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Growth and development of the fruit value chain in Tanzania and South Africa

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Abstract

The fruit value chain has high growth potential in export markets with opportunities for increased participation of small farmers. Growth in global demand for fresh fruit and related processed fruit products presents opportunities for developing countries to participate in high value markets. However, realising such potential requires building supply chain and technological capabilities to access export markets. This includes in and bringing together access to quality fruit varieties, production technologies, standards with logistics and marketing. This paper assesses opportunities for value chain upgrading and increased trade in the fruit value chain between South Africa and Tanzania. Tanzania produces substantial quantities of fruit but has limited capabilities to export with significant post-harvest losses. South Africa, on the other hand, is globally recognised as a leading exporter of fruit and processed fruit products with capabilities in production, standards and logistics. Key findings show that there are limited opportunities for trade in fresh or processed fruit products between the two countries due to poor infrastructure in the region to support trade in fresh fruit. However, the best opportunities for value chain upgrading are in skills and technical advice between South Africa and Tanzania given the different levels of capabilities along the value chain.

JEL classification: L52, L66, O13, O14

Key words: fruit, value chain, production, upgrading, trade, standards, Tanzania, South Africa

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1 Background

This study forms part of a broader research programme on regional industrialisation undertaken by the Department of Trade and Industry (DTI) and coordinated by TIPS. It is informed by SADC's efforts to promote joint industrialisation as part of the region's integrated development agenda. In pursuit of this, a series of studies on regional value chains were conducted to assess opportunities for development and upgrading.

This report assesses opportunities for upgrading in the fruit value chain within South Africa and Tanzania and potential opportunities for increased trade in goods and services between the two countries in the horticultural sector, with a focus on fresh and processed fruit. The research was undertaken by the Centre for Competition, Regulation and Economic Development (CCRED) based at the University of Johannesburg in partnership with the Policy Research for Development (REPOA), based in Dar es Salaam. The objective of the research programme is to map the current structure of the value chain and to identify mutually beneficial opportunities for growth, employment and industrialisation in both countries. This includes developing a shared understanding of any challenges that may impede value chain development within and between Tanzania and South Africa and identifying mutually beneficial, collaborative industrialisation initiatives.

The fruit value chain was chosen because Tanzania produces substantial quantities of fruit (and has potential to further increase production) but it experiences significant post-harvest losses of 40-60% of its crop. South Africa, on the other hand, is globally recognised as a leading exporter of high-quality fresh fruit and is an established producer of processed fruit products. The paper evaluates whether there are opportunities for increased trade in fresh and processed fruit between the two countries or whether there are opportunities for South African producers and processors with access to competitive global markets to support upgrading of the fruit value chain in Tanzania. The research also evaluates whether the regional trade deficit in some processed fruit products can be replaced by increased production within SADC, particularly in Tanzania where there is significant scope to increase production.

Through interviews with South African fruit processors and producers (farmers) in Tanzania, we tried to understand the following:

1. What opportunities exist for bilateral trade in fresh fruit and processed fruit products between South Africa and Tanzania?
 - a. Does Tanzania produce any fruit that is in short supply in South Africa?
 - b. Does South Africa currently import fruit or fruit products from outside the region that can be sourced from Tanzania instead?
 - c. Does Tanzania import processed fruit products from deep-sea sources that can be imported from South Africa instead?
2. How did South African producers attain global accreditation and recognition as leading fruit exporters? What lessons does this hold for Tanzania?
3. Based on existing capabilities, is there potential for South African processors to invest in processing facilities in Tanzania or to support upgrading within the Tanzanian fruit value chain?

We find that the best opportunities for value chain upgrading are in skills and technical cooperation between South Africa and Tanzania, given the capabilities of South African firms in the production, export, processing, and transportation of fruit. There are limited opportunities for trade in fresh or processed fruit products between the two countries.¹

The paper proceeds as follows: section 2 reviews value chain literature with a focus on the fruit value chain. Section 3 sets out our methodology. Section 4 provides an overview of production and trade data in South Africa and Tanzania. Section 5 describes the fresh fruit value chain and the main findings from our interviews. Section 6 identifies proposals for joint industrialization initiatives and section 7 concludes.

¹ Interviews with fruit exporters and processors, South Africa

2 Global value chains: Industrial upgrading and development of capabilities in global fruit value chains

This paper uses the global value chain (GVC) framework to identify opportunities for industrial upgrading and development of capabilities in the fresh and processed fruit industry. The GVC framework provides a useful methodology for tracing patterns of value creation as well as understanding power and governance across the full range of economic activities within an industry. It does so by exploring the linkages amongst geographically dispersed economic activities and actors.²

The GVC literature employs two core concepts to assess global industries, (1) governance and (2) industrial upgrading. Governance refers to authority and power relationships that determine the allocation and flow of resources within a value chain.³ The role played by powerful 'lead' firms in coordinating production activities and shaping the distribution of profits and risk within an industry is central to understanding governance structures.⁴

Lead firms control production through setting and enforcing product and process parameters including standards and protocols that must be met by other players operating in the value chain. This includes controlling decisions about what to produce, how to produce and how much to produce.⁵ Governance structures determine the opportunities for firms at lower levels of the value chain to move up into higher value-added activities. Understanding the governance of value chains is thus important for identifying how power and rents are distributed along value chains.⁶

While governance is about understanding the value chain in a "top-down" manner, upgrading takes a "bottom-up" approach, exploring how firms or countries can maintain or improve their positions within global value chains. Opportunities for upgrading and the extension of capabilities takes four forms:⁷

- i. *process upgrading*: transforming inputs into outputs more efficiently by designing efficient production processes using technology or reorganising production systems;
- ii. *product upgrading*: producing more sophisticated products;
- iii. *functional upgrading*: acquiring new functions or roles in the chain; and

² Gereffi, G. and Fernandez-Stark, K. (2011). *Global value chain analysis: A primer*. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA. Available [here](#).

³ Gereffi, G. (1994). *The organisation of buyer-driven global commodity chains: How U.S. Retailers shape overseas production networks*. Greenwood Press, Westport, CT. Available [here](#).

⁴ Gereffi, G. and Lee, J. (2012). *Why the world suddenly cares about global supply chains*. Journal of Supply Chain Management, 48 (3).

⁵ Humphrey, J. and Schmitz, H. (2002). *Developing country firms in the world economy: Governance and upgrading in global value chains*. Regional Studies, 61/2002.

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

⁶ Gereffi, G. and Lee, J. (2012). *Why the world suddenly cares about global supply chains*. Journal of Supply Chain Management, 48 (3).

Gereffi, G. and Lee, J. (2014). *Economic and social upgrading in global value chains and industrial clusters: Why governance matters*. Journal of Business Ethics 133(1), 25-38.

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

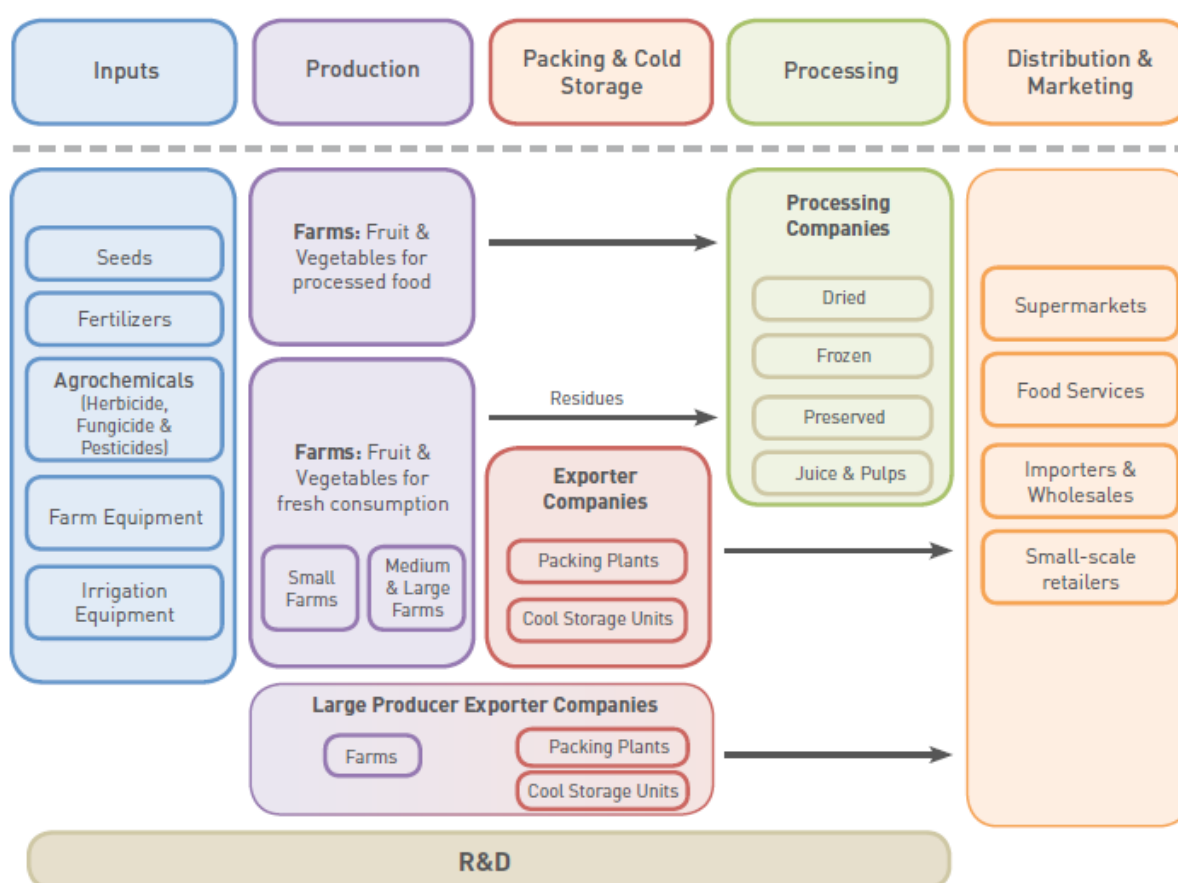
⁷ Gereffi, G. and Lee, J. (2014). *Economic and social upgrading in global value chains and industrial clusters: Why governance matters*. Journal of Business Ethics 133(1), 25-38.

- iv. *chain upgrading*: applying skills acquired in a particular value chain to a different sector.

2.1 The global value chain for fruit

The main activities in the fruit value chain include (1) production, (2) packing and storage, (3) processing, and (4) distribution and marketing (Figure 1). The fruit value chain is an example of a ‘buyer-driven’ value chain where retailers set and enforce the product and process parameters that must be met by producers.⁸ Large retailers in consumer markets across the European Union and United States govern activities in the fruit value chain.⁹

Figure 1: Global Fruit Value Chain



Source: Fernandez-Stark, Bamber and Gereffi, 2011

Retailers exert significant control over the entire value chain and dictate how the fruit is produced, harvested, transported, processed and stored, imposing strict private standards in

⁸ Fernandez-Stark, K., Bamber, P. and Gereffi, G. (2011). *The fruit and vegetables global value chain: Economic upgrading and workforce development*. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA.

Gereffi, G. (2014). *Global value chains in a post-Washington consensus world*. Review of International Political Economy, 21(1), 9-37.

⁹ As noted later in the report, markets in the USA and EU are still the largest, but the greatest growth is expected to come will from countries in the Far and Middle East.

addition to national sanitary and phytosanitary standards.¹⁰ The ability of growers and producers to comply with international food safety and quality standards is thus a prerequisite to access global markets. An inability to meet these public and private standards limits producers' opportunities for upgrading.¹¹

Lead retailers' emphasis on cost competitiveness, quality, consistency and product differentiation puts firms and (farmers) in buyer-driven value chains on a steep learning curve, forcing them to learn quickly and rapidly expand capabilities.¹²

The fruit value chain is undoubtedly global in nature. Key consumer markets with the highest returns are in more developed countries. Regional markets are considered 'shallow' and have lower returns. Data on global imports in 2016 confirm the importance of accessing developed markets, showing that the United States of America accounts for 14% of global fruits and nuts imports, Germany and the Netherlands account for 9% and 6% respectively while the United Kingdom, China, and France each account for 5% of global imports.¹³ Although markets in the USA and EU are still the largest importers, several interviewees for this study emphasise that the greatest growth will come from markets in the Far and Middle East.¹⁴

To access developed countries' markets, producers must be able to comply with stringent international standards. By comparison, regional markets have less stringent standards and provide an alternative market for producers who cannot yet meet international standards.

Some developing countries have taken advantage of the less stringent requirements in regional markets to grow their fruit exports. Honduras and Jordan, for example, struggled to comply with international standards and instead exported loosely packed products to regional markets where standards are less stringent.¹⁵ Although participation in regional markets can provide a stepping stone towards gaining the capabilities required to enter global value chains, they may also have a 'lock-in effect' and restrict producers to lower segments of the value chain, particularly in cases where producers are not forced to learn and upgrade to meet global standards.

¹⁰ Fernandez-Stark, K., Bamber, P. and Gereffi, G. (2011). *The fruit and vegetables global value chain: Economic upgrading and workforce development*. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA.

¹¹ Gereffi, G. and Lee, J. (2012). *Why the world suddenly cares about global supply chains*. Journal of Supply Chain Management, 48 (3).

Gereffi, G. and Lee, J. (2014). *Economic and social upgrading in global value chains and industrial clusters: Why governance matters*. Journal of Business Ethics 133(1), 25-38 (Gereffi and Lee, 2012; 2014)

¹² Humphrey, J. and Schimtz, H. (2002). *Developing country firms in the world economy: Governance and upgrading in global value chains*. Regional Studies, 61/2002.

¹³ International Trade Centre (ITC) Trademap, 2017.

¹⁴ Fruit South Africa, the industry association representing five fruit-growing organisations in South Africa, is focusing its market development initiatives on markets in the Far and Middle East market as an expansion and diversification strategy.

¹⁵ Fernandez-Stark, K., Bamber, P. and Gereffi, G. (2011). *The fruit and vegetables global value chain: Economic upgrading and workforce development*. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA.

2.2 Upgrading in fruit value chains

'Industrial upgrading' into higher value-added activities in the fruit value chain has different dynamics to industrial upgrading in traditional manufacturing activities. In the fruit value chain, there are more opportunities for functional and process upgrading than product upgrading.

