%
Finance Costs@0.48/Kg			34	1%
The total cost of production			2,282	
Gross Margin/Bag			118	
Ex-factory price			2,400	

Source: AKEFEMA 2021

The costs of raw materials account for 81% of producing a 70 Kg bag of a standard dairy meal. Operational costs account for 12%, while other factory costs account for 7%. This brings the total cost of producing a standard 70 Kg bag to Ksh 2,282. Assuming a margin of 5%, the ex-factory price is about Ksh, 2,400 per 70 Kgs bag. However, other costs such as marketing and distribution will be incurred to make a last-mile delivery to the farmer.

The costs of other animal feed products are expected to follow a similar trend. Significantly, critical raw materials such as maize for the dairy meal impact the price. The correlation between local maize production, maize prices and the cost of animal feeds is already established.

3. Trends in raw materials supply and prices

3.1 Production and Imports

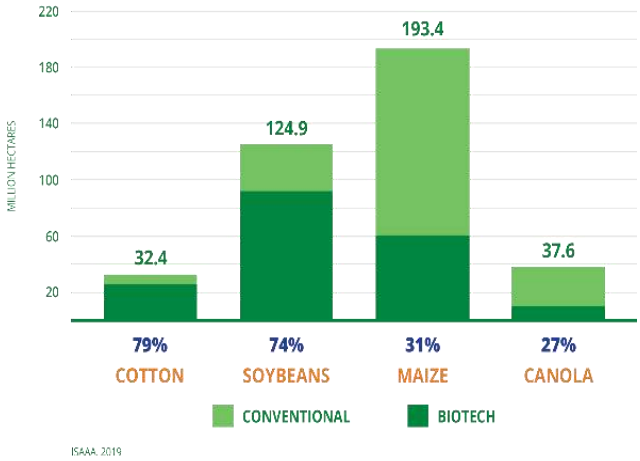
Figure 4 shows maize's local production and imports trend, a critical raw material for animal feeds. Due to unfavourable weather, maize production shocks were experienced in 2011, 2014 and 2017. Maize is usually imported from Uganda and Tanzania, except in 2017 when the country applied for a waiver of the CET to allow maize imports from the region. In the same year, the government also allowed the importation of yellow maize for animal feed production[7]. The waiver was then given in 2020, but the imported volumes of yellow maize were significantly low in the last waiver.

The Ministry estimates that the country utilises 12.5% of the total maize demand on animal feeds. The correlation is that the more maize available for consumption, the more animal feed production. Yellow maize/corn is a good substitute for maize for animal feeds. However, domestic regulations discourage the production of yellow maize. The government has waived the d duty to allow yellow maize importation in the past decade. This has happened in 2011, 2017, 2020 and 2021[8]. Also, much of the yellow maize in the global market is genetically modified, which means that the only way the country can access this market is through a waiver for duty and GM products.

Figure 5 shows the trends in soya production and imports. Unlike maize, Kenya produced very little soya, which was imported as cake. Tanzania has been a critical supplier of soya (Figure 3). Due to the ban on GM products, the country cannot import GM soya. Globally, soya (74%) and cotton (79%) have some of the highest adoption rates of GM (biotech) varieties (ISAAA, 2019). Figure 6 shows the volume of soya available at global markets. The soya available for exports increased in 2019 before dipping in 2020 following the pandemic. The forecast for 2021 is that the volume will increase, but the country cannot utilise this market due to the ban on imports of GM products. Much of the soya available in the global market from key producing counties such as Brazil, the USA, Argentina and Canada is GM Soya (ISAAA 2019).

