

A PROFILE OF THE SOUTH AFRICAN CARROT MARKET VALUE CHAIN

2021



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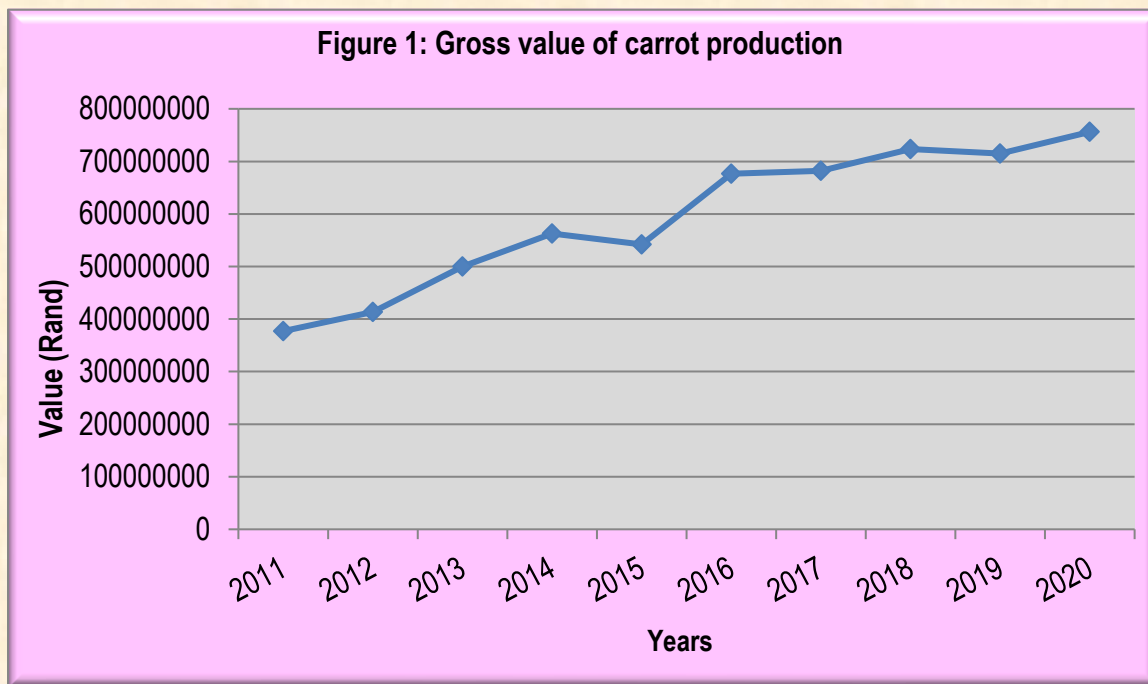
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REPUBLIC OF SOUTH AFRICA

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1. DESCRIPTION OF THE INDUSTRY

Carrot is a root vegetable usually orange, white or red, white blend in colour with a crisp texture when fresh. These colours still exist, with orange-red colour being by far the most popular today. The carrot has originated in Asia. The edible part of a carrot is the tap root. Carrots are considered one of the major vegetables consumed in South Africa. It is among the top ten most economically important vegetables crops in the world in terms of both area of production and market value. Rich in Vitamin C, B1 and B2 and particularly rich in carotene (pro-vitamin A), they can be eaten raw, whole, chopped, grated or added to salads, for colour or texture. Carrot has a crisp texture when fresh. They are also often chopped and boiled, fried or steamed and cooked in soups and stews, as well as fine baby foods and selected pet foods. Carrots are also widely used in many cuisines, especially in preparation of salads. The greens are edible as a leaf vegetable, but are rarely eaten by humans. Some sources suggest that the greens contain toxic alkaloids. Large quantities are also processed either alone or in mixture with other vegetables, by canning, freezing or dehydration.



Source: Statistics and Economic Analysis, DALRRD

Figure 1 above illustrates the contribution of the carrot industry to the gross value of agricultural production over 10 years. As of 2012, there was a 14.9% increase in carrot gross value, when compared to the 2011 gross value. In 2013, gross value has gone up by 20.8% when compared to previous year gross value and this can be attributed to the 1.3% increase in production output in the same year. Carrots gross value grew by 12.6% during the 2014 period in comparison to the previous year gross value and this can be ascribed to the increase in producer price during the same year. In 2015, there was a sharp decrease of 26% in carrot gross value, when compared to 2014 gross value, and this can be ascribed to a 36.7% drop in producer price. Carrot gross value increased by 24.8% during 2016 and the gross value was a record high over a tenyear period. This can be ascribed to a 25% increase in the producer price during the same season. During 2017, there was a slight increase

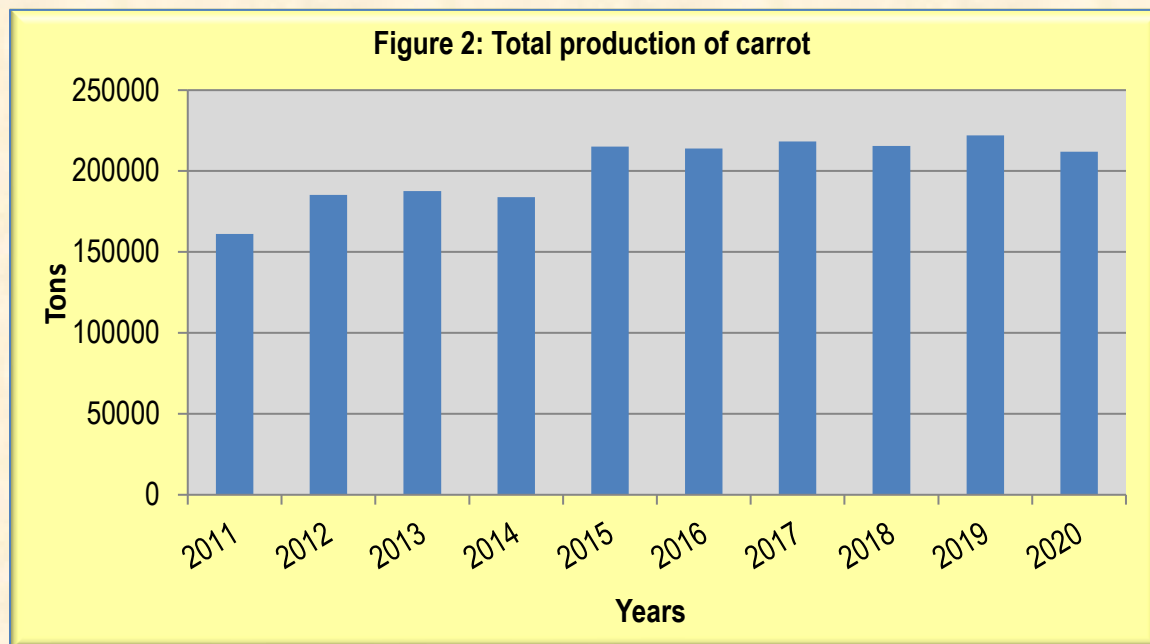
of 0.78% in carrot gross value, relative to 2016 gross value and this can be attributed to 2% increment in carrot production output. As of 2018, carrot gross value grew by 6% in comparison to the 2017 gross value of production and can be ascribed to favourable prices that occurred during the same period. In 2019, South Africa's carrot gross value declined slightly by 1.2% relative to the 2018 gross value and this can be ascribed to the 4.1% drop in producer price. As of 2020, there was a 5.7% increment in carrot gross value relative to the 2019 gross value.

1.1 Production areas

Although carrots can endure summer heat in many areas, they grow best when planted in cooler climates. It is difficult to establish carrots in summer because heat, rain and early blights are major causes of crop failure and quality reduction. Carrot production is concentrated in the Western Cape, Gauteng, Free State, North West, KwaZulu Natal and Mpumalanga. Globally, China is still the largest producer of carrots, followed by, Uzbekistan, the United States of America, the Russian Federation, Ukraine, the United Kingdom, Germany and Indonesia

1.2 Production Trends

Figure 2 illustrates carrot production volume from 2011 to 2020.



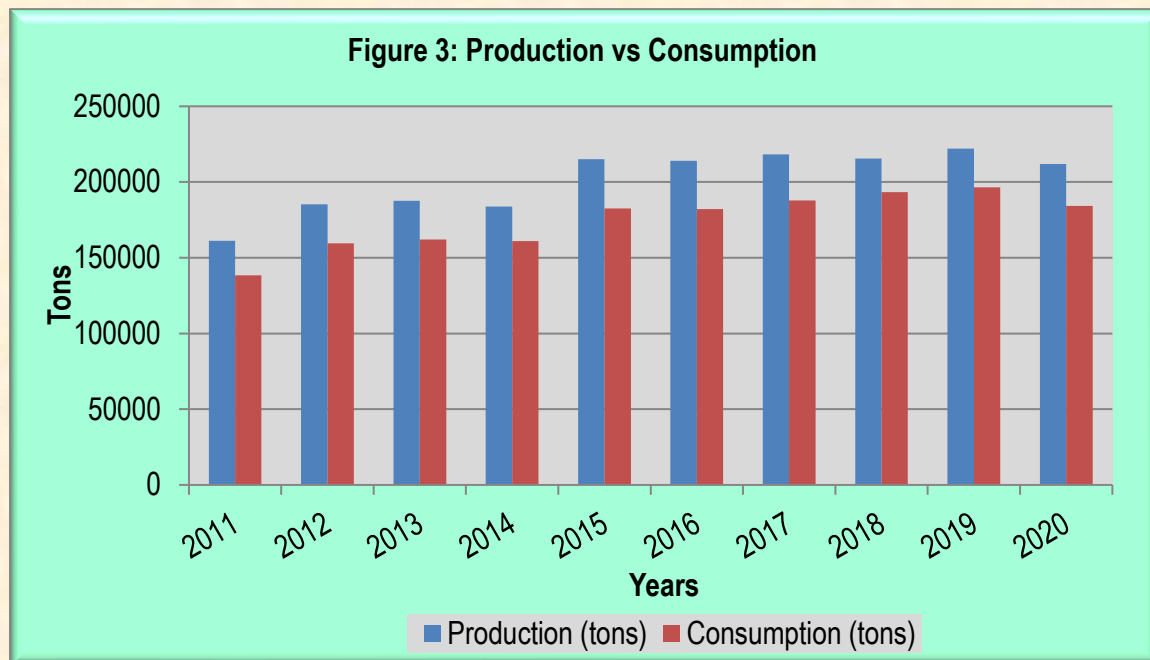
Source: Statistics and Economic Analysis, DALRRD

In 2011, carrot production output was just above 161 143 tons per annum and during 2012, production output increased by 14.9% when compared to the 2011 season and the production volume was the highest in 10 years. During 2013, production output has slightly gone up by 1.3% when compared to the previous year's output. Production output dropped slightly by 2% during 2014 relative to 2013 production volume. There was a notable increment of 16.9% in production output during 2015 when compared to the previous year's output. Production output was stable above

120 000 tons during the 10 years. During 2016, there was a slight decline of 0.5% in production output, when compared to 2015 production. In 2017, carrot production output has expanded by slightly by 2% in comparison to 2016 production output. As of 2018, there was a slight decline of 1.3% in production output relative to the previous (2017) year's production output. During 2019, South Africa's carrot output increased by 3% in comparison to 2018 output. As of 2020, South Africa's carrot production output declined by 4.5% relative to the production output.

1.3 Production vs. Consumption of carrot

Figure 3 below depicts local consumption of carrots compared to the production over the 10 years. The figure indicates that the production of carrot is higher than the consumption. This indicates that South Africa is self-sufficient in terms of carrot production and the surplus is also exported. South African carrot consumption was approximately 174 717 tons in 2020. This represents a 5% decrement in consumption compared to the 2019 consumption volume. This can be attributed to a 4.5% decline in production volumes in the same year.



Source: Statistics and Economic Analysis, DALRRD

2. MARKET STRUCTURE

There is no regulation or restriction in the marketing of carrots. The prices of carrots are determined by the market forces of demand and supply. The industry uses local market, informal markets, processor and direct selling to wholesalers and retailers. Carrots are also exported to other countries through export agents and marketing companies. South Africa also imports carrots from other countries.

2.1 Domestic market and prices

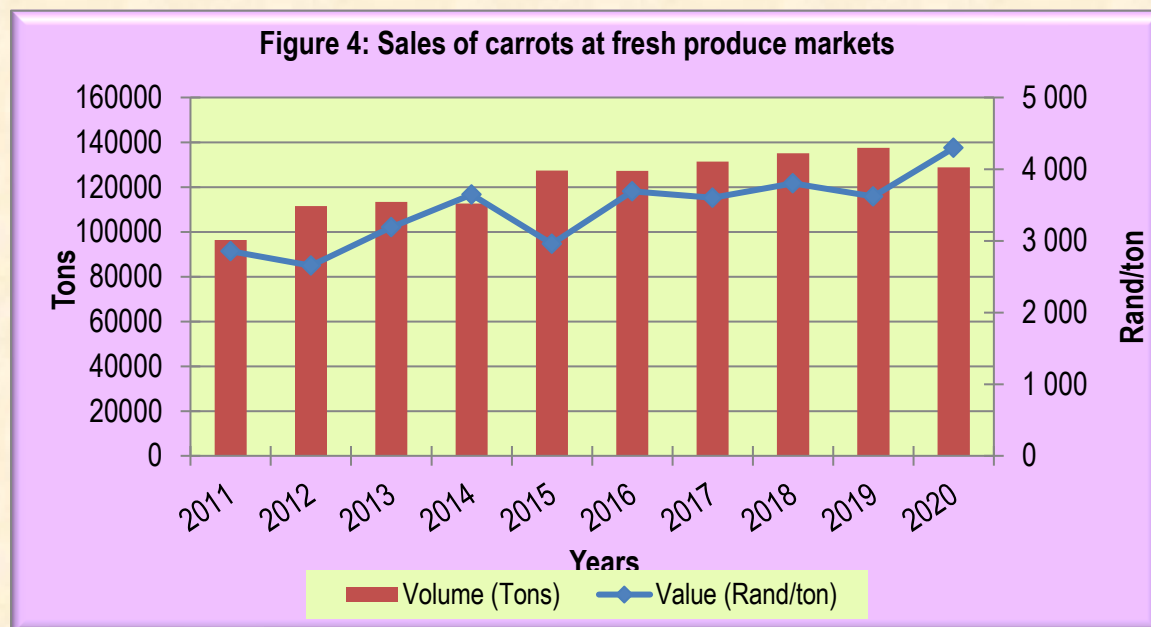
Table 1 gives the various channels of distribution through which carrots are marketed in South Africa.

Table 1: Carrots sold through different market channels

Years	National fresh produce markets (Tons)	Processing (Tons)
2011	96 405	16 993
2012	111 526	17 939
2013	113 355	17 680
2014	112 623	14 979
2015	127 352	19 643
2016	127 256	21 951
2017	131 333	21 277
2018	135 130	11 368
2019	137 461	12 776
2020	128 804	22 214

Source: Statistics and Economic Analysis, DALRRD

Table 1 above shows that in 2020, there was a surge in processed carrots compared to the previous year. National Fresh Produce Markets (NFPMs) remain an important channel for the sale of fresh carrots in South Africa. In 2020, 61% of all carrots were distributed through fresh produce markets. The remaining 39% represents direct sales from producers to wholesalers, exports, retailers, processors, informal traders and consumers. Sales at the market have decreased by 6.2% in comparison to 2019 sales.

