



Growth and development of the oilseeds-edible-oils value chain in Tanzania and South Africa¹

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Abstract

This study evaluates the potential for regional value chains in agro-processing to drive regional growth, industrialisation and development. This follows growth in agricultural productivity and increased demand for processed food within the region, coupled with rising global agro- and commodity prices. Developing the agro-processing sector requires building linked industrial capabilities along with logistics, packaging and quality standards. Using the oilseeds-to-edible oils value chain, the study explores the potential for developing stronger regional linkages between Tanzania and South Africa. Tanzania has significantly increased production of oilseeds since 2010, but continues to import edible oil and processed oil-based products while South Africa has established capabilities in crushing, refining and manufacturing of oil-based products but imports oilseeds and edible oil mainly from Eastern Europe. Key findings from the study show that high logistics costs limit opportunities for increased trade in oilseeds, edible oil, and processed oil-based products between South Africa and Tanzania. In the short term, there are opportunities for increased trade in machinery and equipment for storage and processing and exchange of technical and advisory services to upgrade processing capabilities in Tanzania.

JEL classification: L52, L66, O13, O14

Key words: value chain, production, trade, oilseeds, edible oil, Tanzania, South Africa

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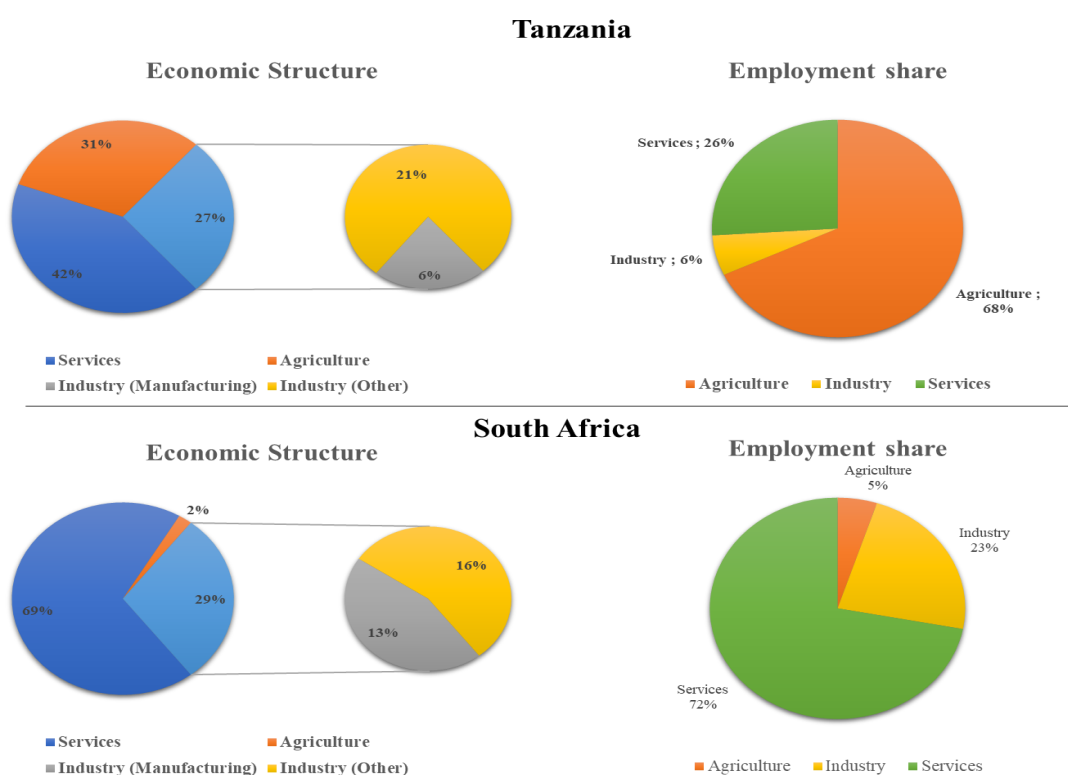
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1 Background to the project

The linked growth of agriculture and agro-processing is central to the economic development of African countries. Agro-processing is a key sector in industrialisation, while the failure to industrialise has led to services dominating GDP. In Sub-Saharan Africa, the services sector accounts for 58% of regional GDP. Industry and agriculture contribute 24% and 18% respectively. In more developed countries the services sector also predominates but these countries have gone through an industrialisation process to develop advanced capabilities, including in agro-processing activities and improved productivity levels in agriculture.

The economic structure of South Africa reflects a very small share of agriculture with the sector contributing only 2% of GDP and accounting for about 5% of employment in 2016. Industry contributed 29% to GDP and accounted for 23% of employment while the services sector contributed 69% and employed 72% of the workforce. By comparison, although the services sector is also the largest contributor to output in Tanzania (accounting for 42% of GDP in 2016) it only accounted for 26% of employment. Agriculture is extremely important contributing 31% to Tanzanian GDP and accounting for a massive 68% of total employment. Industrial sectors contributed about 27% to GDP, in line with the regional and global averages, but only employ about 6% of the workforce (Figure 1).² The small and declining share of manufacturing in GDP lies at the heart of debates about premature deindustrialisation in many developing countries.

Figure 1: Structure of economic output and employment, Tanzania and South Africa

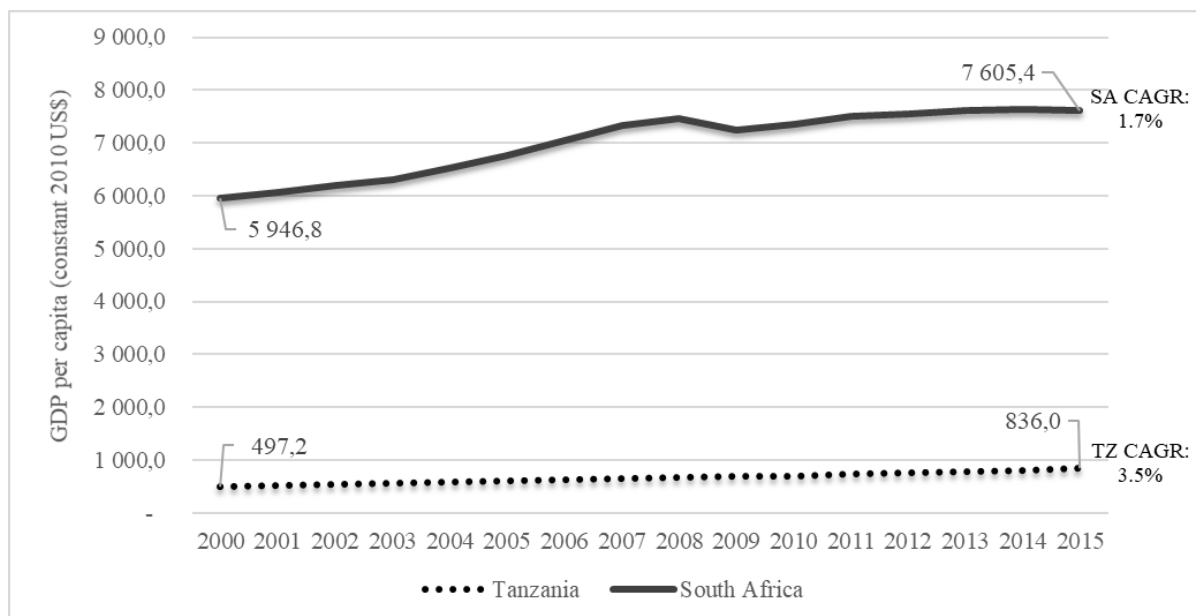


Source: World Bank Development Indicators

² World Development Indicators, Structure of Output <http://wdi.worldbank.org/table/4.2#> and Employment by Sector available at <http://wdi.worldbank.org/table/2.3> . Accessed 21 September 2017

Tanzania has grown much more strongly than South Africa since 2000, though off a lower base. Tanzanian GDP per capita grew at a compound annual growth rate of 3.5% between 2000 and 2015, increasing from under \$500/capita (in constant 2010 US\$) to \$836 in 2015. By comparison, South Africa's GDP per capita grew at about half the rate in Tanzania, at 1.7% per annum since 2000 (Figure 2).³ /

Figure 2: GDP per capita



This study forms part of a broader research programme that reviews trends in (de)industrialisation within the SADC region and evaluates the potential for regional value chains to drive growth, industrialisation and development in southern Africa. The aim is to identify opportunities for increased production of processed food within southern Africa to meet growing regional demand and to replace processed food currently imported into the region. This report reviews opportunities in the oilseeds-to-edible oil value chain in South Africa and Tanzania.

We selected the oilseeds value chain for the following reasons:

1. *Tanzania* has increased its production of oilseeds significantly over the past 5 years, and indications are that there are opportunities to further increase production.⁴ Despite successfully increasing production, Tanzania still imports large quantities of processed products, including margarine and crude edible oil.
2. *South Africa* has unmet demand for oilseeds and crude edible oil which is currently met by deep-sea imports mainly from Eastern Europe. South Africa also has

³ The high GDP per capita in South Africa does not reflect the economic reality of most South Africans as the country is still characterised by high levels of income inequality. In 2015, South Africa's income-based GINI coefficient was 0.68 and more than 55.5% of the population lived in poverty (see STATSSA (2017) *Poverty Trends in SA, an examination of absolute poverty between 2006 and 2015*. Available [here](#)). Tanzania has a much lower level of inequality with latest available data showing an income-based GINI coefficient of 0.38 in 2013. (See UNDP (2013). *Income GINI Coefficient*. Available [here](#))

⁴ Tanzania's Second Five Year Development Plan (FYDPII) focuses on reducing dependence on imports by increasing domestic edible oil production by increasing research, availability of quality seeds, incentives and deepening of potential value chain in oil seeds. United Republic of Tanzania. 2016. Sunflower Sector Development Strategy: 2016-2020

established capabilities in the manufacture of processed products, including margarine, refined edible oil and oil-based sauces and condiments.

Tanzania thus has capabilities in the production of oilseeds but imports processed oil-based products while South Africa has well-established capabilities in crushing, refining and manufacturing branded consumer goods but is a net importer of oilseeds and crude edible oil. The research explores the potential for stronger regional linkages between Tanzania and South Africa in two main areas. First, opportunities for South Africa to shift its oilseed and crude oil imports to Tanzania, and increase intra-regional trade. Second, whether South African firms can contribute technical skills, machinery, equipment, training and advisory services to support process upgrading within the Tanzanian oilseeds sector.

The study was informed by firm-level research in South Africa and producer (farm)-level research in Tanzania. We found that there are limited opportunities for increased trade in oilseeds, edible oil, and processed oil-based products between South Africa and Tanzania largely because of the high transport and logistics costs of trade between the countries compared with imports to South Africa from other continents. However, there are substantial opportunities for mutual co-operation between the two countries to upgrade processing capabilities in Tanzania given the investments in production in Tanzania and the capabilities of South African firms in manufacturing processing machinery and equipment.

The research also highlights the complexity associated with developing regional agro-processing value chains as linkages often span several countries and any interventions within two countries (such as South Africa and Tanzania, in this case) may have unintended consequences for other countries in the region. A bilateral approach to upgrading regional value chains fails to highlight these linkages and identify these complexities. For example, Tanzania imports all its margarine requirements from Kenya, with which Tanzania has a free trade agreement and growth of processing in Tanzania will affect these trade flows and processing in Kenya. In addition, increased production and processing of oil in Tanzania may dampen the growth of a related value chain, the soya to poultry chain, in Zambia. This is because cheap edible oil imports into Zambia from Tanzania reduces Zambian crushers' incentive to crush more oilseeds.⁵ This would have negative consequences for the Zambian stock feed industry which relies on oilcake from the crushing sector.⁶

The report proceeds as follows: section 2 explores imports of processed oil products by the SADC region as a whole and provides background on production, trade and industrial policy support to the oilseeds sector in Tanzania and South Africa. Section 3 provides an overview of the global value chain literature and extends this to regional value chains. Section 4 sets out the study methodology. Section 5 provides an overview of the oilseeds value chain based on interviews conducted. Section 6 explores the trade regimes affecting the oilseeds value chain and conducts a relative price analysis to assess the viability of shifting South Africa's imports to Tanzania. Section 7 sets out the key issues impeding value chain development and section 8 concludes with potential initiatives to develop the value chain.

⁵ Imakando, M (2017). *Initiative to increase trade and regional industrialization: soya bean value chain*. Submitted to *the dti* as part of the AIDIRP series.

⁶ However, it is the poultry demand in Zambia which has stimulated the growth of soya, with oil largely being a by-product.

2 Production capabilities, trade and industrial policy priorities

2.1 SADC trade in processed food and agriculture products

The SADC region has recorded substantially improved trade performance over the past decade in food and agricultural products. In 2007 the region as a whole recorded a negative trade balance of \$331.2mn in food, beverages and tobacco products. By 2016, the deficit had reversed to a positive trade balance of \$1.7 bn.⁷ This is largely due to strong growth in exports of fruit (led by South Africa) and of tobacco (Figure 3). Most food products which started off as net imports in 2007 remained net imports up until 2016 indicating that the region has not necessarily acquired new capabilities in processed food products as part of broader-based industrial development in these value-added areas.⁸

The main imports of SADC countries are cereals and edible oils (Figure 4). Cereals imports have grown substantially, mainly driven by rice and wheat imports, with the drought in 2015/16 leading to net cereals imports being particularly large. The edible oils imports are mainly palm oil, although overall imports of edible oils have not increased over the decade, and imports in fact reduced substantially in 2015. The other broad categories in the top five categories in which SADC recorded net imports are much smaller and are (Figure 3):

- dairy produce; birds' eggs; natural honey; edible products of animal origin, n.e.s. (mainly milk and cream),
- preparations of cereals, flour, starch or milk; pastrycooks' products (mainly sweet biscuits and other baked confectionery products), and
- miscellaneous edible preparations (mainly 'food preparations n.e.s').

As noted, exports over the same period are led by edible fruit and nuts; and tobacco. These are followed by: fish, crustaceans and molluscs; coffee, tea, maté and spice; and, preparations of meat, fish, or crustaceans (Figure 3).

⁷ The Trademap data series is incomplete as not all countries have reported trade data for the entire period.

⁸ There is one product, "preparations of vegetables, fruit, nuts or other parts of plants", which was in a net import position in 2007 but moved to a net export position in 2008, which it maintained until 2016. However, the 2007 data seems to be an outlier as the category recorded net exports from 2001 to 2006 too.

Figure 3: SADC top 5 processed food exports, 2007 – 2016

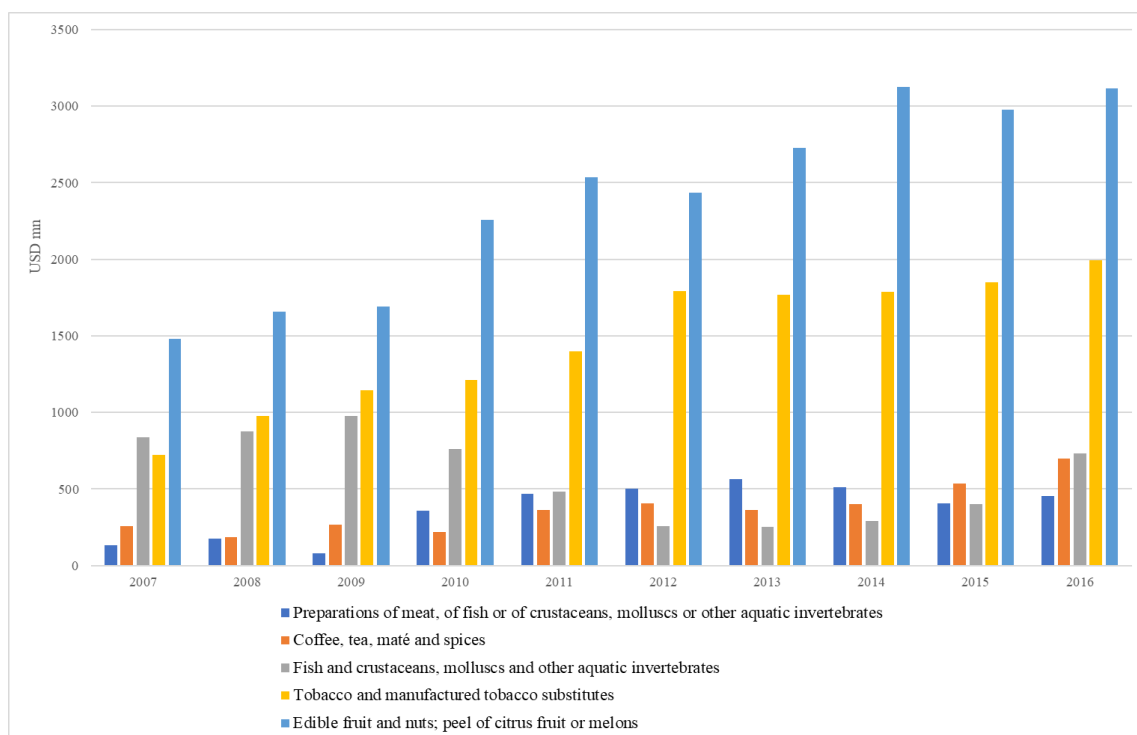
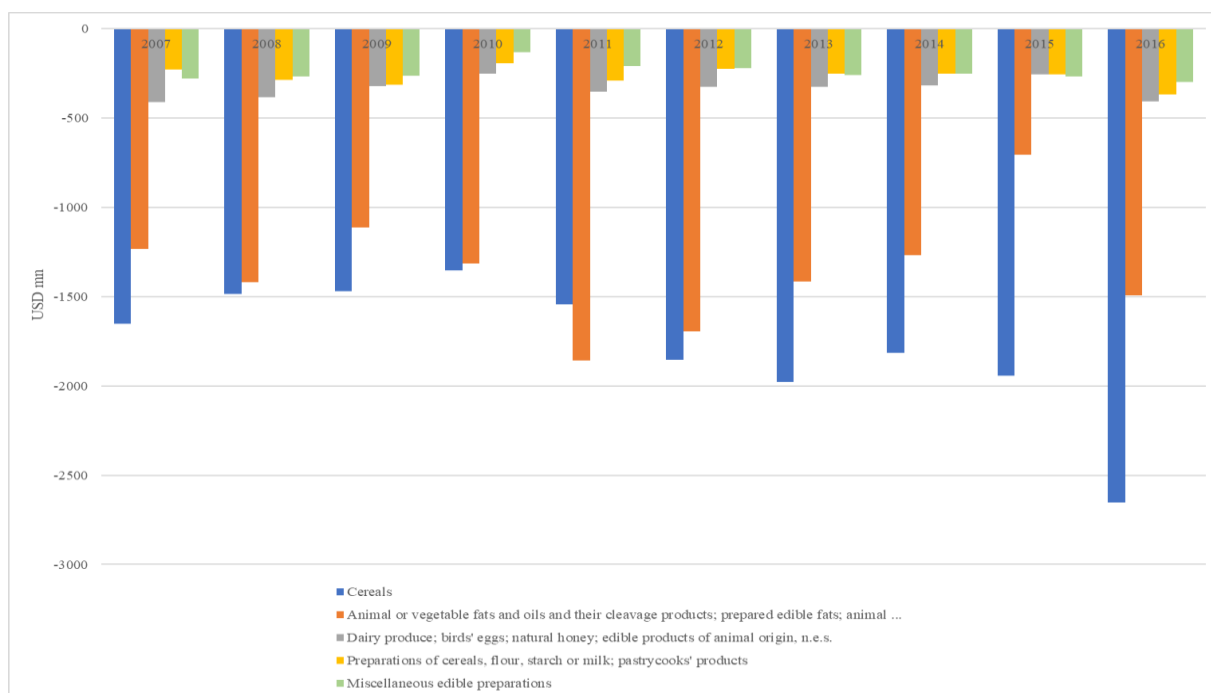


Figure 4: SADC top 5 processed food imports, 2007 - 2016



Source: ITC Trademap

2.2 Tanzania: Production, trade and industrial policy support

2.2.1 Production

Tanzania's economy is largely dependent on agricultural production but further processing of agricultural goods is still limited. About 66% of the population is formally employed in the agricultural sector and a substantially larger proportion of the population derive at least some of their livelihood from agriculture-related activities⁹ One of the most dramatic developments in recent years has been the growth of oilseed production in Tanzania (Table 1). Tanzania has a variety of producers in the oilseeds value chain but production is still dominated by smallholder farmers with minimum use of scientific farming methods¹⁰.