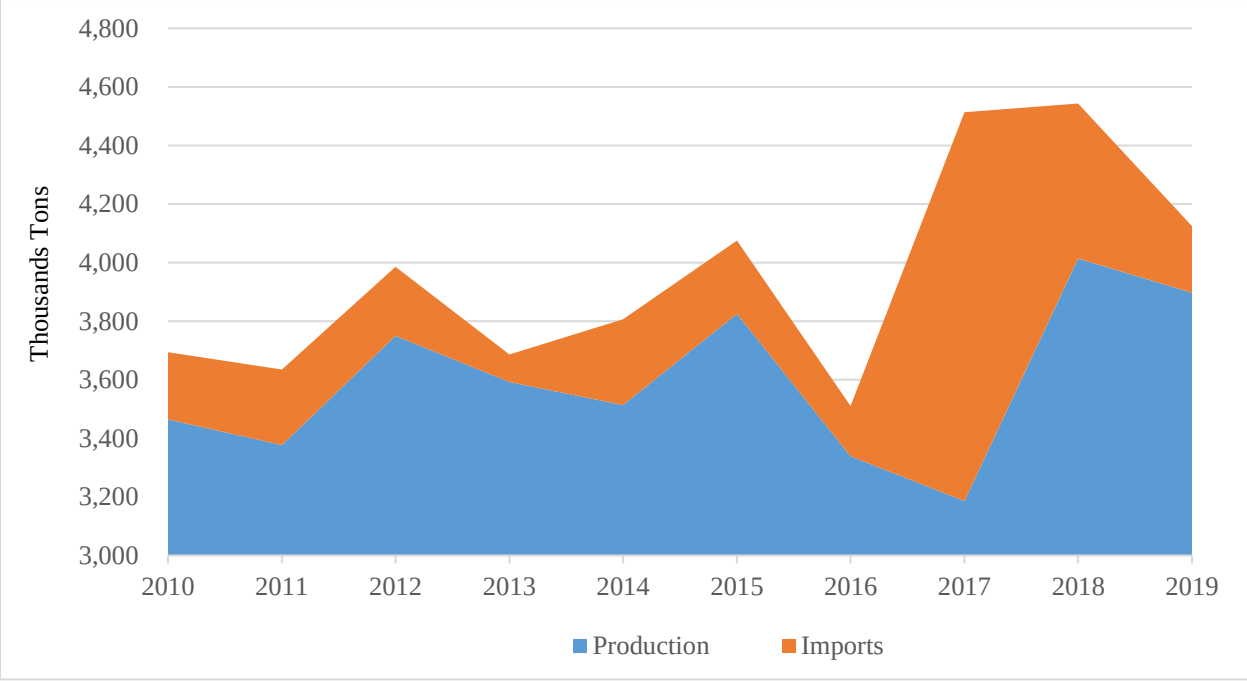
[7] https://www.bloomberg.com/news/articles/2017-02-16/kenya-to-import-yellow-corn-for-first-time-since-2011-on-drought

[8] The gazette notice for allowing importation of yellow maize for use in animal feeds had not been published by November 2021.