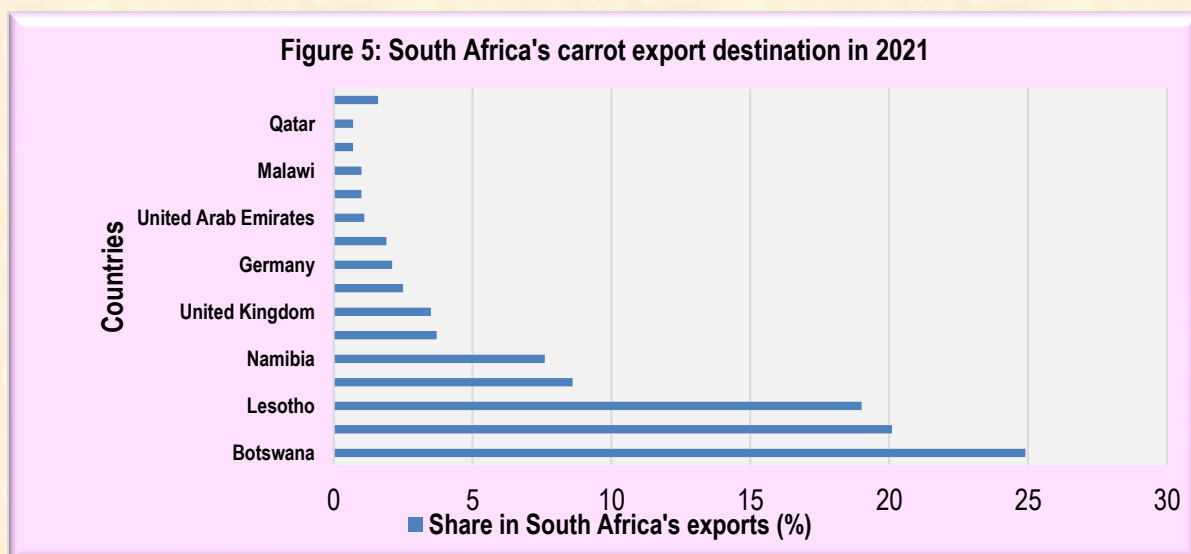


Source: Statistics and Economic Analysis, DALRRD

Figure 4 above illustrates the sales of carrots in the national fresh produce markets over 10 years. Carrot volumes and prices were moderately unstable. During 2011, carrot volume supplied at the market was just above 96 400 tons, which was a record low volume in ten years. In 2012, carrot prices dropped further by 7.5% as a result of a 15.6% increase in carrots supplied across the market. During 2013, the market price has gone up by 20.1%, despite a 1.6% increase in carrots at the market and this can be attributed to the strong demand for carrots in the same year. In 2014 the volume supplied at the market dropped by 0.6% and this impacted positively the market price and the price has gone up by 14% in comparison to the 2013 market price. A notable higher volume of 127 352 tons was supplied at the market in 2015, and this has negatively impacted the market price by 18.8%. There was a slight drop of 0.1% in volume supplied at the markets during 2016 and this resulted in a notable 25% increase in market price. In 2017, carrot volume supplied at the market eased higher by 3.2% and as a subsequent, the market price dropped by 2.4% relative to the 2016 price. As of 2018, carrot volume supplied at the market rose slightly by 2.9% in comparison to 2017 volume and the market price has increased by 5.6%. The increment in market price can be ascribed to good carrot uptake in the same season. In 2019, there was a 1.7% increment in carrot volume supplied at the fresh produce market and this has resulted in a 4.9% decline in the market price. In 2020, there was a 6.2 % decline in the supply of carrots in the fresh produce market, resulting in a notable 18.7% increase in market price.

2.2 South Africa's Carrots Exports

South Africa is not a major carrot exporter. In 2020, it still represented 0.5% of world exports, however, it's ranking in the world was number 24. South Africa's ranking in world carrots exporters has lost its competitiveness as in 2019, it was ranked number 22. Most of the carrots produced were destined for domestic markets. South Africa's carrot exports were mostly destined for Mozambique, Netherlands, United Kingdom, Botswana, Lesotho, Eswatini and Angola. Globally, China, Netherlands, United States of America, Australia, Spain, Belgium, Canada and Italy are the major carrot exporters. Figure 5 below illustrates South African carrot export destinations during 2020.



Source: ITC Trade Map

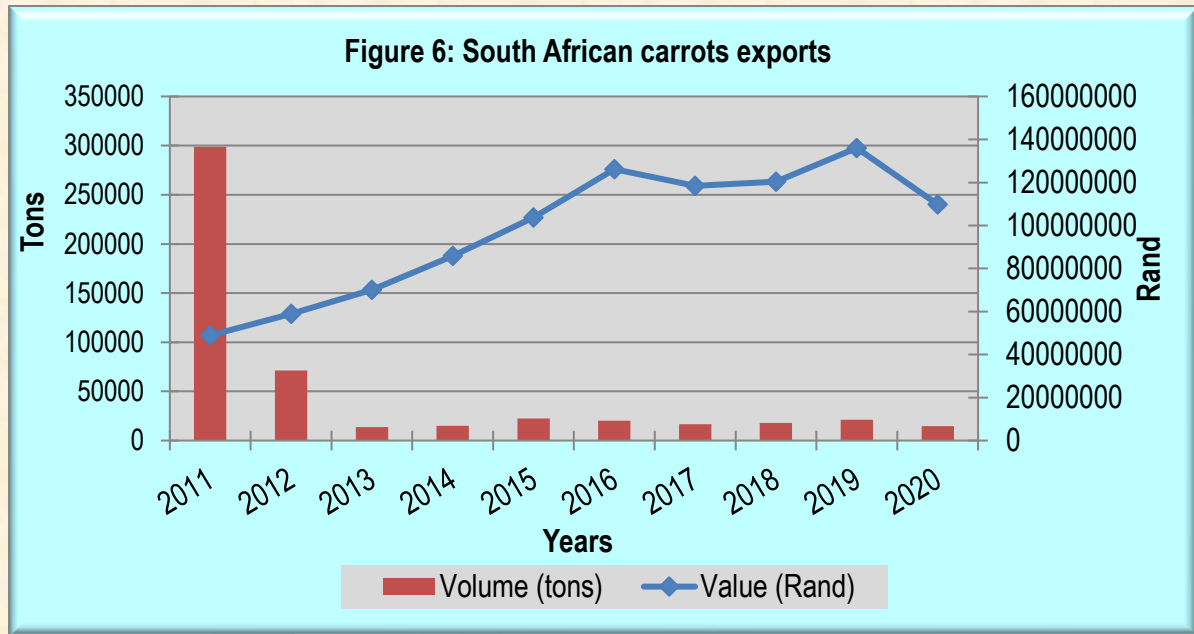
Further details relating to the exports of carrots from South Africa in 2021 are presented in Table 2.

Table 2: South Africa carrot exports in 2021

Importers	Value exported in 2021 (USD thousand)	Trade balance 2021 (USD thousand)	Share in South Africa's exports (%)	Quantity exported in 2021 (tons)	Growth in exported value between 2017-2021 (% p.a.)	Growth in exported quantity between 2017-2021 (% p.a.)	Growth in exported value between 2020-2021 (% p.a.)
World	2706	2683	100	5688	-4	-1	30
Botswana	674	674	24.9	1186	0	0	144
Eswatini	544	544	20.1	2265	19	12	23
Lesotho	514	513	19	1275	0	2	10
Netherlands	232	232	8.6	25	-3	-3	147
Namibia	207	207	7.6	291	-21	-26	12
Angola	101	101	3.7	287	-20	-14	48
United Kingdom	95	95	3.5	12	-24	-25	30
Zambia	69	69	2.5	128	-20	-19	-9
Germany	58	58	2.1	34	40	28	-53
Mozambique	51	51	1.9	87	-12	-24	-42
United Arab Emirates	30	30	1.1	5	-18	2	30
France	27	27	1	3	34	16	57
Malawi	26	26	1	31	8	6	-12
Seychelles	20	20	0.7	12	15	48	-1
Qatar	19	19	0.7	8	296		26

Source: ITC Trade MAP

Table 2 indicates that in 2021, South Africa exported higher quantities of carrots to Botswana, Eswatini, Lesotho, Netherlands, Namibia and Angola. Botswana commanded a 24.9% share of South Africa's carrots export, followed by Eswatini which commanded a 20.1% share and Lesotho commanded a 19% share. South African carrot exports to Namibia have decreased by 21% in value and 26% in quantity during the 2017 to 2021 period. South Africa's carrot exports to the Netherlands have decreased by 6% in value and 6% in quantity during the 2017 and 2021 periods. South Africa's carrot export to Mozambique has decreased by 12% in value and 24% in quantity between 2017 and 2021 period.

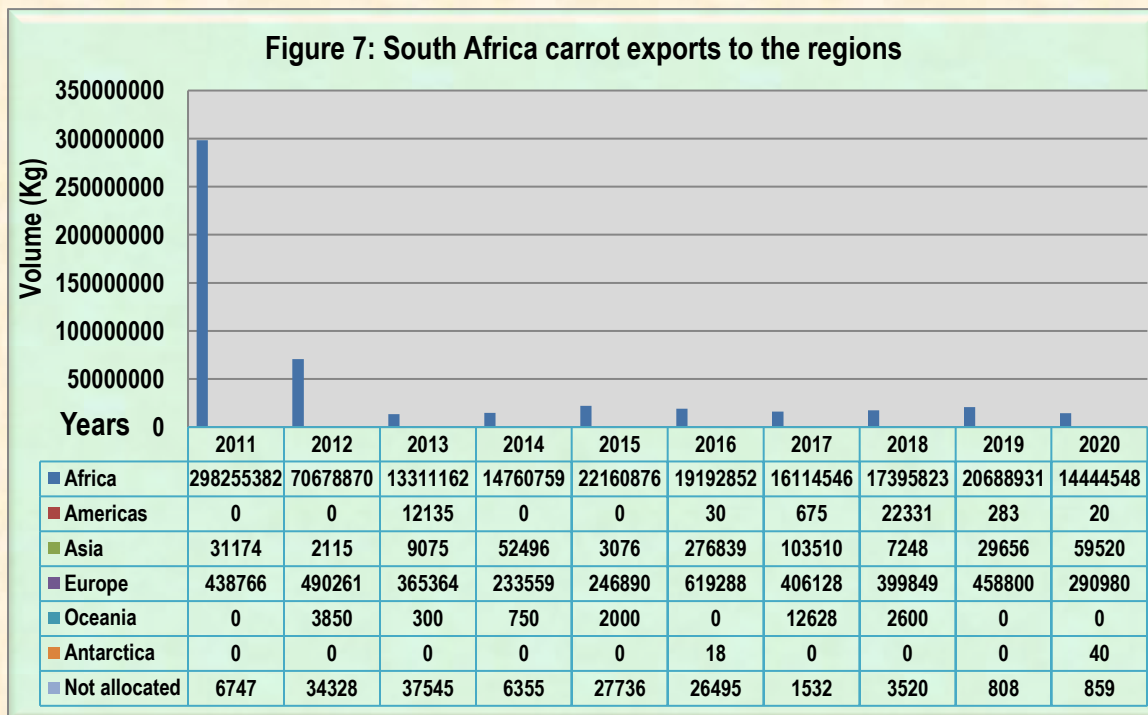


Source: Quantec Easydata

Figure 6 above illustrates carrot exports from South Africa over 10 years. In 2011, South Africa has exported a record high volume of carrots. During 2012, carrot exports have significantly gone down by 76%, when compared to the previous year, despite a 14.9% increase in production output. Export volumes have declined further by 81% during 2013, despite a slight increase, of 1.3% in domestic carrot output. In the same year, it was more profitable to export carrots when compared to the 2012 export value. In 2014 carrot exports increased by 9.5% in comparison to 2013 exports and it was more profitable to export carrots. In 2015, South Africa's carrot export has significantly risen by 49%, when compared to the 2014 export volume and this can be attributed to a 16.9% increment in the domestic output. In the same year, it was less profitable to export carrots in comparison the previous year's export value. There was a 10% decrement in South African carrot exports during 2016, and this can be ascribed to a slight 0.5% decline in the domestic production output. It was also relatively more profitable to export carrots, in comparison to the 2015 export value. In 2017, South Africa's carrot exports eased lower by 17% in quantity and value has sharply declined by 6% despite 2% increase in the carrot production output. As of 2018, there was a 1.6% increment in South Africa's carrot exports despite a slight drop in domestic carrot production. In the same year, it was less profitable to export carrots relative to the 2017 export value. In 2019, South Africa's carrot export increased by 18.7% and it was less profitable to export carrots in comparison to the 2018 export value. Carrot exports from South Africa fell sharply by 30% in 2020, which can be attributed to a 4.5% reduction in domestic production output. However, compared to the value of carrot exports in 2019, it was more profitable to export carrots.

Figure 7 below illustrates South African carrot exports to the regions. From 2011 to 2012, South Africa exports high quantities of carrots to the African region (Mozambique, Angola and Zimbabwe), then followed by Europe countries (the United Kingdom and France). In 2012, the African region continued to be the biggest export market for carrots originating from South Africa and more than 75% of carrots were exported to this region. In the same year and in 2013, Europe was still the second preferred export market for carrots from South Africa. Considerable volumes were exported

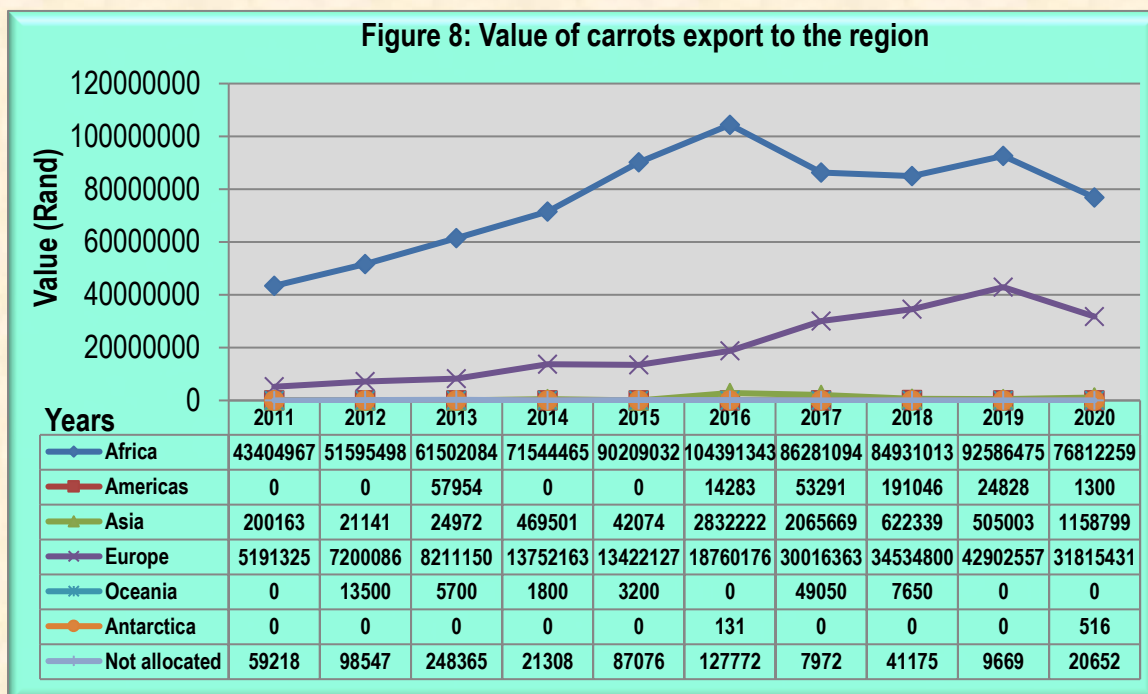
to the Oceania region while export to the Asian region has significantly dropped. In 2013, the African region was still the preferred export market for carrots from South Africa; however, the carrots were also destined for Namibia, Botswana, Swaziland and Lesotho. In 2014, carrots exports to Africa and Asia regions notably increased, while the exports to Europe has dropped by 36% in comparison to the 2013 exports. In 2015, the African region has by far the biggest export market for carrots originating from South Africa. At the same time, there was an increase in carrots exports for Europe, Oceania and unallocated exports, whereas the export destined to Asia region has dramatically decreased. In 2016, the Africa region remained the primary export market for carrots originating from South Africa. At the same time, there was a notable increase in carrot exports destined to Europe and Asia region. During 2017, Africa region continued to be the largest recipient of carrot exports from South Africa, however, the volume has dropped by 16% compared to 2016 export volume. In the same year, there was a notable decrement in carrot export destined to Asia and Europe, while carrot export to Oceania has sharply increased. As of 2018, Africa region was still by far, the preferred export market for carrot export originating from South Africa. There was also a notable export volume destined to Europe and Americas regions. In 2019, South Africa's export to Africa region has eased higher by 18.9% and exports destined to Europe increased by 14.7% and carrot export destined to Asia was incomparably higher relative to 2018 exports. As of 2020, South Africa's export to Africa dropped by 17%, export to the Americas region declined sharply by 94%, export destined to Europe declined by 25% whereas carrots export destined to Asia surged relative to the 2019 exports



Source: Quantec Easydata

Figure 8 below illustrates South Africa's value of carrot exports to the regions. In 2012, it was still more profitable to export carrots to the European region and unallocated exports also fetched higher value. In the same year, it was still less profitable to export carrots to the African region than compared to other regions. In 2013, Europe was still the most profitable export market, followed by

Oceania and unallocated exports also had a higher value. During the same time exports to African region were less profitable and the least profitable exports were exported to Asian region. During 2014, carrot exports to Europe region have fetched high values, followed by Asia and Africa. At the same time, the Americas and Antarctica have recorded zero trade. Europe market was by far the most profitable market for South Africa's carrot export during 2015, followed by Asia and Africa was the least profitable export market. In 2016, Europe market remained the most profitable export market, followed by Asia, while Africa region was still the least profitable market. At the same time, Americas and Antarctica have registered insignificant export values, while the unallocated export have registered a notable export value. During 2017, America followed Europe regions were the most profitable export markets, while Oceania and Africa markets were the least profitable export markets. As of 2018, Europe and Asia were the most profitable markets for South Africa's carrot exports, followed by America and Africa regions, whilst Oceania was the least profitable market. In 2019, it was far more profitable for South Africa to export carrots to the Europe region, followed by Asia while Africa region was the least profitable market. In the year 2020, exporting carrots to the European region was the most lucrative market for carrots originating from South Africa, followed by the African region, while exporting carrots to the Asian region was the market with the lowest profitability.