Transformation of the raw product into a processed product is also not necessarily associated with a higher value end-product in this value chain. In fact, the 'unprocessed' fresh fruit is a much higher-value product in export markets than processed products such as fruit juice, jams or preserves.¹⁶ In the fruit value chain, 'upgrading' is essentially about acquiring the supply chain capabilities required to sell into fresh fruit markets and not about entering the processing level of the value chain.

The acquisition of seemingly simple capabilities in sorting, packing, storage and transportation of fruit adds much greater value than processing. These activities are associated with the use of advanced technology and complex industrial processes. For example, exporting fresh fruit to international markets requires more technological sophistication, packaging, temperature and disease control, and computerized logistics than to export processed fruit juice.¹⁷

Functional upgrading in the fruit value chain can happen in a linear manner (i.e., by moving from production to packing, storage, transport and marketing of fresh fruit, then to processing of "fall-out" fruit) or it can happen in a non-systematic manner, moving from processing (to stem production losses by processing fruit into a more "forgiving" product) to the export of fresh fruit. Regardless of whether a country grows its fresh or processed fruit segments first, it must first develop capabilities in fruit production to be able to meet year-round supply.¹⁸

In order to remain competitive, functional upgrading should be complemented with process upgrading at each level of the value chain. Process upgrading involves the introduction of superior technologies in the production system or restructuring of existing systems to improve efficiency. Examples of process upgrading in the fruit value chain include the introduction of greenhouse production technologies and health protocols in pack houses which help to protect crops from diseases and meet safety standards and assures year-round supply. The adoption of new shipping and cold storage technologies enables suppliers to supply larger volumes of fruit to distant and geographically dispersed markets.¹⁹

The overall process of functional and process upgrading in the fruit value chain must also be supported by investment in logistics. This involves developing storage and cold chain facilities, transportation networks, and information and communication technology.²⁰ Effective logistics

¹⁶ To illustrate the scale of the difference, an interviewee mentioned that in 2015/16, the export market realised a value of R9000 – R12 000/ton for fresh fruit while the juice industry realised a value of R1400 – R1600/ton.

¹⁷ Cramer C. and Sender, J. (.2014). *Opportunities for strategic intervention*. Trade and Industrial Policy Strategies (TIPS).

¹⁸ Fernandez-Stark, K., Bamber, P. and Gereffi, G. (2011). *The fruit and vegetables global value chain: Economic upgrading and workforce development*. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA.

¹⁹ Fernandez-Stark, K., Bamber, P. and Gereffi, G. (2011). *The fruit and vegetables global value chain: Economic upgrading and workforce development*. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA.

²⁰ Roy, T.N. (2015). *Supply chain management of horticultural crops*. Springer. India. Available [here](#).

Fonseca, J.M. and Vergara, N. (2015). *Logistics in the horticulture supply chain in Latin America and the Caribbean*. Food and Agriculture Organization of the United Nations. Rome. Available [here](#).

is critical because fruit is highly perishable. The bulky nature of fruits also makes handling and transportation difficult and any inefficiencies in the system lead to large losses.²¹

Improvements in road network infrastructure, particularly within countries, is critical for moving fruit quickly from areas of production to markets in good condition. Good post-harvest handling practices and access to cold chain facilities maintain the quality of the fruit and preserves shelf life. Access to up-to-date information ensures adequate information flows throughout the value chain and helps producers to make better decisions and to respond more promptly to customers' demands.²² The flow of information is particularly important in the fruit value chain as a buyer driven value chain controlled by large retailers that make decisions regarding product and process parameters to be met by producers.

It is also important to note that these investments in logistics and transport infrastructure will have wider economic benefits. For example, cold storage capabilities acquired in the fruit chain can easily be applied to a different sector such as the cut-flower industry, as happened successfully in Kenya.

Strong government regulatory bodies are also important in facilitating the process of functional upgrading by ensuring compliance with international food safety and quality standards.

2.3 International experience of upgrading in the fruit value chain: examples from Chile and China

International experience shows that there are different models for integrating into the global fruit value chains. While some countries have moved directly from production to integrating into higher-value fresh fruit markets, others started with processing of fruit and moved into fresh fruit markets thereafter. The decision has largely been based on how best to stem post-harvest losses in the short term and on how quickly the country could meet stringent food safety and quality standards.

Chile took the path from production to the export of fresh fruit (the higher value product) and thereafter to processing (the lower value product). It entered the global fresh fruit value chain as an exporter of fresh fruit and vegetables during the 1980s. Its success at the production level was driven by two key factors: access to markets and ability to comply with international food safety and quality standards.

The Chilean Fresh Fruit Association was instrumental in sourcing key markets for its fresh produce in the United States and in Europe. To ensure compliance with international standards, the government created ChileGAP (accredited by GlobalGAP) to support local growers and producers in meeting safety and quality standards imposed by global buyers and the sanitary and phytosanitary standards imposed by regulators in key markets. ChileGAP

²¹ Roy, T.N. (2015). *Supply chain management of horticultural crops*. Springer. India. Available [here](#).

Fonseca, J.M. and Vergara, N. (2015). *Logistics in the horticulture supply chain in Latin America and the Caribbean*. Food and Agriculture Organization of the United Nations. Rome. Available [here](#).

²² Fonseca, J.M. and Vergara, N. (2015). *Logistics in the horticulture supply chain in Latin America and the Caribbean*. Food and Agriculture Organization of the United Nations. Rome. Available [here](#).

Roy, T.N. (2015). *Supply chain management of horticultural crops*. Springer. India. Available [here](#).

provided local growers and exporters with the tools to implement GAP requirements at the lowest cost.²³

Chile also established a local council to assist with genetic improvements, transfer of knowledge, and food safety. After mastering production capabilities, Chile upgraded into packing of fresh fruit during the mid-1980s and started investing in packing and cold storage units. This was coupled with extensive improvements in infrastructure including connections to highways and ports to reduce transport times from farms. The government assisted with sanitary and phytosanitary processes and protocols for pack-houses and for the entire cold chain. Upgrading into the processing segment of the value chain followed in the mid-1990s and was driven by capital investments by the private sector. Processed fruit and vegetable exports increased from US\$100million to US\$1.5 billion between 1990 and 2009.²⁴

China's experience in the apple industry during the 1990s presents a different model of industrial upgrading. China entered the global fruit value chain by first developing the apple processing industry to provide an export outlet for its large local supply of apples, many of which were going to waste. Although China was competitive in the production of apples, the country's exports to international markets were limited by the high cost of shipping perishable products over long distances and the increasingly stringent sanitary and phytosanitary requirements imposed by global buyers and regulators in international markets. China's fresh apples were thus mainly consumed in the domestic market.²⁵

Production of apples soon exceeded domestic consumption leading to an oversupply of apples in the domestic market. Domestic prices of fresh apples plummeted and post-harvest waste increased. Faced with these large post-harvest losses, the government decided to invest in processing plants to produce apple juice concentrate for export (Gale, Huang and Gu; 2010). After stemming the initial losses by investing in fruit processing, China invested in meeting international quality and food safety requirements across the entire value chain. At the farming level, local governments employed technical advisors to help farmers apply pesticides and fertilisers and to carry out inspections of farm inputs to prevent fake pesticides and fertilisers from entering the orchards. At the fruit processing level, the government established a strong inspection and quarantine authority to test and monitor products prior to export. The institution also carried out inspections of processing facilities and orchards and advised exporting companies on standards and quality management systems required in foreign markets. The government also played a key role in sourcing markets for the apple juice concentrate by acting as an intermediary and introducing international customers to local firms.²⁶

China also presents a model for the successful incorporation of small apple farmers into global value chains. Apple growing is labour-intensive and is carried out by an estimated 10 million

²³ Fernandez-Stark, K., Bamber, P. and Gereffi, G. (2011). *The fruit and vegetables global value chain: Economic upgrading and workforce development*. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA.

²⁴ Fernandez-Stark, K., Bamber, P. and Gereffi, G. (2011). *The fruit and vegetables global value chain: Economic upgrading and workforce development*. Center on Globalization, Governance & Competitiveness (CGGC), Duke University, North Carolina, USA.

²⁵ Gale, F., Huang, S. and Gu, Y. (2010). *Investment in processing industry turns Chinese apples into juice exports*. United States Department of Agriculture.

²⁶ Gale, F., Huang, S. and Gu, Y. (2010). *Investment in processing industry turns Chinese apples into juice exports*. United States Department of Agriculture.

small farmers with little education and minimal financial resources.²⁷ Apple juice processing, on the other hand, is capital intensive and is mainly carried out by a few dozen companies that buy apples from the small farmers. China's strategy for integrating small farmers with juice companies was based on identifying large companies called 'dragon head enterprises' that bought produce from several farmers (thus assuring them markets) and for disseminating technical information. In return, the large companies received tax breaks, preferential bank loans, access to land, assistance with raising capital and meeting export standards, and subsidies for storage and cold chain facilities.²⁸

Both Chile and China relied on extensive government support and the development of strong public institutions particularly in facilitating and monitoring compliance with global food safety standards. In both countries, government institutions facilitated access to new markets, established accreditation institutions that ensured compliance with global quality standards and invested in infrastructure to integrate farmers into the transport network. In China, the state also supported investment in processing facilities.

²⁷ Gale, F., Huang, S. and Gu, Y. (2010). *Investment in processing industry turns Chinese apples into juice exports*. United States Department of Agriculture.

²⁸ Gale, F., Huang, S. and Gu, Y. (2010). *Investment in processing industry turns Chinese apples into juice exports*. United States Department of Agriculture.

3 Methodology

The study used a combination of secondary data sources and primary information from field interviews. Production and trade data was sourced from national government departments, the International Trade Centre (TradeMap) and the Food and Agriculture Organisation of the United Nations. We conducted a desktop review to map key players and activities in the value chain which informed the selection of firms for interviews.

3.1 South Africa

In South Africa, we conducted 11 interviews with fresh fruit exporting companies, fruit processors, industry/producer associations, and private research institutions working in agriculture (see Annexure 1 for a list of interviewees). The fieldwork took place over four months, from March to June 2017. Semi-structured interviews were conducted, centered on the following themes:

- i. Identifying key processes/activities in the value chain,
- ii. Understanding the structure of the industry (key players, large and lead firms within the value chain, governance, and competitiveness in the value chain),
- iii. Opportunities for increased trade between South Africa and Tanzania, and
- iv. Challenges associated with upgrading the fruit value chain in South Africa and in Tanzania.

3.2 Tanzania

The Tanzanian leg of the research focused on producers (farmers) at the lower node of the value chain because of their potential for upgrading and the need to stem post-harvest losses and realise greater value from their crop. To understand the fruit value chain in Tanzania, field visits were conducted in Arusha and Tanga. A total of 22 interviews were conducted with farmers, farmers' associations/groups and processors. The majority of the farmers interviewed are small-scale farmers managing farms between 2 to 10 acres in size.

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 fruit production in the district and on prevailing farming and processing practices. They also provided existing databases to identify wards and villages to enable researchers to draw suitable samples in the districts. Researchers also obtained lists of individual farmers, small processors and traders from the DAICOs.

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

- i. Production of fruit: the size of farm cultivated, main fruit grown, farming practices and processes,
- ii. Inputs used: equipment, seed, fertiliser and labour,
- iii. Markets for the fresh produce,
- iv. Processing activities: scale of processing, main forms of processing, equipment used, ability to meet standards, and access to markets.

4 Production capabilities, trade and industrial policy priorities

4.1 South Africa

4.1.1 Production

Fruit production increased steadily at a compound annual rate of 3% per annum between 2010 and 2016 (Table 1). According to interviews, this was driven largely by access to new markets.²⁹ Industry associations such as Fruit South Africa are instrumental in finding new markets and ensuring that market access is granted on conditions that are favourable to the industry.³⁰

Grapes, citrus and apples are the largest fruit crops, jointly accounting for 78% of total fruit production between 2010 and 2016. These crops are well-established and have relatively low annual growth rates. The fastest-growing fruit crops, though off a low base, were plums, granadillas and litchis, avocados, and strawberries and other berries which all grew at or above 5% per annum between 2010 and 2016. Production of mangoes and pineapples is declining in SA (though increasing in Tanzania, as discussed below).

Table 1: Production of fruit in SA (tons)

	2010	2011	2012	2013	2014	2015	2016	CAGR
Total production, of which:	5 959 361	5 968 146	6 297 611	6 590 248	6 869 284	7 127 254	7 050 849	3%
Citrus	2 010 105	2 005 586	2 201 838	2 230 858	2 543 844	2 584 347	2 546 598	4%
Grapes	1 743 496	1 680 436	1 841 385	1 979 872	1 949 264	2 007 293	2 008 819	2%
Apples	753 167	768 125	790 562	883 826	799 524	916 042	917 418	3%
Pears	373 722	359 851	346 642	379 546	412 859	408 499	438 925	3%
Bananas	382 336	402 790	371 251	392 248	463 344	425 715	402 053	1%
Peaches	167 352	171 104	191 294	183 676	155 142	210 197	203 611	3%
Watermelons	128 239	166 037	105 832	96 544	105 997	102 013	115 355	-2%
Pineapples	110 246	98 511	108 699	96 844	96 740	95 867	104 379	-1%
Avocados	64 072	81 858	88 109	87 027	97 675	98 374	87 584	5%
Plums	56 009	67 087	61 176	75 733	69 833	75 262	80 567	6%
Mangoes	55 271	52 672	65 131	52 643	57 582	75 662	41 030	-5%
Papayas	13 534	12 683	12 713	14 875	13 685	15 869	11 375	3%
Apricots	56 302	50 451	66 805	60 824	48 773	57 680	41 756	-5%
Guavas & Loquats	25 865	31 420	23 672	33 574	31 584	31 837	26 566	0%

²⁹ Interviews with fruit processors, South Africa

³⁰ Interview with industry association, South Africa

Strawberries & Other berries	6 756	6 738	8 097	9 986	9 647	8 536	9 258	5%
Granadillas & Litchis	6 626	6 932	8 362	6 433	9 097	9 138	9 145	6%
Prunes, Cherries & Quinces	4 461	4 029	4 105	3 763	2 622	2 941	4 230	-1%
Figs	1 802	1 836	1 938	1 976	2 072	1 982	2 180	3%

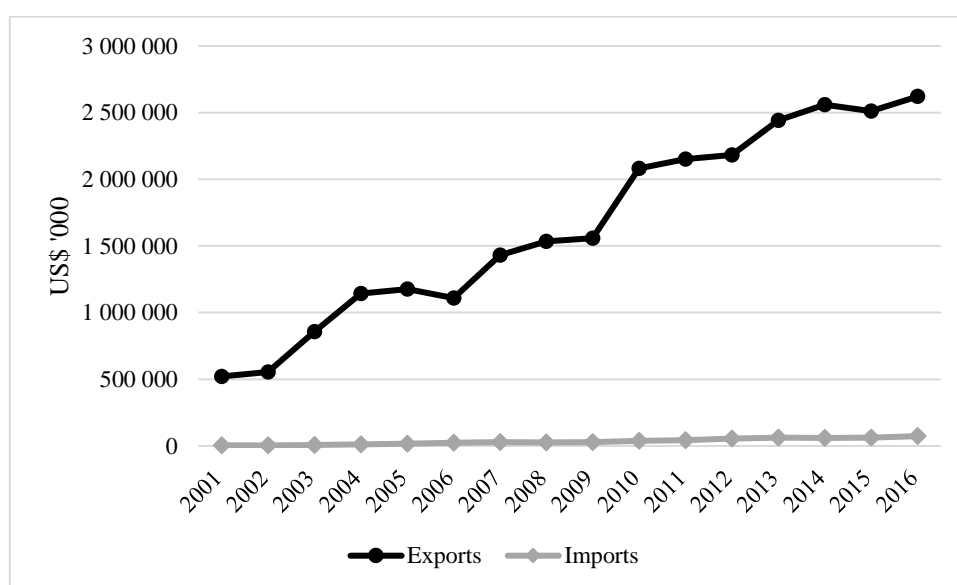
Source: Department of Agriculture, Forestry and Fisheries

4.1.2 Trade in fresh fruit

South Africa's exports of fresh fruit grew after trade liberalisation in 1996 which facilitated access to new export markets and spurred greater production of fruit. Following deregulation of the agricultural sector and dissolution of the marketing boards in 1997, the industry grew from a relatively stagnant, state controlled sector into a globally competitive industry and a key export earner.³¹

Fruit exports grew at a compound annual rate of 12% between 2002 and 2016. South Africa is self-sufficient in production of a range of fruit and thus has limited fruit imports.