Sunflower seed production increased from about 300 000 tons in 2010 to over 2.8 million tons in 2015, a compound annual growth rate (CAGR) of 56%, and Tanzania is now ranked as the 7th largest producer of sunflower seed worldwide.¹¹ Notable growth in production has also been recorded in groundnuts and sesame seeds. In each, the most rapid growth was achieved in the three years to 2013.

The oilseeds sector was targeted by the state for industrial policy support (discussed in section 2.2.4 below) which seems to have driven local production¹². The growth in oilseed production has been accompanied by entry of small-scale crushing and refining plants and Tanzania is yet to produce sufficient edible oil to meet local demand.¹³

Table 1: Production of Oilseeds in Tanzania, 2010 – 2015

	2010	2011	2012	2013	2014	2015	CAGR
Total production for primary crops (tons)	23 024 723	24 526 342	25 178 692	29 155 997	31 935 145	32 619 109	7%
Total production for oilseeds, of which:	1 283 200	2 099 675	2 807 442	5 631 410	5 927 607	6 337 772	38%
Seed cotton	267 000	163 644	225 938	357 133	245 831	203 312	-5%
Sesame seed	144 420	357 162	456 000	1 050 000	1 113 892	1 174 589	52%
Sunflower seed	313 110	786 902	1 125 000	2 625 000	2 755 000	2 878 500	56%
Cashew nuts	74 170	121 070	160 000	127 947	130 124	197 933	22%
Groundnuts	465 290	651 397	810 000	1 425 000	1 635 735	1 835 933	32%
Oil palm fruit	16 110	17 000	24 880	40 500	41 000	41 475	21%
Soybeans	3 100	2 500	5 624	5 830	6 025	6 030	14%
Production of oilseeds as a proportion of total production of primary crops	6%	9%	11%	19%	19%	19%	

Source: CountrySTAT (Food and Agriculture Statistics)

⁹ Tanzania ILFS Integrated Labour Force Survey 2014

¹⁰ Interviews with farmers and processors, District Agricultural, Irrigation and Cooperative Officer in Dodoma and Iringa, Tanzania

¹¹ Statista (2017)

¹² Tanzania Budget Speech June 2016 for the year 2016/2017 (from 0 to 10)

¹³ Azania Post. 16 May 2017. *Minister Mwijage: Tanzania continues to import edible oil to meet the demand*. Available [here](#). Interviews with processors who remain idle in the 'off season' confirms this.

2.2.2 Trade in oilseeds and edible oils

Growth in production of sunflower seeds and groundnuts is not reflected in the trade data, either through improved and sustained export performance in seeds, edible oils and margarine, despite a spike in exports of groundnuts in 2012 and sunflower oil in 2014.

Overall, Tanzania is a net importer of animal or vegetable fats and oils with imports growing by 6% per annum while exports declined by 14.4% per annum between 2010 and 2016 (Figure 5). Margarine imports grew by 9.2% per annum and, except for exports of \$398 000 in 2010, Tanzania recorded no margarine exports (Figure 6).¹⁴

Trade data shows the following trends in particular oilseed value chains:

- i. **Palm oil:** There was a large increase in palm oil exports in 2014 (sustained in 2015) which is likely to reflect re-exports as Tanzania is a large net importer of palm oil. More than 90% of Tanzania's palm oil exports in 2014 and 2015 went to the Republic of Congo (Brazzaville) (Figure 7).
- ii. **Sunflower:** Sunflower oil imports grew at a modest rate of 2.9% per annum but exports of oil declined by 41.2% per annum between 2010 and 2016. Tanzania exports more sunflower oil (the higher value-added product) than sunflower seeds and net exports of sunflower seeds are very small (Figure 8), leaving the puzzle of how this is the case when production has increased almost ten-fold from 2010 to 2016. This implies that much of Tanzania's increased sunflower production is probably used domestically, consistent with information obtained in interviews which indicates that a growing number of small crushing plants have been established in local markets to process sunflower seed produced by local small farmers.¹⁵ However, this should then be associated with lower imports of edible oils as a result of the greater local production but this does not appear to be the case. There are indications that increased sunflower production is absorbed mainly in informal markets and that larger processors in the formal sector continue to import sunflower oil from deep sea markets, which partly explains the sustained imports of sunflower oil despite increasing production.¹⁶

In 2016, nearly all (99%) of Tanzania's sunflower seed exports went to Kenya, indicating that there is a nascent regional value chain in oilseeds in East Africa, with Tanzania exporting seed to Kenya and Kenya, in turn, exporting margarine and fat spreads to Tanzania, reflected in Tanzania's negative trade balance. It is not clear whether the decline in margarine imports in 2016 related to some local production replacing imports.

- iii. **Sesame:** The trade data reflect growing exports of sesame seed but export of sesame oil has been erratic (Figure 9). Tanzania thus seems to export most of its increasing sesame crop in unprocessed form which indicates that there are

¹⁴ ITC Trademap (2017).

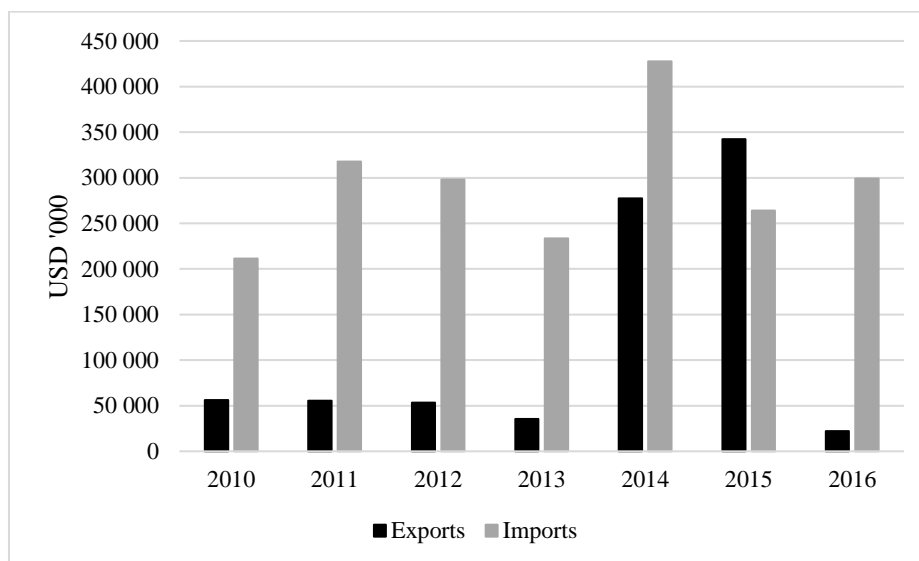
¹⁵ We note that there may be some exports not recorded in official data. In interviews conducted in Zambia in September 2016 relating to the soya to animal feed value chain, Zambian traders and processors indicated that there are sales of Tanzanian oil in border areas that may not be recorded in official data. We could not prove the veracity of this claim.

¹⁶ Interviews with farmers in Dodoma and Iringa.

opportunities for value addition in the sesame value chain (see sections 7 and 8 for additional discussion on this).

- iv. **Groundnuts:** As with sunflower seed, it is difficult to reconcile the booming local production of groundnuts with the trade flows of groundnuts and groundnut oil. Net trade flows have been small and variable. In 2014 for instance, Tanzania recorded net imports of groundnuts, but recorded net exports of groundnut oil, which seems strange as groundnuts are a more valuable commodity than groundnut oil (but may be related to the fact that the phytosanitary requirements for exports of raw groundnuts are more stringent than those for oil) (Figure 10).¹⁷

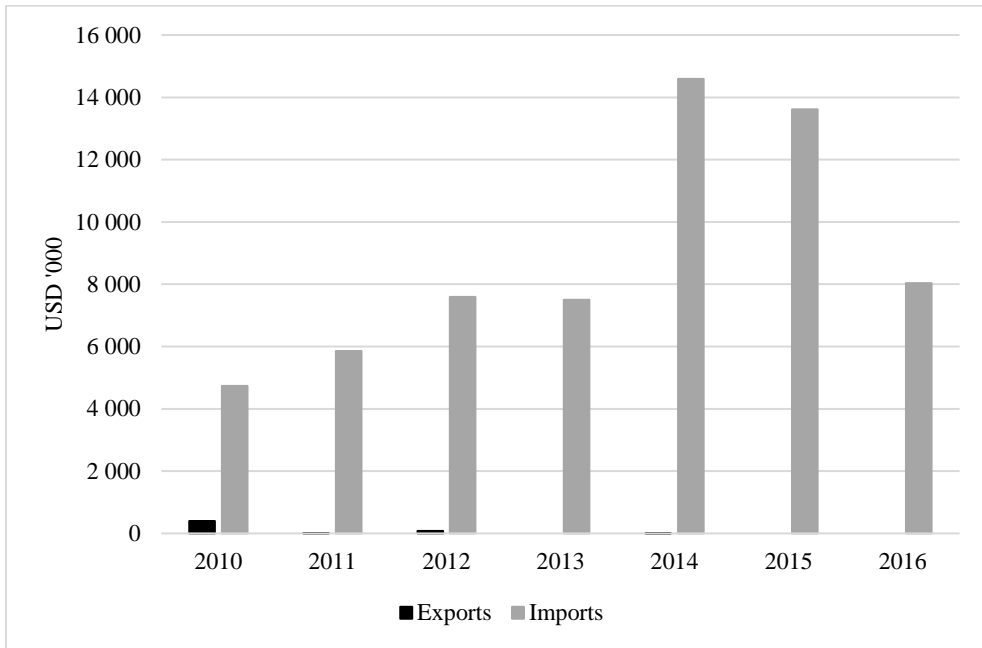
Figure 5: Total trade of edible animal or vegetable fats and oils (HS Code 15)



Source: ITC Trademap

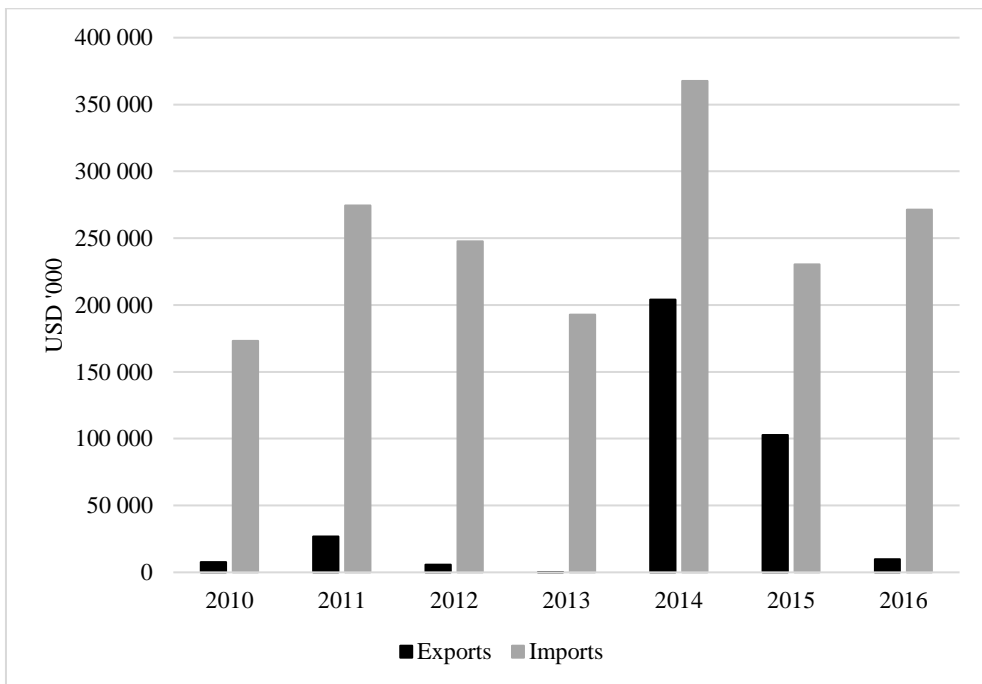
¹⁷ Interview with producer and processor of groundnuts, South Africa.

Figure 6: Trade of Margarine (HS Code 1517)



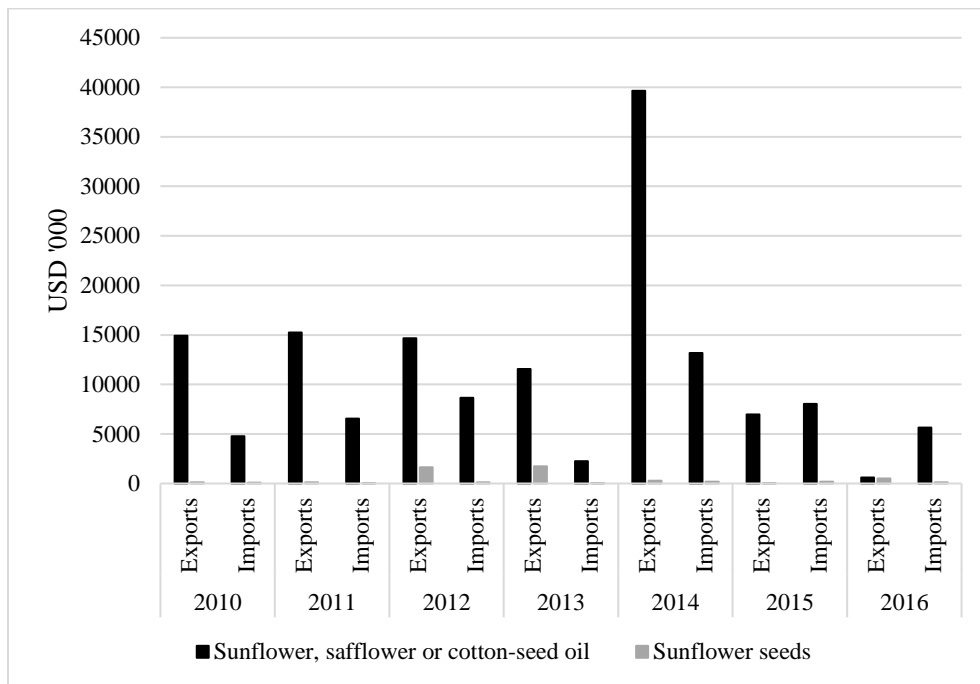
Source: ITC Trademap

Figure 7: Trade of Palm oil (HS code 1511)



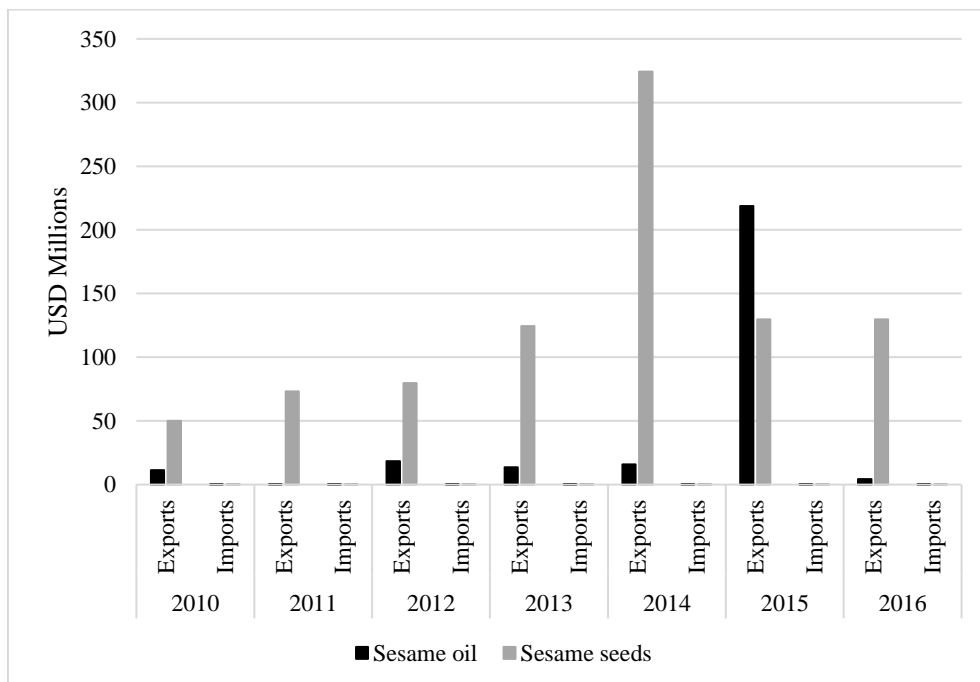
Source: ITC Trademap

Figure 8: Trade of Sunflower Seeds (HS Code 1206) and Sunflower, safflower or cotton-seed Oil (HS Code 1512)