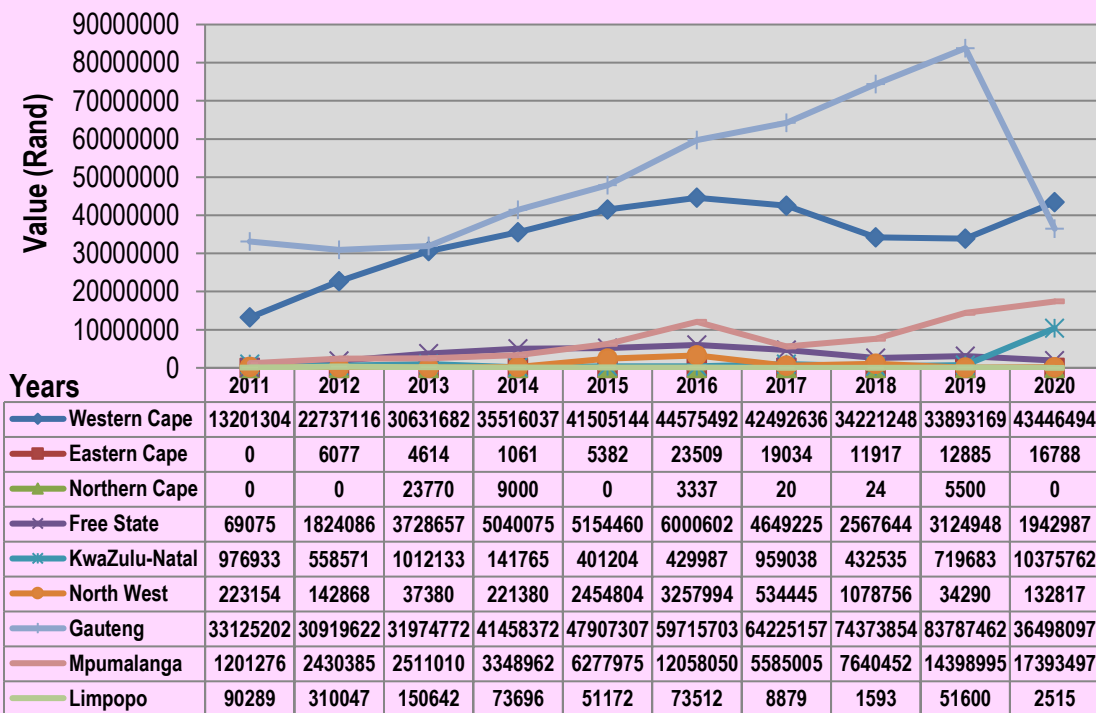


Source: Quantec Easydata

Figure 9 below illustrates the value of carrot exports by provinces for the past ten years. In 2011, Western Cape, Gauteng, Mpumalanga and KwaZulu Natal provinces were the primary exit point for South Africa's carrot. The higher carrot export value was recorded in 2012 and the exports were exported through Gauteng province. In the same year, Limpopo, Mpumalanga Free State and KwaZulu Natal export values have significantly increased relative to the 2019 export value. During 2013, Western Cape, Gauteng and Free State province export values significantly increased. The high export values for Western Cape and Gauteng can be attributed to the export exit points and the

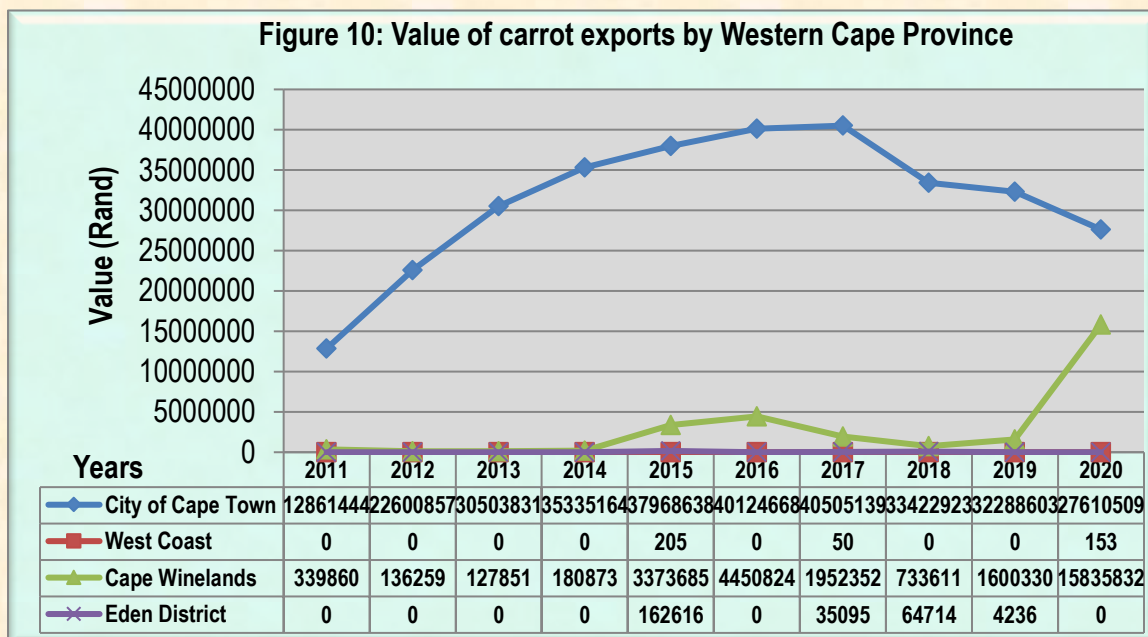
registered exporters located in these provinces. In 2015, Western Cape and Gauteng provinces have continued to contribute notably to South Africa’s carrot exports. At the same time, there was a significant increment in KwaZulu Natal, North West and Mpumalanga export values. During 2016, Western Cape and Gauteng provinces remained the main exit point for carrot export originating from South Africa. In the same year, there was a notable increase in carrot export values recorded for Free State, North West, Mpumalanga, KwaZulu Natal and Limpopo. In 2017, Gauteng and Western Cape provinces were still the primary exit points for carrots exported from South Africa. At the same time, KwaZulu Natal export value has doubled, while North West, Mpumalanga, Free State and Limpopo export volumes eased notably lower compared to 2016 export values. As of 2018, Gauteng province was by far the preferred exit point for South Africa’s lettuce exports, followed by Western Cape and Mpumalanga province. In the same year, Eastern Cape carrot export value declined by 41%, KwaZulu Natal export dropped notably by 54%, and Free State experienced a 43% decrement in export value, whereas North West and Mpumalanga have increased their export values by 101% and 36% respectively. During 2019, Gauteng remained the preferred exit point for carrot exports originating from South Africa and the export value eased higher by 12,6% relative to the 2018 export value. In the same year, KwaZulu Natal export surged by 66%, Free State export value increased by 21.7% whilst Western Cape export declined slightly by 0.9%. The Western Cape was the primary exit route for South African carrot exports in 2020, with the export value increasing by 28% over the previous year. In the same year, KwaZulu Natal exports rose by 30%, Eastern Cape exports increased by 30%, and Gauteng exports decreased by 56%. The following figures (figure 10-16) show the value of carrot exports from the various districts in all provinces of South Africa.

Figure 9: Value of carrots exports by South African Provinces



Source: Quantec Easydata

Figure 10 below indicates that in 2011, the City of Cape Town has was the main contributor to Western Cape carrot exports, West Coast and Eden districts export values were less significant. In 2012 and 2013, the City of Cape Town continued to lead in terms of carrots exports from Western Cape and the export value has significantly increased when compared to the previous year's export value. At the same time, Cape Winelands export value has also increased while export value for Eden has dropped. In 2013, Cape Winelands and City of Cape Town export values have substantially increased when compared to the 2012 export values. During 2014, City of Cape Town continued to contribute significantly to Western Cape carrot export. In during 2015, a record high export value was recorded for the City of Town and there was also a significant rise in Cape Winelands and Eden district export values. City of Cape Town has continued to lead in Western Cape carrot exports in 2016. Cape Winelands and Eden export values have also registered notable increments. During 2017, City of Cape was still the primary exit point for Western Cape carrot exports and the export value has slightly increased by 0.9% while Cape Winelands export value have sharply dropped in comparison to 2016 export values. As of 2018, City of Cape Town was still the primary exit point for Western Cape provincial carrot export, however the export value decreased by 17.4% relative to 2017 export value. At the same time, Cape Winelands export value has drastically dropped, whereas Eden export value sharply increased by 84%, when compared to 2017 export value. During 2019, City of Cape Town export value dropped further by 3.4%, Cape Winelands export value surged by 118% and Eden export value declined sharply by 93% relative to 2018 export values. In the year 2020, City of Cape Town was still by far the leading exit point for Weastern Cape carrot export, however the export value was 14% lower relative to 2019 export. In the same year, there was a surge in Cape Winelands export value and West Coast has registered trivial export value.

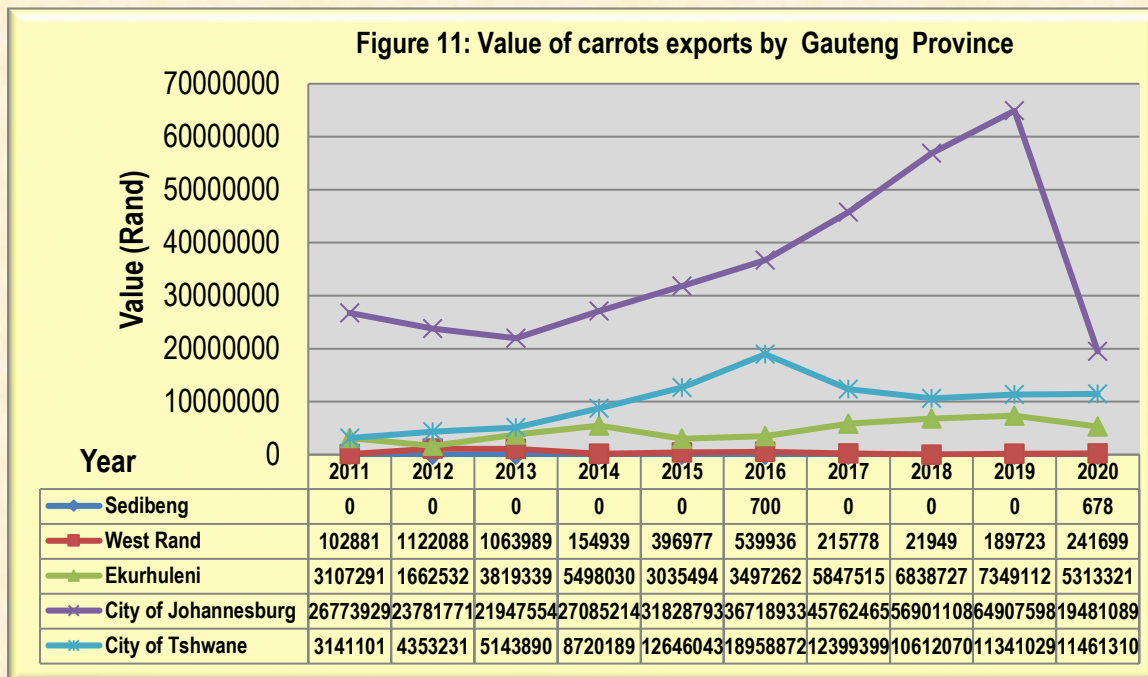


Source: Quantec Easydata

Figure 11 below shows that carrot exports by Gauteng province were mainly from the City of Johannesburg. Ekurhuleni and City of Tshwane have contributed to a lesser extent. In 2011, City of Johannesburg district municipality was the primary exit point for Gauteng provincial exports. As of 2012, the City of Johannesburg was still the highest contributor to carrot exports from Gauteng

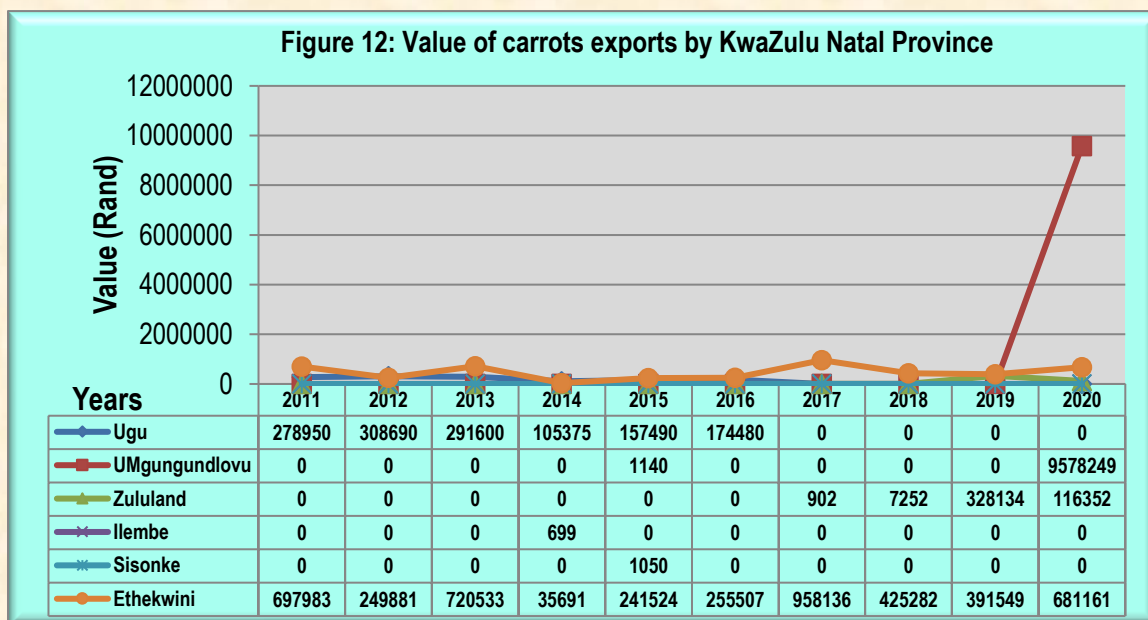
province and the export value has gone up by 12% when compared to the 2011 export value. In the same year, Ekurhuleni's export value has significantly dropped while the West Rand export value has notably contributed to Gauteng carrot export. During 2013, City of Johannesburg's export value was a record high in 10 years. At the same time, West Rand export value has tripled, while the City of Tshwane export value has dropped by 26%.

In 2014, the City of Johannesburg's export value has dropped by 25% in comparison to the 2013 export value, while City of Tshwane, Ekurhuleni and West Rand export value notably increased. The city of Johannesburg was still by far the main exit point of Gauteng carrot export during 2015. At the same time, West Rand and City of Tshwane export values have notably increased, whereas Ekurhuleni export value has experienced a slight decrement. In 2016, City of Johannesburg and City of Tshwane continued to lead in Gauteng carrot exports, Ekurhuleni and West Rand export values have notably increased whilst Sedibeng has recorded a trivial value. During 2017, City of Johannesburg was still the primary exit point for carrots export from Gauteng Province. At the same time, City of Tshwane and West Rand export values have sharply dropped, while Ekurhuleni export value rose by 19% relative to the 2016 export value. As of 2018, City of Johannesburg has continued to be the primary exit point for carrot exports from Gauteng and the export value sharply increased by 28%, whereas West Rand, Ekurhuleni and City of Tshwane export values have experienced decrement when compared to 2017 export values. During 2019, City of Johannesburg export value grew by 14%, Ekurhuleni, export value increased by 7.4%, City of Tshwane export value has gone up by 6.8% and the West Rand export value was incomparably higher relative to 2018 export values. In the year 2020, the City of Johannesburg was still the primary exit point for Gauteng provincial carrot export, however, there was a sharp drop in export value. In the same year, City of Tshwane carrot export value grew by 1% whereas Ekurhuleni export value declined notably by 27.2% relative to 2019 export value.