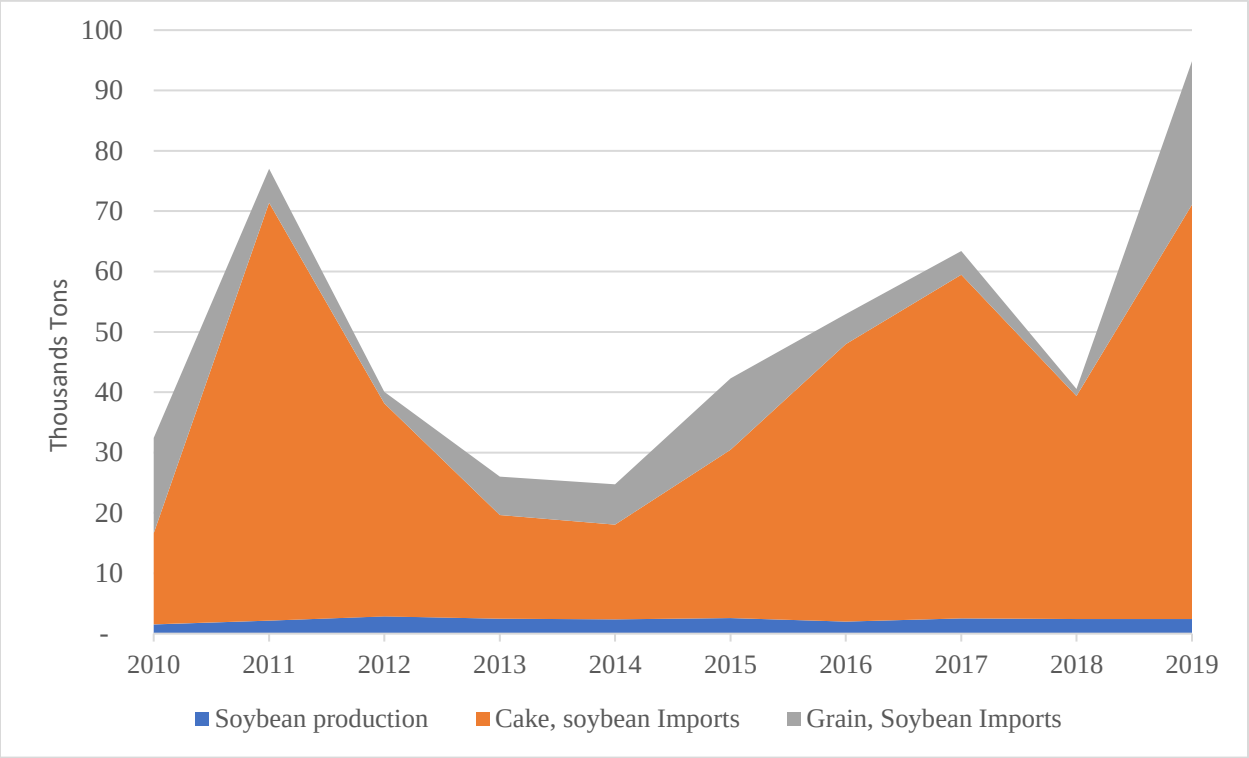
Source: ISAAA 2019

Figure 4: Trends in maize production and imports



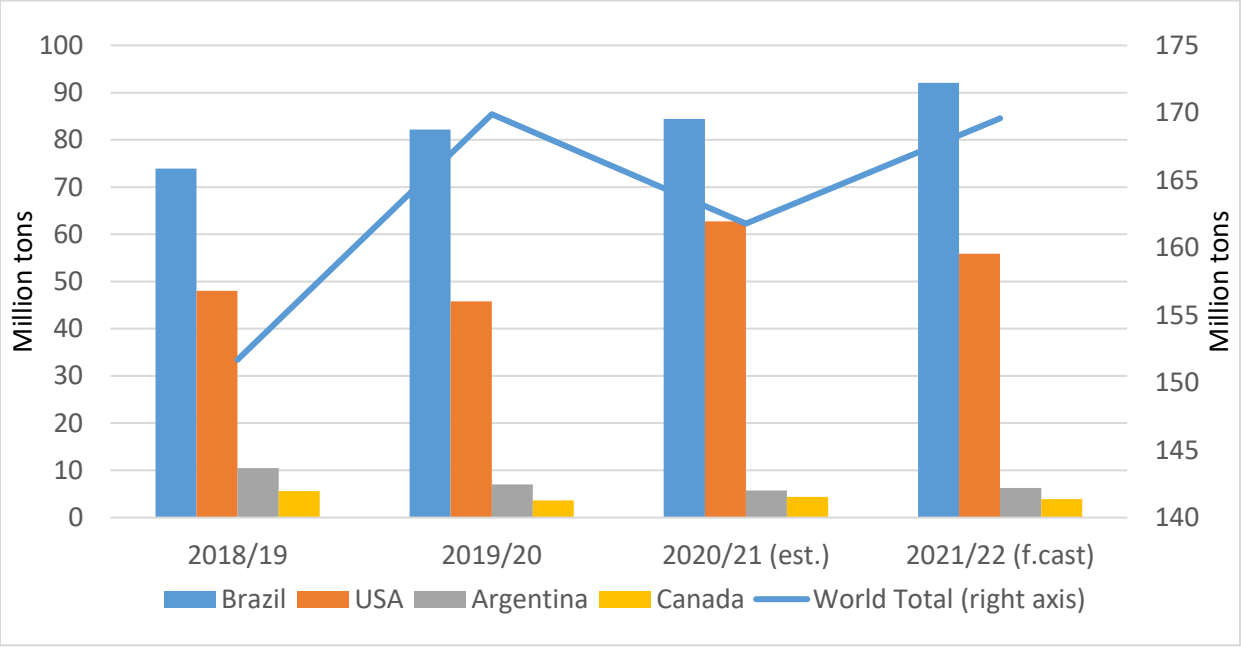
Source: FAOSTAT & International Grain Council