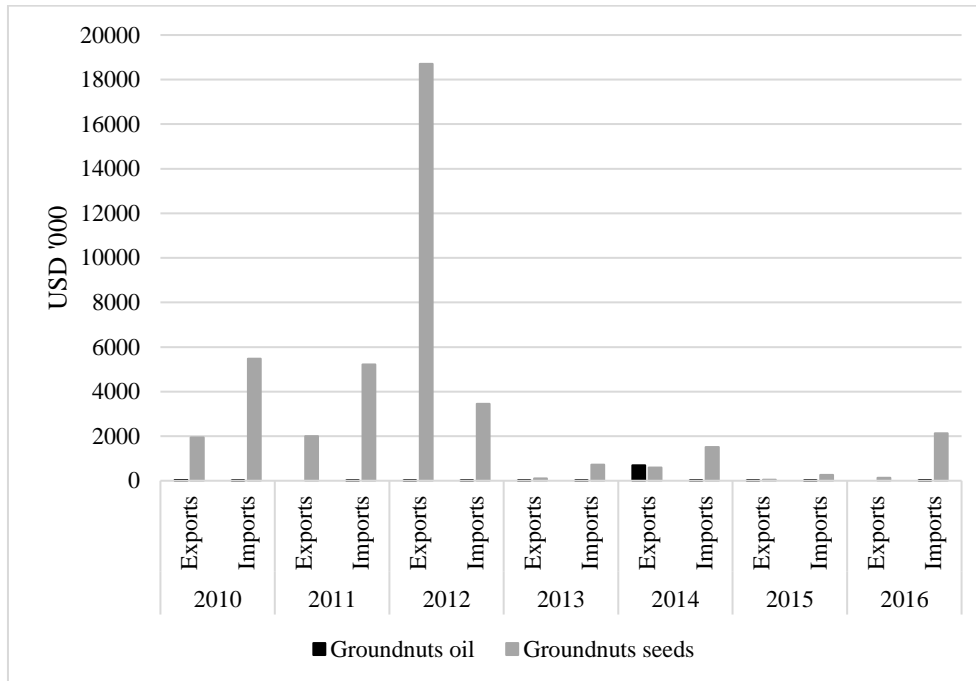
Source: ITC Trademap

Figure 9: Trade of Sesame Seeds (HS Code 120740) and Sesame Oil (HS Code 151550)



Source: ITC Trademap

Figure 10: Trade of Groundnuts (HS Code 1202) and Groundnuts Oil (HS Code 1508)



Source: ITC Trademap

2.2.3 Industrial Policy relevant to the oilseeds value chain in Tanzania

There are various policies and initiatives that focus on the development of the agricultural sector within Tanzania. Tanzania's developmental efforts, including initiatives in the agricultural and agro-processing sectors, have been integrated in The National Second Five Year Development Plan 2016/17 – 2020/21 (FYDP 11) introduced in 2016. The framework is built on three pillars: transformation (including industrialisation), human development, and implementation effectiveness. FYDP II aims to improve efficiency in implementation by organising national resources under one framework to remove the coordination challenges that beset implementation under parallel and potentially contradictory policy frameworks.

The Tanzania Development Vision 2025 envisages that by 2025 Tanzania will be a middle-income country characterized by high quality livelihood for all, with a competitive and diversified economy capable of producing sustainable growth and shared benefits. An increasing share of output and employment will come from high-productivity industrial activities and services with less reliance on the traditional low-productivity agrarian activities. This transformation requires that the agriculture sector grows at an annual average rate of 6% between 2010 and 2025. The current average agricultural growth rate of 4.4 % per annum is insufficient to lead to significant wealth creation and poverty alleviation in line with the Development Vision.

The development of the agricultural sector is beset with various challenges. These are set out in the *National Agriculture Policy 2013* and include: low productivity of land, labour and production inputs; over dependency on rain-fed agriculture, limited capital and access to financial services for the uptake of new technology, inadequate support services, poor rural infrastructure and low levels of agro-processing. Weak producers' organizations and depressed prices for primary commodities in global markets also limit opportunities in the agricultural sector.

Notwithstanding these challenges, there are numerous opportunities for growth in agriculture and related agro-processing activities. Tanzania has abundant natural resources and different agro-ecological zones which gives it comparative advantage in the production of various crops. The Tanzanian government has also devoted its efforts to strengthening agricultural support and technical services (including research, mechanisation, irrigation, extension and training).

The transformation of the agricultural sector into a modern, commercial sector through both private- and public-sector participation is also codified in the *Kilimo Kwanza* policy. *Kilimo Kwanza* is a step towards implementing the *Agriculture Sector Development Strategy* (ASDS) and the *Agriculture Sector Development Program* (ASDP). The first project of the *Kilimo Kwanza* initiative, the Southern Agriculture Growth Corridor of Tanzania (SAGCOT), calls for the private sector to mobilise new investment to promote a modern and profitable agriculture sector.

In the oilseeds value chain, the *Tanzania Sunflower Sector Development Strategy 2016-2020* provides a vision for developing the sunflower sector to be a leading sector in Africa that sustainably supplies value-added sunflower products. The strategy has five pillars. First, the strategy seeks to increase sunflower production and productivity through the adoption of modern production techniques to meet national and international demand. Second, it aims to modernise the sunflower industry through strengthening the coordination, institutional capacity and skills across the value chain. Third, it seeks to improve the quality of sunflower products to comply with both national and international standards. Fourth, it aims to stimulate growth in the sunflower industry through the implementation of coherent and supportive policies in line with national development objectives. Lastly, the strategy sets out the need to provide timely and appropriate market entry support for effective market development.

The strategy identifies specific interventions to support these goals. These include improved access to quality seeds and inputs, providing GlobalGAP training, and developing climate adaptation techniques for the sector. It anticipates that agribusiness services will expand once higher and stable production volumes have been secured. The strategy emphasises the importance of coordination between different levels of the value chain to support sector development. This includes supporting transparent and efficient contracts, improving linkages between small and larger crushers, developing regional industrial clusters and aligning policies, regulations and taxation with the objectives of sustainable sector growth. Our research supports the approach articulated in the Strategy.

Due to the interest in developing the sunflower sector, we found that there are several organisations already working towards the development and upgrading of the oilseeds value chain. These include the Private Agricultural Sector Support Limited (PASS), the SME Competitiveness Facility (SCF), and the Rural Livelihoods and Development Company (RLDC).

The *Agribusiness Innovation Center* (AIC) is a particularly influential research and implementation organisation in the oilseeds value chain and potential partner for any initiatives to upgrade and modernise oil processing. The AIC has been active in the sunflower value chain since at least 2011 and provides both financial and non-financial services to high growth-potential enterprises in the agro-processing sector, focusing on female entrepreneurs. Its non-financial support includes developing recordkeeping and financial management systems, negotiating more favourable input supply contracts, finding better markets and implementing process improvements to reduce costs within the business. The

AIC does not charge any fees upfront but enters into a three-year contract with businesses and shares in the increased revenue (if any) achieved by its clients over the contract period.¹⁸

2.3 South Africa: Production, trade and industrial policy support

2.3.1 Production

Oilseeds are mainly grown by commercial farmers in South Africa.¹⁹ Production of oilseeds increased by 36% from 1.2 million tonnes in 2010 to 1.7 million tonnes in 2016 (Table 2). Prior the 2015/2016 drought, annual production grew at a compound annual rate of 14% between 2010 and 2014. This is much lower than production growth in Tanzania (of 72% over the same period), which surpassed South Africa in total volumes of oil seeds produced by 66% in 2014.

Growth in South African sunflower production has been largely driven by increased land used for sunflower and not due to improvements in crop yields, which oscillate between 1.45 and 1.15 averaged tons per hectare between 2002 and 2015. Area under sunflower production increased by 58% between 2012 and 2016 from 453 000 hectares to 718 000 hectares.²⁰

The largest oilseed crops in South Africa are sunflower and soya which jointly accounted for 89% of total oilseed production in 2016. Production of canola has grown since its introduction in the early 2000s and it is now the third largest oilseed crop in South Africa following a decline in groundnut production. The continued increase in the soya crop has been driven by the growth of the commercial poultry industry and increased consumer demand for poultry products in South Africa and across the region.²¹ However, the size of the crop is constrained by water scarcity in South Africa with the country likely to become even drier with climate change (though with an increase in the frequency and severity of extreme rainfall events such as droughts and floods). South Africa's soya crop is unlikely to increase significantly in the short to medium term.²² These factors have driven investments in new soya cultivars that are more suitable to dry conditions, but the country will most likely have to look to the rest of the SADC region to meet its growing soya oilcake deficit.²³

Sunflower seed is grown mainly in the Free State and North-West provinces, which accounted for 55.7% and 34,1% of sunflower planted in 2016 respectively. Soya is grown mainly in Mpumalanga and the Free State which accounted for 47.7% and 34.6% of soya planted in 2016 respectively. Groundnut production is spread across the North West, Free State and Northern Cape which accounted for 42%, 28.8% and 22.1% of groundnuts planted

¹⁸ An overview of the AIC and its business model is available [here](#).

¹⁹ Interview with an association of agribusinesses operating in South Africa and southern Africa, South Africa.

²⁰ CCRED. (forthcoming). *Industrial Development Think Tank: Food, agro-processing and retail value chains*.

²¹ Ncube, P; Roberts, S, Zengeni, T and Samboko, P. 2017. *Identifying growth opportunities in SADC through regional value chains: The case of the animal feed to poultry value chain*. Available [here](#).

²² ACDI. (2015). *Climate Change in South Africa – how are we tackling this?* Available [here](#). For various reports on the impact of climate change on agro-food systems, see ClimAfrica. (2014). *Climate Change predictions in Sub-Saharan Africa: Scenarios of major production systems in Africa*. Available [here](#).

²³ Roberts, S and Paremoer, T. (2016). *Medium-Term regional action plan for poultry urgently needed*. AIDIRP. Interview with an association of grain farmers, South Africa

in 2016 respectively. Canola is produced primarily in the Western Cape, which accounted for 99% of canola planted in 2016.²⁴

Groundnut production is the only crop that exhibits a declining trend in production. This has been attributed to a range of factors including the fact that it is a highly labour-intensive crop and has stringent sanitary and phytosanitary standards, both of which discourage farmers from producing groundnuts.²⁵ Concerns about the quality of South African groundnuts have had a lasting effect on the reputation of the industry. Between 2008 and 2011, EU officials received upwards of 40 alerts about potential contamination of South African groundnuts destined for EU market. Although all concerns were cleared, this had a negative reputational effect and reduced demand for South African-produced groundnuts in European markets.²⁶

Table 2: Production of oilseeds in South Africa, 2010 – 2016

	2010	2011	2012	2013	2014	2015	2016	CAGR
Total production for primary crops (tons)	35 272 284	31 378 573	33 419 534	33 746 718	39 500 198	32 409 489	26 748 537	-4,5%
Total production for oilseeds, of which:	1 224 684	1 764 273	1 358 889	1 531 082	2 032 410	882 968	1 668 637	5,3%
<i>Cotton seed</i>	12 684	28 273	19 889	8 582	14 410	30 968	16 637	5%
<i>Sunflower seed</i>	509 000	894 000	543 000	579 000	865 000	689 000	785 000	7%
<i>Canola</i>	37 000	59 000	79 000	112 000	121 000	93 000	105 000	19%
<i>Groundnuts</i>	100 000	73 000	67 000	47 000	84 000	70 000	20 000	-24%
<i>Soybeans</i>	566 000	710 000	650 000	784 500	948 000	1 070 000	742 000	5%
<i>Production of oilseeds as a proportion of total production of primary crops</i>	3%	6%	4%	5%	5%	6%	6%	

Source: Department of Agriculture, Forestry and Fisheries

2.3.2 Trade in oilseeds

Despite the growth in production, South Africa remains a net importer of sunflower and soya beans (Figure 11 and Figure 12). Local production of sunflower seeds was about 695 000 tonnes per annum, on average, between 2010 and 2016. This falls short of local demand, which is approximately 800 000 tonnes per annum.²⁷ The decrease in soya bean exports from 2012 to 2013 and increase in soya bean imports from 2013 to 2016 reflect substantial investments in local crushing capacity between 2013 and 2014. Imports of oilcake were replaced by imports of beans, both of which are driven by the demand for animal feed in the poultry industry coupled with local climatic constraints in growing soya bean.²⁸

²⁴ Department of Agriculture, Forestry and Fisheries. 2016. *Trends in the Agricultural Sector*. Available [here](#).

²⁵ Interview with groundnuts producer and processor, South Africa.

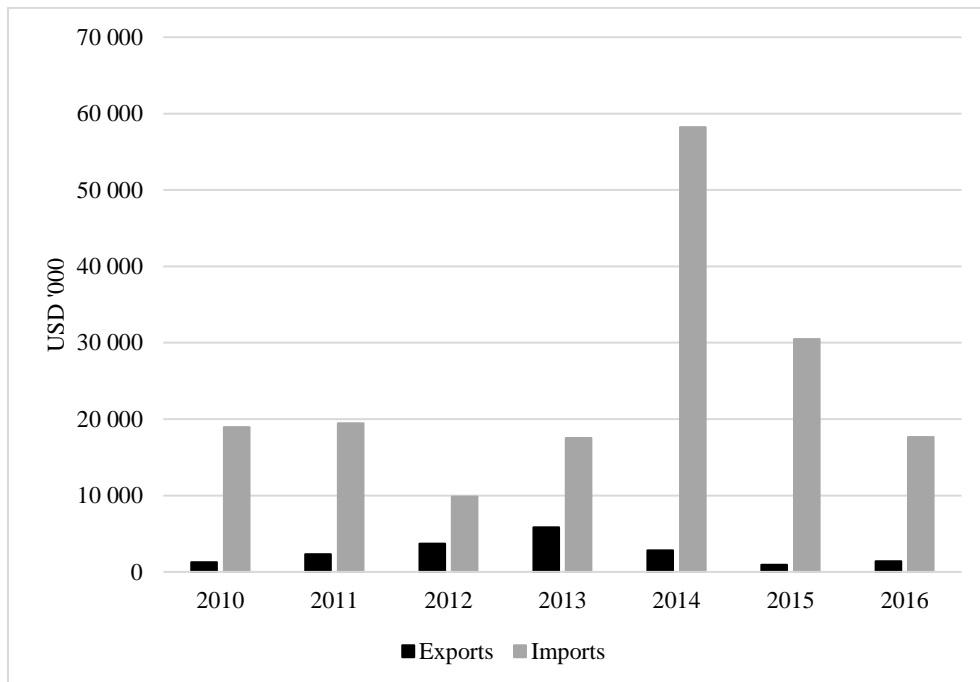
²⁶ The final audit report on aflatoxin contamination in peanuts intended for export to the European Union (2011) is available [here](#).

²⁷ Interview with sunflower processor and an association of agribusinesses operating in South Africa and southern Africa, South Africa.

²⁸ Ncube, P; Roberts, S, Zengeni, T and Samboko, P. 2017. *Identifying growth opportunities in SADC through regional value chains: The case of the animal feed to poultry value chain*. Available [here](#).

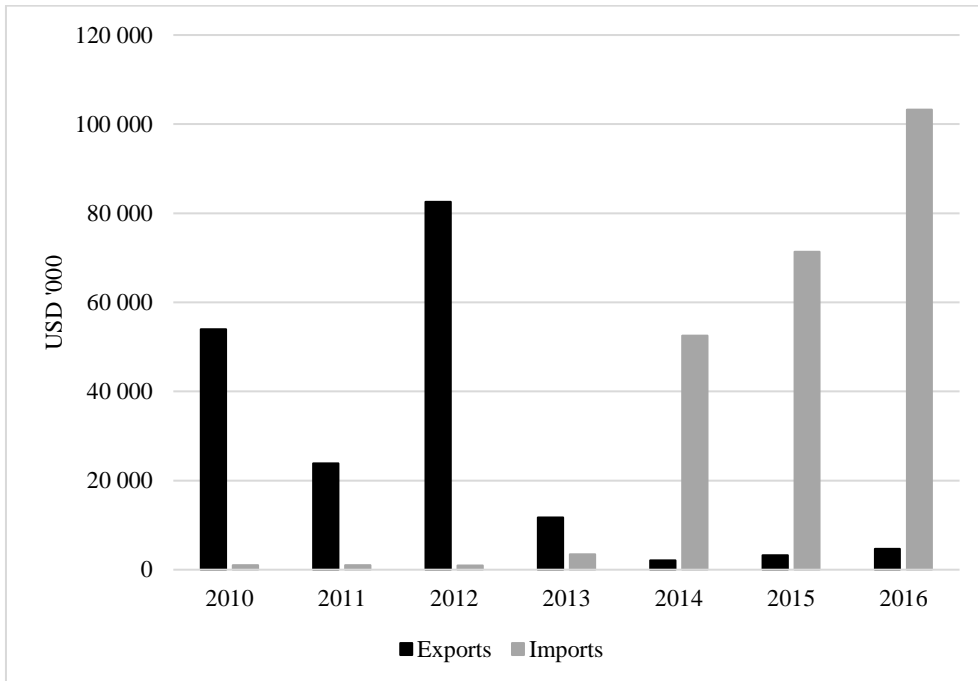
South Africa's exports of groundnuts declined rapidly between 2010 and 2013 with the result that the country became a net importer in 2016 (Figure 13). The worsening trade balance might be due to a decline in local production of groundnuts coupled with the long-lasting concerns regarding the quality of South African groundnuts which has reduced demand in European markets. Therefore, it appears that South Africa is substituting local production of groundnuts with increased imports. Lastly, local production of canola is still low in absolute terms given that it is a fairly new crop and therefore South Africa depends on imports to meet local demand (Figure 14).