Source: Quantec Easydata

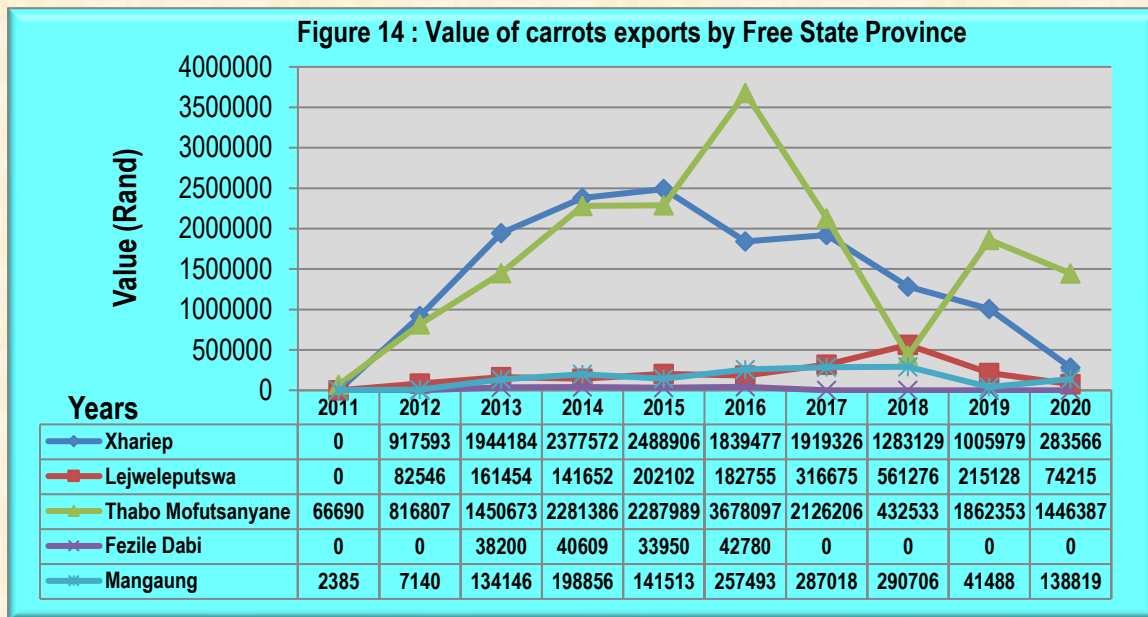
Figure 12 below indicates that carrot exports by KwaZulu Natal province were mainly from Ethekewini municipality and Durban harbour renders an export exit point. During 2011, Ethekewini and Ugu districts contributed notably to carrot exports from KwaZulu Natal. In 2012, KwaZulu Natal carrot exports were exported through Ethekewini and Ugu districts. Export value for Ethekewini has dropped by 85.7% and Ugu export value has increased by 2.9% when compared to the 2011 value. During 2013, KwaZulu Natal carrots were mainly from Ethekewini and the export value increased by 187%. In the same year, the export value for Ugu has dropped by 5.5%. During 2014, Ugu and Ethekewini export values drastically dropped, when compared to 2013 export values. In 2015, KwaZulu Natal carrot was exported mainly through Ugu and Ethekewini. At the same Umgungundlovu and Sisonke contributed for the first time to the KwaZulu Natal export value, however the export value was trivial. During 2016, Ethekewini export value increased by 10.3% and Ugu export value has gone up by 10.7% in comparison to 2015 values. In 2017, the Ethekewini district was still the main exit point for carrot export from KwaZulu Natal province and the export value was incomparably higher relative to the 2016 value. At the same time, Zululand recorded its first export value, but the value was insignificant. As of 2018, Ethekewini carrot export value has marginally dropped by 55.6% and Zululand export value was incomparably higher when compared to 2017 export value. In 2019, Ethekewini export value decreased by 7.9% and Zululand export share was incomparably higher relative to the 2018 export value. As of 2020, Umgungundlovu was the primary exit point for carrot exports from KwaZulu Natal, Ethekewini export value surged by 74% and Zululand export value grew notably by 64% relative to the 2019 export value.



Source: Quantec Easydata

Figure 13 below shows that carrot exports by Free State province were mainly from Thabo Mofutsanyane and Xhariep Municipalities. In 2012, Xhariep and Lejweleputswa contributed for the first time to Free State province carrot exports. In 2013, Xhariep has significantly increased its export value and this can be attributed to an increase in carrots exports to neighbouring Lesotho. In the same year, Fezile Dabi notably contributed to Free State carrot exports. Free State exports were from the Xhariep, Thabo Mofutsanyane, Fezile Dabi and Mangaung districts during 2014. Free State

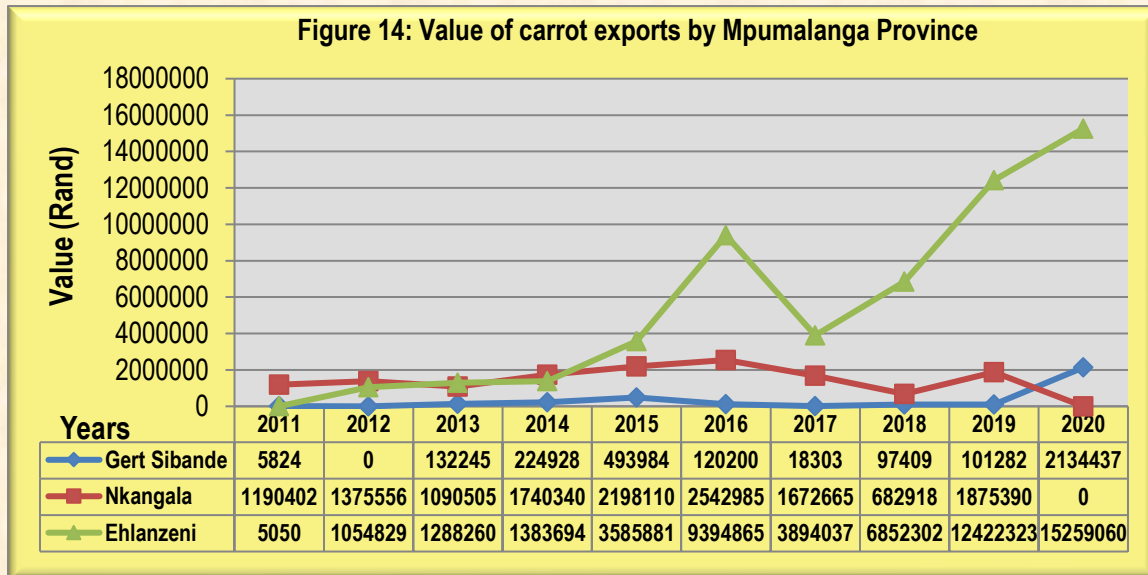
province exported carrots primarily through Xhariep and Thabo Mofutsanyane during 2015. There was a surge in Thabo Mofutsanyane carrot export value during 2016, Mangaung, Fezile Dabi have also registered notable increments in export values. The surge in Thabo Mofutsanyane export value can be ascribed to a 26% increase in the quantity of exports destined to neighbouring Lesotho. In 2017, Thabo Mofutsanyane was still the primary exit point for carrots export from Free State province, however, the export value has sharply dropped by 42% in comparison to the 2016 export value. In the same year, there was a notable increase in export value recorded for Xhariep, Lejweleputswa and Mangaung. During 2018, Xhariep was the main exit point for Free State carrots export, although the export value decreased by 33%, Thabo Mofutsanyane export value has drastically declined by 79.6% relative to 2017. At the same time, Lejweleputswa export value rose marginally by 77% and Mangaung export value slightly increased by 1.3%. During 2019, Thabo Mofutsanyane was by far the primary exit point for Free State carrot exports, Mangaung export value declined by 86%, and Lejweleputswa export value dropped by 61.6% and Xhariep export value declined by 22%. In the year 2020, Xhariep carrot export value declined sharply by 71%, Lejweleputswa export value fell notably by 65%, Thabo Mofutsanyane experienced a 22% decrement in export value whereas Mangaung export value surged by 234% relative to the 2019 export value



Source: Quantec Easydata

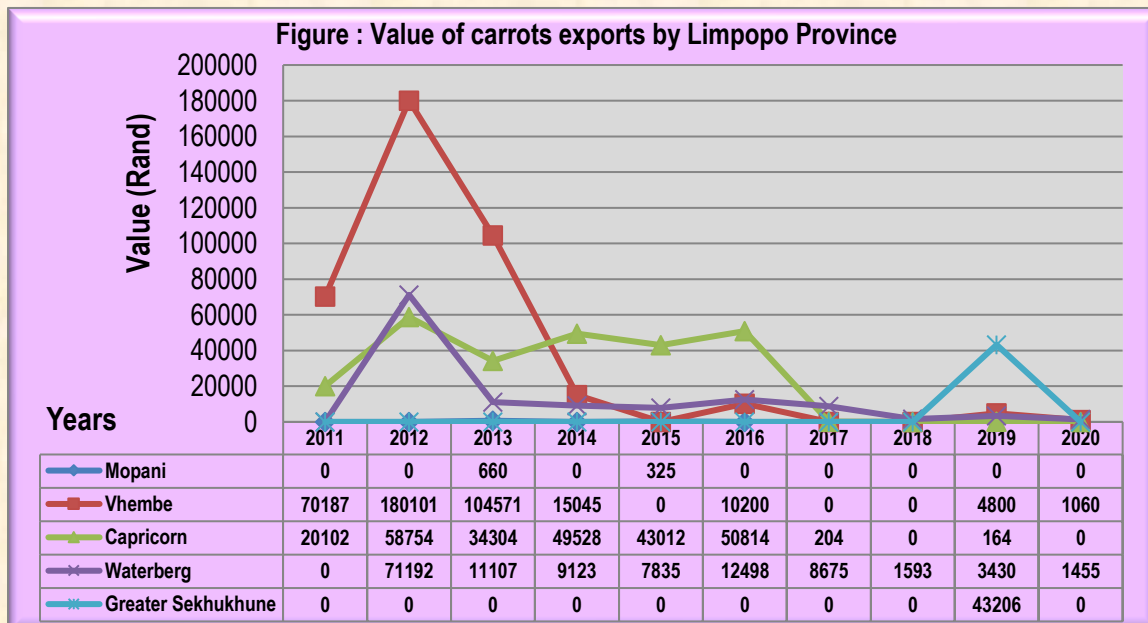
Figure 14 below indicates that, in 2011, Mpumalanga provincial carrots were exported mainly through the Nkangala district. In 2012, Mpumalanga carrot exports were exported through Nkangala and Ehlanzeni district and the export values have improved significantly. In 2014, Mpumalanga carrots exports were from Ehlanzeni and Gert Sibande and the export values have notably increased relative to the 2013 export value. Ehlanzeni carrot export value has surged during 2015, and Gert Sibande export value has also experienced a slight increment. In 2016, Ehlanzeni carrot export value surged, Nkangala has notably contributed to Mpumalanga carrot export, while Gert Sibande export value dropped by 77% in comparison to 2015 export value. During 2017, Ehlanzeni carrot export value eased lower by 58.5% relative to 2016 export value. In the same year, Nkangala export value has significantly increased while Gert Sibande export value has drastically dropped. In 2018, Ehlanzeni was still the primary exit point for Mpumalanga carrot exports and the export value rose marginally

by 76% and Gert Sibande export value was incomparably higher relative to the 2017 export value. The surge in export value can be ascribed to 76% increment in export value for carrots destined to neighbouring Mozambique between 2017 and 2018. During 2019, Ehlanzeni has remained the primary exit point for Mpumalanga carrot exports, Gert Sibande and Nkangala export values have notably increased relative to 2018 export values. As of 2020, Ehlanzeni carrot export value grew by 22.8% and Gert Sibande export value was incomparably higher to the 2019 export value.



Source: Quantec Easydata

Figure 15 illustrates the value of carrot exports by Limpopo province.



Source: Quantec Easydata

Figure 15 above illustrates that in 2011, Vhembe and Capricorn districts were the exit points for Limpopo provincial carrot exports. In 2012 and 2013, the Vhembe district continued to lead in terms of carrots exports from Limpopo province. In 2014, export from Limpopo province originated from Vhembe, Capricorn and Waterberg districts and Vhembe export value has drastically dropped. In 2015, Capricorn export value has drastically increased, Waterberg export value decreased by 45% and Mopani carrot export value was insignificant. In 2016, Limpopo carrot exports were sent through Capricorn, Waterberg and Vhembe districts. In 2017, there was a sharp decline in Limpopo carrot export relative to 2016 export value, and this can be ascribed to the 77% decrement in carrot value destined to neighbouring Zimbabwe. In 2018, Limpopo carrot was exported through Waterberg, however, the export value has sharply dropped by 81.6% relative to the 2017 export value. As of 2019, Greater Sekhukhune was the primary exit point for Limpopo carrot exports and there was a notable increase in Waterberg and Vhembe export values. In the year 2020, Vhembe and Waterberg were the main exit points for Limpopo provincial carrot exports however, the export values were less significant.

2.3 Share Analysis

Table 3 below indicates the regional share of South Africa's carrots exports. African countries commanded the greatest share of South African carrot exports followed by European countries. Carrot exports to the Americas and Asia were less significant. In 2011, African region commanded 99.84% of South African carrot exports and the European region export share was insignificant. In 2012, African region continued to be the preferred export market for carrots originating from South Africa. During 2013 and 2014, Africa region has commanded 96.91% and 98.05%, respectively, and at the same time. Export shares for the Americas, Antarctica and Asia were insignificant. African region received 95.41% of South Africa's carrot export during 2016, exports to Europe has increased to 3.08% share whilst Asia has registered a 1.38% share of carrot exports. In 2017, the Africa region was still by far the preferred market for carrots from South Africa and it has commanded 96.85% of the exports, while exports to Europe decreased from 3.08% to 2.44% relative to the 2016 export share. As of 2018, carrot export destined for the Africa region has increased to 97.56% share, whilst Europe has registered a 2.24% share of South Africa's carrot exports. During 2019, Africa export share grew slightly to 97.69%, Europe export share dropped to 2.17% and Asia export share was insignificant. In the year 2020, Africa region carrot export share declined slightly to 97.62% and Europe export share declined to 1.97% share.

Table 3: Share of regional carrots exports to the total South Africa carrot exports (%)

Years Region	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Africa	99.84	99.25	96.91	98.05	98.75	95.41	96.85	97.56	97.69	97.62
Americas	0	0	0.09	0	0	0	0	0.13	0	0
Asia	0.01	0	0.07	0.35	0.01	1.38	0.62	0.04	0.14	0.40
Europe	0.15	0.69	2.66	1.55	1.10	3.08	2.44	2.24	2.17	1.97
Oceania	0	0.01	0	0	0.01	0	0.08	0.01	0	0
Not allocated	0	0.05	0.27	0.04	0.12	0.13	0.01	0.02	0	0
World	100	100	100	100	100	100	100	100	100	100

Source: Calculated from Quantec Easydata

Table 4 below is an illustration of provincial shares towards national carrot exports. The Western Cape and Gauteng provinces commanded the greatest share of carrot exports. In 2011, Gauteng registered 81.96%, Western Cape export share grew slightly to 15.88% and KwaZulu Natal commanded a 1.99% share. In 2012, Western Cape has increased its export share to 27.96%, while Gauteng dropped its export share to 67.66% when compared to the 2011 export share. During 2013, Western Cape and Gauteng continued to command a high export share of carrots exports from South Africa. The high export shares in Western Cape and Gauteng can be attributed to registered exporters and available ports based in these provinces. Free State and North West increased their export share during 2013 and this can be attributed to an increase in carrot exports to neighbouring Lesotho and Botswana. Gauteng export share notably dropped to 49.87% during 2014, and in the same year Western Cape's export share went up to 40.48%.

In 2015, Gauteng and Western Cape have continued to dominate South Africa carrot export share by commanding 48.22% and 40.11% shares respectively. During 2016, Gauteng registered a 48.65% share of carrot exports, followed by Western Cape with 35.54% and Mpumalanga export share has gone up to 8.05%. North West and Mpumalanga export shares have notably increased and this can be attributed to an increment in carrot export destined to Botswana and Namibia. In 2017, Gauteng has continued to lead in carrot export shares by commanding 54.20%, Western Cape has recorded 35.87%, while Mpumalanga and Free State provinces commanded export of 4.71% and 3.93% respectively. As of 2018, Gauteng carrot export share rose to 61.81%, Western Cape export share decreased slightly to 28.44%, Mpumalanga has registered a 6.35% share, whereas Free State export share declined to 2.13% share. In 2019, Gauteng has registered a 61.60% share of South Africa's carrot exports, Western Cape commanded 24.92% and Mpumalanga export share eased higher to 10.59% share. As of 2020, Western Cape carrot export share grew to 39.57%, KwaZulu Natal export share increased to 9.45%, Mpumalanga export share increased to 15.84% whilst, Gauteng export share dropped sharply to 33.24% relative to the 2019.