Figure 2: South Africa fruit exports and imports³²



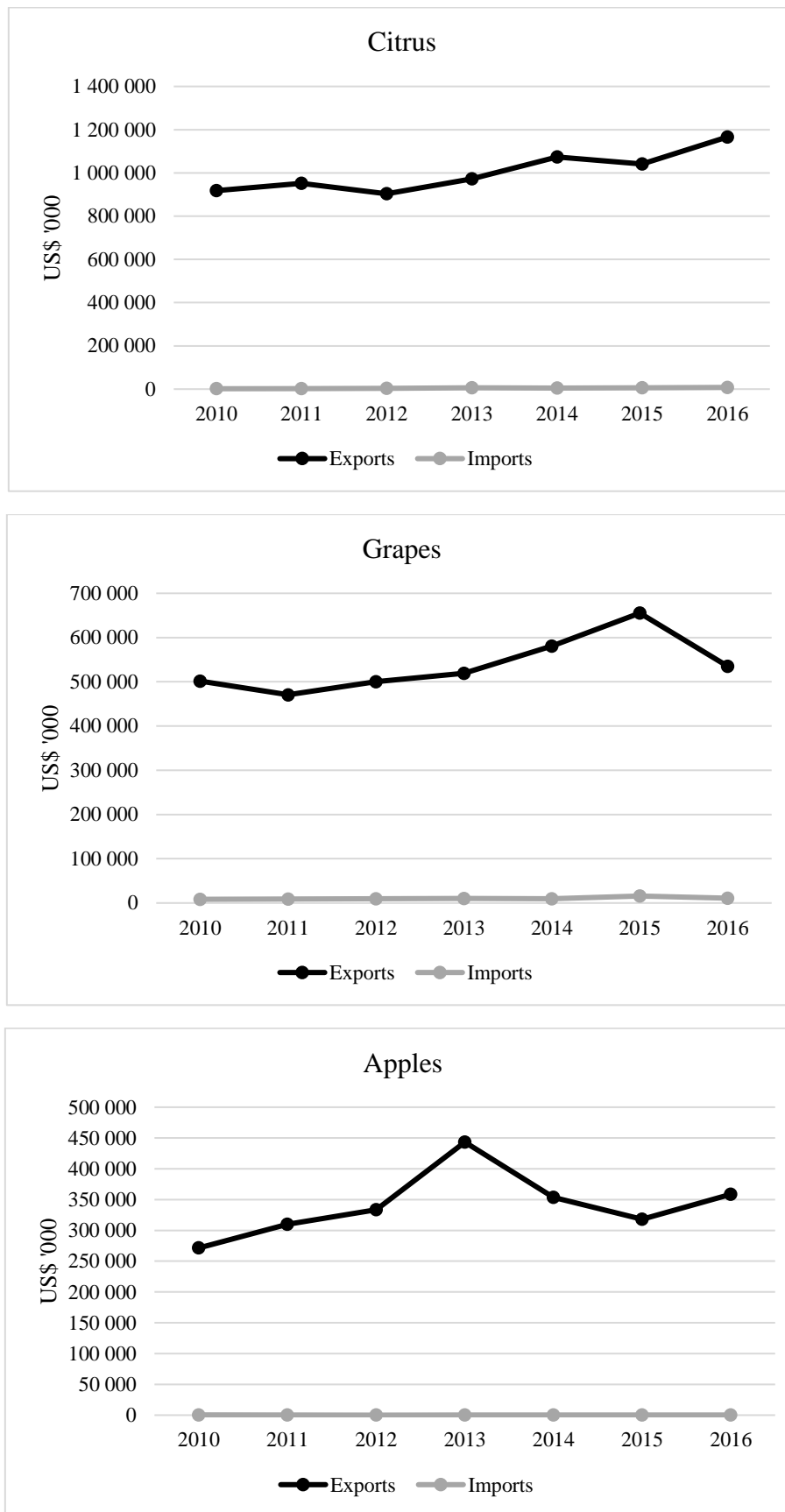
Source: ITC TradeMap

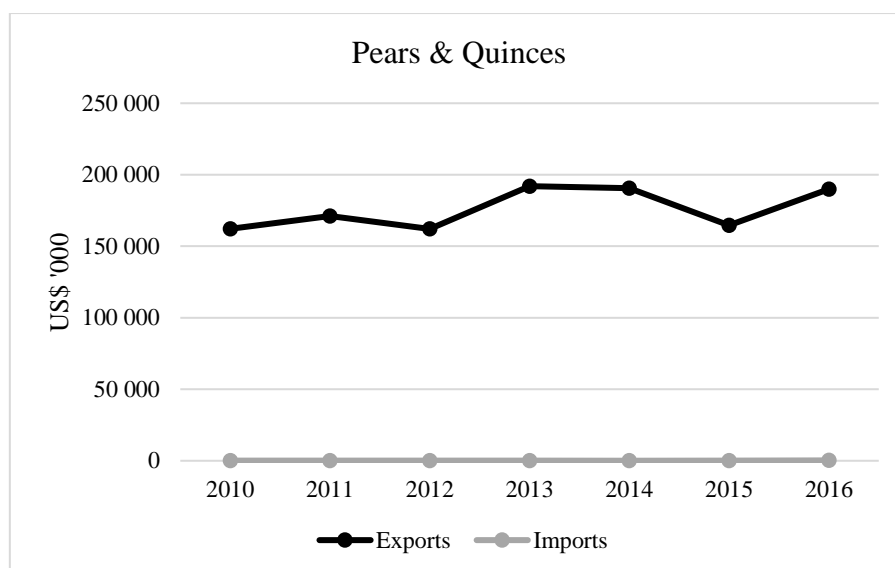
South Africa's leading fresh fruit exports are citrus, apples and grapes which jointly accounted for 80% of total fruit export earnings in 2016. In 2016, the key export markets for the major fruits were the Netherlands and United Kingdom. The fastest growing fruit in export markets (again, off a low base) are niche fruit such as berries and cherries which grew at a compound annual growth rate of 18% between 2010 and 2016.

³¹ Interview with a citrus processor, South Africa

³² Fruits are HS code 0803, 0804, 0805, 0806, 0807, 0808, 0809, 0810, 0813.

Figure 3: Trade balance for the largest fruit exports, South Africa





Source: ITC Trademap

South Africa's main fruit imports between 2010 and 2016 were bananas, grapes, kiwi fruit, avocados, and strawberries (Figure 3). Bananas were imported almost exclusively from Mozambique, which accounted for about 91% of imports in 2016. Large banana imports coincide with a decline in banana planted in South Africa from 18 000 hectares in 2000 to 12 000 hectares in 2010. Most banana farms have become unproductive as producers are not willing to reinvest, resulting in a shift in production to neighbouring countries such as Mozambique.³³ Kiwi was imported mainly from New Zealand (58.5% of total imports in 2016) and Italy (32% of imports in 2016).

Although grapes and avocados are key import fruits, South Africa is still a net exporter of both. Grapes were imported from Spain (52% of total imports) and Egypt (23% of total imports) while avocados were imported from Spain (77% of total imports) and Israel (17% of total imports) in 2016. These imports are likely to meet demand during off-seasons, given that they are imported from countries in the northern hemisphere.

Local production of avocados has been growing but farmers are facing constraints, as indicated by waiting lists of up to two years at nurseries to access avocado seedlings.³⁴ This has constrained production. We note that Tanzania is a producer of avocados and that there are opportunities for South Africa to shift imports of avocados from Spain to Tanzania. However, a local trader indicated in their interview that they are not allowed to import avocados from Tanzania and Kenya. We could not establish why this is the case.³⁵

Strawberries and other berries were imported mainly from Egypt (74.9%) and Zimbabwe (23.6%). South Africa's trade balance in strawberries and other berries shows the greatest improvement over the period in line with the increase in local production shown in Table 1 **Table 1**. Strawberries and other berries are high-value niche products with growing demand

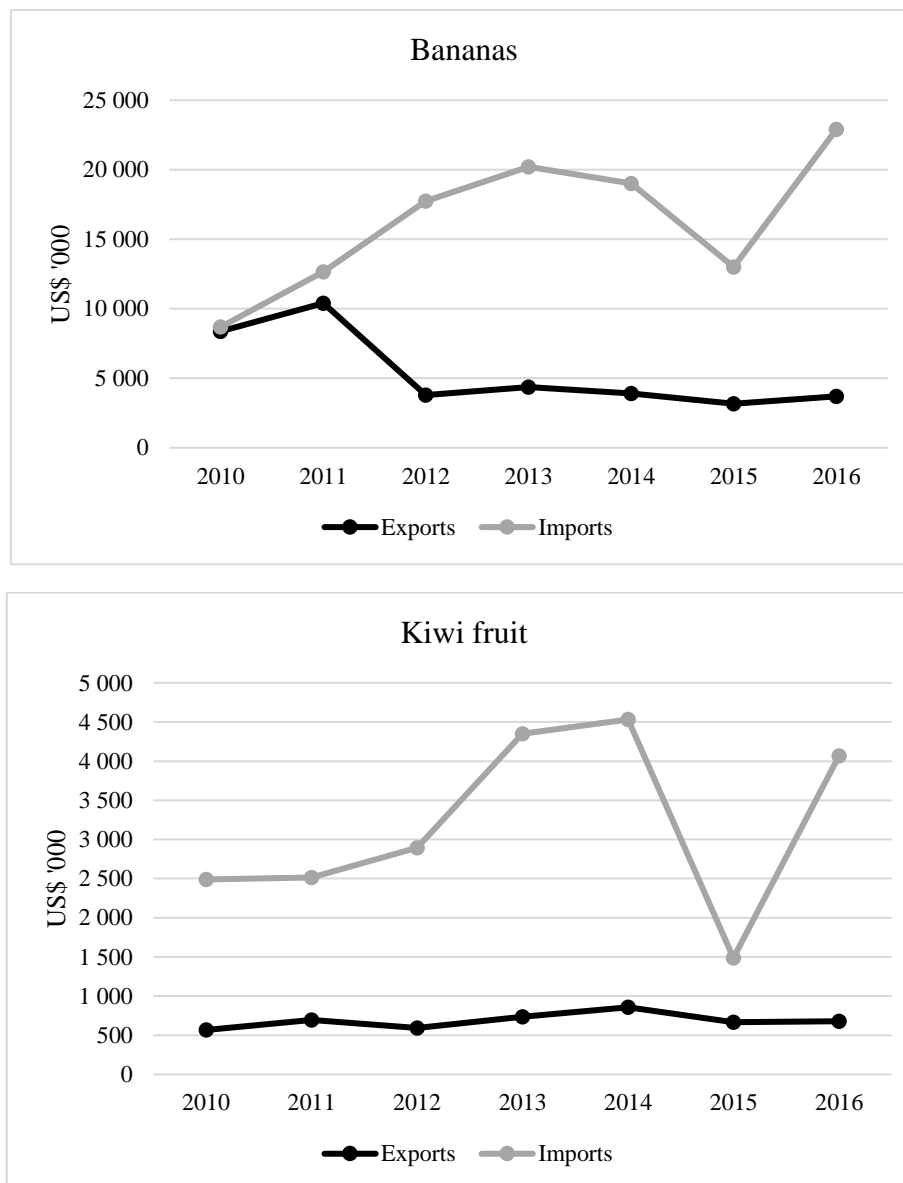
³³ Bureau for Food and Agricultural Policy. (2011). *The contribution of the agro-industrial complex to employment in South Africa*. Bureau for Food and Agricultural Policy.