Figure 5: Trends in soya bean production and imports



Source: FAOSTAT & International Grain Council

Figure 6: Available soya for export from leading soya bean export countries

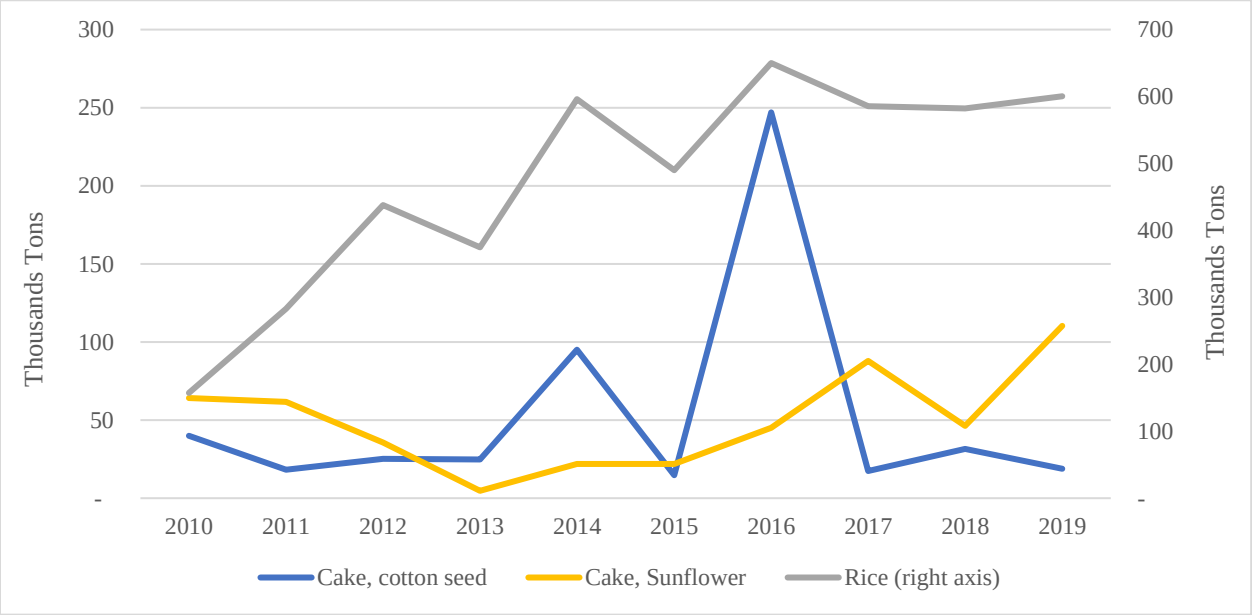


Source: International Grain Council

Figure 7 shows rice and oil cakes, sunflower, and cotton trends. Rice imports are usually in the form of milled rice. However, the amount of rice bran or rice polish produced locally or imported was unavailable. Rice bran and rice polish are by-products during rice milling, making their

estimation challenging. There was a spike in the importation of cotton cake in 2016; however, the adoption of Bt cotton and expansion in the areas under cultivation is expected to increase the volume of cake produced locally. The importation of sunflower cake has been growing.

Figure 7 Trends in imports for selected raw materials

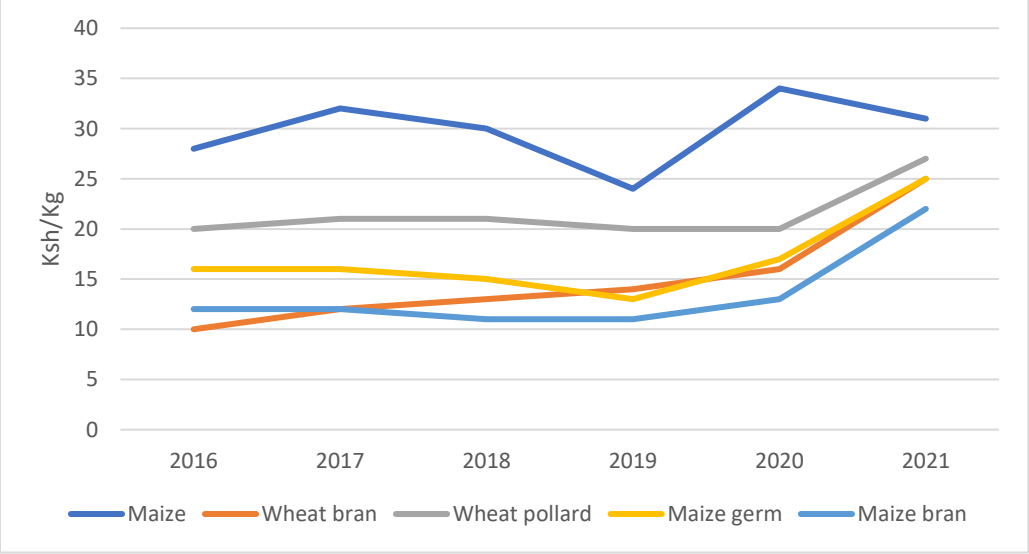


Source: International Grain Council

3.2 Prices for raw materials

Domestic prices for raw materials increased in 2021, sustaining price increases in 2019. Figure 8 shows the trends in costs for energy sources raw materials. Except for maize grain, the prices of maize germ, wheat bran and wheat pollard have increased since 2019.