Table 4: Share of provincial carrot exports to the total of RSA carrot exports (%)

Years District	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Western Cape	15.88	27.96	30.38	40.48	40.11	35.54	35.87	28.44	24.92	39.57
Eastern Cape	0	0	0	0	0	0.02	0.02	0.01	0.01	0.02
Free State	0	1.57	2.81	6.39	4.97	4.76	3.93	2.13	2.30	1.77
KwaZulu-Natal	1.99	0.95	1.44	0.17	0.38	0.34	0.81	0.36	0.53	9.45
North West	0	0	0	0.74	2.36	2.58	0.45	0.90	0.03	0.12
Gauteng	81.96	67.66	63.42	49.87	48.22	48.65	54.20	61.81	61.60	33.24
Mpumalanga	0.02	1.72	1.83	2.27	3.91	8.05	4.71	6.35	10.59	15.84
Limpopo	0.14	0.14	0.13	0.06	0.05	0.06	0.01	0	0.04	0.00
RSA	100	100	100	100	100	100	100	100	100	100

Source: Calculated from Quantec Easydata

Table 5 indicates that the City of Cape Town commanded the higher share of carrot exports from Western Cape province during the period under review. During 2011, the City of Cape Town commanded the greatest share of 91.89% and Eden commanded a 7.08% share of Western Cape carrots exports. In 2012, the City of Cape Town continued to lead in Western Cape carrots export and it has increased its export share from 91.89% to 98.23%. At the same time, the export share for Eden has dropped from 7.08% to 1.16%. In 2013, the export share for the City of Cape Town slightly dropped while Eden increased its carrot export share. In 2014, City of Cape Town commanded a 99.65% share of Western Cape carrot export. There was a notable decline in the City of Cape Town export share in 2015, while Cape Winelands and Eden export share have experienced a notable increment. During 2016, the City of Cape Town continued to lead in Western Cape carrot export and it commanded 89.53%, Cape Winelands recorded a 9.91% share, whereas Eden export share dropped to 0.56%. In 2017, the City of Cape Town increased its export share from 89.53% to 95.32%, while Cape Winelands export share dropped from 9.91% to 4.59%. As of 2018, the City of Cape Town carrot export share rose to 97.68%, whilst Cape Winelands export share declined to 2.13% share. In 2019, City of Cape Town export dropped to 95.27% whilst Cape Winelands export share eased higher to 4.72% share. As of 2020, there was a notable drop in the City of Cape Town carrot export share from 95.27% to 63.55% share whereas Cape Winelands export share grew to 36.45% share.

Table 5: Share of district carrots exports to total Western Cape provincial carrot exports (%)

Year District	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
City of Cape Town	91.89	98.23	96.13	99.65	88.34	89.53	95.32	97.68	95.27	63.55
West Coast	0.71	0	0	0	0	0	0	0	0	0
Cape Winelands	0.32	0.61	0.26	0.20	8.09	9.91	4.59	2.13	4.72	36.45
Eden	7.08	1.16	3.61	0.15	3.57	0.56	0.08	0.19	0.01	0
Western Cape	100	100	100	100	100	100	100	100	100	100

Source: Calculated from Quantec Easydata

Table 6 below shows that the City of Johannesburg commanded the greatest share of carrot exports from Gauteng province. As of 2011, the City of Johannesburg commanded the greatest share of 80.83%, City of Tshwane's export share eased higher to 9.48%. During 2012, the City of Johannesburg continued to lead in Gauteng carrot exports by commanding 76.91% share. Carrot export share for the City of Johannesburg has slightly decreased to 68.64% in 2013. During 2014, City of Johannesburg's export share dropped to 65.33%, while the City of Tshwane and Ekurhuleni export shares went up to 21.03% and 13.26% respectively. In 2015, City of Johannesburg continued to record a higher export share of Gauteng provincial carrot export, followed by the City of Tshwane with 26.40%, Ekurhuleni with 6.34% and West Rand with 0.83%. During 2016, the City of Johannesburg export share dropped to 61.49%, City of Tshwane export share increased to 31.75%, whilst Ekurhuleni export share slightly dropped to 5.37%. City of Johannesburg has continued to lead in Gauteng carrot export share and 2017, it commanded a 71.24% share. At the same time, Ekurhuleni's export share has gone up to 9.11%, whereas the City of Tshwane export share has notably dropped from 29.83% to 19.31%. As of 2018, the City of Johannesburg has commanded a 78.79% share, the City of Tshwane export share has dropped to 14.27%, Ekurhuleni export share has gone down to 6.91% relative to the 2017 export share. During 2019, the City Johannesburg export share dropped slightly to 77.47%, the City of Tshwane export share declined to 13.54% whilst

Ekurhuleni export share grew slightly to 8.77%. In the year 2020, City of Johannesburg carrot export share declined further to 53.38%, City of Tshwane export share increased notably to 31.40% and Ekurhuleni commanded a 14.56% share.

Table 6: Share of district carrots exports to the total Gauteng provincial carrot exports (%)

Year District	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
West Rand	0.31	3.63	3.33	0.37	0.83	0.90	0.34	0.03	0.23	0.66
Ekurhuleni	9.38	5.38	11.94	13.26	6.34	5.86	9.11	6.91	8.77	14.56
City of Johannesburg	80.83	76.91	68.64	65.33	66.44	61.49	71.24	78.79	77.47	53.38
City of Tshwane	9.48	14.08	16.09	21.03	26.40	31.75	19.31	14.27	13.54	31.40
Gauteng	100	100	100	100	100	100	100	100	100	100

Source: Calculated from Quantec Easydata

Table 7 below indicates that Ethekeeni has mainly commanded greatest share of carrot exports from KwaZulu Natal province. In 2011, Ethekeeni has commanded a 71.35% share of carrots exports from KwaZulu Natal, and Ugu has registered a 28.65% export share. During 2012, Ugu carrot export share increased significantly to 55.26%, while Ethekeeni export share dropped further to 44.74% share. During 2013, Ethekeeni commanded a 71.19% share of carrots exports from KwaZulu Natal. In the same year, export shares for Ugu districts dropped to 28.81%. Ugu recorded the greatest share of 74.33% during 2014, while Ethekeeni export share has dropped from 25.18%. In 2015, Ethekeeni has commanded the greatest share of 60.20% followed by Ugu with 39.25%. At the same time, Umgungundlovu and Sisonke have contributed to the KwaZulu Natal carrot export share, however, the export shares were trivial. During 2016, Ethekeeni continued to lead in KwaZulu Natal export share by commanding 59.42% share, whilst Ugu has recorded 40.58% share. Ethekeeni has increased its export share by commanding 99.91% in 2017, whilst Umgungundlovu has commanded a trivial export share. During 2018, Ethekeeni carrot export share dropped slightly to 98.32% share, whilst Zululand recorded a trivial export share. As of 2019, Ethekeeni export share declined sharply to 54.41% and Zululand export share grew notably to 45.59% share. In the year 2020, Umgungundlovu has commanded the greatest share of 92.31% whereas Ethekeeni export declined drastically to 6.56% share.

Table 7: Share of district carrots exports to the total KwaZulu Natal provincial carrot exports (%)

Year District	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ugu	28.65	55.26	28.81	74.33	39.25	40.58	0	0	0	0
UMgungundlovu	0	0	0	0	0.28	0	0.09	0	0	92.31
Zululand	0	0	0	0	0	0	0.09	1.68	45.59	1.12
ILembe	0	0	0	0.49	0	0	0	0	0	0
Sisonke	0	0	0	0	0.26	0	0	0	0	0

Year District	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ethekwini	71.35	44.74	71.19	25.18	60.20	59.42	99.91	98.32	54.41	6.56
KwaZulu Natal	100	100	100	100	100	100	100	100	100	100

Source: Calculated from Quantec Easydata

Table 8 below shows that, in 2011, Nkangala was leading in KwaZulu Natal carrot export and it commanded 99.09% share. As of 2012, Nkangala export share declined sharply to 56.60% and Ehlanzeni commanded a 43.40% share of Mpumalanga carrots exports. During 2014, Gert Sibande recorded a 6.72% export share and Ehlanzeni district export share dropped from 41.32%. In 2015, Ehlanzeni has increased its export share to 57.12%, while Nkangala export share dropped to 35.01%. Ehlanzeni continued to lead in Mpumalanga export share and during 2016, it commanded 77.91% and Gert Sibande's export share has notably dropped to 1 share. In 2017, Ehlanzeni was still leading in Mpumalanga export share but the export share has notably dropped to 69.72% and Nkangala has notably increased its export share to 29.96%. During 2018, Ehlanzeni carrot export share rose to 89.79%, whereas Nkangala export share sharply declined to 8.94% relative to the 2017 export share. As of 2019, Ehlanzeni export share dropped slightly to 86.27% and Nkangala export share eased slightly higher to 13.02% share. In the year 2020, Ehlanzeni export share grew slightly to 87.73%, and Gert Sibande registered a 12.27% share.

Table 8: Share of district carrots exports to total Mpumalanga Provincial carrot exports (%)

Year District	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Gert Sibande	0.48	0	5.27	6.72	7.87	1.00	0.33	1.27	0.70	12.27
Nkangala	99.09	56.60	43.43	51.97	35.01	21.09	29.95	8.94	13.02	0
Ehlanzeni	0.42	43.40	51.30	41.32	57.12	77.91	69.72	89.79	86.27	87.73
Mpumalanga	100	100	100	100	100	100	100	100	100	100

Source: Calculated from Quantec Easydata

Table 9 below indicates that the Xhariep district commanded the greatest share of carrot exports from the Free State province. In 2011, Thabo Mofutsanyane has recorded a high carrot export share from Free State province. As of 2012, Xhariep commanded a 50.30% share of carrot exports and Thabo Mofutsanyane has registered a 44.78% share. During 2013, Xhariep continued to record high export share by commanding 52.14% share whilst Thabo Mofutsanyane export share declined to 38.91% of carrots exports. As of 2014, Thabo Mofutsanyane export value has increased to 45.26% and Xhariep export share has dropped to 47.17%. In 2015, Xhariep commanded 48.29% of Free State carrot export share, followed by Thabo Mofutsanyane with 44.39% and Lejweleputswa has increased its export share to 3.92%. Thabo Mofutsanyane increased its export share to 61.30% in 2016, whereas Xhariep export share has gone down to 30.65%. In 2017, Thabo Mofutsanyane export share dropped from 61.30% to 45.73%, Xhariep export share increased to 41.28% and Lejweleputswa commanded a 6.81% share. As of 2018, Xhariep carrot export share increased to 49.97%, Lejweleputswa has commanded 21.86% share, Thabo Mofutsanyane export share drastically dropped to 16.85%, whereas Mangaung export share has gone to 11.32% share. In 2019, Thabo Mofutsanyane export share has eased higher to 59.60% whereas Xhariep export share declined to 32.19% share. Thabo Mofutsanyane has commanded 74.44% of Free State carrot export

share during 2020. At the same time, Xhariep export share declined to 14.59% and Lejweleputswa export share dropped to 3.82% share.

Table 9: Share of district carrots exports to the total Free State Provincial carrot exports (%)

Years District	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Xhariep	0	50.30	52.14	47.17	48.29	30.65	41.28	49.97	32.19	14.59
Lejweleputswa	0	4.53	4.33	2.81	3.92	3.05	6.81	21.86	6.88	3.82
Thabo Mofutsanyane	96.55	44.78	38.91	45.26	44.39	61.30	45.73	16.85	59.60	74.44
Fezile Dabi	0	0.00	1.02	0.81	0.66	0.71	0	0	0	0.00
Mangaung	3.45	0.39	3.60	3.95	2.75	4.29	6.17	11.32	1.33	7.14
Free State	100	100	100	100	100	100	100	100	100	100

Source: Calculated from Quantec Easydata

Table 10 below shows in 2011, Vhembe commanded 77.74% carrot export share and Capricorn district registered 22.26% share. Vhembe continued to lead in the Limpopo provincial carrot export and it commanded 58.09% export share in 2012 and 2013, it commanded 69.42% share. During 2014, Vhembe export share has drastically dropped to 20.41%, while Capricorn and Waterberg export values have increased to 67.21% and 12.38% respectively. In 2015, Capricorn has commanded 84.05% export share while Waterberg export share has dropped from 27.33% to 15.31%. Mopani and Vhembe export values were trivial. During 2016, Capricorn continued to lead in Limpopo carrot export share. However, the export share dropped to 69.12%. Vhembe and Waterberg export shares have increased to 13.88% and 17.01% respectively. In 2017, Waterberg has commanded the largest share of 97.70% of Limpopo carrot export share whilst Capricorn export share declined from 69.12% to 2.30% share. As of 2018, Waterberg has commanded a 100% share of Limpopo provincial carrot exports. During 2019, Greater Sekhukhune commanded the greatest share of 83.73% whilst Waterberg export share declined sharply to 6.65% share. In the year 2020, Waterberg carrot export share grew notably to 57.85% and Vhembe export share increased to 42.15% share.

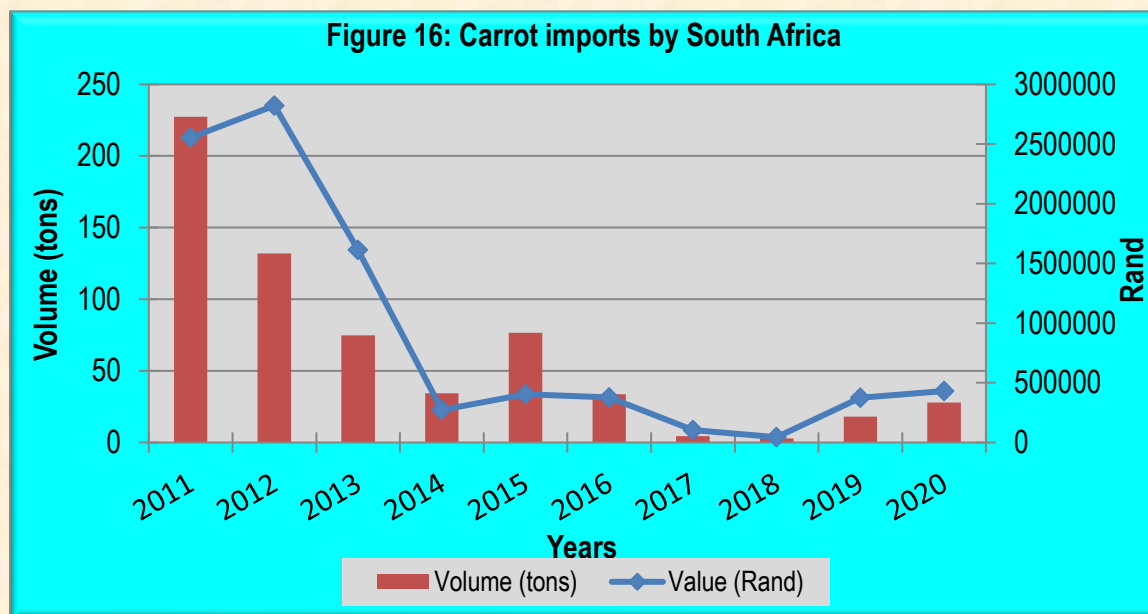
Table 10: Share of district carrots exports to the total Limpopo Provincial carrot exports (%)

Year District	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Mopani	0	0	0.44	0	0.64	0	0	0	0	0
Vhembe	77.74	58.09	69.42	20.41	0	13.88	0	0	9.30	42.15
Capricorn	22.26	18.95	22.77	67.21	84.05	69.12	2.30	0	0.32	0
Waterberg	0	22.96	7.37	12.38	15.31	17.01	97.70	100	6.65	57.85
Greater Sekhukhune	0	0	0	0	0	0	0	0	83.73	0
Limpopo	100	100	100	100	100	100	100	100	100	100