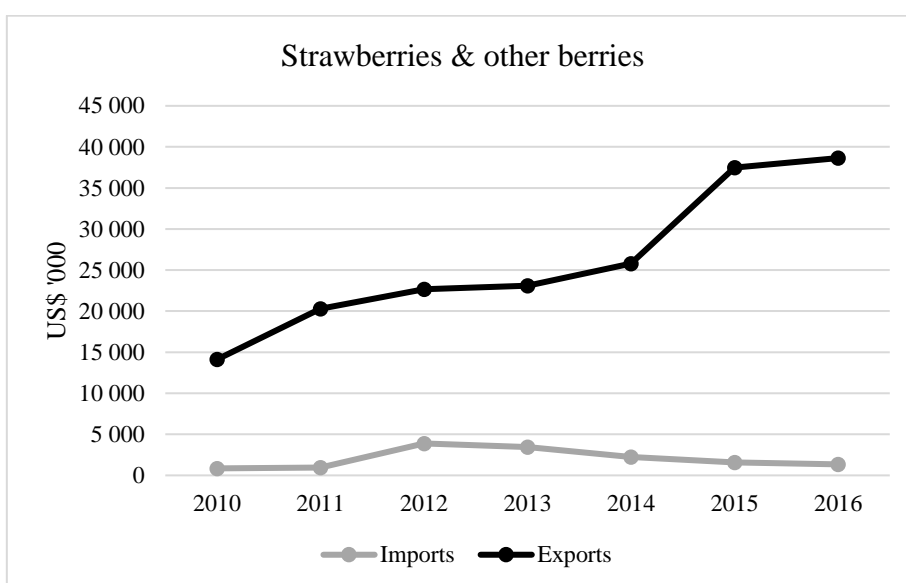
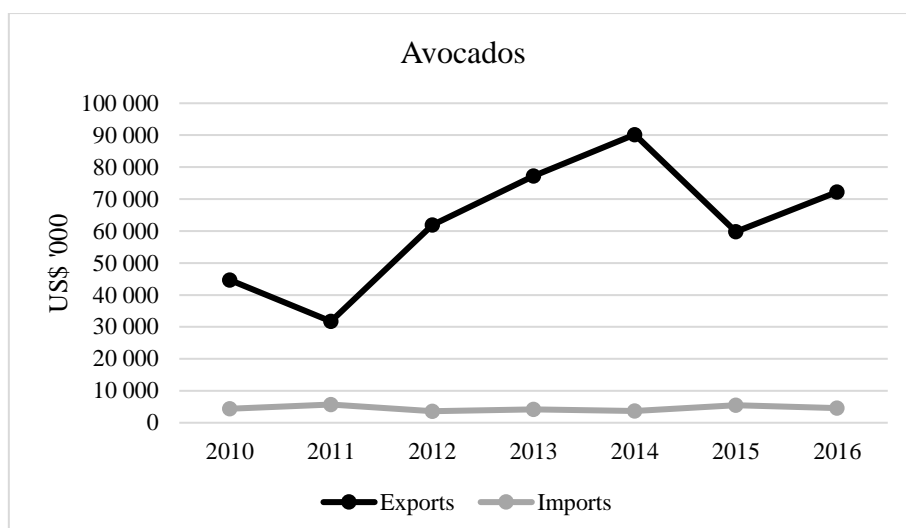
³⁴ Bureau for Food and Agricultural Policy. (2011). *The contribution of the agro-industrial complex to employment in South Africa*. Bureau for Food and Agricultural Policy.

³⁵ Interview with a fresh fruit exporter, South Africa

in international markets. Production of strawberries is actually among the fastest-growing in terms of fruit production in South Africa at an average of 5.5% CAGR between 2010 and 2016. Strawberries and other berries also constitutes one of the fastest growing fruit in export markets with a CAGR of above 20% between 2001 and 2016.

Figure 4: Trade balance for the largest fruit imports, South Africa



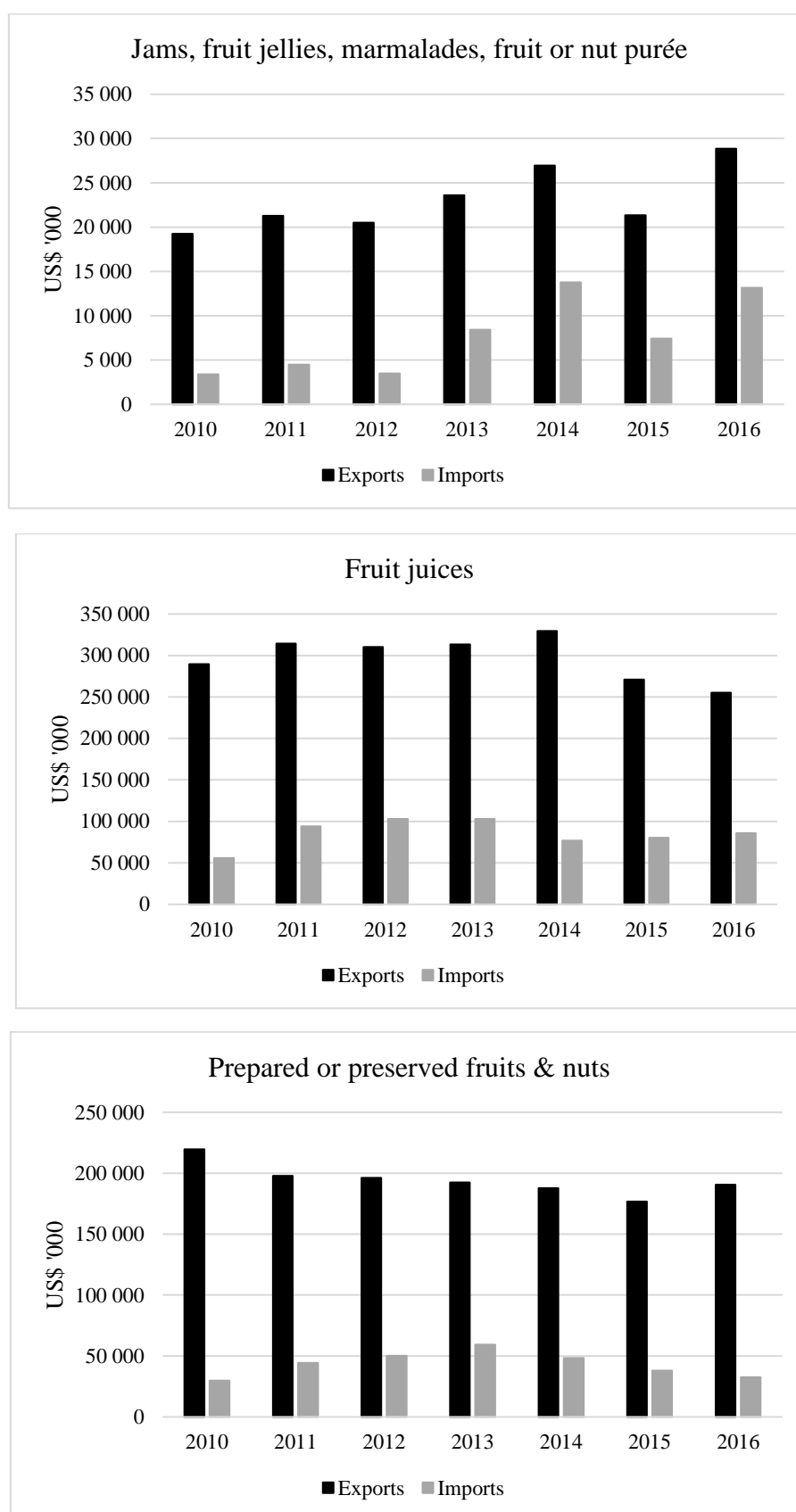


Source: ITC Trademap

4.1.3 Trade in processed fruit products

South Africa has a positive trade balance in processed fruit products (Figure 4), confirming that South Africa has developed capabilities across the entire fruit value chain and is self-sufficient in fresh and processed fruit products.

Figure 5: Trade balance in processed fruit products, South Africa



Source: ITC Trademap

Despite a positive trade balance in fruit juices, South Africa does import some fruit juices from China and Argentina, regardless of a 25% duty on these imports (Table 2). The trade data does not provide this level of detail, but interviewees suggested that these may reflect imports of mango juice or mango puree, as this is the only product in which South Africa does not have sufficient production to meet local demand.

If this is the case, there are opportunities to shift mango imports to Tanzania, which has capabilities in production of mango and can access the South African market at zero duty. The existing duty on imports from China and Argentina may give Tanzanian producers some protection to compete in the South African market.

Swaziland, a SACU-member state, exports a small amount of preserved pineapples, jams and jellies to South Africa duty-free.

Table 2: SA tariffs for processed fruit

Tariff regime	Applied Tariff (2016)	Globally competitive exporters	Key import sources for South Africa
Processed fruit			
Fruit juices			
Intra SACU	0%	Brazil, Netherlands, Belgium	China, Argentina (MFN duty applied to both)
Most Favoured Nations (MFN) duties	25%		
Preferential tariff for European Union countries	0%		
Preferential tariff for SADC countries	0%		
Prepared or preserved pineapples			
Intra SACU	0%	Thailand, Philippines	Swaziland (zero duty), Thailand (MFN duty)
Most Favoured Nations (MFN) duties	OQTR: 55.00c/kg IQTR: 14.00%		
Preferential tariff for European Union countries	0%		
Preferential tariff for SADC countries	0%		
Jams, fruit jellies, marmalades, fruit or nut purée and fruit or nut pastes			
Intra SACU	0%	France, Turkey, Italy	Swaziland (zero duty)
Most Favoured Nations (MFN) duties	30% or 4.5c/kg		
Preferential tariff for European Union countries	0%		
Preferential tariff for SADC countries	0%		

Source: TradeMap

4.1.4 Industrial policy relevant to the fruit value chain in South Africa

The Industrial Policy Action Plan (IPAP 2010-2017) and the Agricultural Policy Action Plan (APAP 2014-2019) constitute the national policy documents relevant to the fruit value chain. IPAP draws from and constitutes a key pillar of the New Growth Plan launched in 2010. APAP, housed under the Department of Agriculture, Forestry and Fisheries draws from the National Development Plan and New Growth Path. In the agro-processing value chain, APAP's core objective is to create employment at the upstream agricultural production level while IPAP focuses on the processing of agricultural products.

Both the Industrial Policy Action Plan (IPAP) and the Agricultural Policy Action Plan 2014-2019 (APAP) have strategies for the fruit value chain. APAP identifies a range of fruit as 'strategic commodities' that will be supported by the Department of Agriculture, Forestry and Fisheries to drive employment creation. These include avocados, citrus, apples, pears, mangos and table grapes which are all labour-intensive high growth potential commodities that employ on average 1.63 workers per hectare.³⁶

Earlier versions of IPAP (2010 – 2015) focused on investment in fruit processing and particularly in fruit canning. It targeted the fruit canning industry following the sector's loss in competitiveness after the strengthening of the Rand in 2005 and proposed the implementation of a fruit canning initiative in partnership with the SA Fruit & Vegetable Canners' Association (SAFVCA) in 2005. SAFVCA developed initiatives to improve market access, develop new products and increase the competitiveness of the South African industry to ensure long term growth. *The dti* provided support in terms of market access by negotiating favourable trade terms and facilitating the launch of new products (IPAP, 2010-2013). The initiative led to the launch of 20 new products in the fruit canning industry in 2013 and 2014. At the production level, *the dti* facilitated expansion of new orchards (IPAP 2013, 2014, and 2015).

In 2016 and 2017, the focus of IPAP shifted to adopt a value chain approach aligned to the APAP strategic commodities. Fruit was identified as a key sector based on export performance, gross value added and its potential to generate employment in related industries. IPAP proposed cross-cutting investments in infrastructure to support the growth of the fruit sector as well as supplier development programmes to incorporate emerging and marginalized producers and farmers into formal supply chains. Infrastructure investments focused on establishing facilities for aggregation and processing of produce (including packing sheds, cold chain facilities and logistical facilities for example); food testing laboratories, packaging facilities, and incubation centres. The agro-processing supplier development programme will be established in partnership with large retailers and agri-processors to provide shelf space and support to emerging and marginalized producers and farmers and enable them to supply large supermarkets.

4.1.5 High-potential fruit value chains to explore

Most interviewees suggest that there is potential for South Africa to import pineapple, mango and avocado from Tanzania or to consider investment in these value chains within Tanzania:

³⁶ Bureau for Food and Agricultural Policy. (2011). *The contribution of the agro-industrial complex to employment in South Africa*. Bureau for Food and Agricultural Policy.
Agricultural Policy Action Plan (2015-2019) and Industrial Policy Action Plan (2016).

- i. *Mango*: South Africa's mango supply is erratic. In 2016, it started importing mango from India and Brazil which could be shifted to Tanzania if they can establish stable, good quality supply (see section 3.1.4).³⁷ The best way to transport mango would be in puree form, which is less expensive than transporting the fruit (which has a large pip) and has a longer shelf life.
- ii. *Pineapple*: there is potential for trade in pineapple destined for the canning industry due to large global demand for pineapple.³⁸
- iii. *Avocado*: South Africa imported \$4.6mn worth of avocado in 2016. Most of these imports (77%) were from Spain. It is unclear why South Africa does not import avocado from East Africa though one trader interviewed said that they are 'not allowed to import avocado from Tanzania and Kenya'.³⁹

4.2 Tanzania

Tanzania's economy is largely dependent on agricultural production while processing of agricultural products is not yet developed. About 80% of the population earn a living from agricultural activities. Tanzania produces a variety of fruit and it is well positioned for increased fruit production. It has vast tracts of available arable land, a favorable climate, and the horticultural sector is one of the key sectors of interest by government. The country's main horticultural crops are spices, fruit (including mango, oranges, jackfruit, apples, avocado, pineapple, passion fruit and bananas) and vegetables (including tomatoes, onions, carrots, potatoes and high value baby vegetables) which are mainly produced by smallholder farmers with landholding of less than 2 hectares. In 2011, smallholder farmers accounted for about 70% of all horticultural crops.⁴⁰

The country's integration into global value chains is limited. In 2016, 40% of the net exports in various fruit crops were destined for the regional markets within the East African Community (EAC) and an additional 32% were destined for SADC markets. Only 28% of net exports in fruit crops went to high value markets in Europe.⁴¹ As highlighted earlier, regional markets could provide a stepping stone towards entering global value chains, but they may have a 'lock-in effect' and restrict producers to lower segments of the value chain if they do not quickly learn and upgrade to meet global standards. The focus in Tanzania is thus on improving the quality of its fruit exports to penetrate global markets.

4.2.1 Production

Total fruit production grew steadily at 2.8% CAGR over the five-year period between 2009 and 2014 (Table 3) with notable increases in watermelon, lemons and limes, oranges, pears, and plums and sloes (a plum-like fruit suitable for preserves but too tart and astringent for eating). Bananas and citrus grew slowly while grapes saw a 5.2% annual decline from about 8000 tons in 2009 to just over 6000 tons in 2014. The slow growth or decline in high-value fruit crops like citrus and grapes requires further evaluation.

³⁷ South Africa's main mango import markets in 2016 were Mozambique and Israel.

³⁸ Interview with fruit processors. Pineapple is not very popular in juice market because consumers find the taste of overwhelming and it is not used in significant quantities in mixed juices.

³⁹ We have not found any evidence to support the claim of a prohibition on the import of avocado from Tanzania.