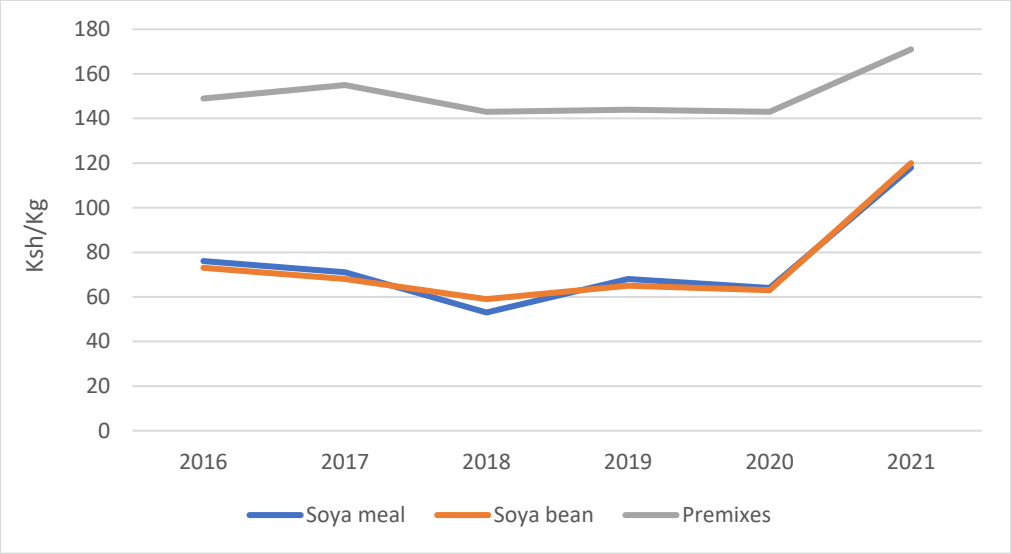
Figure 8: Trend in prices for raw materials for energy



Source: FAOSTAT

The price of wheat pollard increased by 35% from 2019 to 2021. For maize germ, wheat germ and wheat bran, the prices doubled (100% increase) over the same period. Figure 9 shows the trends of the soya (proteins) and premixes (vitamins and amino acids). The soya prices have risen by 90%, while those of premixes have been increased by 20% from 2019 to 2021.

Figure 9: Trends in raw materials for proteins and vitamins



Source: FAOSTAT

Production and supply shocks in the global markets explain the spike in soya prices. Due to the ban on GM products, Kenya cannot take advantage of cheaper sources of soya in the international markets as lead producing countries mainly produce GM soya.

3.3 Effect of raw materials prices

The rising costs of raw materials have contributed to the increasing costs of animal feeds. Table 2 shows the price changes for selected raw materials between June and October 2021. The price of maize grain has risen by 29%. However, the cost of maize germ has increased by 67% over the same period.

Table 2: Changes in prices of raw materials in 2021

	Jun-21	**Oct-21**	**Difference**	***% Change***
Ingredients	**Kshs/kg**	**Kshs/kg**	***Ksh/Kg***	
Local white maize	24	31	***7***	29%
Soya	70	118	***48***	69%
Oil Cakes (sunflower cake)	26	38	***12***	46%
Other key materials				
Pollard	20	31	11	55%
Wheat bran	16	27	11	69%
Maize germ	15	25	10	67%

Source: AKEFEMA, 2021

Soya and wheat bran have increased by 69%, pollard by 55%, while sunflower cake has risen by 46%.

The effect of the prices changes on the cost of animal feed is shown in Tables 3 and 4 for standard dairy meals and layers. From the costs increases in Table 2 for a standard dairy meal, the total cost of raw materials per bag increased by 37%. Maize grain cost per ton increased by 11%, maize germ by 41%, and sunflower cake 31%. The ex-factory price for a standard dairy meal increased by 33%.