Figure 11: Trade of Sunflower seeds (HS Code 1206)



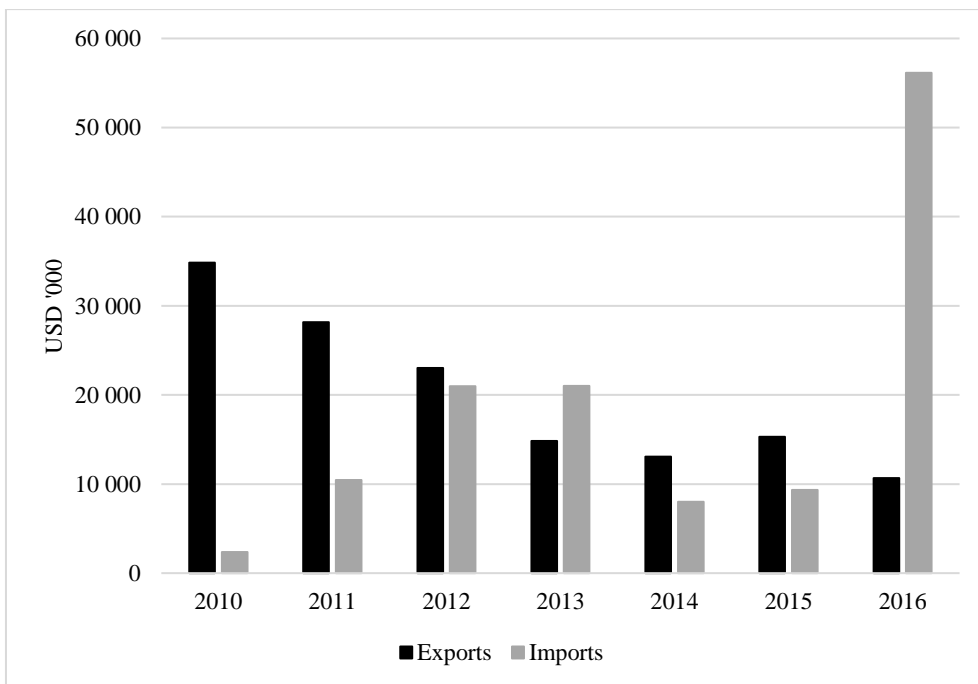
Source: ITC TradeMap

Figure 12: Trade of Soya beans (HS Code 1201)



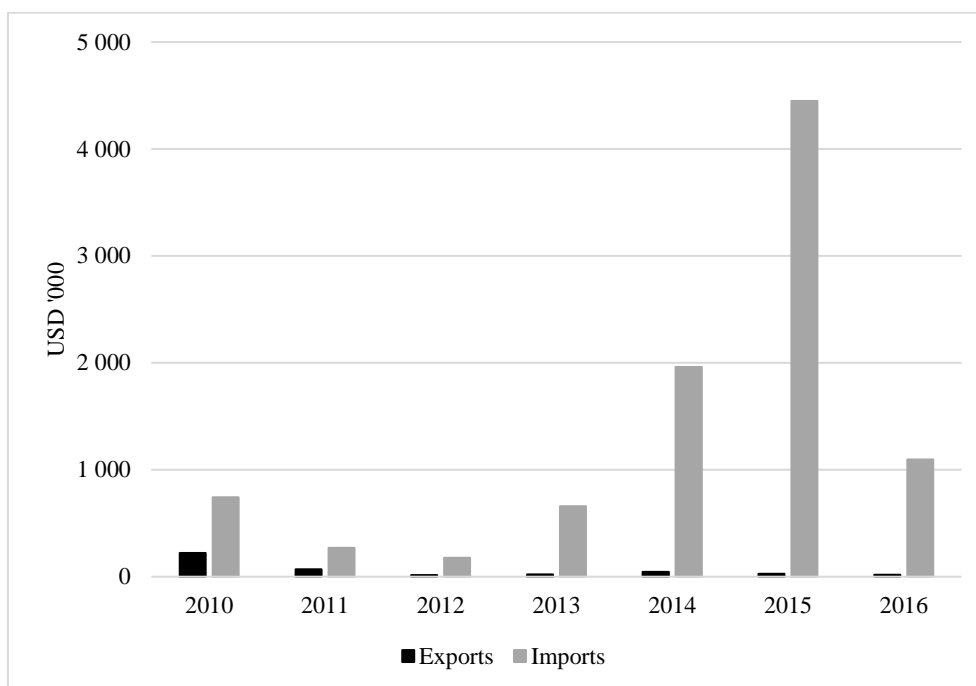
/Source: ITC TradeMap

Figure 13: Trade of Groundnuts (HS Code 1202)



Source: ITC TradeMap

Figure 14: Trade of Rapeseed/Canola seeds (HS Code 1205)



Source: ITC TradeMap

2.3.3 Trade in edible fats and oils

Although South Africa has large oilseed processing facilities, it is a net importer of edible oils (Figure 15), particularly sunflower oil, soya oil and palm oil (Figure 16, 17 and 18). Lower down the value chain, the country is a net exporter of secondary products such as margarine given the presence of large processing firms in South Africa (Figure 19).

Interviewees in the sunflower industry suggest that South Africa will remain a net importer of sunflower oil primarily because there is insufficient demand for sunflower oilcake in the local and regional market. Sunflower oilcake is used in small amounts in animal feed due to its high fibre content. This generates a so-called 'oilcake ceiling' in the local market, which can only absorb the oilcake-equivalent of 800 000 tonnes of seed.²⁹ Above the 'ceiling', it is more profitable for South African processors to import crude oil rather than seeds (the business case for importing crude oil rather than seeds referred to as the crush margin is discussed further in section 7). This means that South Africa will likely remain a net importer of crude oil unless it can find another market for sunflower oilcake.

Similarly, despite growing production in soya beans and investments in local crushing capacity, South Africa remains a net importer of soya bean oil. Local production only constitutes a third of the country's crushing capacity and therefore this signals opportunities for increased production.³⁰

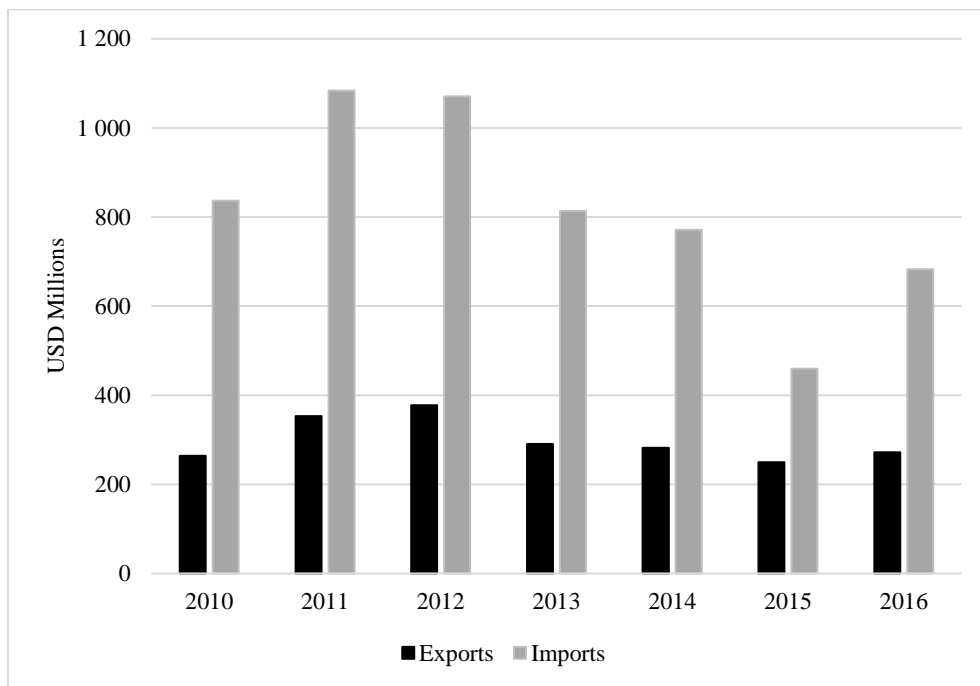
In contrast to the above, South Africa is a net exporter of groundnut oil (off a low base) despite the decline in local production (Figure 20). It appears that the negative reputational effect around the quality of South African groundnuts in EU markets has led local firms to import raw groundnuts for processing into oil. This allows firms to bypass the stringent sanitary and

²⁹ Interview with processor of sunflower seeds and an association of grain farmers, South Africa.

³⁰ South Africa's soybean industry: A brief overview. Available [here](#).

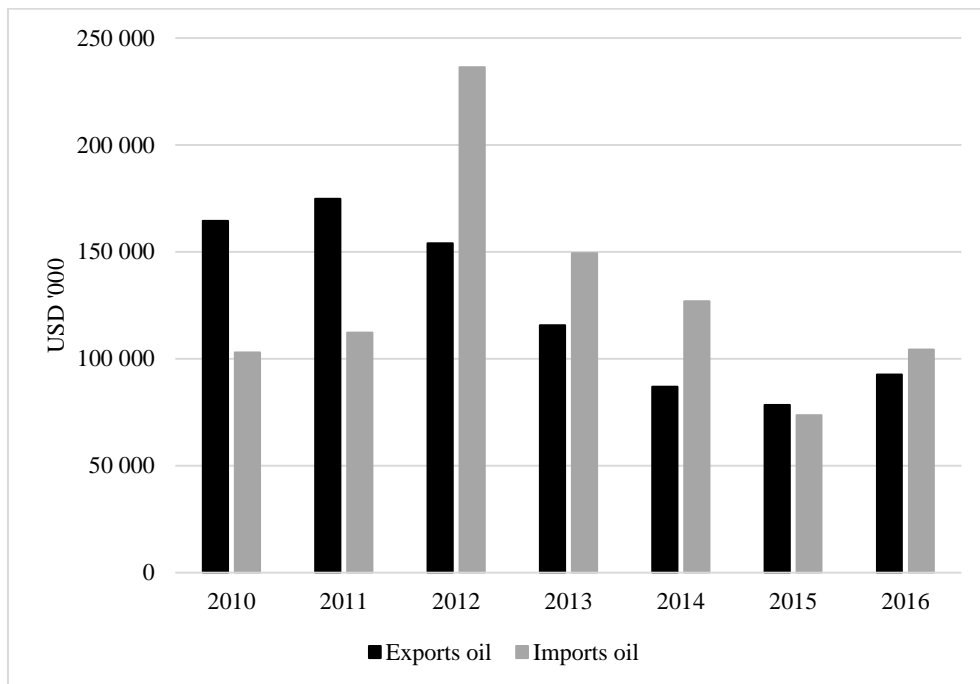
phytosanitary requirements on exports of raw groundnuts which largely disappear after processing. However, the economic value of groundnuts lies in the blanched peanuts and not in the peanut oil. Blanched peanuts constitute the largest market and require large investments in blanching plants to be able to compete in international markets.³¹ Lastly, although South Africa is a net importer of canola oil, imports have decreased drastically between 2011 and 2014 coupled with slight improvement in exports especially in 2016 (Figure 21). This shows that with growth in local production of canola seeds there are opportunities to grow exports of canola oil.

Figure 15: Total Trade of animal or vegetable fats and oils (HS Code 15)



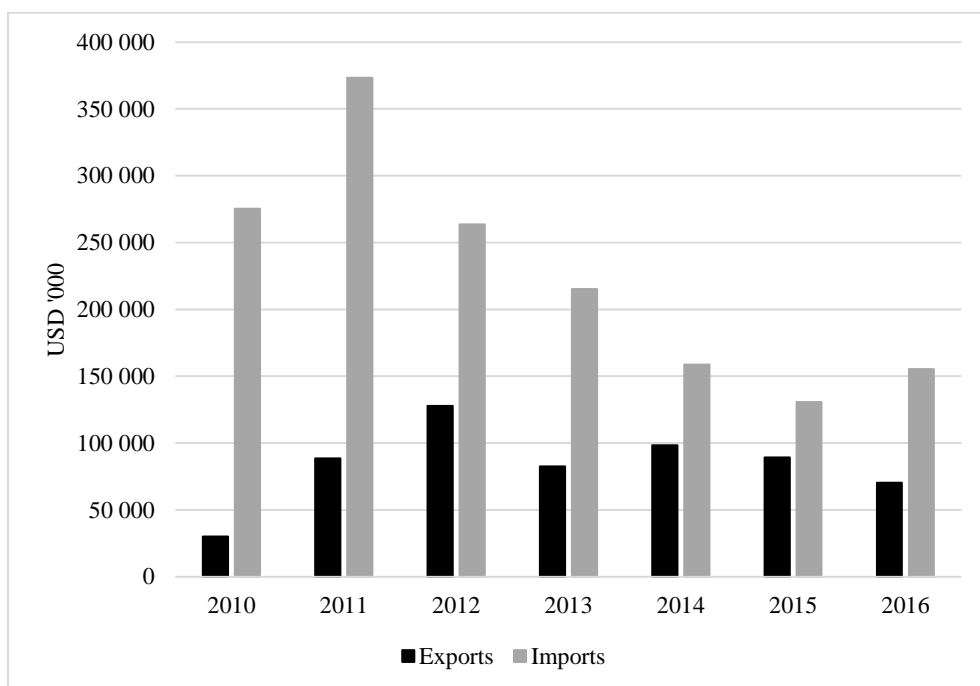
³¹ Interview with a blanching plant company

Figure 16: Trade of Sunflower-seed, safflower or cotton-seed oil (HS Code 1512)



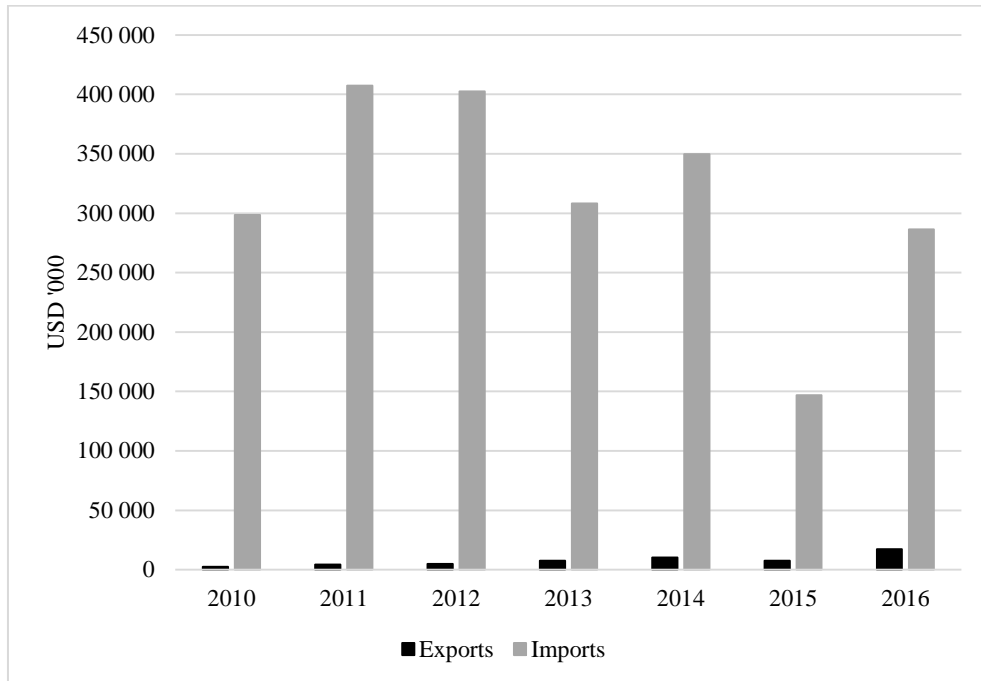
Source: ITC TradeMap

Figure 17: Trade of Soya bean oil (HS Code 1507)



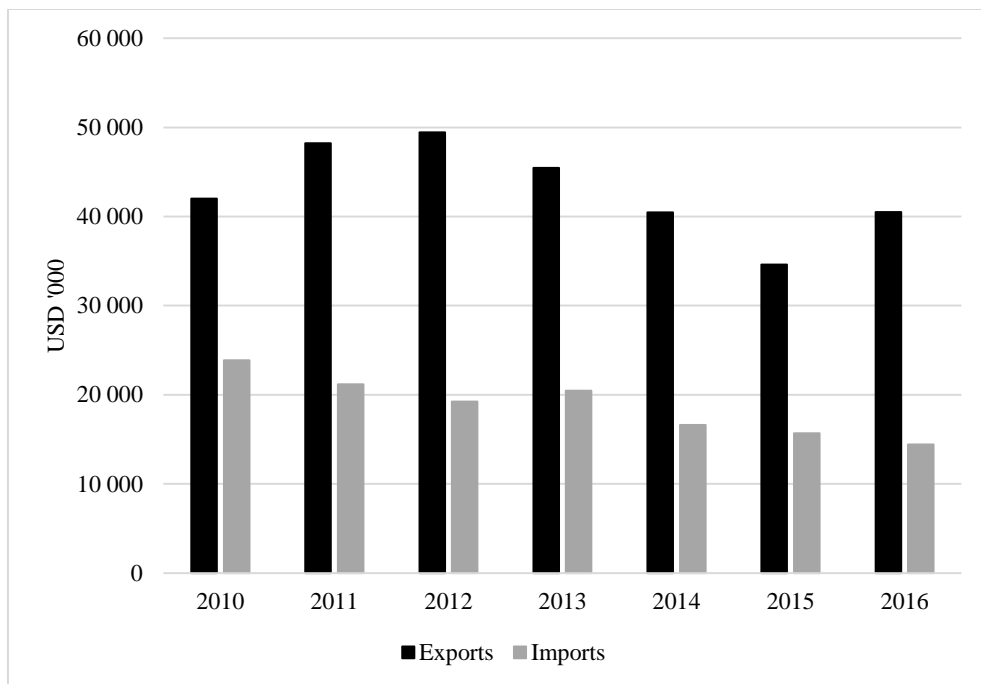
Source: ITC TradeMap

Figure 18: Trade of Palm oil (HS Code 1511)