⁴⁰ Mkindi, J. 2011. *Horticulture Value Chain in Tanzania*. Tanzanian Horticultural Association. Available [here](#).

⁴¹ ITC Trademap. 2017.

Table 3: Fruit production in Tanzania, tons⁴²

Crop	2009	2010	2011	2012	2013	2014	CAGR
Total fruit production, of which:	4 147 304	4 393 910	4 480 621	3 943 840	4 205 947	4 755 688	2.8%
Bananas	3 006 400	3 155 710	3 143 835	2 524 740	2 678 680	3 192 030	1.2%
Mangoes, mangosteens, guavas	320 000	350 000	380 000	410 000	450 041	437 115	6.4%
Oranges	200 000	240 000	290 000	315 000	360 024	394 796	14.6%
Pineapples	300 000	320 000	330 000	345 000	358 253	362 297	3.8%
Fruit, fresh nes	200 976	200 000	201 462	202 000	202 000	202 314	0.1%
Fruit, tropical fresh nes	50 285	50 000	50 403	50 500	50 500	50 601	0.1%
Watermelons	10 000	16 000	22 000	30 000	37 322	44 574	34.8%
Fruit, citrus nes	42 443	43 000	43 321	44 000	44 000	44 531	1.0%
Lemons and limes	5 000	7 000	8 500	10 000	11 179	12 434	20.0%
Grapes	8 000	7 000	5 000	5 500	5 976	6 138	-5.2%
Pears	2 400	3 000	3 500	4 000	4 434	4 888	15.3%
Plums and sloes	1 800	2 200	2 600	3 100	3 538	3 970	17.1%
Tomatoes	250 000	300 000	350 000	390 000	423 323	457 657	12.9

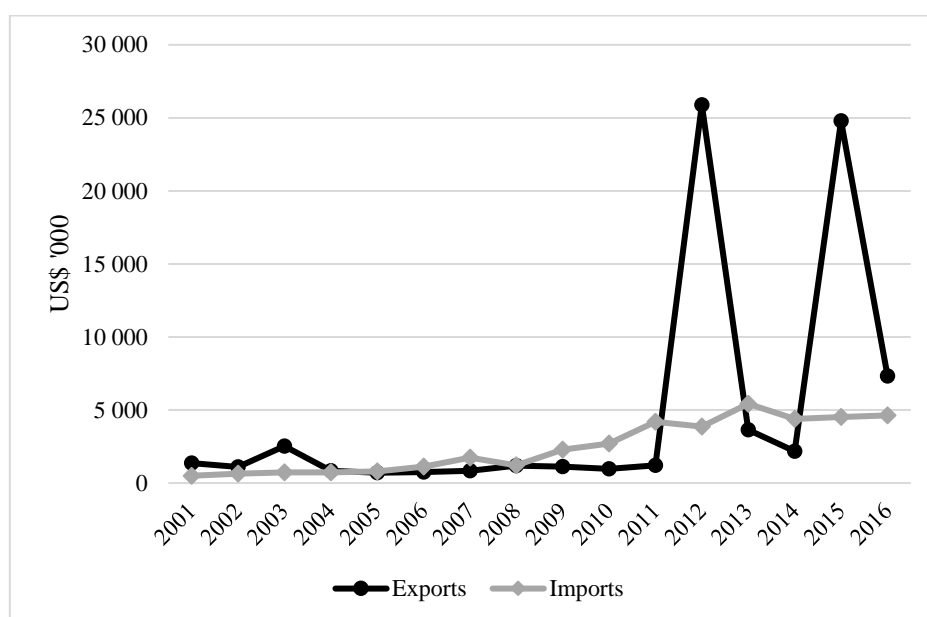
Source: FAOSTAT

4.2.2 Trade in fresh fruit

Despite the steady growth in fruit production shown above (Table 3), Tanzania did not record much trade in fruit (Figure 6), indicating that much of the fruit is probably consumed locally or, as set out in the Tanzania Horticultural Development Strategy, a large proportion is going to waste.

⁴² Table displays all crops for which FAO had data.

Figure 6: Tanzania fruit exports and imports⁴³



Source: ITC TradeMap

Tanzania's largest export is oranges (recorded in trade data as 'fresh or dried oranges'). Despite large production of lemons and limes, Tanzania does not export any lemons and limes. Tanzania also recorded large and growing production of mangoes and banana, but did not record large exports of these fruit (though banana exports increased dramatically in 2016). Pineapple exports grew significantly at 11% CAGR between 2010 and 2016, though off a low base.

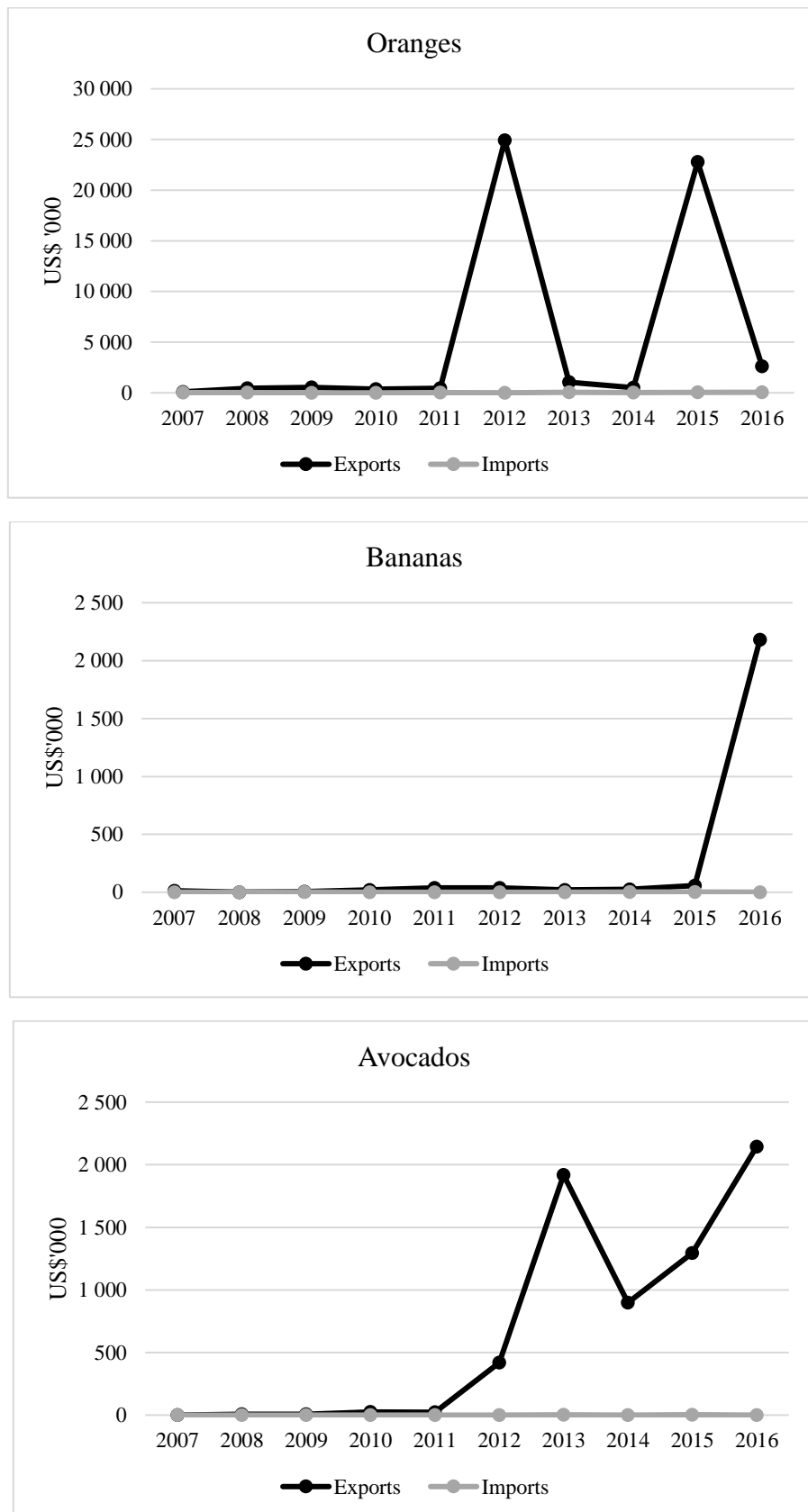
Avocado is Tanzania's third largest net export fruit. Prior to 2007, Tanzania did not export any avocado. Exports thus increased from a base of zero in 2007 to \$2.1mn in 2016 (Figure 7). Although the absolute value of avocado exports is still small by global standards, the significant growth rate indicates potential for quick ramp-up of production. Exports of avocados to France and the United Kingdom are largely done by the firms *Africado* and *Serengeti Fresh*. These firms have an extensive logistics network for both inputs and output and have the resources required to meet the international standards.

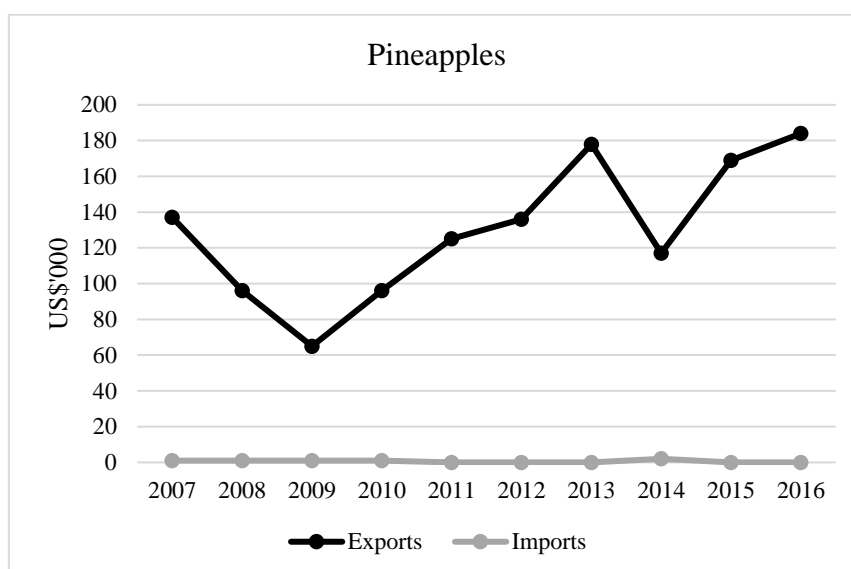
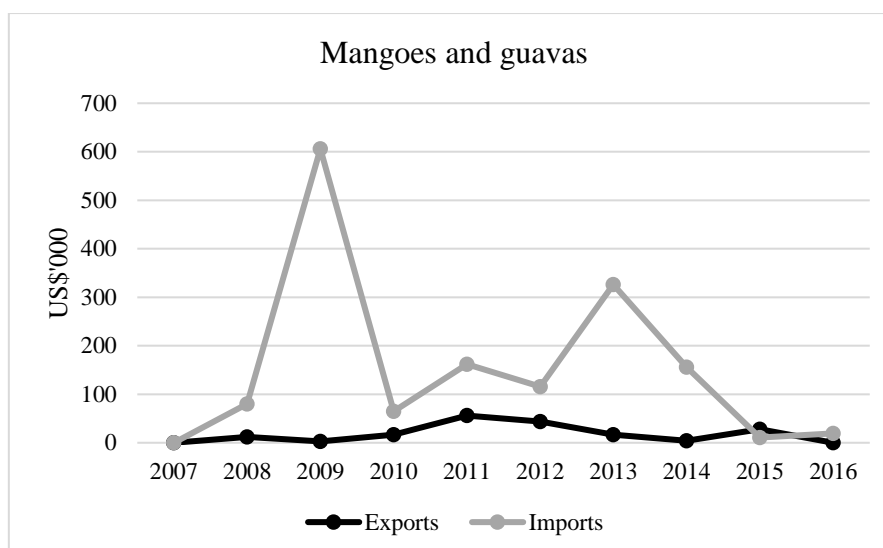
Based on demand patterns in global markets, bananas, avocados and pineapple constitute fruits with high growth potential for Tanzania.⁴⁴

⁴³ Fruits are HS code 0803, 0804, 0805, 0806, 0807, 0808, 0809, 0810, and 0813.

⁴⁴ Interviews with South African processors.

Figure 7: Trade in selected fruit, Tanzania





Source: ITC Trademap

4.2.3 Trade in processed fruit products

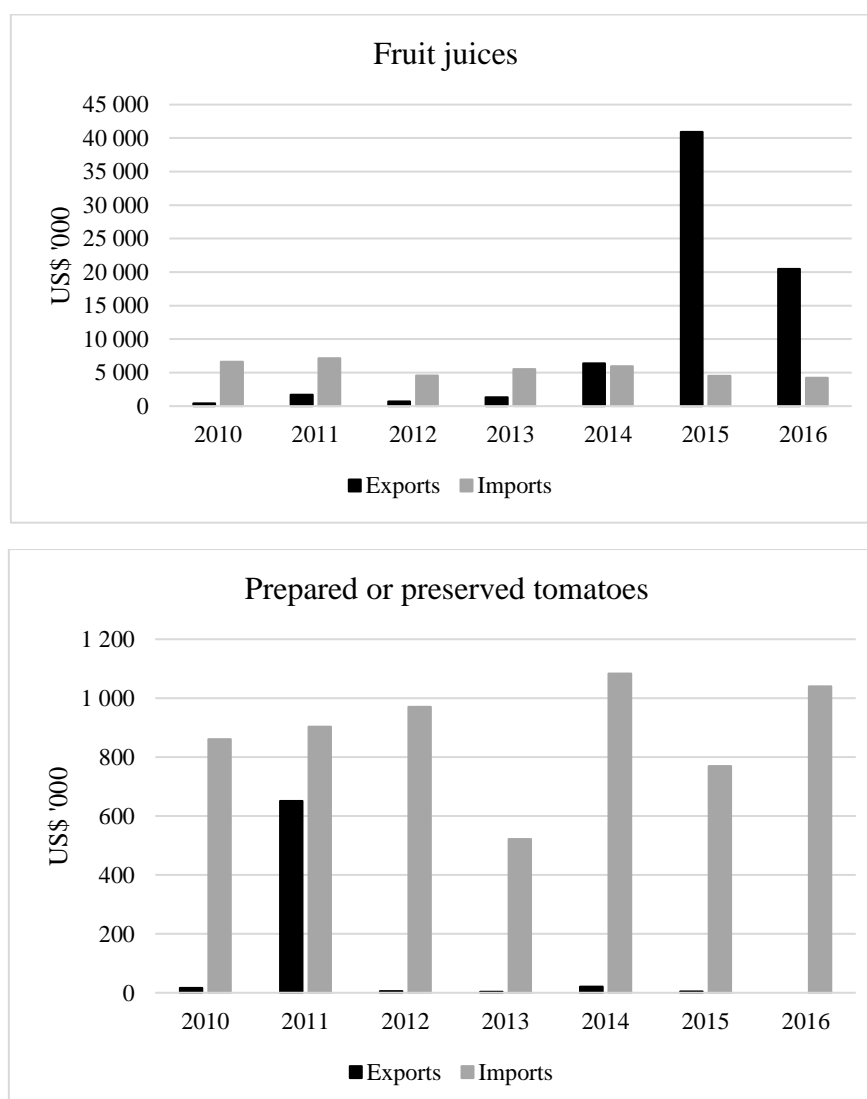
The trade data for processed fruit products suggest that there are opportunities for Tanzania to increase local processing and to source processed products from within the SADC region. Although this report focuses on fruit, we also report on canned and frozen vegetables in which Tanzania has large net imports. Processing activities are similar for both fruit and vegetables.