Source: Calculated from Quantec Easydata

2.4 South Africa's Carrot Imports

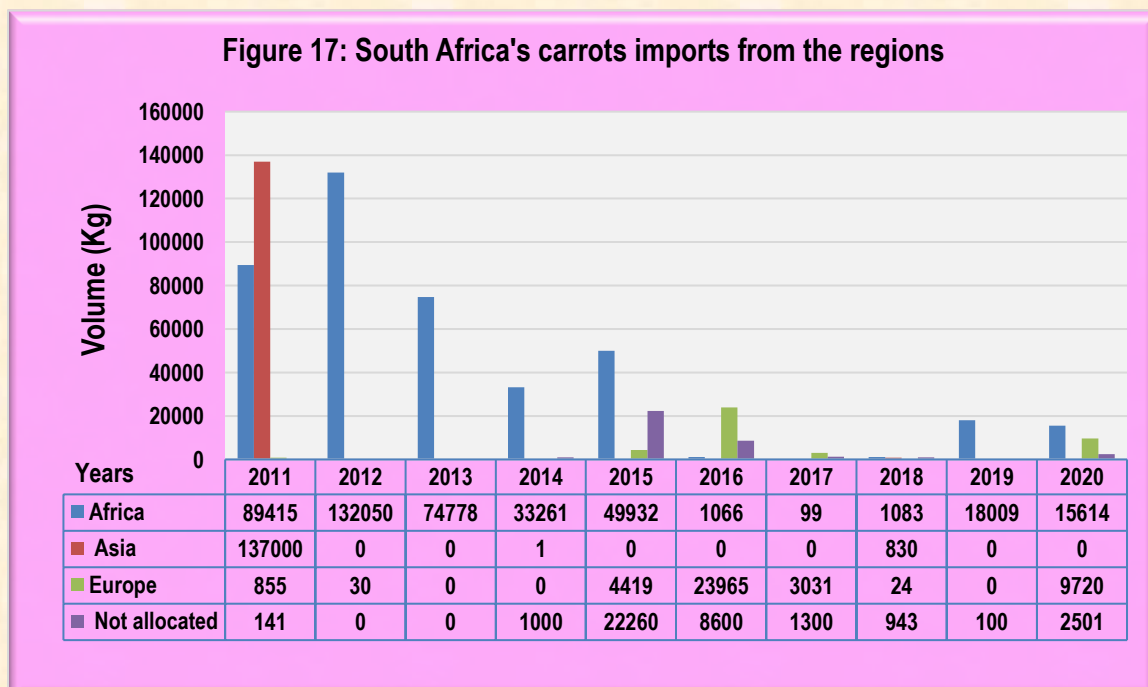
South Africa is not a major carrot importer and in 2020, it represented 0% of world carrot imports and its ranking in world imports was 149. South Africa's carrot imports volume increased by 53.7% in 2020. South Africa has lost its competitiveness as in 2019, it was ranked number 158. In 2020, South Africa imported carrots primarily from Zambia with 50% share and Belgium with 38.5% share of imports. Globally, Germany, United States of America, Canada, Russian Federation, France, Netherlands, Belgium and Thailand are the major carrot importers. Figure 16 illustrates South Africa's carrot imports from 2011 to 2020. In 2012, South Africa's carrot imports have dropped by 41% when compared to the 2011 imports. In the same year, it was relatively expensive to import carrots since a higher value was recorded for volumes imported. In 2013, South Africa's imports dropped by 40%, when compared to the previous year imports and this can be attributed to a 1.3% increase in domestic production. It was also more expensive to import carrots when compared to the previous years. South African carrot imports have drastically dropped by 54% during 2014 when compared to the previous year. In 2015, South Africa's carrot import has surged by 123%, in comparison to the 2014 import volume, despite a 16.9% increment in the domestic carrot output. South Africa imported 56% fewer carrots during 2016, in comparison to the 2015 import volume. At the same time, it was also more expensive to import carrots when compared to 2015 export value. In 2017, South Africa carrot import has dramatically dropped by 87% relative to the 2016 import volume, and this can be ascribed to a 2% increment in the domestic carrot production output. During the same year, it was relatively more expensive to import carrots in comparison to the 2016 import value. As of 2018, South Africa has imported a record low volume of 2.9 tons and this represents a 34.9% decline in imports. In 2019, South Africa's carrot imports were incomparably higher and it was also relatively more expensive to import carrots relative to 2018 imports. In the year 2020, South Africa imported 23.7 tons of carrots, and this represents a 53.8% increment in imports. It was also cheaper for South Africa to import carrots relative to the 2019 imports.



Source: Quantec Easydata

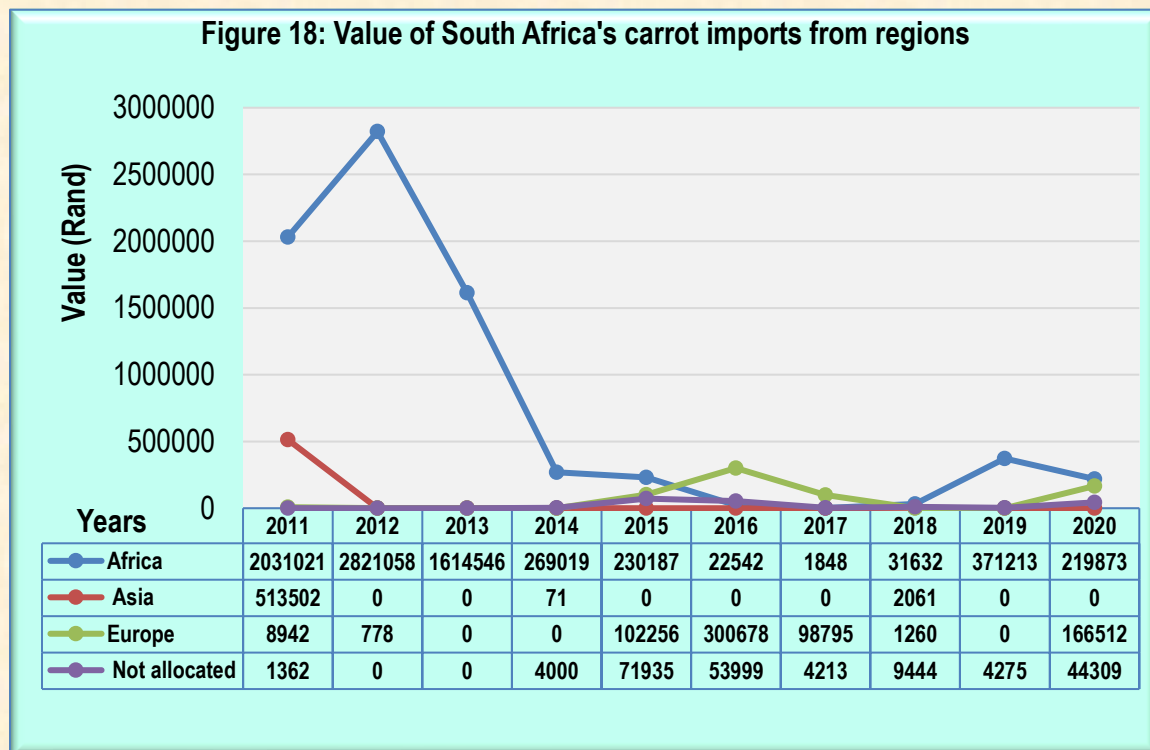
Figure 17 below illustrates South Africa's carrot imports from the various regions. In 2011, South Africa imported higher volumes of carrots from the Asian region (China), import volume from the Africa region has also risen and the imports from Europe (Poland) were less significant. In 2012, South Africa's carrot imports were sourced from the African region and the import volumes from Europe were insignificant. In 2013, the African region was the sole supplier of carrots imported by South Africa. In 2014, Africa remained the primary supplier of South African carrot imports, but the import volume has notably dropped. At the same time, there was a considerable volume, which was not allocated to any region. During 2015, the Africa region was still the main supplier of South Africa's carrots imports, Europe also contributed minimally and the unallocated carrot import notably increased. In 2016, the Europe region was the primary supplier of South Africa's carrot imports, whilst imports from Africa have drastically dropped. There was also a notable drop in unallocated carrot imports. During 2017, the Europe region has continued to be the main supplier of South African carrots imports, however, the volume has drastically dropped by 87%. In the same year, the unallocated imports have also notably eased lower by 84.8% relative to 2016. As of 2018, African region was still the primary supplier of South Africa's carrot imports, there was a notable volume of carrots imported from Asia and unallocated import volume has dropped by 27% relative to 2017 imports. In 2019, South Africa's carrot imports were mainly sourced from Africa (Zambia) region and the unallocated imports have sharply declined relative to 2018 imports. In the year 2020, African region (Zambia) was still the primary supplier of South Africa's carrot imports, there were notable imports from Europe (Belgium) and there was also a surge in unallocated imports

In 2016, the Europe region was the primary supplier of South Africa's carrot imports, whilst imports from Africa have drastically dropped. There was also a notable drop in unallocated carrot imports. During 2017, the Europe region has continued to be the main supplier of South African carrots imports, however, the volume has drastically dropped by 87%. In the same year, the unallocated imports have also notably eased lower by 84.8% relative to 2016. As of 2018, African region was still the primary supplier of South Africa's carrot imports, there was a notable volume of carrots imported from Asia and unallocated import volume has dropped by 27% relative to 2017 imports. In 2019, South Africa's carrot imports were mainly sourced from Africa (Zambia) region and the unallocated imports have sharply declined relative to 2018 imports. In the year 2020, African region (Zambia) was still the primary supplier of South Africa's carrot imports, there were notable imports from Europe (Belgium) and there was also a surge in unallocated imports



Source: Quantec Easydata

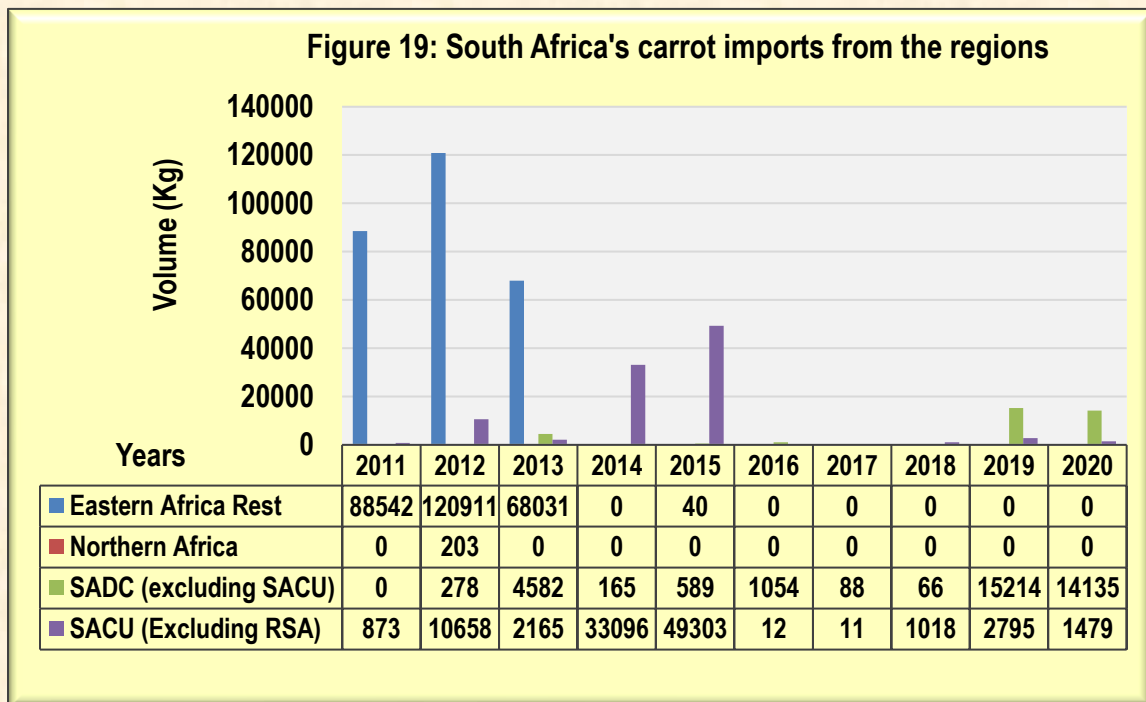
Figure 18 below illustrates the value of South Africa's carrot imports from regions. Africa region has recorded higher values, as it is the primary source of South Africa carrot imports. In 2011, it was by far more expensive to import carrots from the African region in comparison to Asian imports. In 2013, South Africa imported carrots in Africa and the imports were more expensive compared to 2012 imports. In 2013, carrot imports from African region were relatively cheaper, in comparison to the previous year imports. In 2015, carrots sourced from the Europe region were relatively more expensive compared to imports from Africa region. It was more expensive to import carrots from African region in 2016 when compared to carrots imported from the Europe region. In 2017, it was relatively more expensive for South Africa to import carrots from the Europe region relative to 2016 imports. As of 2018, it was still more expensive to import carrots from the Europe region, followed by African region and unallocated imports had registered lower import value. In 2019, it was cheaper to import carrots from Africa region, when compared to the 2018 import value from the same region. In 2020, it was more expensive for South Africa to source carrots from the Europe region compared to the 2019 import value and unallocated imports had also registered higher value.



Source: Quantec Easydata

Figure 19 below illustrates the value of South Africa's carrot imports from African regions. The figure shows that South Africa imported carrots mainly from Eastern African countries (Kenya) and SADC countries (Zimbabwe, and Zambia). In 2011, South Africa imported high volumes of carrots from Eastern Africa countries. South Africa's carrots imports from SADC countries were less significant. In 2012, South Africa imported carrots from Eastern Africa (Kenya), the SADC region (Zambia and Zimbabwe) and for the first time in ten years South Africa also imported from Northern Africa (Egypt). Carrots imports from SADC and Northern Africa regions were less significant. During 2013, South Africa imported carrots from Eastern Africa (Kenya) and SADC countries (Zimbabwe and Mozambique). In 2014, South Africa's carrots imports were sourced mainly from SACU (Swaziland)

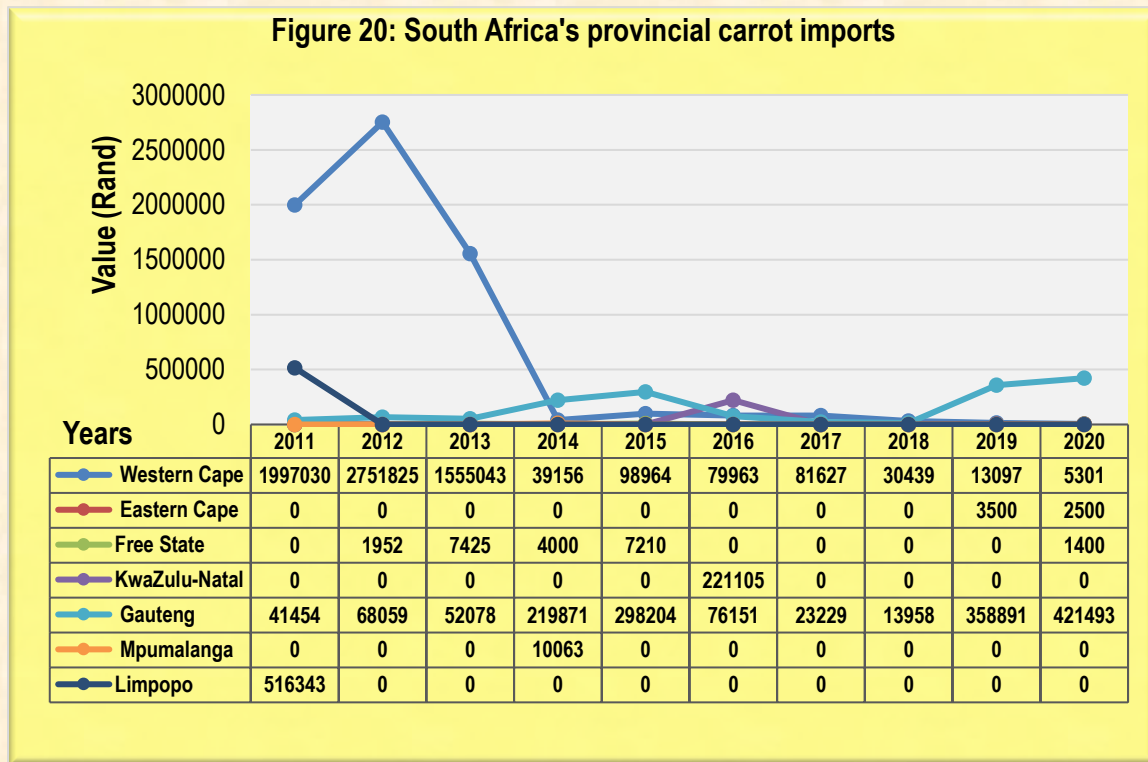
and imports from SADC were insignificant. During 2015, SACU countries (Eswatini) have continued to be the primary supplier of carrots imported into South Africa. SADC (Zimbabwe) was still the main supplier of South African carrot imports. In 2016, South Africa has imported a notable volume of carrots from the SADC region, whilst the imports from the SACU region were trivial. South Africa has continued to source carrots from SADC and SACU, but the volumes were insignificant. In 2018, the SACU region was the primary supplier of South Africa's carrot imports and import volume from SADC was trivial. As of 2019, SADC (Zambia) was the primary supplier of South Africa's carrot imports and SACU (Eswatini) has contributed to a lesser extent. As of 2020, SADC and SACU countries were still the preferred source of South Africa's carrots imports however the imports declined by 7% and 47% respectively.