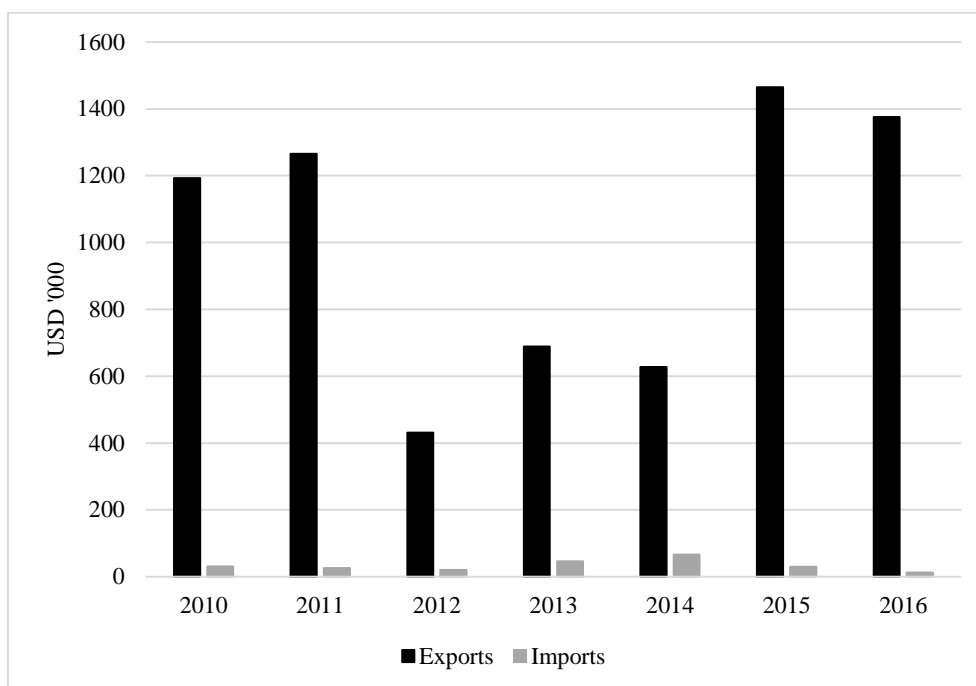
Source: ITC TradeMap

Figure 19: Trade of margarine (HS Code 1517)



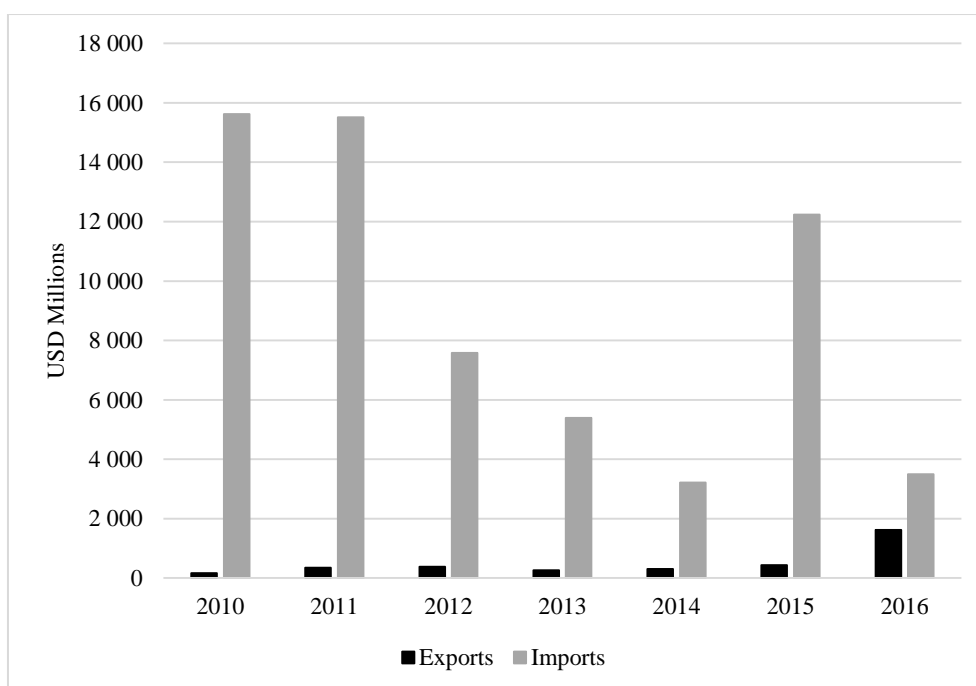
Source: ITC TradeMap

Figure 20: Trade of Groundnuts oil (HS Code 1508)



Source: ITC TradeMap

Figure 21: Trade of Rapeseed/Canola oil (HS Code 1514)



Source: ITC TradeMap

2.3.4 Industrial Policy relevant to the oilseeds value chain in South Africa

South Africa's Industrial Policy Action Plan (IPAP) 2011-2017 and Agricultural Policy Action Plan (APAP) 2014 – 2019 do not have a specific strategy for oilseeds and edible oils. Oilseeds are not identified as a 'strategic commodity' in APAP. This may be because the main oilseeds (sunflower, canola, groundnuts and soya beans) are not labour-intensive

commodities employing fewer than 0.01 persons per hectare.³² IPAP interventions seem to focus on labour intensive sub-sectors such as fruit, poultry and milling.

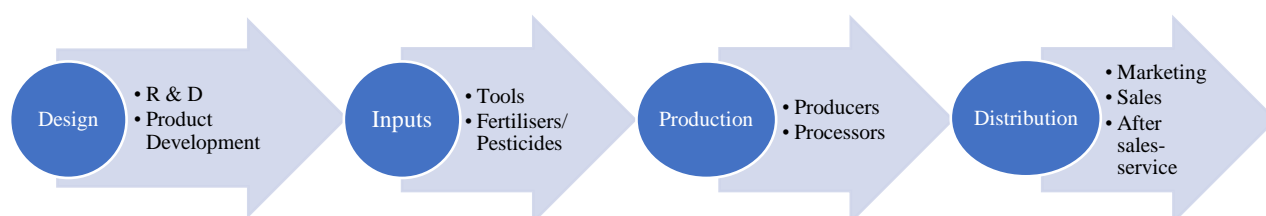
There are, however, cross-cutting interventions in IPAP which would be beneficial to the development of the edible oils sub-sector as well. These include export promotion activities, increased local procurement, financial assistance for productivity-enhancing investments, development of competitive clusters and investments in infrastructure.³³

In summary, the edible oilseeds sector (and sunflower in particular) is a key focus area in Tanzania's development path. Tanzania has successfully increased production in all oilseeds over a short period of time but still faces challenges in increasing crushing and processing to meet local and regional demand for crude oil. In South Africa, the oilseeds sector does not have the same level of attention from an agricultural and industrial policy perspective, perhaps because the South African sector is already developed and because there is a ceiling on South Africa's ability to crush further oilseeds. The opportunities for increased trade between South African and Tanzania thus seem to be primarily in crude sunflower oil which will support the Tanzanian government's efforts to increase value addition in the oilseeds value chain. These opportunities are explored further in section 7. Next, we review the Global and Regional Value Chain literature to provide context for our findings.

3 Literature review: from global value chains to regional value chains

Global value chains (GVCs) describe the full range of cross-national value addition processes and activities that firms and workers engage in to transform raw commodities into final products or services.³⁴ These activities include design, production, marketing and distribution (Figure 22).

Figure 22: Stylised Representation of a Global Value Chain in Processed Food



Note: R&D, product and process development is not confined to the first 'node' of the value chain, but occurs at all levels of the value chain, particularly as firms invest in new capabilities and value chain upgrading

Source: Adapted from Gereffi, G. and Fernandez-Stark, K. 2011

Global value chains are characterised by fragmented production networks spread across several countries as firms specialize in a narrow range of core competencies and outsource production processes in which they are not globally competitive to firms in other countries

³² Bureau for Food and Agricultural Policy (BFAP). 2011. *The contribution of the agro-industrial complex to employment in South Africa*. Available [here](#).

³³ The Department of Trade and Industry. 2015. Industrial Policy Action Plan. 2015/16 – 2017/18. Available [here](#). The Department of Industry and Trade. 2016. Industrial Policy Action Plan 2016/17 – 2018/19. Available [here](#).

³⁴ Gereffi, G. and Fernandez-Stark, K. 2011. *Global value chain analysis: A primer*. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA. Farole, T. 2016. *Factory southern Africa? SACU in global value chains*. World Bank Group Working Paper. Available [here](#).

where they can be produced more competitively.³⁵ Outsourcing and fragmentation of production processes are facilitated by factors such as the growth in capabilities in the developing world, decrease in transport costs across the globe, and the widespread development of communication technologies.³⁶

The rise of global value chains means that countries and firms are thus increasingly dependent on each other for inputs and markets. This kind of interdependence allows firms to source inputs from the rest of the world for incorporation into their own exports and to concentrate scarce resources on building specific production capabilities to produce competitive final products. At lower nodes of the value chain, returns are smaller and increase with value addition further up the value chain.³⁷

The GVC framework is a useful tool for understanding how international supply chains link geographically dispersed economic activities, who the key actors are at the global, regional, national and local levels within industries and also for understanding where power resides within a value chain.³⁸ It is worth noting that the governance or leadership of a value chain may differ in the entire chain versus governance within a particular node in the value chain.³⁹ As Sturgeon (2009) pointed out, GVC analysis explores and predicts how nodes of value-adding activities are linked in the spatial economy.⁴⁰

Trade, investment and knowledge flows within GVCs are crucial for rapid learning, innovation and industrial upgrading.⁴¹ Participation in global value chains is thus important for economic development and for many low-income countries in particular, the ability to insert themselves into a global value chain is vital for development and as stepping stone to integration into

³⁵ Gereffi, G. and Fernandez-Stark, K. 2011. *Global value chain analysis: A primer*. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA.. Farole, T. 2016. *Factory southern Africa? SACU in global value chains*. World Bank Group Working Paper. Available [here](#). Keane, J. 2015. *Firms and Value Chains in Southern Africa*. World Bank Working Paper. London: World Bank. Kaplinsky, R. and Morris, M. 2015. Developing regional value chains in southern Africa: A think piece for ICTSD.

³⁶ Kaplinsky, R. and Morris, M. 2015. *Developing regional value chains in southern Africa: A think piece for ICTSD*.

³⁷ Kaplinsky, R. and Morris, M. 2015. *Developing regional value chains in southern Africa: A think piece for ICTSD*.

³⁸ Bamman, H. 2007. *Participatory value chain analysis for improved farmer incomes, employment opportunities and food security*. Pacific Economic Bulletin, 22(3) 113-125. Gereffi, G. and Fernandez-Stark, K. 2016. *Global value chain analysis: A primer*. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA.

³⁹ Talbot, J.M. 2009. *The comparative advantages of tropical commodity chain analysis*. J. Bain (Ed.), Frontiers of commodity chain research (pp. 93–109). Stanford, CA: Stanford University Press.

⁴⁰ Sturgeon, T. J. 2009. *From commodity chains to value chains: Interdisciplinary theory building in an age of globalisation*. J. Bair (Ed.), Frontiers of commodity chain research (pp. 110-135). Stanford, CA: Stanford University press.

⁴¹ Gereffi, G. 2015. *Global value chains, development and emerging economies*. Inclusive and Sustainable Industrial Development Working Paper Series WP 18 | 2015. Farole, T. 2016. *Factory southern Africa? SACU in global value chains*. World Bank Group Working Paper. Available [here](#). Staritz, C., Gereffi, G. and Cattaneo, O. (eds.). 2011, *Special Issue on “Shifting End Markets and Upgrading Prospects in Global Value Chains.”* International Journal of Technological Learning, Innovation and Development 4(1/2/3).

world trade.⁴² But for GVC participation to be beneficial, it presumes that firms/countries can access the value chains, can compete within them, and can capture the benefits for local economic development. However, many developing countries are not incorporated into global value chains on beneficial terms. Developing countries' participation in global value chain has historically been limited to export of primary commodities and import of higher value processed goods. Therefore, these countries are incorporated at the low-skill and low-value parts of the chain where there are limited opportunities for upgrading into more complex technology-based and skill-intensive industries. There is also minimal participation by developing countries in international trade of processed intermediate inputs. Instead, domestic firms often import foreign intermediate products for assembly into final products.⁴³

Partly due to the challenges of how developing countries have been incorporated into global value chains, there is increasing focus on developing *regional* value chains as a complementary development tool to both global value chains and national industrial policy. The logic of regional value chains as a development tool is thus closely linked to the logic of regional integration (increased market size and greater economies of scale) as a growth driver.

Regional value chains (RVCs) operate within a specific region, are driven by regional lead firms, and concentrate on meeting demand in regional markets.⁴⁴ Lower barriers to entry in regional value chains means that RVCs are easier to access than global value chains which are more difficult to penetrate, particularly at higher nodes. Regional markets also tend to be less concentrated and lead firms tend to be less powerful compared to lead firms in global value chains.⁴⁵ Participation of local firms in regional value chains thus provides a basis for economic growth through the development of production and manufacturing capabilities and through increased incomes and employment.

3.1 Regional value chains in the Southern African Development Community (SADC)

In recognition of the importance of a regional industrialisation agenda, SADC member states launched the *SADC Industrialisation Strategy and Roadmap 2015-2063* in late 2015. The Roadmap addresses challenges around the way SADC countries are incorporated into global value chains, particularly the tendency for countries in the region to export low-value unprocessed or minimally processed goods and to import higher-value processed goods.

⁴² Gereffi, G. and Fernandez-Stark, K. 2011. Global value chain analysis: A primer. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA.

⁴³ Farfan, O. H. 2005. *Understanding and escaping commodity – dependency: A global value chain perspective*. Prepared for the Investment Climate Unit International Finance Corporation The World Bank Group. Kowalski, P., Gonzalez, J.L., Ragoussis, A. and Ugarte, C. 2015. *Participation of developing countries in global value chains: Implications for Trade and Trade-Related Policies*. OECD Trade Policy Papers, No. 179, OECD Publishing, Paris. Available [here](#).

Farole, T. 2016. *Factory southern Africa? SACU in global value chains*. World Bank Group Working Paper. Available [here](#).

⁴⁴ Farole, T. 2016. *Factory southern Africa? SACU in global value chains*. World Bank Group Working Paper. Available [here](#). Kaplinsky, R. and Morris, M. 2015. Developing regional value chains in southern Africa: A think piece for ICTSD.

⁴⁵ Keane, J. 2015. *Firms and Value Chains in Southern Africa*. World Bank Working Paper. London: World Bank.

The strategy focuses on value-addition and beneficiation of resources particularly in the agricultural and mining sectors as a key path to regional industrialisation.⁴⁶

Intra-regional trade data supports SADC's assertion that economies in the region, and across the continent in general, are not very integrated. Over the period 2010 to 2016, both intra-regional trade among SADC states and the rest of the world barely grew. SADC's intraregional exports and imports for all products declined at an annual compound rate of 1% between 2010 and 2016. In terms of trade with the rest of the world, SADC's exports and imports to and from the world are both declining at an average of 2% per annum between 2010 and 2016. SADC's intra-regional trade as a share of global trade has also barely improved over the six-year period from 2010 to 2016, averaging 21% of total trade.⁴⁷

The poor trade performance within SADC states and between SADC and the rest of the world could be attributed to a number of factors, including the nature of products traded by SADC countries. Fifty-four percent of Africa's main exports are primary commodities including mineral fuels and oils, precious stones and metals, and ores and copper. On the other hand, key imports include mineral fuels and oils, machinery and mechanical appliances, electrical machinery and equipment; and vehicles. An increase in diversified manufactured products in the region could thus foster higher levels of intra-regional trade but lack of infrastructure and underdeveloped manufacturing sectors limit these opportunities.⁴⁸

Recent case studies in the animal-feed-to-poultry and sugar-to-confectionery value chains in southern Africa also show evidence of underdeveloped regional value chains with significant potential for import replacement and downstream processing. The region continues to depend on deep-sea imports of key inputs to animal feed, such as soybeans and soya oilcake despite potential to source inputs from neighbouring countries. The sugar-to-confectionery value chain is dominated by a few large-scale, vertically-integrated South African firms with operations across the region who control access to inputs by downstream confectioners. Despite being the region's lowest cost sugar producer, Zambia has some of the highest cost industrial sugar in the world, impeding the development of downstream confectionery businesses.⁴⁹

There are thus several compelling reasons to focus on the development of regional value chains in southern Africa. In terms of agro-processing value chains, continued growth in agricultural productivity across the region, rising global food and commodity prices, and increased demand for processed food present continued opportunities for growth in the sector.⁵⁰ Importantly, taking a regional value chain approach to food production and processing also increases the pool of resources available to mitigate the impact of climate

⁴⁶ SADC Industrialisation Strategy and Roadmap 2015-2063. 2015. Available [here](#).

⁴⁷ International Trade Centre TradeMap (2017).

⁴⁸ Kaplinsky, R. and Morris, M. 2015. *Developing regional value chains in southern Africa: A think piece for ICTSD*.

⁴⁹ das Nair, R., Nkhonjera, M. and Ziba, F. 2017. *Growth and development in the sugar to confectionery value chain*. Available [here](#). Ncube, P., Roberts, S. and Zengeni, T. 2016. *Development of the animal feed to poultry value chain across Botswana, South Africa, and Zimbabwe*. Available [here](#). Ncube, P., Roberts, S., Zengeni, T. and Samboko, P.C. 2017. *Identifying growth opportunities in the Southern African Development Community through regional value chains: The case of the animal feed to poultry value chain*. Available [here](#).

⁵⁰ McMillan, M., Rodrick, D. and Verduzco-Gallo, I. 2014. *Globalization, structural change, and productivity growth, with an update on Africa*. World Development Vol. 63, pp. 11-32.

change in any one country within a region. Differing climatic conditions across the region thus provides greater food security on a regional basis.

4 Methodology: value chain selection

To inform this comparative study, we interviewed stakeholders in the oilseeds value chain in both South Africa and Tanzania. Our interviews were narrowed to the sunflower value chain, given that this is where South Africa has unmet demand and where Tanzania has proven production capabilities.