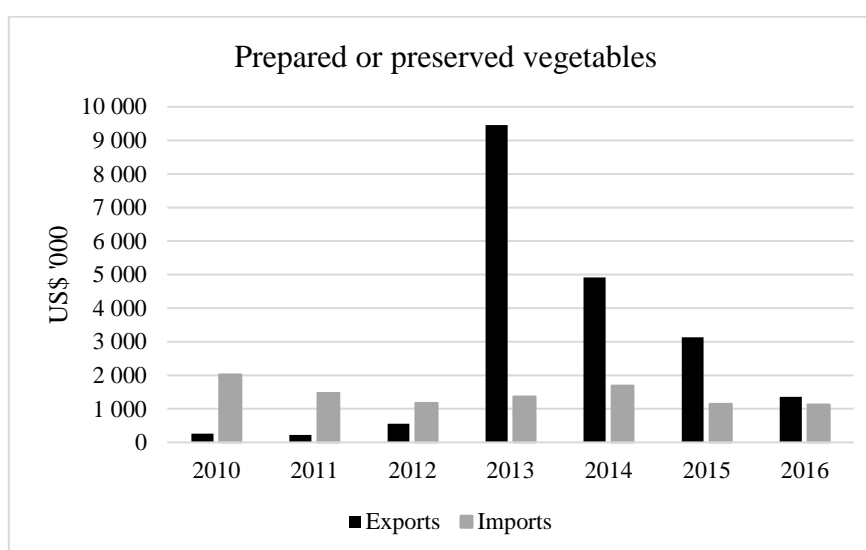
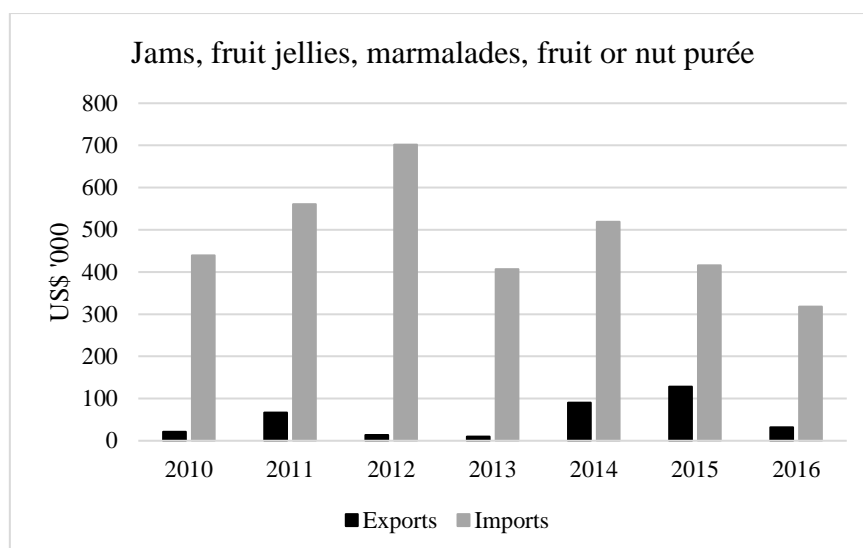
At an aggregate level, Tanzania turned a 2007 trade deficit of \$1.9mn in fruit juices into a surplus of \$37.8mn in 2016 (Figure 4). Most of this is orange juice, with net exports of \$32.9 recorded in 2016, destined mainly for the DRC and Comoros which accounted for 53.3% and 45.6% of 2016 exports respectively. Production of orange juice is supported by access to abundant raw materials given that orange constitutes one of the largest fruit produced in Tanzania (Table 3). Large processing companies such as Bakhresa and Azam are driving the growth in fruit juices.

In terms of net imports, Tanzania's largest trade deficit is in prepared or preserved tomatoes which it imports mainly from China (China accounted for 79% of imports in 2016) (Figure 4) despite large agricultural production and growth in tomatoes. This shows a lack of local processing capabilities (Table 3). Tanzania also recorded a trade deficit in 'jams, fruit jellies, marmalades, fruit or nut puree and fruit or nut pastes' made from fruit other than citrus. These products were imported mainly from India and Kenya which accounted for 50.5% and 30.6% of 2016 imports respectively. Due to lack of processing capabilities, Tanzania supplies raw fruit to Kenya's fruit processing industry, which in turn exports processed fruit products back to Tanzania. However, Tanzania's exports of processed vegetables increased significantly in 2013, which then rapidly declined in the subsequent years up to 2016 (Figure 4).

Though the net imports in processed fruit and vegetable products are quite small in value terms, investment in local processing may be justified in terms of longer-term increased demand from growing urbanisation and population growth within Tanzania and across the region.

Figure 8: Trade balances, processed fruit and vegetables, HS Code 20





Source: ITC Trademap

Although Tanzania and South Africa share preferential trade regimes with zero duties, the two countries are not significant trade partners in the fruit value chain. South Africa exports some fresh fruit (mainly apples and pears) to Tanzania but the trade values are low.

The low levels of trade between the two countries has been attributed to poor transport and logistics infrastructure between them, particularly the lack of cold storage facilities at the Tanzanian air and seaports in Dar es Salaam which tend to break the cold chain and increase waste. The countries are also located in similar agro-ecological zones within the southern hemisphere, meaning that they produce similar fruit during the same season. Trade in fresh fruit is generally higher between countries in different hemispheres because the fruit crop is delivered at different times of the year.⁴⁵

4.2.4 Industry policy relevant to the fruit value chain in Tanzania

The *Tanzania Horticultural Development Strategy 2012-2021* is a sector strategy and key pillar for achieving the goals of *Kilimo Kwanza* (meaning Transforming Agriculture). *Kilimo Kwanza*

⁴⁵ Interviews with industry association and fruit processors, South Africa

comprises of a set of policy instruments and strategic interventions to foster modernization and commercialization of various agricultural sub-sectors.⁴⁶ This policy was adopted in 2009 as an implementation tool to achieve the goals of the *Tanzania Development Vision 2025*, developed in 1999. *The Development Vision 2025* aims to move Tanzania from a least developed country to a middle income, semi-industrialised and diversified country.⁴⁷

The *Tanzania Horticultural Development Strategy 2012-2021* was developed by the Horticultural Development Council of Tanzania (HODECT) to address challenges in the horticulture industry. The broad objectives of the strategy are to develop a competitive horticulture sector capable of meeting the country's nutritional needs and supporting the development of high quality produce for regional and international markets.

The horticultural sector is a marginalized and low-priority sector in Tanzania with a weak production base, limited access to long-term finance and investment, poor infrastructure and inadequate market development support. The strategy proposes to address these challenges by implementing the following programmes:

- Promoting horticultural activities and building awareness of the economic and social potential of the industry among farmers, traders, government and consumers through campaigns, seminars, agricultural shows, and horticulture trade fairs.
- Expanding the area of land under fruit cultivation. This involves making large serviced plots of land available at affordable prices and establishing land banks for horticulture activities.
- Improving production by providing farmers with affordable equipment, subsidised agricultural inputs and promoting the use of modern drip and micro-sprinkler irrigation practices.
- Ensuring compliance with Good Agricultural Practices (GAP) and standards by providing on-farm assistance and delivering training on the requirements of Global GAP certification and the processes on how to obtain the certification at farmer training school.

The horticulture industry has limited access to long-term finance with few commercial banks willing to extend finance to farming activities. The loans that are granted have high collateral requirements and unaffordable interest rates. The industry therefore relies on limited government funding. The Horticulture Development Strategy sets out plans to expand long-term financing and financial services for horticulture from the national investment and agricultural banks including the Tanzania Investment Bank (TIB) and the Tanzania Agricultural Development Bank (TADB). Other strategies include expanding development partner financing and mobilising new private financial capital. Lastly, the industry will work with commercial banks to develop financial products that are customized to the needs of the horticulture industry.

⁴⁶ Tanzania horticulture Sector outlook: Opportunities and challenges. Available [here](#).

⁴⁷ Tanzania: Industrial Policy Execution Tanzania's Big Challenge. Available [here](#).

Plans to improve infrastructure include upgrading of roads in horticulture areas, improving service delivery at air and sea ports and supporting investment in cold chain infrastructure. The policy also targets infrastructure improvements in electricity, water and communication.

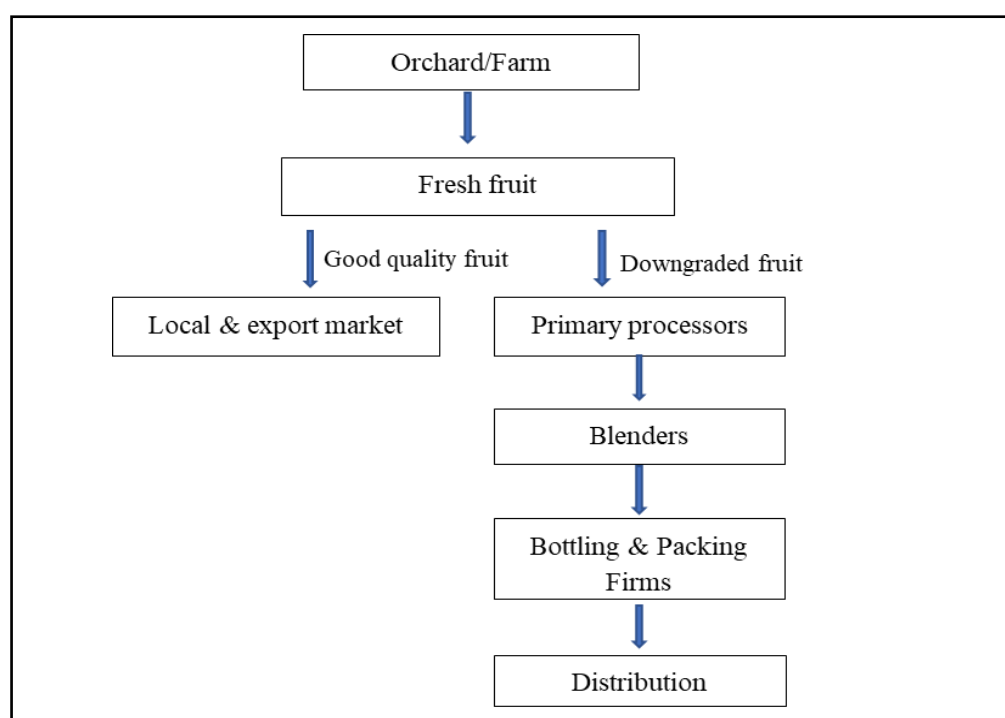
Lastly, insufficient market intelligence, research and poor dissemination of market price information limit producers' access to high-value export markets and their understanding of the market. The strategy proposes strategic interventions to support product and market development across domestic, regional and international markets including the strengthening of horticultural fresh produce distribution networks, developing and disseminating export information for targeted markets and promoting higher quality produce for export markets.

5 Insights from interviews: the fruit value chain

The fruit value chain is comprised of fresh processing and ‘additional’ processing (). ‘Additional’ processing activities include the manufacture of fruit juices, dried fruit, canned and bottled fruit, fruit-based condiments and sauces such as jam, chutney and ‘atchar’ and the production of related products like citrus oil.⁴⁸

As discussed above, fruit is primarily grown for the fresh market. Fruit processing is a residual business that depends on ‘fall-out’ or downgraded fruit not suitable for the fresh market. In South Africa, for example; of the 4.7 million tons of fruit produced in 2016, 72 % was sold in the fresh market, about 28% went for processing and less than 1% went for drying.⁴⁹

Figure 9: Fruit value chain



Source: Authors' own, based on interviews

5.1 The fruit value chain in South Africa

The first level of the value chain is the farm or orchard where fruit is grown, harvested and transported to certified pack-houses for washing, sorting, treatment and inspection (). In 2016, an estimated 6,000 commercial farmers were involved in the cultivation of fruit and vegetables in South Africa.

Production for the fresh export market tends to be dominated by large producers and marketing companies who rely on competitive technologies and economies of scale to make the investments required to meet standards set by international lead firms (Fernandez-Stark, Bamber and Gereffi, 2011).

⁴⁸ Citrus Oils are used in pharmaceuticals, the food and beverage industry, and in cleaning products. Interview with fruit processors, South Africa.

⁴⁹ Interview with industry association, South Africa

The best quality fruit is exported while 'reject' fruit is sent to processing facilities. Farmers producing fruit for the export markets register their intention to export with the industry association before the planting seasons starts. This is because different markets have different requirements that farmers must consider before harvesting.⁵⁰

The first fruit-sorting process is conducted by fruit pickers, who inspect the fruit and sort them into three grades during picking; export grade, fruit suitable for the local fresh market and 'juice grade' fruit.⁵¹ The fruit is then sent to packhouses, which are certified for traceability and conform to globally recognized quality standards and health and safety practices. Fruit destined for export markets are evaluated for sugar content, colour and other quality metrics specified by the importing country and, if approved, the fruit is transported to cold storage facilities and exported.⁵²

Fruit destined for additional processing proceed to some, or all, of the following steps:

- i. *Primary processors* convert the downgraded fruit into fruit pulp, concentrate and puree that is supplied to blenders or other 'secondary' processors who make jams, jellies or preserves
- ii. *Blenders* mix various juice combinations and supply the mixed juice to bottlers
- iii. *Bottlers* pack the final product into branded cartons and distribute to final consumers.