Table 3: The effect of changes of raw materials on the cost of standard dairy meal

Raw material	**Proportion in dairy feed (%)**	**Incremental/MT**	**% Increase**
Local white maize	5	350	11%
Soya	2	960	
Oil Cakes (sunflower cake)	14	1,680	31%
Other key materials			
Pollard	15	1,650	
Wheat bran	20	2,200	
Maize germ	30	3,000	41%
Resultant Increase in Cost / MT Bag since June 2021		9,840	37%
Resultant Increase in Cost / 70 Kg Bag since June 2021		689	

The average price of the dairy meal/70Kg in June 2021	1,800	
The average price of dairy meal/70Kg in October 2021	2,400	
Percentage change in ex-factory price	33%	

The effect of the increases in raw materials for layers is an incremental cost for the ex-factory price by 29% between June and October 2021.

Table 4: The effect of changes of raw materials on the cost of layers

Raw material	**Proportion in dairy feed (%)**	**Incremental/MT**
Local white maize	30	2,100
Soya	8	3,840
Oil Cakes (sunflower cake)	12	1,440
Other key materials		
Pollard	18	1,980
Wheat bran	8	880
Maize germ	20	2,000
Resultant Increase in Cost / MT Bag since June 2021		12,240
Resultant Increase in Cost / 70 Kg Bag since June 2021		857

The average price of layers/70Kg in June 2021	2,800
The average price of layers/70Kg in October 2021	3,600
Percentage change in ex-factory price	29%

4. Proposed interventions and implications on prices

To bring down prices of animal feeds, the government can consider allowing the importation of cheaper raw materials by waiving the duties and restrictions that currently bar such proposed interventions. This section analyses the potential impact if such proposed interventions are adopted.

If the government seeks to import cheaper raw materials from global markets, it must navigate the policy hurdles to achieve this goal. First, the government must navigate the duty charges waivers. Table 5 shows the duty charged on selected raw materials. Oilseed cakes attract a duty of 10%, maize from outside the EAC regions attracts 50%, wheat imports attract 10%, and barley attracts 25% duty. By-products such as wheat or maize bran attract a duty of 10%. Some imported premixes attract 10% duty, while others attract no duty but a 16% VAT. Kenya imports about 70 types of comixes. Vegetable materials, waste, residues used for animal feeding attract a 10% duty.

Table 5: Duty charged on imported raw materials

Materials	**Duty**
Oilseed cakes	10%
Cereal grains	
Maize	50%
Wheat	10%
Barley	25%
Milling by-products	
Wheat bran	10%
Maize bran	10%
Premixes	Some 10%, other 16% VAT
Vegetable materials and vegetable waste, vegetable residues and byproducts, whether or not in the form pellets, of a kind used in animal feeding, not else specified or included	10%

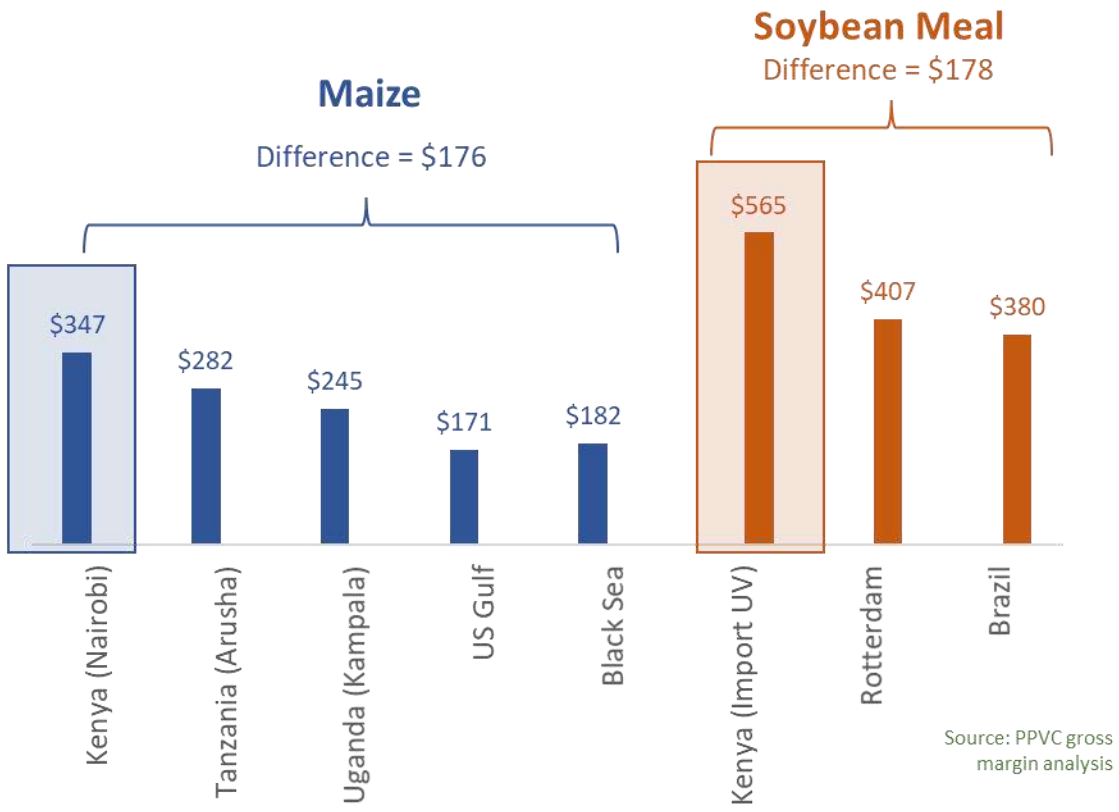
Besides duty, there are other charges associated with importation. These include Import Declaration Fees (3.5%), Railway Development Levy (2%), KEBS, KEPHIS and Department of Veterinary Services charges, and port charges, including stevedoring, wharfage, clearing/clearing/ clearing/agency fees and warehousing charges. Cumulatively, these charges are expected to be about 15% of the customs value.