The Tanzanian interviews focused on farmers (the production level) and the South African interviews focused on traders and processors (the manufacturing level). Interviews were supplemented with desktop reviews of ongoing initiatives and previous studies in both countries.

Purposive sampling was used to determine the stakeholders for interviews. A total of 19 interviews were conducted in Tanzania and 12 interviews in South Africa.⁵¹

4.1 Sampling Protocol

4.1.1 South Africa

The study was conducted using a combination of secondary sources and primary information from field interviews. Quantitative secondary data was sourced from national government departments and the International Trade Centre (TradeMap) to identify sectors with export potential and opportunities for increased trade between Tanzania and South Africa. A desktop review was conducted to identify key players and activities in the value chain. This informed the selection of firms for interviews. The firms and stakeholders interviewed included manufacturers, industry associations, producer associations and private research institutions working in the agricultural sector. The fieldwork was conducted over a period of 3 months (March – May 2017).

Semi-structured questionnaires were used during interviews, centered on the following themes:

- i. key processes/activities in the value chain,
- ii. key players/large and lead firms within the value chain,
- iii. governance of the value chain,
- iv. competitiveness in the value chain,
- v. opportunities for increased trade between South Africa and Tanzania and
- vi. challenges associated with upgrading and expanding the value chains in South Africa and Tanzania.

4.1.2 Tanzania

In Tanzania, the Dodoma region in Chamwino district and the Iringa region in Iringa district were chosen because their agronomic and socio-economic characteristics best represent the entire country. Iringa is divided into two agro-ecological zones, a Midland Zone and a Lowland Zone. The Chamwino district is dry with flat lowlands and is divided into a very dry flat undulating plain and flat undulating hills.

⁵¹ Three South African interviewees declined to be interviewed. These included a refiner and manufacturer of oil-based consumer goods, a commodity trading firm and a government department.

The researchers approached the District Agricultural, Irrigation and Cooperative Officer (DAICO) as a key informant in each district. The DAICO provided information on the potential for sunflower production in the district and on prevailing farming and processing practices. They also provided the necessary information to enable researchers to draw suitable samples in the two districts. This included providing existing databases to identify wards and villages for the survey. Wards and villages were chosen based on whether sunflower production, processing and marketing is taking place at ward or village level.

Researchers also obtained lists of individual farmers, small processors and traders from the DAICO. The farmers, processors and traders were divided into three groups (small, medium and large) based on the DAICO's judgement as no objective data was available for this classification. Most of the farmers interviewed can be considered small-scale farmers with farms between 1 and 3 hectares in size.

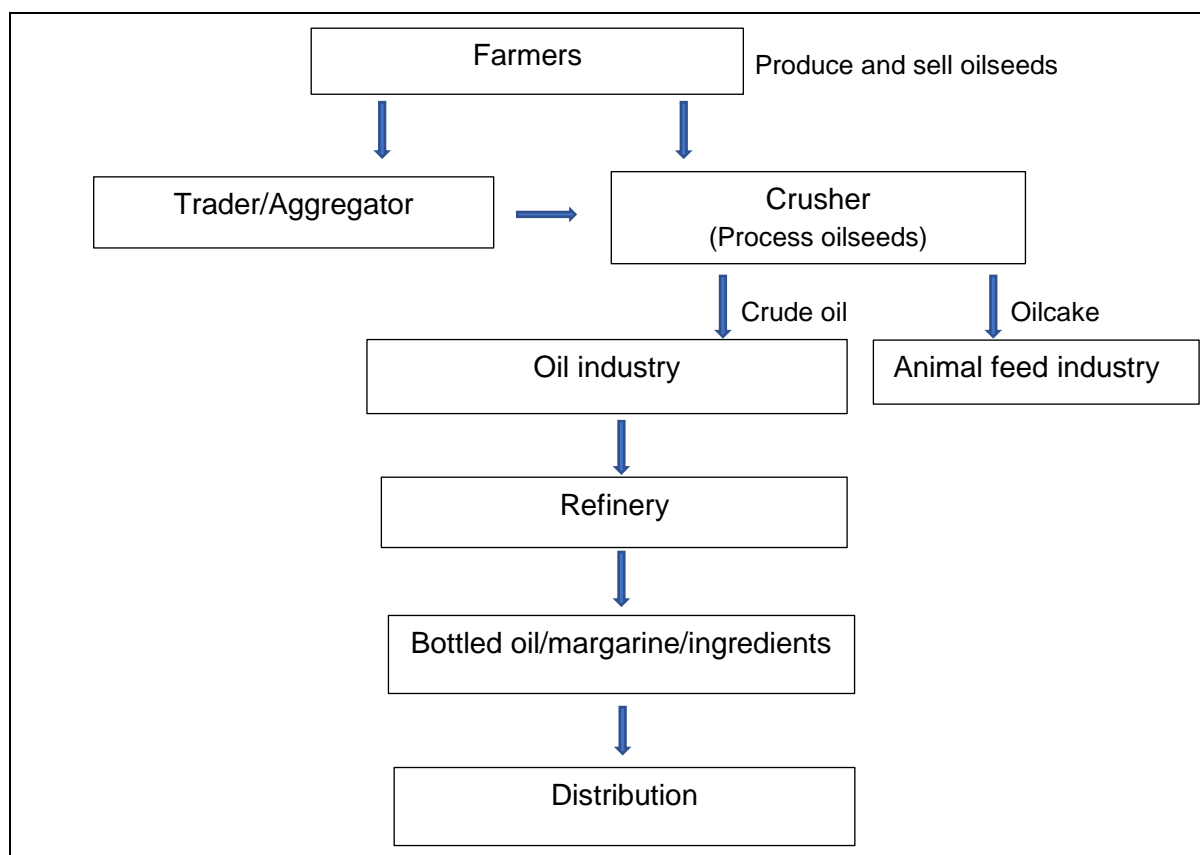
Semi-structured interviews were conducted with farmers, small processors and traders. The following issues were explored:

- i. *Production of sunflower*: how farmers cultivated their land, the size of farm cultivated and their ability to extend the land or otherwise,
- ii. *Inputs used*: equipment, seed, fertilisers and labour,
- iii. *Processing activities*: whether farmers operate processing facilities, whether there are stand-alone processors in the region, and the current level of processing (i.e., are processors simply crushing seed or also refining the oil),
- iv. Issues related to quality standards and licensing in the oilseeds value chain,
- v. *Marketing*: marketing approaches used by farmers, markets for oilseeds and marketing of processed/crushed products.

5 Interview Findings: Opportunities in the Sunflower Value Chain

A typical oilseeds value chain is shown below. We discuss specific dynamics in South Africa and Tanzania thereafter.

Figure 23: Oilseeds to fats and oils value chain



Source: Authors' own, based on stakeholder interviews

5.1 South Africa

The production process for soft oils (specifically sunflower and canola oil) is described in Figure 23 above. Oilseeds are either sourced from domestic commercial farmers or from deep sea markets. The seeds are cleaned and graded before they are delivered to silos to be stored prior to processing.

At the crushing facility, seeds are processed into crude oil, oilcake and hulls using either chemical or mechanical extractions methods. The extraction process determines the value of the oil and oilcake, making this a critical part of the value chain. Although oil content differs for various sunflower varieties depending on production conditions (weather conditions play a crucial role), the seed generally yields 37% oil, 40% sunflower oilcake and 23% hulls.⁵² The oilcake is sold to ruminant feed manufacturers and the crude sunflower oil is refined, deoderised and bottled for household or industrial use.⁵³ Sunflower oil is also a key ingredient

⁵² Interviews with processors, South Africa. Estimates of oil extraction varied between 36% and 40%.

⁵³ For sunflower and canola, the oilcake is less valuable than oil and the oilcake is thus considered a by-product. This is different from soybeans where the meal is the most valuable output and the oil is considered the by-product.

in the manufacture of margarine, fat spreads and cooking fats used in industrial or household applications.

There exists a degree of vertical integration along the value chain with large processors involved from the crushing level to the manufacture of final products. Vertically integrated firms with both crushing and refining facilities have a competitive advantage over downstream firms that only have a refinery because they have the option of selling both oil and oilcake (and making a margin on both, albeit a small margin on oilcake) if there is a positive crush margin (see Box 1 below).⁵⁴ Firms that only have a refinery are more constrained. At the downstream level, manufacturers of consumer goods generally make a range of products including cooking oil, margarine, fat spreads and oil-based dips.⁵⁵

Transport costs are the largest cost component in the sunflower value chain after the cost of the raw material input itself (i.e. transport cost is second only to the cost of oilseeds or crude oil).⁵⁶ Processors try to reduce transport at upstream levels of the value chain because raw seeds have less value, preferring to crush seeds as close as possible to production areas and rather transport higher-value crude oil to refineries and packaging plants further away.⁵⁷ Ideally, processors would prefer to reduce transport costs further by crushing the seeds and refining the oil close to areas of production

⁵⁴ Interview with large processor and producer of consumer goods, South Africa

⁵⁵ Interviews with processors, South Africa.

⁵⁶ The cost of transport essentially divides South Africa into two distinct regions. It is cheaper to transport oil via bulk tanker from Eastern Europe to Durban than from oil-producing regions in the north of the country via road to Durban. Demand for crude oil in coastal provinces is thus met by deep sea imports while the inland provinces consume locally-produced oilseeds.

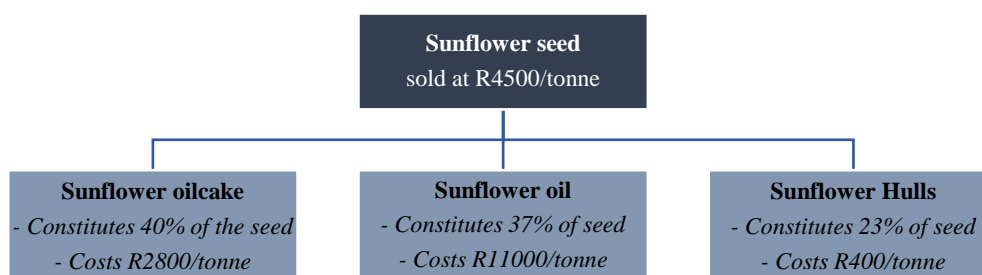
⁵⁷ Interview with trader and small processor, South Africa.

Box 1: Competitiveness in the oilseeds value chain and the importance of the crush margin

Decisions around sourcing of oilseeds or crude oil are made with reference to the “crush margin”. The crush margin is made up of five components: the cost of sunflower seed, the variable costs of crushing seeds and refining oil, the price (return) from sunflower oil, the price (return) from sunflower oilcake and the price (return) from sunflower hulls. The margin involves determining whether it is cheaper to buy sunflower seeds and process them locally, or whether it is cheaper to enter lower down the value chain by purchasing crude oil and simply refining and packaging the oil. The latter approach avoids incurring the cost of disposing of meal and hulls. These decisions are all influenced by the prevailing market price of oil, oilcake and hulls and the efficiency of the plant.

An illustrative example is given below.

Figure 24: Illustration of the calculation of the crush margin



In this example, the processor must decide whether it is more cost-effective to purchase sunflower seeds at R4500/ton, process the seeds and sell the by-products or whether it is cheaper to purchase crude oil and simply refine and package the oil for resale. In general, a processor will choose to crush if the crush margin is positive in order to get the best return from their processing equipment.

The processor in our example would buy a ton of sunflower seed at R4 500. The sunflower oilcake, which constitutes 40% of the seed is sold at R2 800/ton. The processor will realise R1120 ($0.4 \times R2\ 800$) from the sale of the oilcake. Similarly, the processor will realise R4 070 from the sale of oil and R92 from the sale of the hulls to get a total return of R5 282 from the ton of sunflower seeds. If we assume that the variable cost of processing a ton of seeds is R400, the processor's total costs are R4 900 (R4 500 for the seeds and R400 for processing). The crush margin is thus R382 (total revenue of R5 282 minus total cost of R4 900).

In certain instances, the seed is too expensive or the prevailing cost of oil, oilcake and hulls too low to cover the costs of crushing, resulting in a 'negative crush margin'. The crush margin is also influenced by economies of scale and availability of seeds, with lower crush margins common towards the end of the season when sunflower stocks are low.

When asked what influences their purchasing decisions, South African processors and traders all confirmed that their decisions are primarily influenced by value of the oilseeds as evaluated by both price and oil content. All traders supplement local production with imports and decide on the import market based primarily on prevailing prices and previous quality of imports received. Therefore, any decision to shift imports to Tanzania will be based on whether the oilseeds can be landed in Durban at a better price than bulk imports from Eastern Europe and whether the seeds have comparable oil content to competing markets.

One of the factors that influence the landed price are tariffs imposed on oilseeds or crude oil. In section 6, we assess the trade agreements between South Africa and various oilseed-producing countries (including Tanzania) to see whether the trade regime offers any pricing cover to Tanzanian exporters.

5.2 Tanzania

In Tanzania, the value chain discussion focuses on production and small-scale processing.

5.2.1.1 The production level

Sunflower is generally grown in rotation with other cash crops like maize, millet and groundnuts. Farmers grow at least some sunflower each year because it is more drought resistant than maize, providing some surety of income in dry seasons.

One of the key issues affecting sunflower yield is that farmers struggle to access new seed varieties which improve yields significantly. Although new seed varieties improve yields, they do carry some risk. Due to lack of irrigation infrastructure, the new cultivars require rain within two weeks of sowing to ensure a good harvest. If it does not rain, the seed shrinks and becomes useless. Consequently, the cheaper local seed variety is still used widely. The local seed varieties, while more drought-resistant than new varieties, produce lower yields and can only be harvested after 120 – 150 days (compared to 75 - 90 days for the new variety). Farmers expect to harvest about 3 – 9 sacks per acre from the local variety (195 – 585kg) and 8 - 15 sacks from the improved variety (520 – 975kg).⁵⁸

An interviewee confirms that *“[the improved variety] could give you about 15 sacks from an acre...while the local variety gives less.”* With respect to the local seed, a farmer in Iringa said *“You know we never follow the proper procedures for sowing the seeds and most of the time we just randomly throw seeds, so in each acre I normally get like three sacks”*.

The cost of improved seed was also cited by many farmers as a major barrier. One interviewee remarked that, *“The main issue here is that getting all the requirements from the shops is quite expensive, so somehow you have to divide your farm into two and use a small portion for modern ways of farming and the rest you deal with it traditionally”*. Lower yields are thus locked in by the high price of inputs, reliance on rain-fed agriculture and use of non-scientific farming with limited extension services.

To minimise anticipated losses and costs, some farmers use a mix of new and local seeds. They farm a portion of their land using more “modern” farming techniques (such as use of fertilisers, pesticides, tractor, etc and improved seed varieties), but farm the rest in a more traditional manner using local seed. A farmer using this approach commented on this split in farming methodologies as follows: *“So, in that small portion if you look after it well and put fertilizers and the weather remains conducive, you will be assured of having a good harvest.”*

Smallholder farmers are aware of what they must do to increase sunflower yields, but lack access to seeds and irrigation equipment to maximise their yields. There is scope to further increase production beyond the notable increases already achieved (Table 1), if seeds are made available and irrigation is installed.

In terms of farming practices, farming is carried out using traditional methods, largely due to lack of finance to purchase equipment. Farmers must save over extended periods of time before they can afford new machines.⁵⁹ Weeding, pruning, spraying and harvesting is thus commonly done by casual labour without the benefit of specialised equipment. Harvesting is

⁵⁸ A ‘sack’ is between 65 and 70kgs

⁵⁹ Interviews with farmers and processors in Dodoma and Iringa

done using the traditional mechanism of ‘threshing’ the flower with sticks and loading the seed into sacks.

A farmer from Dodoma remarked on the lack of access to equipment which limits yields, “*You know when you are preparing the farm you can use a tractor to plough for you and then when the rain comes you are then supposed to sow your seeds but the problem is that we do not have a planter (planting machine), so we actually just randomly throw the seeds over the farm which is more like guess work because you are not guaranteed that anything will come up, and sometimes you might have thrown too many seeds in one spot and crops come up and if you do not hurry and make sure that you remove the excess seedlings so as to create enough space, you may end up affecting everything around that particular spot. So that’s the main problem, there is lack of tools. But also, there is shortage of pesticides, for example when the insects attack the farms then it is a big problem.*”

Farming is only marginally profitable (Table 3). Profits range between \$22 and \$52 per acre if the farmer sells sunflower seeds and between \$64 and \$94 per acre if they process the seed and sell sunflower oil. Importantly, farmers can almost double their revenue simply by storing their seeds and selling them later in the season instead of selling soon after harvest when supply is at its peak, but many are not able to do this because they do not have access to storage facilities or need income immediately after harvesting.