Most processors interviewed for this study are either partly or wholly owned by farmers who started the processing facility as a means to add value to downgraded fruit. The processing facilities are located close to production areas to reduce transportation cost (downgraded fresh fruit is bulky and costly to transport and does not travel well). Furthermore, proximity of processing facilities to production areas ensures that fruit is processed, packed and sealed quickly. Apple and pear puree, for example, must be packaged within 8 hours to avoid fermentation while orange and mango ferments even quicker.⁵³ Although the distance that fruit can travel varies per type, the maximum distance fruit can travel in an ambient supply chain is about 500 – 600km (downgraded fruit will not be transported in a more expensive cold chain). All processors interviewed were located within 150km of production areas.

Operationally, fruit processing is a difficult and precise activity as any errors in packing weight ('under -pack' or 'over-pack') cannot easily be corrected after the fruit is packed and must be controlled carefully during the production process.⁵⁴ It is also a working capital-intensive business as the product must be processed at harvest time and stored at the processors' cost for delivery to retailers throughout the year.⁵⁵

The equipment used in processing is generally tailored to a particular category of fruit (depending on the size of the pip, for example). There are options to establish multi-fruit processing plants to improve utilisation but this is not common.⁵⁶

⁵⁰ Interview with industry association, South Africa

⁵¹ Interview with fruit processors, South Africa

⁵² Interview with industry association, South Africa.

⁵³ Interviews with processors, South Africa

⁵⁴ Interview with processors, South Africa

⁵⁵ Interview with processors, South Africa

⁵⁶ Interview with fruit processor, South Africa

Within the fruit processing segment, there is also a 'hierarchy' in terms of which form of processed fruit is more 'forgiving' than others. The puree market, for example, is easier to enter because purees can absorb poorer quality fruit than canning where the fruit must still be visually appealing to the consumer.⁵⁷ The extent of processing also differs by fruit type. For orange, mango, and litchi, the pulp is normally kept in the fruit puree but apple and pear juice is clarified to remove the solid particles. To maximise the cost of transport, processors try to transport the fruit pulp, puree or juice with as high a sugar content (or 'Brix value') as possible.⁵⁸

At the consumer level, interviewees differed about the importance of branding but there does seem to be a difference between developing and developed markets, with interviewees saying that branding is still important in developing markets but that consumers in developed markets (particularly in the US and EU) are moving away from branded goods to cheaper dealers' own brands.⁵⁹

Generally, our interviews show that there is a significant amount of vertical coordination in the value chain to ensure optimal utilisation of processing plants and to ensure that conversion happens rapidly given the short shelf life of fruit.⁶⁰ We found that firms at the processing level are either wholly or partly owned by farmers and generally operate at the blending level of the value chain. However, processors and blenders tend not to operate at the consumer goods level, leaving the bottling and branding of ready-to-drink juices to large FMCG firms. In fresh fruit value chains there is even greater vertical coordination. To improve responsiveness to customer demand in high-value export destinations, producers are setting up processing facilities closer to customer hubs and integrating their supply chain with sales data in supermarkets to improve service levels and respond more promptly to demand.⁶¹

5.1.1 Large players and key trends in the South African fruit processing value chain

The South African fruit processing industry is relatively mature with slow growth. From the supply side, growth of the fruit juice industry is largely due to growth in fruit production while on the demand side growth in processed fruit products has been driven by improvements in per capita income and innovation in the industry.⁶² However, in terms of overall industry growth, there has been no entry of new processors but rather a trend towards consolidation with large processors taking over smaller processors.⁶³ Interviewees attribute the rising consolidation to economies of scale and the globally competitive nature of the sector.

⁵⁷ Interview with fruit processor, South Africa

⁵⁸ 'Brix' measures the sugar content of an aqueous solution. It ranges from 1 (pure water) to 100 (pure sugar solution). A puree, which is more viscous, generally gets to a brix value of 32-40, citrus can reach 60 and apples and pear can reach 70-75. Processors do not generally want to extract more water than this because a liquid with brix over 75 becomes too dense to pump through the processors' equipment. *Interview with fruit processor.*

⁵⁹ Interview with fruit processor, South Africa

⁶⁰ Most processors interviewed for this study are wholly or partly owned by farmers. Most traders/exporters have relationships with farmers but do not own a stake in the farm. A notable exception is the Unlimited Group which owns 5 farms that grow its baby vegetables or has a majority stake in other farms. The location of their farmst takes full advantage of South Africa's varying climate with 2 farms in the Western Cape, 2 in the Free State and 1 in Limpopo, ensuring that they have year-round supply of vegetables.

⁶¹ Interviews with fresh fruit companies and processors, South Africa

⁶² Interviews with processors, South Africa

⁶³ Interviews with processors, South Africa

Table 4 shows the major primary processors and juice manufacturers in the fruit processing value chain within South Africa. Fruit processing is relatively concentrated with the largest five firms accounting for slightly under 50% of total revenue in the industry (Euromonitor, 2017). There has been no entry of new processors but rather a trend towards consolidation with large processors taking over small processors. This is characteristic of a mature and stable industry with slow growth.

Table 4: Main players in the fruit value chain

Primary processors	Juice manufacturers/packaging companies
Associated Fruit Processors	Nestle
Ceres Fruit processors	Coca-Cola (Appletiser)
Tiger brands	Passina
Langeberg & Ashton Foods (subsidiary of Tiger Brands)	Tiger Brands
Rhodes Food Group	Clover
Pioneer Foods	Rhodes Food Group
Ceres Fruit Processors (Pioneer)	Parmalat
Uni-Fruit	Pioneer (Ceres)
Pure Juice	Sir Juice
Venco Fruit Processors	Take 5
Elgin Fruit Processors	
Granor Passi	
Cape Fruit Processors	
Uni-Fruit	

Source: Interviews with South African processors

Canned fruit and fruit puree

Major players in the fruit canning business include Langeberg & Ashton Foods, a subsidiary of Tiger Brands, and Rhodes Food Group. Langeberg & Ashton Foods is the leading player in deciduous fruit canning with a production capacity of approximately 100 000 to 120 000 tonnes of fruit per annum. The firm accounts for approximately 60-70% of the canned fruit puree market.⁶⁴ The company's 'Koo' brand is the leading brand in processed fruit and vegetables with a 33% value share in 2016.⁶⁵ Rhodes Food Group accounts for the remaining 30-40% share of the market. Its leading brands, Rhodes and Bull Brands, had an 8% value share in 2016.⁶⁶

Southern Canned Products, a subsidiary of the specialist chemical and explosives company AECL, exited the canning business to focus on trading fruit juice concentrate, purees and 'ready-to-use' juice formulations. The company was started in the 1970s primarily as a pineapple canning business but has since evolved into a trading business. About 7 years ago, it set up a factory that converts fruit concentrates and pulps into 'ready-to-use' fruit juice

⁶⁴ We note that these are not competition markets as no extensive analysis of competing or substitute products and other factors were conducted. These market shares were reported by interviewees and describe firms' views of competitive conditions in their markets.

⁶⁵ Euromonitor, 2016.

⁶⁶ Euromonitor, 2016.

formulations for bottlers including Clover, Appletiser, Ceres and the Coca-Cola Company, to be bottled under the companies' own brands. The company also supplies alcohol and cider manufacturers and confectionery firms.

Southern Canned Products specialises in a wide range of concentrates and purees including citrus, berries, apple, pear, stone fruit, tropical fruit and grapes. Their concentrates are sold across the continent, with growing sales in West Africa (particularly Ghana and Nigeria), Angola, Central Africa and the island states (Mauritius and Seychelles). Their business model in these countries is the same as in South Africa (i.e. mixing concentrate for sale to bottlers), but the formulations are tailored to local tastes and flavour profiles. Though they have seen growth in these markets, Southern Canned Products cautions that fruit juice is very much a luxury product in the developing economies in which they operate and is still easily excluded from consumer baskets in difficult economic conditions.

Key producers of citrus concentrate include Granor Passi, Uni-Fruit, Venco Fruit Processors and Cape Fruit. Granor Passi is one of the largest citrus fruit processors with a production capacity of 300 000 tonnes of fresh fruit per annum. Smaller processors such as Venco Fruit Processors have a production capacity of 80 000 to 100 000 tonnes of fruit per year.⁶⁷

Key producers of apple and pear concentrate include Ceres Fruit Processors, Elgin Fruit Processors and Associated Fruit Processors. Associated Fruit Processors has a processing capacity of 70 000 tonnes of fresh fruit per annum (CCRED and REPOA, 2017).⁶⁸

At the downstream juice manufacturing and distribution level, the market-leading firms include Nestle, Coca-Cola, Passina, Tiger Brands, Ceres (Pioneer) and Clover. Smaller recent entrants include Sir Juice in Johannesburg and Henties Juice Factory in the Western Cape.

5.2 The fruit value chain in Tanzania

Processing of fruits and vegetables is still underdeveloped in Tanzania and hence the value chain discussion focuses on the upstream agricultural production of fruits and small-scale processing.

Production

Production of fruits is dominated by smallholder farmers managing 2-10 acres. The main fruits grown include oranges, avocados, mangoes and tomatoes. Farmers tend to concentrate on growing fruit for which private local investors or businessmen are willing to extend finance and move away from fruits where there is more limited funding, such as watermelon. Most farmers practice mixed farming of fruits with vegetables, maize, and potatoes in order to earn additional income.

Farmers are increasingly using organic farming in production of fruits and vegetables, which was made possible through awareness campaigns that encouraged farmers to shift from inorganic farming to organic farming. This is coupled with minimal use of scientific farming methods such as the application of fertilisers and pesticides.⁶⁹

⁶⁷ Interviews with processors, South Africa

⁶⁸ Interview with fruit processors, South Africa

⁶⁹ Interview with farmers, Tanzania

Farming relies on rain-fed production, supplemented with water from traditional wells, and there is limited access to irrigation. The majority of farmers cannot invest in irrigation systems due to lack of access to finance. Water availability is increasingly becoming a key challenge.

Farmers also struggle to contain diseases and fruit flies which attack fruit trees. These insects reduce production and the quality of fruits. Although farmers have access to extension services from the agricultural extension officers on how to fumigate their crops, farmers lack finance to buy the pesticides which are also not easily available in local farming villages. The cost of transportation further raises the cost of sourcing pesticides from the city.

Inputs to production

With regard to seed inputs, most farmers are increasingly using improved variety of seeds and moving away from recycling local seed varieties from previous farming seasons. The local or traditional variety of seed takes longer to mature and produce fruits, has low yields, and the fruit it yields fetches lower prices. For example, the local variety of orange trees take 7-10 years to harvest the first fruits while the improved variety takes 4-5 years. The improved variety of avocados takes between 3-4 years to harvest the first fruit subject to sufficient water and fertiliser.

In the case of avocados, farmers often access the improved variety by becoming out-growers for large firms, *Africado* and *Serengeti*, who provide access to improved seeds. These companies sell the seeds to out-growers at a cost of TZS1000 while non-members can pay as much as TZS3000.⁷⁰ The large exporting companies also supply out-growers with harvesting equipment, crates and transportation of fruits from the farms. They also inspect smallholders' farming processes to ensure that they comply with standards in export markets.⁷¹

Because of the high costs of seeds, some local farmers successfully adapted the improved seedlings from Africado and specialise in producing seedlings for other local farmers at a cheaper cost than Africado. These are mainly groups of farmers who operate orange and avocado nurseries and seedlings. Improving access to improved varieties of seeds and inputs in fruit production is not a key government priority. Unlike other crops, the government does not provide any subsidies on inputs into orange and avocado production.

Markets

Farmers mainly sell their produce in the domestic market, which floods the market and results in plummeting of prices and significant post-harvest waste especially soon after harvest. Farmers lack knowledge of larger reliable markets and do not have access to cold storage facilities to store fruits and extend the shelf life of their produce beyond the harvest season.⁷² For example, the price of an orange can be as high as TSH100 during off-season and as low as TSH20 during the harvest season.⁷³

To address the challenges around limited markets and post-harvest waste, farmers sell their fruits through intermediate buyers or middlemen who then sell to local markets, processing

⁷⁰ Interviews with small farmers, Tanzania

⁷¹ Interviews with small farmers, Tanzania

⁷² Interviews with small farmers, Tanzania

⁷³ Interview with orange farmers, Tanzania

companies or export to Kenya. If farmers decide to sell directly on the market, there is no guarantee that they will sell all the fruits and therefore risk their fruit going to waste if kept for extended periods. To avoid fruit going to waste, farmers sell their produce to middlemen at low prices.

Farmers who are members of associations use local associations to find export markets for their produce, mainly in neighbouring countries. The association aggregates the fresh produce and sells it directly into export markets to avoid the costs of middlemen. Alternatively farmers sell to processing companies such as Bakhresa, DASH and Azam but these processors buy small quantities at prices approximately 50% below market price.⁷⁴

Due to the small local market, Tanzania sells its exports of oranges mainly to Kenya (Nairobi and Mombasa) to supply processing industries there. The rapid growth in exports of oranges to Kenya floods the market and lowers the price of oranges. Export oranges also have lower prices relative to oranges sold in the local market because they are of poorer and/or mixed quality since they are used for processing industries in Kenya. While the local market offers a higher price for oranges than the export market, the local market is not reliable. Other export markets include Congo, Rwanda, and Burundi.

In the case of avocados, there is some demand both in the country and outside. The local variety avocado is mainly marketed in neighbouring countries while the improved variety is sold in Europe. In contrast to oranges, the local market for avocados generates lower returns than exports. However, farmers who are not incorporated into the supply chains of firms like Africado and Serengeti Fresh cannot export. They do not comply with global farming standards and requirements and lack capital to invest in packaging material and cold chain facilities to receive and distribute fruits. Smallholder farmers lack economies of scale in production required to be competitive in export markets.⁷⁵ A number of farmers used to export in the past, but later failed because of lack of packaging, inability to meet standards and the remoteness from markets.⁷⁶ The local companies that have managed to export fruits from Tanzania received support from international organisations such as USAID. Generally, farmers lack the entire supply chain capabilities required to export into the fresh fruit markets.

Transport and infrastructure

Most farmers do not have access to reliable transport to take fruit to markets. Furthermore, poor road transport infrastructure limits access to markets from production areas. Although there are main roads linking farmers to markets; the biggest challenge is the bad condition of feeder roads or access roads from the farms to the main roads. Transporting fruit is particularly a challenge during rainy seasons.