Second, the government can consider waivers on the ban on GM products to tap into cheaper raw materials at the global markets.

Figure 10 shows the maize and soya meal price for Kenya, the region, and the global market. The cost of maize from Tanzania was 65$/ton (19%) lower than the price in Kenya, while the price in Uganda was 102$/ton (29%) lower. If policymakers approve the duty waiver for maize to source globally, the Black Sea price was 165$/ton (48%) lower than the price in Kenya, while the US

price was 176$/ton (51%) lower. The price of a soya meal from Brazil was 28% cheaper than the imported price in Kenya, while the price in Rotterdam was 32% cheaper. The costs of transportation would be about 45$/ton, with 1.5% of the FOB price being the cost of insurance.

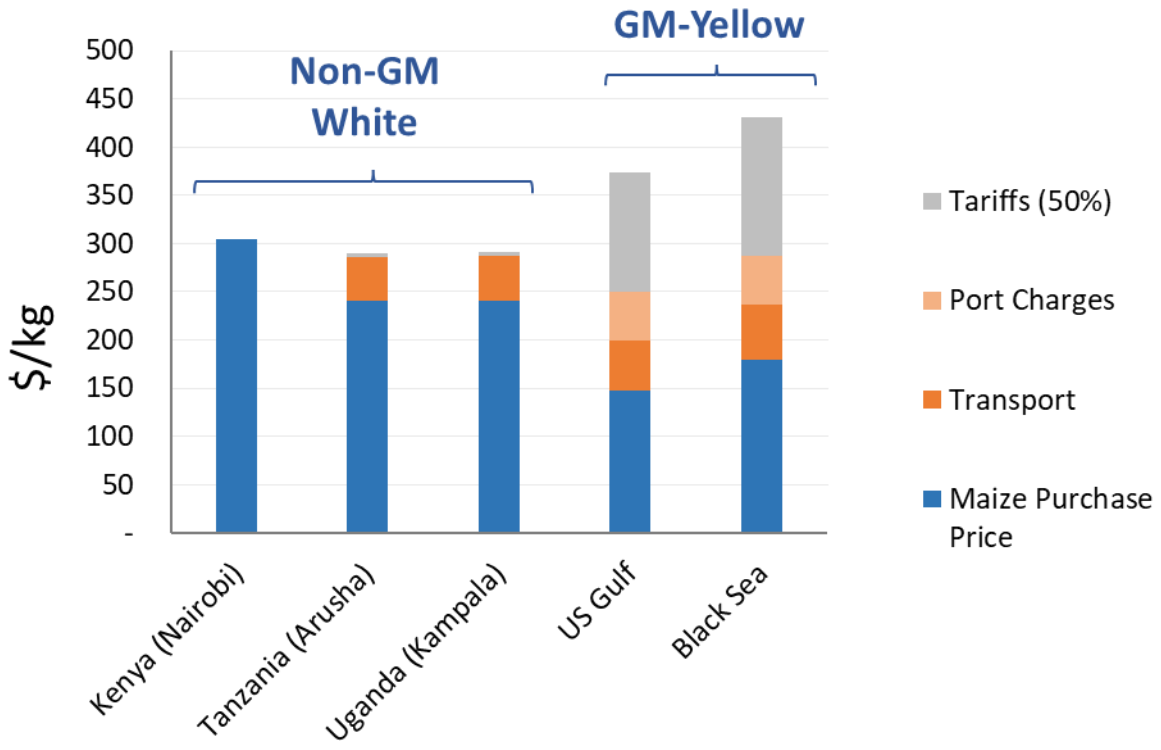
Figure 10: Price of critical feed raw materials ($/mt)