Source: Quantec Easydata

Figure 20 below illustrates the entry point of South African carrot imports from 2011 to 2020. Gauteng province is the primary entry point for South Africa's carrot imports. In 2011, Western Cape and Limpopo were the primary entry point for South Africa's carrot imports and Gauteng import values were less significant. From 2012 to 2013, Western Cape was the primary entry point for South Africa's carrot imports. There was a surge in Gauteng import value and the following years (2014), and Western Cape import value drastically dropped. During 2015, Gauteng was still leading in carrot imports and Western Cape import value increased sharply by 152% relative to 2014. In 2016, KwaZulu Natal has notably contributed to provincial carrot imports. In 2017, Gauteng and Western Cape provinces were the entry points of South Africa's carrot imports. As of 2018, Western Cape and Gauteng were the entry points for South Africa's carrot imports, however, the import values have declined by 62.7% and 39.9% respectively. In 2019, Gauteng was by far the primary entry point for South Africa's carrot imports, Western Cape and Eastern Cape have recorded insignificant import values. In the year 2020, Gauteng province remained the preferred entry point for South Africa's

carrot import. At the same time, Western Cape, Eastern Cape and Free State provinces have registered insignificant import values.



Source: Quantec Easydata

2.5 Processing

Carrot processing includes canning, freezing and dehydration. Carrot can be eaten raw, whole, chopped, grated or added to salads for colour or texture. They are also often chopped and boiled, fried or steamed, and cooked in soups and stews, as well as fine baby foods and select pet foods. Grated carrots are used in carrot cakes, as well as carrot pudding. The greens are edible as leaf vegetables but are rarely eaten by humans. Baby carrots have been a popular ready-to-eat snack food available in supermarkets. Carrot juice is also widely marketed, especially as a health drink, either stand-alone or blended with other fruits and vegetables. Carrot seed oil is an essential oil extract of the seed from the carrot plant. Carrot seed oil is used as a massage oil, in creams and lotions. Figure 21 below illustrates the carrot value chain explaining its uses.

Figure 21: Carrot Value Chain Tree explaining its uses

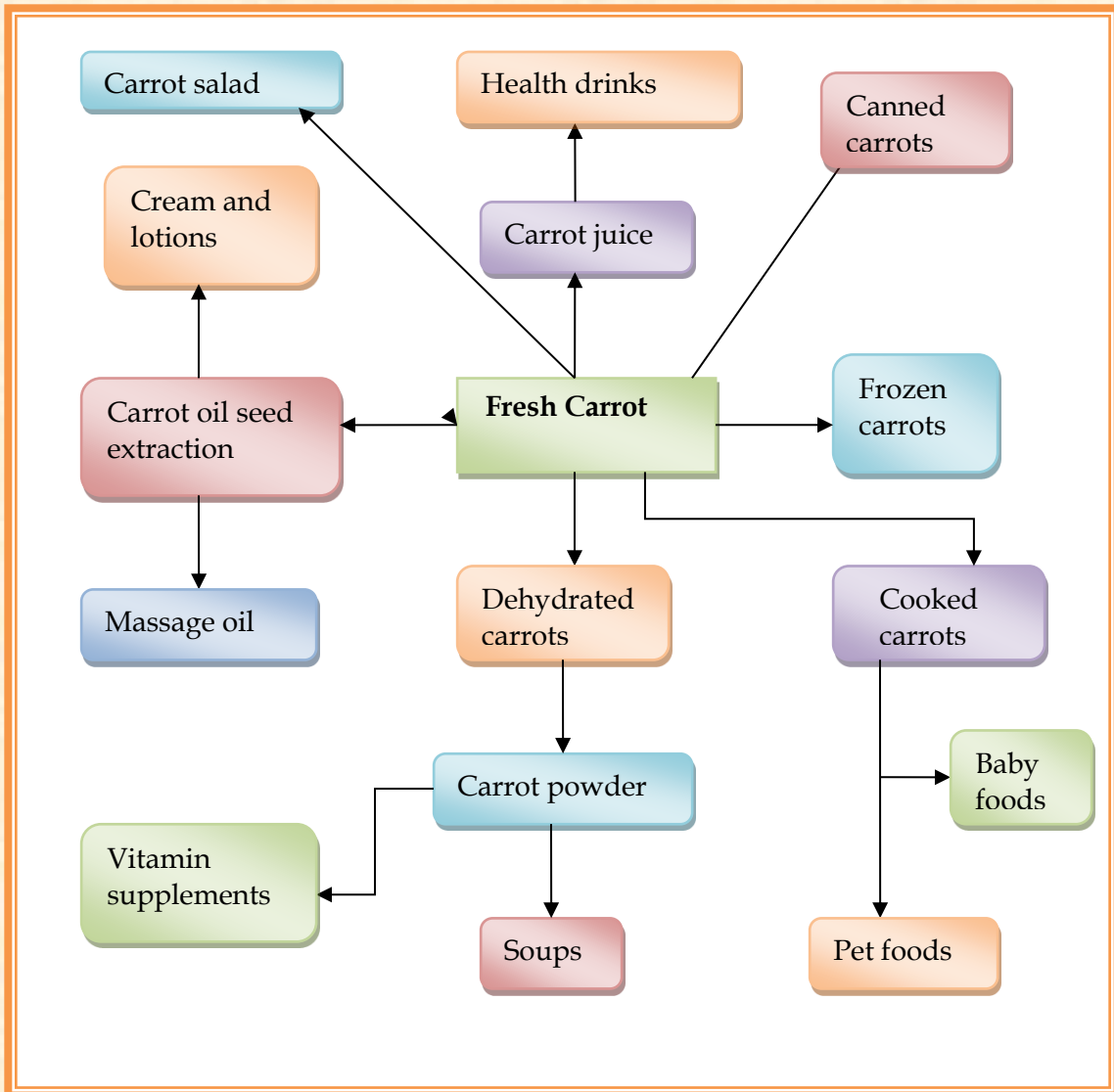
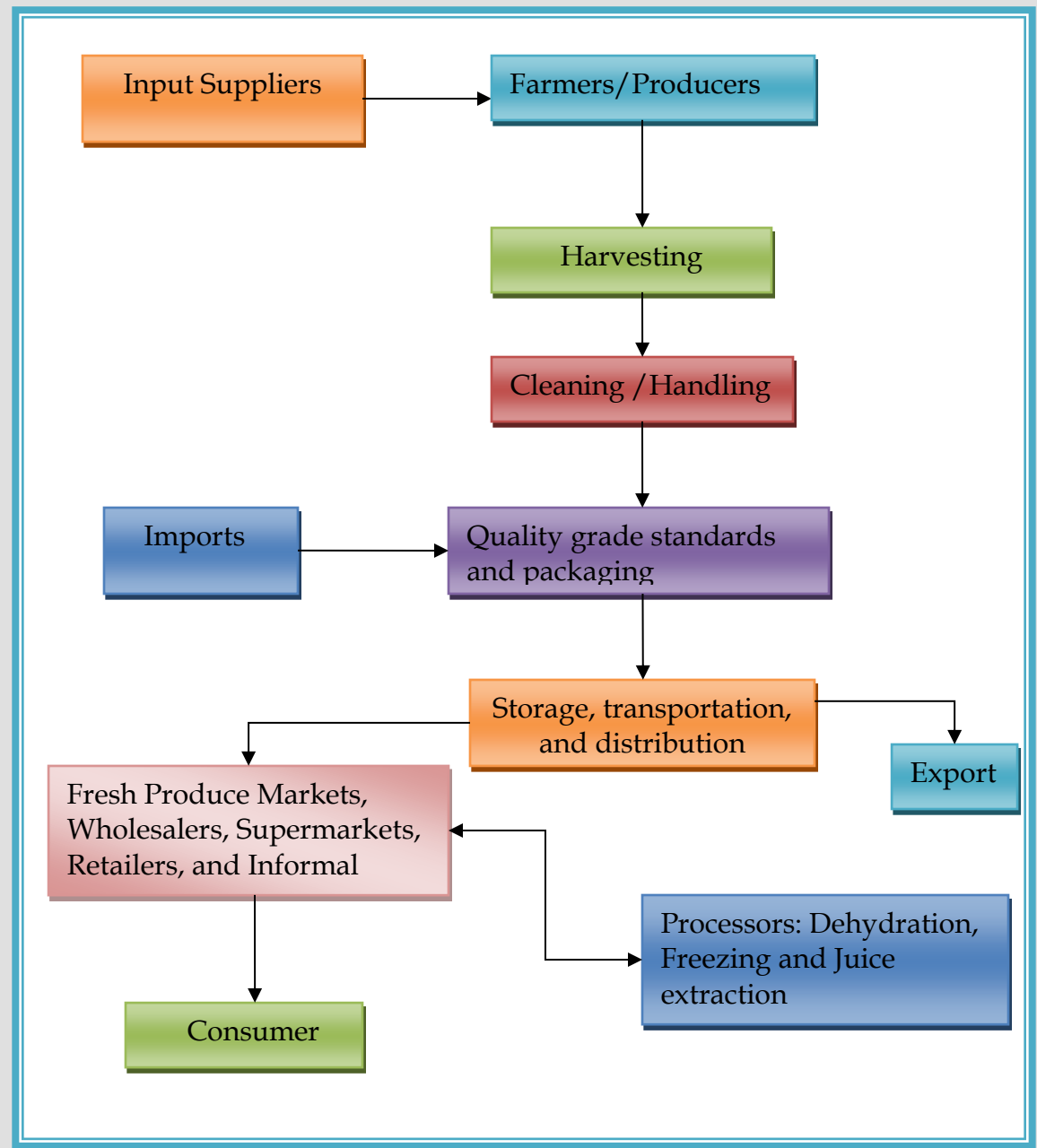


Figure 21 presents the market value chain for carrots. The carrot value chain can be broken down into the following levels: the producers of carrots (farmers); pack house owners (cleans, grade and quality control); cold storage and transport facilities (store and transport carrots on behalf of farmers); traders in carrots (market and sell carrots); processors (add value to carrots and process carrots to other usable forms); and end users (consumers).

Figure 22: Market value chain for carrots



3. MARKET INTELLIGENCE

3.1 Tariffs

Tariffs applied by the various markets to carrots originating from South Africa during 2019 and 2020 are presented in Table 11.

Table 11: Tariffs applied by various export markets to carrots originating from South Africa.

Country	Product Description (H0706100)	Trade regime description	Applied tariff	Estimated total ad valorem equivalent tariff	Applied tariff	Estimated total ad valorem equivalent tariff
			2019		2020	
Angola	Carrots and turnips fresh or chilled	MFN duties (Applied)	50.00%	50.00%	20.00%	20.00%
Botswana	Carrots and turnips fresh or chilled	Intra SACU rate	0.00%	0.00%	0.00%	0.00%
China	Carrots and turnips fresh or chilled	MFN duties (Applied)	13.00%	13.00%	13.00%	13.00%
Canada	Carrots and turnips fresh or chilled	MFN duties (Applied)	2.70%	2.70%	0.00%	0.00%
Congo	Carrots and turnips fresh or chilled	MFN duties (Applied)	20.00%	20.00%	20.00%	20.00%
Côte d'Ivoire	Carrots and turnips fresh or chilled	MFN duties (Applied)	20.00%	20.00%	20.00%	20.00%
Uzbekistan	Carrots and turnips fresh or chilled	Non MNF duties (Applied)	60.00%	60.00%	40.00%	40.00%
France	Carrots and turnips fresh or chilled	Preferential tariff for South Africa	0.00%	0.00%	0.00%	0.00%
Gabon	Carrots and turnips fresh or chilled	MFN duties (Applied)	30.00%	30.00%	30.00%	30.00%
Kenya	Carrots and turnips fresh or chilled	MFN duties (Applied)	25%	25%	25%	25%

Country	Product Description (H0706100)	Trade regime description	Applied tariff	Estimated total ad valorem equivalent tariff	Applied tariff	Estimated total ad valorem equivalent tariff
			2019		2020	
Lesotho	Carrots and turnips fresh or chilled	Intra SACU rate	0.00%	0.00%	0.00%	0.00%
Mauritius	Carrots and turnips fresh or chilled	MFN duties (Applied)	13.00%	13.00%	0.00%	0.00%
Mozambique	Carrots and turnips fresh or chilled	Preferential tariff for South Africa	0.00%	0.00%	0.00%	0.00%
Morocco	Carrots and turnips fresh or chilled	Preferential tariff for South Africa	40.00%	40.00%	40.00%	40.00%
Namibia	Carrots and turnips fresh or chilled	Intra SACU rate	0.00%	0.00%	0.00%	0.00%
Netherlands	Carrots and turnips fresh or chilled	Preferential tariff for South Africa	0.00%	0.00%	0.00%	0.00%
Senegal	Carrots and turnips fresh or chilled	MFN duties (Applied)	20.00%	20.00%	0.00%	0.00%
Russian Federation	Carrots and turnips fresh or chilled	Preferential tariff for GSP countries	9.00%	9.00%	12.00%	12.00%
Eswatini	Carrots and turnips fresh or chilled	Intra SACU rate	0.00%	0.00%	0.00%	0.00%
United Kingdom	Carrots and turnips fresh or chilled	Preferential tariff for South Africa	0.00%	0.00%	0.00%	0.00%
United States of America	Carrots and turnips fresh or chilled	Preferential tariff to AGOA countries	0.00%	0.00%	0.00%	0.00%
Zambia	Carrots and turnips fresh or chilled	Preferential tariff for South Africa	0.00%	0.00%	0.00%	0.00%
Zimbabwe	Carrots and turnips fresh or chilled	Preferential tariff for South Africa	0.00%	0.00%	0.00%	0.00%

Source: Market Access Map

In 2020, Mozambique, Botswana, and the Netherlands were the primary export market for carrots originating from South Africa. Mozambique, United Kingdom, United Kingdom and Angola accounted for 42.48% of carrot exports. Angola has reduced its tariff from 50% to 20% tariff, despite the existence of the SADC-FTA. Mozambique applies a 0% preferential tariff to carrots originating from South Africa. South Africa exported a notable volume of carrots to SACU countries (Botswana, Eswatini and Lesotho). These countries apply a 0% Intra SACU rate to carrot exports originating from South Africa. The most lucrative export markets for carrots from South Africa are in European markets (the United Kingdom, Netherlands and France) since these countries apply zero tariff to exports of carrots originating from South Africa due to an EU-SA Free Trade Agreement (FTA). The African market in Senegal and Mauritius apply a 0% tariff to carrots originating from South Africa. China and Russian Federation and Uzbekistan are the largest carrot producers and their domestic markets are still protected by a 13%, 12% and 40% tariff respectively. Morocco is the only African country, which is among the top ten world carrot producers, and its domestic market is still highly protected by a 40% tariff.

3.1 Non-tariff barriers

3.1 The European Union

Non-tariff barriers can be divided into those that are mandatory and laid out in the EU Commission's legislature, and those that are a result of consumers, retailers, importers and other distributions' preferences.

3.1.1 Product legislation: quality and marketing

There are several pieces of EU legislation that govern the quality of produce that may be imported, marketed and sold within the EU.

General Food Law covers matters in procedures of food safety and hygiene (micro-biological and chemical), including provisions on the traceability of food (for example, Hazard Analysis and Critical Control Points, of HACCP).

EU Marketing Standards, which govern the quality and labelling of vegetables, are laid out in the CAP framework under regulation EC 2200/96. These regulations include diameter, weight and class specifications, and any produce that does not comply with these standards are not allowed to be sold on the EU markets (detailed lists of products and their standards can be found in the annexes to the directive). The legislation (under EU 1148/2001) also dictates that a Certificate of Conformity must be obtained by anyone wishing to export and sell vegetables in the EU, if that particular vegetable falls under the jurisdiction on the EU marketing standards, Vegetables to be used in further processing needs a Certificate of Industrial Use, whilst another legislative directive covers the Maximum Residue Limits (MRL) of various pesticides allowed.