Table 3: Profitability of small-scale farmers (data obtained from interviews)

Profitability of small-scale farmers			
Costs per acre			
Input costs	Cost (TSh)	Unit	Explanatory Notes
Seed cost	2 000	tsh/acre	
Clearing land (labour)	15 000	tsh/acre	
Renting tractor to plough	45 000	tsh/acre	
Renting cows to plough (instead of tractor)	35 000	tsh/acre	
Sowing (labour)	6 000	tsh/acre	
Weeding	30 000	tsh/acre	
	35 000	tsh/acre	
Harvesting (labour)	15 000	tsh/acre	
Transport	1 000	tsh/sack	
Processing	130	tsh/kg	
Yield			
Upper estimate	9	sacks/acre	A sack is 65-70kg
Mid-range	6	sacks/acre	A sack is 65-70kg
Lower estimate	5	sacks/acre	A sack is 65-70kg
Market prices			
Sunflower seed (immediately after harvest)	31 300	tsh/sack	Equivalent to \$218/ton. This is the average of retail prices quoted in interviews.
Sunflower seed (if stored until 'low season')	62 500	tsh/sack	Equivalent to \$436/ton. This is the average of retail prices quoted in interviews.
Sunflower oil (20 L)	50 000	tsh/sack	Calculated. Oil price is Tsh17k/5 litres and each sack delivers 20 - 22 litres of oil

Profitability			
Scenario 1: Small farm (5 acres) with paid labour, selling seeds			
Costs/acre	103 000	TSh	Assumes lowest ploughing and weeding costs
Yield/acre	5	sacks/acre	
Revenue from seeds (immediately after harvest)	156 500	TSh	More likely sales scenario because small farmers have fewer resources to 'wait' for higher prices
Transport costs	5 000	TSh	
Profit (TSh)	48 500	TSh	
Profit (USD)	22	USD	Exchange rate (TSh/USD) for July 2017): TSh2205/USD

Scenario 2: Small farm (5 acres) without paid labour, selling seeds			
Costs/acre	37 000	TSh	
Yield/acre	5	sacks/acre	
Revenue from seeds (immediately after harvest)	156 500	TSh	
Transport costs	5 000	TSh	
Profit (TSh)	114 500	TSh	
Profit (USD)	52	USD	Exchange rate (TSh/USD) for July 2017): TSh2205/USD

Scenario 3: Small farm (5 acres) with paid labour, selling oil			
Costs/acre	103 000	TSh	Assumes lowest ploughing and weeding costs, & oilcake left in lieu of processing cost
Yield/acre	5	sacks/acre	
Revenue from oil	250 000	TSh	More likely sales scenario because small farmers have fewer resources to 'wait' for higher prices
Transport costs	5 000	TSh	Transport of seed to processor (lower end; excludes transport of oil back to market)
Profit (TSh)	142 000	TSh	
Profit (USD)	64	USD	Exchange rate (TSh/USD) for July 2017): TSh2205/USD

Scenario 4: Small farm (5 acres) without paid labour, selling oil			
Costs/acre	37 000	TSh	Assumes oilcake left in lieu of payment for processing
Yield/acre	5	sacks/acre	
Revenue from oil	250 000	TSh	
Transport costs	5 000	TSh	
Profit (TSh)	208 000	TSh	
Profit (USD)	94	USD	Exchange rate (TSh/USD) for July 2017): TSh2205/USD

Source: Compiled by authors based on interviews in Dodoma and Iringa

5.2.1.2 The oil-processing level

Most farmers also process their oilseeds to realise greater value.⁶⁰ They use low-tech, traditional equipment that can process between 3-5 tons of seeds over a 24-hour period.⁶¹ In most cases, oil processing equipment is communally owned, with several farmers within a particular area making use of one oil press.

Processors usually charge about TSh130/kg (equivalent to \$59/ton) to process seeds to oil and oilcake, although the fee is usually waived if the farmer agrees to leave their oilcake as payment. This practice appears to be common.⁶² Processors recover their costs by selling the oilcake at TSh150 – TSh200/kg during the harvest season (a 15 – 54% profit margin over purchase price) but can sell the cake at much higher prices (up to Tsh400/kg, a 208% profit margin) if they store the cake and sell at times of lower supply. Availability of storage thus increases profits significantly.

The oil presses used in Dodoma and Iringa were mainly introduced by politicians who provided limited support for sustainable operation, especially with regards to ongoing maintenance. Extraction rates are low and filtration systems are rudimentary, leaving impurities in the oil (Figure 25).⁶³ Processors expressed a need for improved processing equipment to increase output and earnings and to meet the formal standards required to produce branded goods and enter formal retail markets.⁶⁴

⁶⁰ Interviews with farmers and processors in Dodoma and Iringa

⁶¹ Interviews with farmers and processors in Dodoma and Iringa

⁶² Interviews with farmers and processors in Dodoma and Iringa

⁶³ Interviews with farmers and processors in Dodoma and Iringa

⁶⁴ Although extraction rates are generally low, the oil content of seeds also depends on where the sunflower seed is grown. Sunflower grown in the drier parts of the country such as Kongwa, Arusha, and Kibaigwa have a higher oil content up to 18 to 20 litres per sack while seeds from the wet regions of the country yield about 15 litres per sack. To achieve the highest oil content, farmers should harvest the seeds while they still have moisture and store the seeds properly.

Figure 25: Processing equipment in Tanzania



Several processors also report experiencing significant downtime from power failures, which lead to waste of sunflower cake and machine blockages that are difficult to clear. These processors reported struggling to find technicians to assist with breakdowns. They are forced to pay high call-out rates to technicians based in urban areas who charge exploitative prices. The lack of local technical skills available to conduct maintenance and perform repairs in rural areas increases the cost of service significantly. Processors from Iringa stated that *“.....To make it worse, the spare parts are not even available here in our local area, so when it so happens that we need a spare part, we actually scratch our heads first because we have to get the parts from Dar-Es-salaam and sometimes you may find that there is no technician in the local area to fix the machine. So this means that you also have to get a technician from Dar-Es-Salaam at your own costs, and this includes paying for the technician’s transport, accommodation and everything else.”*⁶⁵

All oil produced by smaller informal processors is sold in a semi-refined or crude form for household consumption in local informal markets. Only a small proportion of the oil is double-refined as local customers prefer semi-refined oil to double-refined oil. There are two different types of processing machines, those which use power [which] are much better and give lots of oil than manual machines which are commonly used in small settings in the rural areas.⁶⁶

A central challenge identified by both farmers and processors is that that they lack access to markets to sell their seeds and oil and consequently have to travel long distances to larger markets to sell their produce.⁶⁷ Because they lack alternatives, farmers are reportedly at the mercy of speculative brokers who purchase seed at very low prices, reducing farmers’

⁶⁵ Interview with a processing group, Tanzania

⁶⁶ Interviews with farmers and processors, Iringa in Tanzania

⁶⁷ In the interviews, ‘markets’ are used in a literal sense, referring to large marketplaces that sell consumer goods. It does not refer to formal retail stores only.

returns. The traders stock the seeds and sell at a later date at a higher prices during off-season.⁶⁸ Farmers stated that, “The problem lies in dealing with middlemen/traders. Sunflower seeds may cost 30,000 shillings or 35,000 shillings today, but the problem is that there are traders who buy and stock the seeds and wait for the prices to go up and that’s when they can sell.” In addition, “Another challenge is that it is a bit difficult to enter into several markets due to the set standards that exist. For example, it is hard to take sunflower oil that we produce straight to the supermarkets due to the quality of production being low. On the other hand, there is also a challenge regarding the standards authorities that are supposed to assist farmers and processors to meet required standards such as Small Industries Development Organisation (SIDO) and Tanzania Bureau of Standards (TBS) but are not very supportive. For example, TBS normally sets standards and communicates these standards to farmers and processors but they never show us how to actually reach those standards, in other words what should be done to achieve such set standards.”⁶⁹

Processors in Dodoma and Iringa claim that despite increased sunflower production and increased small-scale processing in their areas, edible oil demand in urban areas is still met by imports. A small farmer-processor from Dodoma stated “...*there is more to be done because we do not service the [entire] market as some of the oil is actually imported from outside. There is a great need for us to consider using better seeds and maybe use irrigation and farm more so that we may be able to cover the entire national market because currently there is a very high demand but supply is not enough so that’s why there is importation of sunflower oil.*” There is significant scope to integrate smaller processors and farmers into more formal value chains by supplying to large, more established processors.

In summary, interviews confirm that production of sunflower seed has increased significantly but that there are still notable challenges with regards to local processing.⁷⁰ Local producers still extract oil with simple mechanical extractors and to improve extraction rates and integrate into regional value chains, Tanzanian processors will have to upgrade their refining processes and invest in improved processing equipment. However, their experience with the existing equipment shows that any new investments must be supported by the provision of technical training to create local capacity to maintain equipment. There is also a need to integrate smaller processors into the value chains of the large refiners in Tanzania who reportedly have refining capacity but import their edible oil requirements as opposed to buying from local producers or processors.

6 Relative prices and the impact of trade agreements and tariffs

One of the mechanisms we explore for deepening the regional oilseeds value chain is whether there are opportunities for increased trade between Tanzania and South Africa in oilseeds or oil-based consumer goods (cooking oil and margarine). As part of this assessment, we review the trade and tariff agreements between the two countries to see whether there are any tariff barriers impeding value chain development. We find that despite the preferential trade regime between Tanzania and South Africa, the two countries are not significant trade partners in the oilseeds value chain. This is because both South Africa and Tanzania have zero-tariff agreements with other countries from whom they import oilseeds

⁶⁸ Interview with farmers and processors, Iringa Tanzania

⁶⁹ Interview with District Agriculture Officer, Tanzania

⁷⁰ For previous studies with similar findings see the Agribusiness Innovation Center of Tanzania Scaling Value Adding, Post-Harvest Processing Agribusinesses.2012. infoDev, Finance and Private Sector Development Department. Washington, DC: World Bank.

and crude edible oil. Furthermore, large, established global producers are competitive despite facing duties to access the South African market.

6.1 Tariffs and trade agreements

Tanzania and South Africa are signatories to the Southern African Development Community (SADC) Free Trade Agreement, and the Tripartite Free Trade Agreement (Table 4). Both agreements aim to promote the development of local production capabilities and improve intra-regional trade.

Under these agreements, Tanzania can access the South African market at a zero duty (Table 5). However, South Africa applies a zero-tariff system to several countries, including countries in the European Union. This means that Tanzania has no tariff protection relative to large oilseeds-producing countries like Romania when exporting oilseeds or crude oil to South Africa.

Additionally, some of South Africa's key import partners for oilseeds and processed oils are countries that face the Most Favoured Nation (MFN) tariffs to access the South African market, such as Argentina (which faces a 10% tariff on sunflower oil). Despite these tariffs, these countries are still price competitive, partly due to low per unit transport cost because they ship the oil in bulk tankers.

Table 4: Trade agreements between South Africa and Tanzania

SADC Free Trade Agreement

Member states	Objectives
Angola, Botswana, DRC, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe	<ul style="list-style-type: none"> • Increased domestic production • Greater business opportunities • FDI and joint ventures • Higher regional imports and exports • Access to inputs and consumer goods • Creation of regional value chains • Employment opportunities

Tripartite Free Trade Agreement

Member states	Objectives
<p>The member states of the following regional formations:</p> <ul style="list-style-type: none"> • East African Community (EAC) • Southern African Development Community (SADC), and • Common Market for Eastern and Southern Africa (COMESA) 	<ul style="list-style-type: none"> • Reduce trade barriers and costs

Source: (Joint Agribusiness Department of Agriculture, 2014)

Table 5: South Africa's tariff regime on sunflower products

Tariff regime	Applied Tariff (2016)	Large global exporters	South Africa's key import sources
Sunflower oilseeds whether or not broken (code 12060000)			
Intra SACU	0%	Romania, China, Bulgaria, France	Bulgaria (zero duty), Argentina (MFN duty)
Most Favoured Nations (MFN) duties	9.40%		
Preferential tariff for European Union countries	0%		
Preferential tariff for SADC countries	0%		
Sunflower-seed crude oil (code 151211)			
Intra SACU	0%	Ukraine, Russia, Argentina	Bulgaria (zero duty), Spain (zero duty), Argentina (MFN duty), France (zero duty)
Most Favoured Nations (MFN) duties	10%		
Preferential tariff for European Union countries	0%		
Preferential tariff for SADC countries	0%		
Sunflower-seed or safflower oil and their fractions, whether or not refined, but not chemically modified (excluding crude) (code 151219)			
Intra SACU	0%	Turkey, Russia, Hungary, France	Spain (zero duty), Bulgaria (zero duty)
Most Favoured Nations (MFN) duties	10%		
Preferential tariff for European Union countries	0%		
Preferential tariff for SADC countries	0%		

Source: ITC Trademap

Turning to Tanzania, we note that all its margarine imports are from Kenya (approximately US\$ 5.4 million in 2016). This may be because Kenyan products can enter the Tanzanian market at zero duty under the EAC trade agreement and the geographic proximity makes it commercially viable for Tanzania to import from Kenya where Unilever Private Limited Company (Plc) has a large fats and oils manufacturing facility.

Tanzania imposes a higher tariff than South Africa on imports of processed sunflower products from outside SADC, potentially to protect its nascent sunflower sector (Tanzania applies 25% duty on imports of processed sunflower products from deep sea markets while South Africa applies only 10% duty) (Table 6). Tanzania's higher tariffs on imports may be part of the government's efforts to promote value addition and production capabilities in the local industry⁷¹.

Table 6: Tanzania's tariff regime on sunflower products

Tariff regime	Applied Tariff (2016)	Large global exporters	Tanzania's key import sources
Sunflower oilseeds whether or not broken (code 12060000)			
Most Favoured Nations (MFN) duties	10%	Romania, China, Bulgaria, France	Malawi (zero duty), India (MFN duty)
Preferential tariff for EAC countries	0%		
Preferential tariff for SADC countries	0%		
Preferential tariff for South Africa	0%		
Sunflower-seed crude oil (code 151211)			

⁷¹ Tanzania budget speech 2016/2017

Most Favoured Nations (MFN) duties	10%	Ukraine, Russia, Argentina	Ukraine (MFN duty) and Mozambique (zero duty)
Preferential tariff for EAC countries	0%		
Preferential tariff for SADC countries	0%		
Preferential tariff for South Africa	0%		
Margarine, excluding liquid margarine (code 151710)			
Most Favoured Nations (MFN) duties	25%	Netherlands, Belgium	Kenya (zero duty)
Preferential tariff for EAC countries	0%		
Preferential tariff for SADC countries	0%		
Preferential tariff for South Africa	0%		
Edible mixtures or preparations of animal or vegetable fats or oils and edible fractions of different fats or oils 151790			
Most Favoured Nations (MFN) duties	25%	Indonesia, Belgium, Netherlands, USA, Malaysia	Malaysia (MFN duty), Singapore (MFN duty)
Preferential tariff for EAC countries	0%		
Preferential tariff for SADC countries	0%		
Preferential tariff for South Africa	0%		

Source: ITC Trademap

6.2 Pricing and relative competitiveness – are Tanzanian prices competitive against prevailing South African import parity prices?

This section evaluates the prevailing oilseeds prices in Tanzania and compare these against South Africa's import parity prices. The South African producer price of sunflower seed decreased by 26% from \$536/ton in 2012 to \$414/ton in 2016 (Figure 26).

Sunflower import parity prices, quoted ex-EU, were \$384/ton in October 2017 (international FOB). Shipping, insurance and port (discharging) charges add \$23/ton, \$5/ton and \$14/ton respectively bringing landed cost in Durban, South Africa to \$426/ton.⁷² Assuming Tanzanian oilseeds have a similar oil content to imports from the EU (and there are no indications to the contrary) and that shipping and transport charges would be similar to European exports, Tanzania would be competitive against current South African imports market at an export price below \$384/ton.

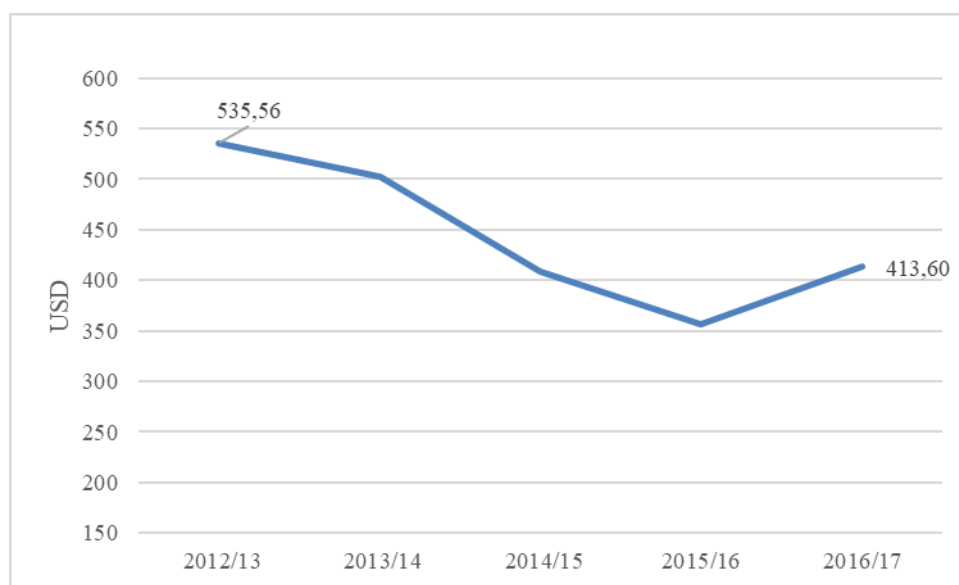
In late July 2017, Tanzanian sunflower seed was reportedly sold to processors at \$437/ton, though the seed was purchased from farmers for around \$297/ton.⁷³ The interviews for this study found that producer prices were even lower, at about \$218/ton soon after harvest. Even at the higher producer price of \$297/ton, Tanzanian sunflower is competitive against South Africa's existing imports from Europe. However, traders add an additional margin of about \$140/ton which makes the Tanzanian imports uncompetitive against exports from European markets, especially if we include transport costs to Durban which adds an additional \$42/ton.

⁷² Prices and cost data obtained from SAGIS. Last Accessed October 2017

⁷³ Azania Post (26 July 2017). Agriculture Markets Development Trust to support sunflower growers in Tanzania. Available [here](#).

The interviews conducted for this study did cite large trader margins (and limited bargaining power of farmers) as a constraint to the development of the downstream sunflower processing sector. Therefore, incentives by the government need to be aligned to make sure that the margin obtained by all producers tip the balance, where farmers receive a good price and processors obtain cost efficient raw material. In addition, government should incentivise job creation (vs. job destruction from misaligned incentives that encourage raw material exportation) and technology transfer, while ensuring that consumers receive reasonably priced oil of adequate quality. In summary, Tanzanian farmers can produce sunflower seed at competitive prices, but the network of traders who aggregate seed and transport seeds to markets currently adds significant cost. If aggregation and transport could be made less costly (and more efficient), Tanzania could compete against South Africa's existing imports.

Figure 26: Sunflower producer price in South Africa (USD/ton)



Source: SAGIS

7 Assessment: Key issues in the development of the sunflower value chain

This section sets out key issues impeding the development of a regional value chain in oilseeds as well as key challenges in upgrading the oilseeds value chain in Tanzania. It suggests initiatives that could be implemented to address these constraints.