Source: PPVC gross margin analysis

Figure 11 shows the prices of maize sourced from different markets. For white maize from the region, the total expenditure incurred factoring transportation and logistics would reduce by 15$/ton (5%). If yellow GM maize is purchased from the Black Sea, the cost reduction would be 17$/ton (6%), factoring in all costs assuming a duty waiver. If the yellow GM maize is sourced from the US, the saving would be 55$/ton (18%), assuming a duty waiver. The costs for the yellow GM maize are more expensive than local maize with the duty, transportation and port charges. Even without the duty, the high transportation costs and port charges significantly reduce the advantages for cheaper raw materials sourced in the global market.

Figure 11: Prices of maize from alternative sources



Source: PPVC gross margin analysis

Table 12 simulates the effect of importation of maize and soya, assuming the duty is waived. The waiver simulated here of only for conventional varieties. For example, the cost of maize per kg would reduce by 21%, while that of soya would decrease by 60%. The cost savings will be higher if a waiver on the ban of GM products is pursued.

Figure 12: Raw material price if duty/levies removed

	Current price	**Imported duty-free**		
Ingredients	**Kshs/kg**	**Kshs/kg**	***Cost differential Ksh/Kg***	***% change***
Maize	31	39	***8***	21%
Soya	118	47	***(71.00)***	60%

Using the prices of layers in June 2021, a duty waiver for maize and soya would increase the cost per ton for maize layers by 7% while reducing the cost per ton for soya by 48%. Subsequently, the price of layers per ton is expected to decline by 28%.

Figure 13: Effect of duty waiver on the costs of layers

Raw Material	**Proportion in Layers feed(%)**	Incremental/MT
Maize	30	2,250
Soya	8	(5,680)
	Resultant Decrease in Cost / MT Bag since June 2021	(3,430)
	Resultant Decrease in Cost / 70 Kg Bag since June 2021	(240)

5. Summary and Conclusion

This brief looks at the competitiveness of the animal feed industry in Kenya. Raw materials used for animal feed production account for 81% of the cost of animal feeds. Disaggregating the prices of raw materials, while energy sources such as maize account for a more significant proportion of the costs for raw materials, the costs of proteins such as soya have risen significantly (69%). Similarly, semi-processed products such as maize germ and wheat germ have seen similar increases in prices. This has increased prices between 29% and 32%. The rising fuel cost means that the retail prices increase by a higher proportion.

The government is considering duty waivers for some raw materials such as yellow maize and soya to reduce retail prices for animal feeds. However, to realise this objective, the government must consider the source of raw material, whether GM or non-GM. Furthermore, the government must also waive the requirement to ban the importation of GM products and allow access to feed millers since scientific evidence and a long history of use show they are as safe as their conventional counterparts. In addition, the high transportation cost coupled with port and clearing charges can erode the benefit of accessing cheaper global markets depending on the source market. This analysis shows that allowing duty-free importation of soya has more significant benefits in reducing the costs of animal feeds than maize.

Therefore, the government should consider the animal feeds sub-sector's long-term competitiveness. This includes reviewing options such as importing semi-processed GM products (non-Living modified organisms-LMOs) such as crushed maize; Distillers Dried Grains with Solubles (DDGS); soy cake; enhancing access to cheaper sources of raw materials by addressing incoherent policies; investing in research and development in alternative sources of more inexpensive raw materials such as insects and their utilisation in the manufacture of animal feeds; enhancing the efficiency of the feeds sectors by providing incentives to adopt modern technologies and capacity utilisation; and improving the business environment by addressing the high costs of energy, transportation and taxation. Long term competitiveness of the animal feeds and the livestock sectors will ultimately require competitive raw material sourcing and production.

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