Lack of access to capital

Although farmers have access to land, they do not have access to capital to invest in their land to increase productivity. Farmers cannot access bank loans because financial institutions classify farming as a risky project. Farmers depend on rain-fed production and therefore returns are not assured. They also lack access to bank finance because they do not have title deeds to their farms hence cannot use their land as collateral to get loans from the banks.

⁷⁴ Interview with orange farmers, Tanzania

⁷⁵ Interview with farmers, Tanzania

⁷⁶ Interviews with farmers, Tanzania

Furthermore, farming is a marginal business. Often farmers are financially constrained and will be forced to borrow funds for consumption, school fees, etc. instead of for productive investments.

This has seen many farmers turning to risky investors or middlemen termed ‘wawekezaji’ to access capital. When a farmer enters into a contract with middlemen, they practically lose ownership of the farm and become little more than farm managers. The middlemen provide finance for farm preparation, sowing, inputs (seeds, fertilizer and pesticides), and transport with an agreement that all the harvest will be delivered to them at an agreed price which can be as low as 50% of the market price. In this case, the farmer will not even know how many oranges or avocados were harvested. During the production period, the farmer weeds for free, and thus can intercrop with maize and beans to earn additional income. This arrangement may extend from a season to 7 years. It is quite common for the agreement to be extended for several years and even for it to be paid by the next generation. Some farmers end up selling their plots to the middlemen. This practice is common in Muheza, an orange producing region and Arusha among tomato farmers.

Although most farmers are organised into farmers’ associations or credit associations to raise capital, these efforts are not sustainable and they are not sufficient.⁷⁷ Often these farmers’ associations are financially weak because of small number of members.

5.2.1 Small scale fruit processing in Tanzania

Processing of fruits and vegetables is carried out at a very small scale and processors use primitive and low technology equipment for processing. Processing is mainly carried out by organised groups of farmers or members who receive basic training and a processing machine from local institutions such as Small Industries Development Organisation (SIDO) or international private organisations.

SIDO was established to promote development of small-scale industries in Tanzania and has also grown to support micro businesses in the informal sector. Often, these organised groups of processors never mature to commercially viable businesses and due to lack of funding fail to invest in additional machines to increase production capacity. Processors also lack technicians and genuine spare parts for processing machines.

The main form of processing is drying and juice pressing. Processors dry fruit using solar driers and use manual hand machines to press juice from oranges. They cannot use electrical machines due to lack of access to electricity. The effectiveness of solar driers depends on the weather, making them unreliable.

After processing, processors use basic forms of packaging in bottles and plastic packets without any form of branding. The majority of processors are not registered and do not have certification of standards from the Tanzania Bureau of Standards (TBS) and Tanzania Food and Drugs Authority (TFDA).

The process of attaining qualification for standards is regarded to be bureaucratic. However, a few processors have managed to attain certification of standards. Small processors are also

⁷⁷ Interview with farmers and processors, Tanzania

not confident of taking their products to authorities for fear of getting their products banned due to poor quality.

The processed products do not have expiration dates and only last for an average of 6 months because of lack of knowledge on preservation methods. They therefore process small quantities to avoid losses from over-production since their market is small and limited. Processors mainly produce for the informal market and cannot access formal supermarkets due to lack of compliance with standards.⁷⁸

Due to lack of funding, there is limited capital investments in processing equipment and factories. Local farmers depend on foreign investors or individuals to invest in local processing facilities. Although there have been efforts to try and get investors to set up small and medium processing industries in the fruit producing districts, these negotiations never materialise.

⁷⁸ Interview with a banana processing group, Tanzania

6 Key issues and proposals for intervention

This section presents insights from interviews on key challenges that limit development of the fruit value chain between Tanzania and South Africa and suggests initiatives to address these challenges.

There are significant opportunities for investment and upgrading in Tanzania given already-existing capabilities in fruit production, but the industry faces a number of constraints. Key challenges in upgrading Tanzania's fruit value chain include lack of capital to invest on farms to increase productivity, lack of compliance with global standards, lack of cold storage and processing facilities leading to significant post-harvest losses, limited markets and poor transport and infrastructure from fruit production areas to markets. The South African fruit industry, by contrast, is well-developed and the country is a key exporter of fresh fruit to all major consumer markets. It has established a well-regarded institutional framework to assure quality and traceability throughout the value chain and to find and facilitate access to new consumer markets.

In terms of opportunities for increased trade between Tanzania and South Africa, most South African interviewees suggest that opportunities are limited by the similarity in types of fruit produced, poor transport network and infrastructure to move fruits from production areas, and the lack of cold storage facilities at Tanzanian ports of entry and exit. If logistical constraints were addressed, the greatest potential for increased trade would be in mango, avocado, passion fruit, pineapple and pomegranates as high value fruit.⁷⁹ Of these crops, the greatest interest appears to be in mango, pineapple and avocado.

The most beneficial cross-country opportunities for collaboration undoubtedly lie in improving logistics and assuring compliance with global quality standards to support Tanzania's integration into the global fruit value chain. The key challenges to consider in upgrading the Tanzanian value chain are:

- i. Providing support to increase production and ensure year-round supply of fruit for fresh market and fruit processing
- ii. Global competitiveness,
- iii. Investment in skills, logistics and technology to upgrade the cold chain, and
- iv. Access to finance

6.1 Security of supply and investment in processing facilities

Security and sustainability of fruit supply is important for supplying global markets and incentivising investments in processing facilities. Processing facilities require a minimum level of throughput to be efficient and the investments would only be justified if continuous (year-round) fruit supply could be assured.

However, it appears that Tanzania has not yet fully developed local fruit production capabilities which may limit investments in fruit processing. Fruit production is largely carried out by small-scale farmers who rely on rain-fed production. Furthermore, farmers lack access to affordable inputs and equipment creating a weak production base.

⁷⁹ Interviews with fresh fruit exporting companies, fruit juice industry association and fruit processors

On the other hand, opportunities in fruit processing are even more significant in Tanzania at present because farmers lack supply chain capabilities required to sell into fresh fruit markets. They do not have the appropriate infrastructure to store and transport fresh fruit and struggle with finding markets for fresh fruits. Although fruit processing is not the most profitable segment in the fruit value chain, it remains a necessary component in the value chain to absorb fruit that is not suitable for fresh markets. This fruit could be dried or converted to purees, pulps and concentrates used in the manufacture of fruit juice, preserves and other condiments. Small groups of farmers or processors are already involved in fruit drying and pressing of orange juice, but these activities are carried out at a very small scale which is not commercially viable. Significant investments in processing equipment are required to increase production capacity.

Potential initiative: Efforts to improve production could build on the strategies proposed by the Horticultural Development Council of Tanzania (HODECT) in the Horticultural Development Strategy 2012-2021. These include providing farmers with affordable equipment, subsidised agricultural inputs and promoting the use of irrigation practices. However, implementation of these strategies requires access to long-term term finance and political buy-in. Section 6.4 outlines some of the strategies to expand long-term financing for the horticulture sector in Tanzania.

On the processing side, South African processors suggested investments in solar fruit driers and small pulping plants to absorb fruit that is going to waste and increase current production capacity. This processing equipment could be procured from South African equipment suppliers.

6.2 Access to markets and compliance with standards

Fresh and processed fruit are globally traded commodities with prices set by large producers.⁸⁰ As a large producer of oranges and avocados, Tanzania needs to be competitive against well-established global producers such as South Africa, Spain, and China in the export of citrus; and Mexico in the export of avocados. All major exporters have built strong global reputations over long periods. On average, it took South African firms approximately 5 years to establish a good reputation with European customers (relationships that go back decades) and any variation in quality can lead to an immediate setback. South Africa's competitiveness lies in its ability to consistently meet international food safety standards coupled with good infrastructure and capabilities in fruit production.

Due to the globally competitive nature of the fruit value chain, access to large developed markets is crucial for upgrading within the industry. Access to larger markets outside the region is a key challenge to growing Tanzania's fresh fruit industry. It is thus imperative that Tanzania complies with international standards and traceability requirements to enter high value export markets. Although small farmers and processors have access to information on food safety and quality standards, they appear complacent in terms of taking the necessary steps to acquire certification which is exacerbated by the lack of funding and weak institutional framework to assure quality and traceability throughout the value chain.

⁸⁰ Prices are generally determined by the largest producers. China sets the price benchmark for apple juice concentrate, South American countries for grape, Brazil for oranges, Greece and Turkey for deciduous fruit and Thailand for pineapple.

Potential initiatives: There are some companies within Tanzania that have been successful in meeting international standards. These include *Africado* and *Serengeti Fresh*, both of whom market avocados produced by smallholder farmers incorporated into out-grower schemes to developed countries. These successes need to be embedded within a broader public or private institutional structure, such as a standards regulatory body, that can assist local firms to comply with international certification requirements.

South Africa has a number of private associations that assist farmers and processors in meeting global food safety standards and the Department of Agriculture, through the independent service provider, Perishable Products Export Control Board (PPECB), which carries out inspection and food safety services in the fruit export sector.⁸¹ We suggest bilateral cooperation between the South African and Tanzanian governments, in cooperation with Fruit SA, to strengthen existing structures within Tanzania that provide training and advice on meeting global food standards. The Tanzania Bureau of Standards (TBS) and Tanzania Food and Drugs Authority are the main bodies involved in the certification of standards.

6.3 Transport and infrastructure

Investing in transport, road infrastructure (particularly feeder or access roads from farming areas to main roads) and cold chain facilities in production areas and at air and sea ports is critical to stemming post-harvest losses and upgrading Tanzania's fruit value chain. Cold storage facilities extend the shelf life of fruit while improvements in road network infrastructure facilitate the quick movement of fruit from farm to consumer markets. The construction of a new airport in Dar es Salaam with cold storage facilities was cited by many interviewees as a step in the right direction. One of the South African fruit exporters interviewed is currently considering investing in sorting and storage facilities in Dar es Salaam due to the coming improvements.

Potential initiative: There is potential for partnership between South African exporters and Tanzanian producers to invest in cold storage equipment and a reliable cold chain to export markets. It may be beneficial for Tanzanian producers to partner with South African entities familiar with the quality and phytosanitary requirements necessary to access leading consumer markets in designing the cold chain and ensuring the integrity of the chain is maintained from farm to port.

6.4 Access to finance

The initiatives we have proposed all rest on access to finance for expansion and on organizing smallholder farmers and incorporating them into global supply chains on a fair basis. Financing remains a significant challenge in Tanzania with few commercial banks willing to extend finance to farming activities. Fruit production is considered a risky project because farmers depend on rain-fed production and do not have irrigation systems, farming equipment and inputs that will raise productivity and generate higher returns for their fresh produce. Lack of funding perpetuates a cycle of poverty among farmers who continue to be locked in low productivity activities earning marginal returns.

Potential initiative: The Horticultural Development Council of Tanzania (HODECT) proposed a range of plans to expand long-term financing and financial services in the sector from 2012

⁸¹ Interview with industry association, South Africa

to 2021. The Council outlined plans to improve access to finance through investment and agricultural banks such as the Tanzania Investment Bank (TIB) and the Tanzania Agricultural Development Bank (TADB). It also proposed expanding development partner financing and South African-based development finance institutions with a regional interest, such as the IDC and the DBSA, could support these HODECT initiatives.

7 Conclusion

Many of the interviewees were intrigued by the research question and supportive of the idea of joint regional industrialisation, indicating that they already look towards regional demand for future business growth but have not considered alternative regional sources of supply. Interviewees suggested that we should approach future value chain studies as a firm would develop a business case, thus selecting value chains on the basis of a comprehensive evaluation of global market size and potential demand.

When we evaluate the potential for cooperation between two countries it would also be useful to consider 'soft' issues and institutional factors such as (1) the predominant business language (in this regard Tanzania has a significant advantage over a country like Mozambique for example in that English is a major business language), (2) the embeddedness and similarity of the legal system between the countries, (3) policy certainty, (4) the skills required in a particular sector and whether they are available where needed, and (5) access to necessary inputs at reasonable cost. In agro-processing value chains it is particularly important to evaluate the cost of fertiliser, the availability and cost of spare parts for machinery and equipment, and the availability of packaging within any new market. Interviewees gave examples of agricultural investments that were crippled by the cost of spare parts and inputs. The state of transport infrastructure, particularly cargo and freight handling capabilities at major ports of entry and exit, can also add considerably to costs.

There are other considerations in agro-processing value chains that have emerged during this study. The range of products that can be produced within countries is obviously determined by climate and geographic location. Trade would necessarily be greater between countries in different hemispheres because products are harvested at different times of the year. In this case, the effect of proximity between countries is unclear – it is obviously easier to trade over short distances, but it also increases the chance that the countries have similar production capabilities.⁸²

⁸² That said, raw fruit does vary from region to region and from season to season in terms of acidity, flavour, colour etc. Factories become known for their taste/flavour profiles and are sought out by particular customers.

Annexure 1: South Africa list of interviewees

Interviews	Firm/institution
1	Ceres Fruit Processors
2	Langeberg & Ashton Foods (subsidiary of Tiger Brands)
3	In2Fresh
4	Fruit SA
5	Venco Fruit Processors
6	South African Fruit Juice Association (SAFJA)
7	Granor Passi
8	Southern Canned products
9	Unlimited Group
10	Associated Fruit Processors
11	ZZ2

Annexure 2: Tanzania list of interviewees

Interviews	Classification	District
FGD 1	Members of group (Farmers and processors)	Arusha
FGD 2	Members of group (Farmers and processors)	Arusha
IDI 1	Farmers and processors	Arusha
IDI 2	Farmers and processors	Arusha
IDI 3	Farmers and processors	Arusha
IDI 4	Farmer	Arusha
IDI 5	Farmer	Arusha
IDI 6	Farmer	Arusha
IDI 7	Farmer	Arusha
IDI 8	Farmer	Arusha
IDI 9	Farmer	Arusha
FGD 3	Members of group (Farmers only)	Arusha
FGD 4	Members of group (Farmers only)	Arusha
IDI 10	District Agriculture Officer	Muheza
FGD 5	Members of Association (Orange Farmers only)	Muheza
FGD 6	Members of Group (farmers only)	Muheza
FGD 7	Farmers and transporters	Muheza
FGD 8	Member of group (Farmers and processors)	Muheza
IDI 11	Farmer	Muheza
IDI 12	Farmers and processors	Muheza
IDI 13	Farmer	Muheza
IDI 14	Farmer	Muheza

Notes: Focus Group Discussion (FGD), In-depth Interviews (IDI)