Overall, there are compelling reasons to invest in agro-processing in Tanzania. A South African agro-conglomerate with experience in managing agricultural projects in Tanzania views the country as a favourable investment destination with large tracts of arable agricultural land currently lying fallow and versatile production capabilities. A variety of crops including oilseeds, rice, maize, cassava, sorghum, and millet can be sustainably produced across the entire country.⁷⁴ A major challenge, in their view, is establishing sustainable and reliable production that would justify investment in local processing facilities. This does not necessarily require the establishment of large scale/commercial farms. The firm believes that smaller farmers can provide good quality supply on a sustainable basis, but note that this

⁷⁴ Interview with agro-conglomerate, South Africa.

requires consensus-building and a commitment to providing support to smaller farmers. None of this is considered a major barrier to investment.⁷⁵

Despite the positive sentiment, there are some challenges. These are discussed below.

7.1 Production capabilities and security of supply

One of the principal considerations in setting up an oilseeds processing facility is security of supply. The decision to invest in a large crushing and refining facility depends on whether the processor can rely on steady supply of raw material to run the plant efficiently. However, it is possible to establish small plants in local areas. A South African equipment manufacturer suggested that a mechanical extractor that processes about 10 000 tons/annum can be installed for ZAR5.7 million.⁷⁶

The absence of processing facilities creates a 'chicken or egg' conundrum as it is not clear whether investment in processing facilities or increased production should come first. If a large processing plant is commissioned, farmers would likely increase production to take advantage of the demand for their crop created by the established plant. A private processor, on the other hand, would not be willing to invest in a processing facility if it were not assured of a certain minimum supply of oilseeds.

This coordination problem could be solved by an initiative by the government to invest in a processing facility or upgrade the equipment of existing small processors, who are already embedded within rural supply networks. These investments may make losses initially, but would become viable as production increases and as new markets are developed.

7.2 Investment in storage facilities

To run an oil processing facility efficiently, the processor requires access to year-round supply of oilseeds. This requires investment in storage facilities. As discussed above, access to storage also allows the farmer to realise greater value as they are not forced to sell immediately after harvest when prices are lowest.

Several storage options are available on the South African market, from smaller 30-ton steel silos that cost approximately R45 000 to larger silos capable of storing upwards of 1000 tonnes. These larger silos can be constructed at R2 000/ton, including the cost of civil works required to erect the silo.⁷⁷

7.3 Investment in handling and grading

In many agro-processing value chains, small improvements in the handling of the product add significant value to the product. In oilseeds, processors say that the first step in adding value to oilseeds is to invest in cleaning, sorting and grading the seeds. In oilseeds like

⁷⁵ Interview with agro-conglomerate, South Africa.

⁷⁶ This is a conservative utilisation estimate and is based on 5 ton/hour, 8 hours per day, 5 days per week, and 50 weeks per year. The equipment can, however, be used for more than one oilseed crop so the scale need not be reached in one specific crop. Chemical extractors that process at the same rate 8 tons/hour are also available at about R8mn but they are not as easy to install, more dangerous to operate and are less environmentally sustainable.

⁷⁷ ABC Hansen, a subsidiary of the ABC Africa Group, provides these (and other) storage solutions. The firm also manufactures and sells a range of oil processing equipment suitable for oilseeds and groundnuts. For further information on ABC Hansen, see <http://www.abchansenafrica.co.za/contact/who.php>

sesame, for example, sorting allows the producers to realise greater value by exporting higher grade seed at better prices and crushing smaller or lower grade seed. The sesame oil, which is a high value seed oil, can be produced from seeds that would fetch a lower price on seed export markets.

7.4 The development of a commodity exchange

The establishment of a commodity exchange would allow small farmers to convert grain into a tradable instrument against which they can borrow funds. The establishment of an exchange requires several associated investments, such as investment in handling and storage equipment to ensure that the grain is stored at the right moisture content and is available for delivery throughout the year. Furthermore, it is important to invest in systems that ensure access to reliable data on crop production, anticipated yields and crop estimates. The efficient functioning of an exchange also requires a reliable grading system, preferably aligned to global standards to facilitate integration into global trading markets. Currently, there is no systematic way of differentiating between different grades of seeds in Tanzania.⁷⁸ These databases would also be useful from a food security perspective, as it will allow stakeholders to track production, benchmark yields across regions and identify challenges in a timely manner.

7.5 Competitiveness

Oilseeds are a globally traded commodity and prices are set by the largest exporters. In the case of both sunflower and canola, the price is determined by countries within the EU.⁷⁹ As discussed in section 6, the EU faces no duties to export to South Africa under the EU-SA FTA. Consequently, there is no tariff cover for potential exporters in Tanzania.⁸⁰ Tanzanian production and quality (specifically the oil content of seeds) would have to be competitive against established East European markets for South African importers to consider it a viable alternative.

One of the key actors that determines oil content is on-farm management and particularly irrigation. Improving competitiveness depends on expanding extension services, providing access to improved seed cultivars at reasonable prices, and rolling out irrigation systems to small farmers. All of this must be underpinned by training support to ensure that farmers can maintain the irrigation systems.

In addition to the direct costs of production borne by Tanzanian farmers, their competitiveness is also negatively affected by the additional costs of poor transport and logistics infrastructure which increases the costs of bringing goods to market or ports.

7.6 Transport

Transport cost is a significant cost component of oil-based consumer goods, second only to the cost of purchasing crude oil or seed itself.⁸¹ Much of this cost is added by road freight. South African processors report that the total cost of transporting oil from Indonesia to Durban harbor (about 6000 nautical miles/ 11 112km) is \$42 - \$45/ton. In contrast, the cost

⁷⁸ Interview with equipment supplier, South Africa.

⁷⁹ Interview with South African oil processors.

⁸⁰ Interview with South African oil processors.

⁸¹ Interview with South African oil processor.

of transporting oil by road freight from Durban to Johannesburg (just 562km) is the same at \$43/ton.

Tanzania's deep-sea port gives it an advantage over landlocked countries like Zambia in terms of exporting goods to South Africa. Although sea freight is less costly than road transport, it comes with the additional requirement of larger volumes and is less flexible than road transport where smaller mixed loads can be transported more cost-effectively.

Although most consideration is usually given to transport between countries, some processors have found that transport within countries, from production regions to ports, is also a major constraint and have mentioned that this may be a problem within Tanzania. Intra-country transport links from production areas to ports can be the deciding factor in whether countries are able to integrate into regional value chains.

7.7 Access to Finance

Farmers and processors in Tanzania raised their inability to access finance as a key constraint to increasing production and engaging in processing and refining of oil at a larger scale. Farmers tend to use local cooperatives (SACCOs) to access finance or save for extended periods of time to purchase equipment and inputs. A processor in one of the study regions stated that, *“Actually, it was when we just first started, we got a loan from SIDO, it was about 3 million shillings. Our machine actually used diesel but there were other two machines close by which used electrical motors instead of fuel. So since we used diesel and at that time it was a bit expensive we could not survive competition because every time you hear our machine then there is probably money being used unlike electricity that does not cost much.....we never managed to recover our money and therefore we could not return the 3 million loan. So this caused SIDO to confiscate the machine as we could not pay back the loan.”*

8 Conclusion: initiatives for the development of a regional oilseeds value chain

This report explores the potential for the development of a regional value chain in edible oil between South Africa and Tanzania. Based on a desktop review of trade and production data, it initially seemed that there was potential for increased bilateral trade in oilseeds and processed oil-based products between South Africa and Tanzania. We evaluated whether South Africa could shift its existing deep-sea imports of sunflower seeds and crude sunflower oil to Tanzania and whether Tanzania could, in turn, shift its existing margarine imports to South Africa. The research shows that this is unlikely due to the following factors. South Africa imports good quality sunflower seed and crude oil at low prices from markets in Eastern Europe. To compete with these markets, Tanzania must consistently export large quantities of seed or crude oil in bulk tankers at globally competitive prices. With respect to margarine, Tanzania currently imports margarine and fat spreads from Kenya and the viability and benefits of shifting its imports to South Africa are not clear.

However, the research highlighted opportunities elsewhere in the value chain.⁸² South Africa has a well-developed oilseeds-to-edible oil sector with established manufacturers of storage and oil-processing equipment. The Tanzanian oilseeds-to-edible oil sector value chain is less developed with many small processors and significant potential for investing in storage and processing equipment. This means that there is potential for South African equipment

⁸² Also see Appendix 2 for alternative value chains suggested by South African interviewees

suppliers to support upgrading of oil-processing facilities within Tanzania by supplying storage equipment and improved processing equipment. The South African equipment suppliers would benefit in terms of sales, but could also support the development of technical skills within Tanzania. As part of the commissioning and handover of new machinery, local technicians can be trained to maintain and service the equipment.

It would be important to work with existing institutions to implement these initiatives. The AIC has been identified as a potential partner.

8.1 Proposed initiatives

8.1.1 Invest in silos/storage solutions in oil-producing regions

Information from interviews suggest that farmers can double their returns from selling oilseeds by simply storing the seeds until later in the year and not selling seeds immediately after harvest. In fact, if seeds are sold during times of low supply, farmers can realise a higher return from selling the seeds than converting the seeds to oil and selling oil immediately after harvesting.

Improving revenue from oilseeds and increasing production of oilseeds will thus require investment in storage capacity. As discussed above, there are various options available within the South African market, from small 30-ton steel silos to much larger silos capable of storing more than 1000 tons of oilseeds or grain. Investment in storage facilities will also allow farmers greater bargaining power in price negotiations as they will no longer be forced to sell their seed at, or close to, harvest time. The storage systems should also be accompanied by a warehouse receipt system and the development of a globally recognized grading and sorting system to facilitate the trade of oilseeds on a global scale.

8.1.2 Investment in irrigation systems

The lack of irrigation systems is a primary constraint to planting improved seed varieties, which are known to increase the yield of small-scale farmers. Installation of efficient drip or sprinkler irrigation systems would reduce the risk to farmers and encourage them to plant improved varieties.

8.1.3 Invest in processing equipment

Although there are many small oil processors in Tanzania, these processors typically use outdated machinery that is prone to breakdown, produces low quality/minimally refined oil and is difficult to service. There is potential for South African firms that manufacture oil presses and refining equipment to supply improved small to medium scale plants and to combine these investments with skills transfers or the development of local trade schools to train technicians in basic maintenance of the processing equipment (Figure 27).

Figure 27: South African processing equipment



Importantly, both initiatives rely on the aggregation of output from dispersed farmers. For this to happen, considerable time will have to be invested in building consensus and support amongst farmers and processors around storage, sorting and grading, and increased processing capacity. However some farmers in certain regions already seem to have organised themselves. Processors will also have to invest in developing markets for larger quantities of oil. Generally, such investments in large-scale processing would be driven by commercial entities. In this case, a suitable entity to anchor these investments and drive value chain development must be found.

8.1.4 Market sizing and prioritisation of key markets

The AIC, which we have suggested as a potential partner for the implementation of initiatives in the oilseeds value chain, already assists farmers in finding and entering new markets in the domestic economy. One of the potential initiatives could be to support the AIC to find commodity traders and consumers in markets across the region. South African traders, for example, have indicated that they would be willing to purchase oilseeds from Tanzania at the right price and quality, but have simply not considered it as a potential source and were surprised by the spectacular increase in oilseed production in the country.⁸³ Tanzania's access to a deep-sea port means that it can be integrated into international markets more easily. More importantly at a regional level⁸⁴, sunflower oil imports were \$11 million in 2016 while sunflower seed imports were \$3.3 million in 2016 (excluding DRC for which no trade data is available). There is thus regional demand to be met if local farmers could be connected to consumers across the region.

⁸³ Interviews with local and international grain traders in South Africa.

⁸⁴ Includes data for Kenya, Rwanda, Burundi, Malawi, Uganda. No data is available for the DRC, which means that this underestimates regional demand.

APPENDICES

Appendix 1: Large and lead firms in the vegetable fats and oils value chain in South Africa

Table 7 shows the number of players involved at the different levels of the value chain for a range of seeds starting from supply of seed, storage and processing. This section will focus on the processors of sunflower seed who include both upstream sunflower seed crushers and downstream manufacturers of secondary sunflower oil and fats products.

Table 7: Number of firms in the oilseed value chain, October 2016

	Seed suppliers	Processors	Traders and storage
Sunflower	15	60	36
Soybean	22	49	45
Canola	7	10	8
Groundnut	18	36	38

Source: *Who Owns Whom Report 2016*

Due to a lack of recent data on crushing capacity, Table 8 shows the crushing capacity of the largest sunflower seed crushers in South Africa in 2013.⁸⁵ The major sunflower crushing companies involved in the sunflower oil and oilcake industry include Continental Oil Mills, Epko Oil Seed Crushing, Nola Industries, Sun Oil Refineries, Sunola Oil Mills, Willowton Oil Mills, Central Edible Oils (CEOCO) and Nedan Oil.⁸⁶

Willowton Group is a vertically integrated company involved in the production and refining of crude oil for the manufacture of industrial and secondary consumer products. At the upstream crushing level, the group accounts for approximately 23% market share based on total crushing capacity in 2013 (Table 8). At the downstream level, Willowton is a key competitor in the margarine and industrial oil products and is the leading player in the sunflower oil market with its Sunfoil brand.⁸⁷

Continental Oil Mills is a vertically integrated firm involved in the crushing of sunflower seeds and refining of crude oil. The company accounts for about 17% percent of total crushing capacity in 2013 (Table 8). At the downstream level, Continental Oil Mills manufactures and bottles edible vegetable oils, mayonnaise and dips. The company's main brand, *Excella*, is one of the leading brands on the sunflower oil market.⁸⁸

Smaller crushers including **Central Edible Oils**, **Epko Oil Seed Crushing** and **Nedan** operate only at the upstream crushing level of the value chain and are not involved in the manufacture of branded consumer products. Central Edible Oils is involved in the crushing of oilseed for production of crude sunflower oil and accounts for about 11% market share of total crushing capacity as of 2013 (Table 8). The company supplies crude oil to

⁸⁵ Bureau for Food and Agricultural Policy (BFAP). December 2013- January 2015. The South African Sunflower Complex.

⁸⁶ Bureau for Food and Agricultural Policy (BFAP). December 2013- January 2015. The South African Sunflower Complex.

⁸⁷ Interview with oil processors, South Africa.

⁸⁸ Interview with oil processors, South Africa

Unilever and other South African refineries.⁸⁹ Epko Oil Seed Crushing is a contract manufacturer of crude sunflower oil with about 7% market share of total crushing capacity in the same year (Table 8). However, the company's crushing capacity has increased by 50% from 120 000 tons in 2013 to 180 900 tons in 2016.⁹⁰ Nedan operates as a sunflower seed wholesaler and a crusher in the value chain. The company sells oilseeds in bulk to other crushers. It also operates a crushing plant producing various oils and proteins and accounts for approximately 5% of total crushing capacity (Table 8). The crude oil is supplied in bulk to industrial customers.⁹¹

Table 8: Sunflower crushing companies

Major Oilseed crushing companies	Location	Refinery/plant	Crushing capacity in 000t/year in 2013
Continental Oil Mills	Viljoenskroon	Plant and oil refinery	120
	Randfontein	Plant and oil refinery	192
Epko Oil Seed Crushing	Litchenburg	Plant	120
Nola Industries	Randfontein	Plant and oil refinery	120
Willowton Oil Mills	Pietermaritzburg	Plant and oil refinery	168
	Isando	Plant and oil refinery	240
Central Edible Oils (CEOCO)		Plant	192
Nedan	Potgietersrus	Plant	96
Sun Oil Refineries	Durban	Refinery only	
Sunola Oil Mills	Port Shepstone	Refinery only	
Epic Foods	Southdale	Refinery only	
Gauteng	Gauteng Oil	Plant and oil refinery	120
Recent entrants			
Noble	Standerton		269
Majesty	Krugersdorp		154

Source: BFAP industry survey 2013

At the downstream level, key players in the manufacture of secondary products include Unilever South Africa and Epic Foods in addition to the vertically integrated firms such as Willowton Group, Wilmar Continental Edible Oils and Fats and Nola Industries.

Unilever South Africa operates at the downstream level of the value chain and receives much of its industrial oils and fats inputs from **Sime Darby Hudson & Knight** which operates an oil refinery.⁹² Unilever owns a margarine manufacturing factory and is involved in marketing and distribution of food and household consumer products. It is the largest firm in

⁸⁹ Who owns whom report. 2016. Manufacture of vegetable and animal oils and fats.

⁹⁰ Who owns whom report. 2016. Manufacture of vegetable and animal oils and fats.

⁹¹ Who owns whom report. 2016. Manufacture of vegetable and animal oils and fats.

⁹² Interview with an oil processor, South Africa.

the margarine market with a 60-70% market share.⁹³ The company's main brands include Rama, Flora, Stork and Country Spread.

Epic Foods operates at the downstream level of the vegetable fats and oils value chain producing fats and oils for household and industrial purposes. The company also owns a refinery and processes crude or refined oil sunflower oil at the premises for use in the manufacture of cooking oil, margarine, baking and pastry fats and dips. The plant produces 2 000-2 500 tonnes per month of margarine and 1 000 tonnes per month of industrial products.⁹⁴ Its main brands are Blossom, Z-Lite, Ole' and Ultra.

⁹³ Interview with processor, South Africa.

⁹⁴ Interview with oil processor, South Africa

Appendix 2: Alternative value chains proposed by South African interviewees

Several interviewees suggested alternative value chains that could be explored in addition to sunflower. These include marula, soya, sesame and groundnuts.

- i. Marula fruit produces high value oil which is used primarily in skincare products. The trees bear fruit within in a year of planting and yields increase over time
- ii. Investment in soya was suggested to meet growing demand for animal feed within Tanzania (including for fish feed) but is also used in high protein food supplements distributed by multilateral aid organizations such as the World Health Organisation
- iii. Peanuts also provide a cheap source of energy and protein and there are various potential markets, including processing nut butters for local/regional consumption or blanched peanuts for export to higher value markets in the USA and Europe.
- iv. Sesame seed and sesame oil are both high value crops with established consumer markets in China. Tanzania had already increased sesame production significantly (see Table 1) and the same oil-processing equipment used for sunflower could also be used for pressing sesame seeds.