3.1.2 Product legislation: phytosanitary regulations

The international standard for phytosanitary measures was set up by the International Plant Protection Committee (IPPC) to protect against the spreading of diseases or insects through the

importation of certain agricultural goods. The EU has its own particular rules formalized under EC 2002/89, which attempt to prevent contact of EU crops with harmful organisms from elsewhere in the world. The crux of the directive is that it authorizes the Plant Protection Services to inspect a large number of vegetable products upon arrival in the EU. This inspection consists of a physical examination of a consignment deemed to have a level of phytosanitary risk, identification of any harmful organisms and certification of the validity of any phytosanitary certificate covering the consignment. If the consignment does not comply with the requirements, it may not enter the EU, although certain organisms can be fumigated at the expense of the exporter.

3.1.3 Product legislation: packaging

The EU commission lays down rules for materials that come into contact with food and which may endanger people's health or bring about an unacceptable change in the composition of the foodstuffs. The framework legislation for this EC 1935/2004. Recycling packaging materials are also emphasized under 94/62/EC, whereby member states are required to recycle between 50% and 65% of packaging waste. If exporters do not ship produce in packaging which is reusable, they may be liable for the costs incurred by the importing companies. Wood packaging is subject to phytosanitary controls (see Directive EC 2002/89) and may need to undergo heat treatment, fumigation, etc.

3.1.4 Non-legal market requirements: social and environmental accountability

To access a market, importers must not only comply with the legal requirements set out above, but also with market requirements and demands. For the most part, these revolve around quality and the perceptions of European consumers about the environmental, social, health and safety aspects of both the products and the production techniques. Whilst supplying vegetables that complies with these issues may not be mandatory in the legal sense, they are becoming increasingly important in Europe and cannot be ignored by existing or potential exporters.

(i) Social responsibility is becoming important in the industry, not only amongst consumers but also for retail outlets and wholesalers. The Social Accountability 8000 (SA8000) certification is a management system based on International Labour Organization (ILO) conventions, and deals with issues such as child labour, health and safety, and freedom of association, and requires an on-site audit to be performed annually. The certificate is seen as necessary for accessing any European market successfully. The major retailers in the EU also play an important role in tackling environmental issues, which means that exporters have to take these into account when negotiating exporting arrangements.

(ii) Environmental issues are becoming increasingly important to European consumers. Consumer movements are lobbying against purchasing non-environmental friendly or non-sustainable produce. To this end, both governments and private partners have created standards (such as ISO 14001 and EUREPGAP) and label to ensure produce adhere to particular specifications. Labels are an absolute must for exporters attempting to enter the rapidly expanding organic produce market. The EU Commission has recently adopted an EU label for identifying food produced according to EU organic standards in the directive EEC 209/91

3.1.5 Consumer health and safety requirements

Increasing consumer conscience about health and safety issues has prompted several safety initiatives in Europe, such as EUREPGAP on good agricultural practices (GAP) by the main European retailers, the international management system of HACCP, which is independently certified and required by legislation for European producers as well as food imported into Europe (EC 852/2004), and the ISO 9000 management standards system (for procedures and working methods), which is certified by the International Standards Organization (ISO).

3.2 The United States

The USDA has quality standards for vegetables that provide a basis for domestic and international trade and promote efficiency in marketing and procurement. At the same time the USDA issues quality certificates based on these standards and a comprehensive grading system. Graders are located around the country at terminal markets. These certification services, which facilitate the ordering and purchasing of products by large-volume buyers, assure these buyers that the product they purchase will meet the terms of the contract in terms of quality, processing, size, packaging, and delivery.

3.3 Asian Market Access

Japan's agricultural sector is heavily protected, with calculations from the Organization for Economic Co-operation and Development (OECD) estimating that almost 60% of the value of Japan's farm production comes from trade barriers or domestic subsidies. Japan uses tariff rate quotas (TRQ) to protect its most sensitive products, and reserves the right for trading many of these products (within the quota) for one or two state trading enterprises. However, these extremely protective measures apply only to some products; others can compete more effectively with outside competition, often on the grounds of higher quality.

Perhaps the biggest barrier to trade with Japan in vegetable markets is its strict phytosanitary requirements, which have often been challenged in the WTO as having little or no scientific justification. Other measures that are being challenged include Japan's use of fumigation on agricultural products when cosmopolitan pests (already found in Japan) are detected. Japan is also increasing its labelling requirements

4. GENERAL DISTRIBUTION CHANNELS

There are roughly three distinct sales channels for exporting vegetables. One can sell directly to an importer with or without the assistance of an agent (usually larger, more established commercial farms/orchards). One can supply a vegetable combine, which will then contract out importers/marketers and try to take advantage of economies of scale and increased bargaining power. At the same time vegetable combines might also supply large retail chains. One can also be a member of a private or co-operate export organization (including marketing boards) which will find agents or importers and market the produce collectively. Similar to a vegetable combine, an export organization can either supply wholesale markets or retail chains depending on particular circumstances. Export organizations and marketing boards will wash, sort and package the produce.

5. LOGISTICAL ISSUES

5.1 Mode of transport

The transportation of vegetables falls within two categories – *ocean cargo* and *air cargo* – with ocean cargo taking much longer to reach the desired location but costing considerably less. Of course, the choice of transportation method depends, for the most part, on the fragility of the produce and how long it can remain relatively fresh. With the advent of technology and container improvements, the feasibility, cost and attractiveness of sea transportation have improved considerably. As more developing countries begin to export and supply major developed countries markets, so the number and regularity of maritime routes, and the container vessels travelling these routes, increase.

Presently South American countries like Peru benefit from the asparagus trade, which has led to some level of economies of scale with other vegetable products, and this has enabled cheaper transport prices for their other vegetable varieties. Such economic scale could benefit SADC countries if more producers became exporters and took advantage of the various ports which have special capabilities in handling vegetable produce (for example, the proposed terminal in Maputo). For some products, to reach the destination market with an acceptable degree of freshness, air transport is the only option (asparagus, for example, is flown from Peru to the sufficient to cover the transport costs, and collective agreements between farmers of different commodities with different harvest periods can become particularly important.

5.2 Cold chain management

Cold chain management is crucial when handling perishable products, from the initial packing houses to the refrigerated container trucks that transport the produce to the shipping terminals, through to the storage facilities at these terminals (and their pre-cooling capability), onto the actual shipping vessels and their containers, and finally on to the importers and distributors that must clear the produce and transport it to the markets/retail outlets, etc. For every 10°C increase above the recommended temperature, the rate of respiration and ripening of produce can increase twice or even thrice. Related to this are the increasingly important traceability standards, which require an efficiently controlled supply chain and internationally accepted business standards.

5.3 Packaging

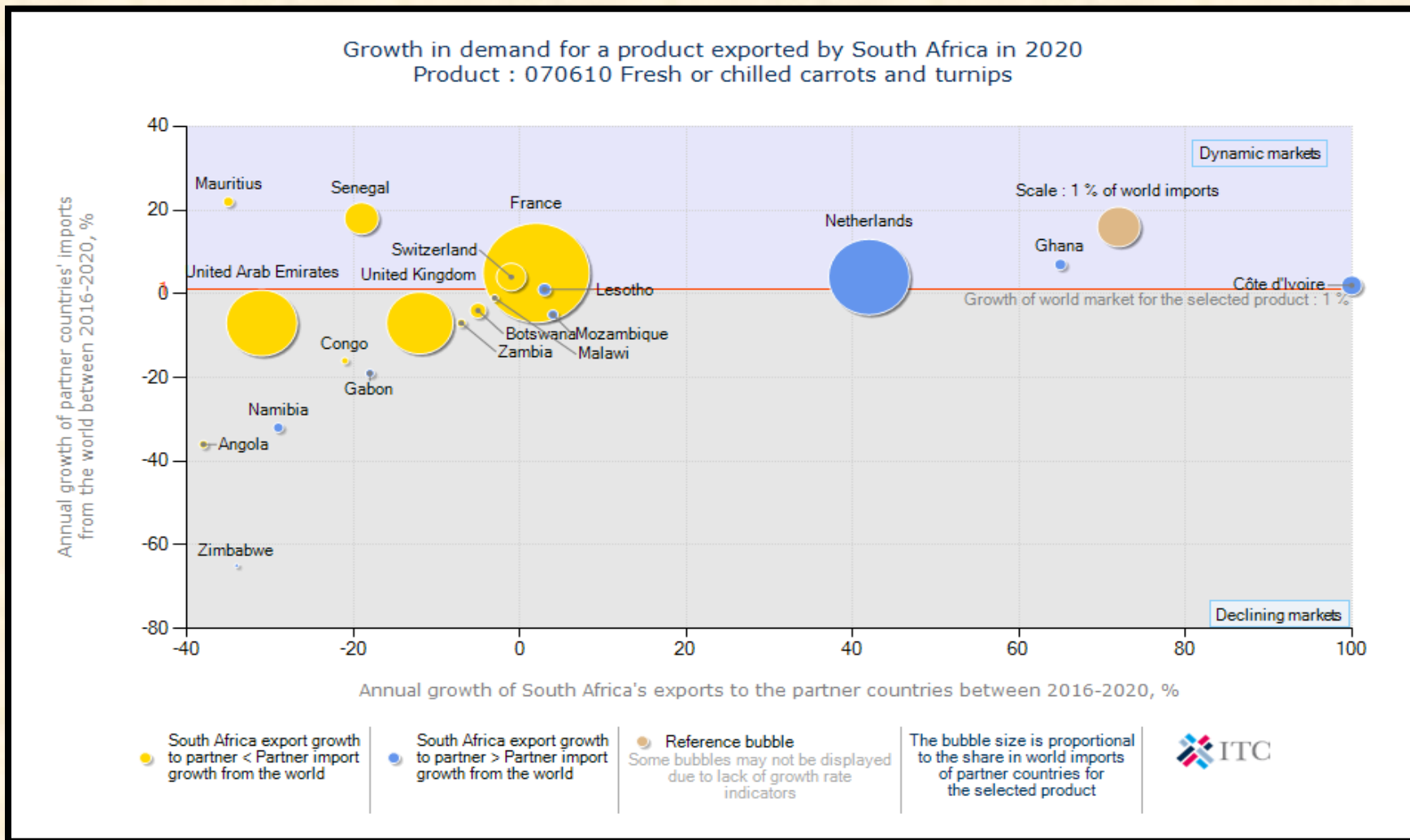
Packaging also plays a vital role in ensuring safe and efficient transport of a product and conforming to handling requirements, uniformity, recyclable materials specifications, phytosanitary requirements, proper storage needs and even attractiveness (for marketing purposes).

6. COMPETITIVENESS OF SOUTH AFRICAN CARROTS EXPORTS

Figure 23 below shows that South African carrot exports are growing faster than the world imports into Ghana Lesotho, Netherlands, Zimbabwe and Côte d'Ivoire. South Africa's performance in those markets can be regarded as a gain in dynamic markets. South Africa's carrots exports are growing slower than the world imports into France, Switzerland, Angola and Senegal. These are dynamic markets and South Africa has lost market share. South African carrot exports are declining faster than the world imports into the United Kingdom, Malawi, Zambia, Congo, and United Arab Emirates. South African exports into Mozambique, Gabon and Namibia are growing while world imports are declining into these countries. South Africa's performance in these countries can be regarded as a gain in a declining market.

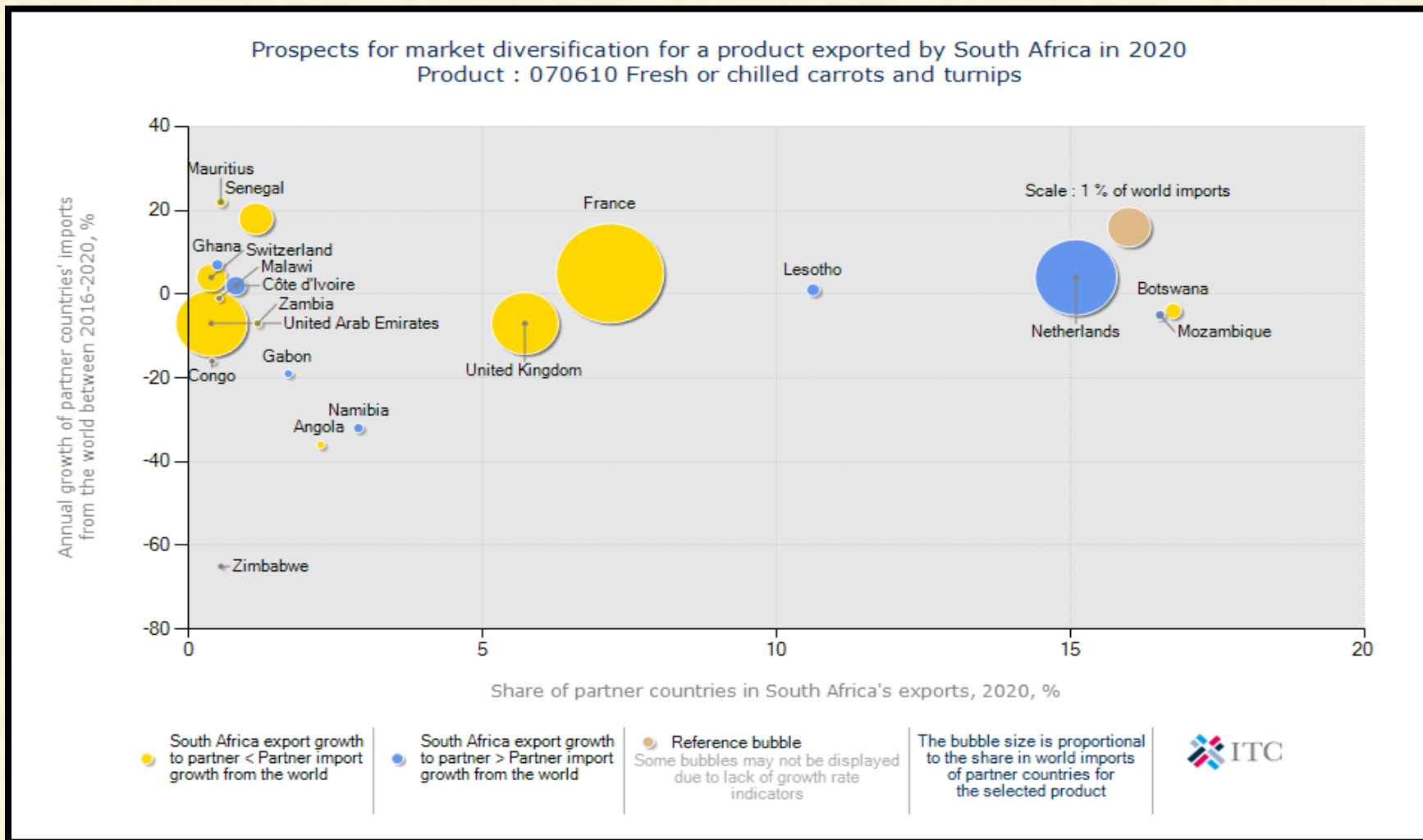
Figure 24 below, shows the prospective export markets for a carrot from South Africa. In 2020, Mozambique, Botswana and Netherlands hold a bigger share of South African carrot exports. Prospective markets exist in Senegal, Greece and France. Other African markets exist in Côte d'Ivoire and Ghana. However, if South Africa is to diversify its carrots exports the most lucrative markets exist in Mauritius and Senegal which have increased their carrot imports by 22% and 18% respectively from the world between 2016-2020 period. Carrot imports from the world to Congo, Gabon, Malawi Zambia and Angola have declined, and these countries have recorded a negative growth rate between 2016 and 2020 period.

Figure 23: Growth in demand for carrots exported by South Africa in 2020



Source: ITC calculations based on COMTRADE statistics.

Figure 24: Prospects for market diversification for carrots exported by South Africa in 2020



Source: ITC calculations based on COMTRADE statistics

7. OPPORTUNITIES AND CHALLENGES

7.1 Opportunities

Carrots have found increasing favour among consumers. Several health benefits have promoted marketing this vegetable as a convenient and good-tasting snack food or juice product. Carrots are popular as snacks, side dishes, salad ingredients, juice mixtures and dessert mixtures (e.g. carrot cake and carrot pudding). The rise of the fresh cut industry has meant some of the misshapen and otherwise imperfect carrots have an alternative profitable outlet. Carrots that would not have made the grade in a standard pack of fresh carrots do not have to be sent to freezers or canners to be cut, diced, or juiced. Today, the cutting and peeling process for various fresh-cut carrot products allows a majority of the raw carrots destined for the fresh market to become fresh market products. As a way of minimizing post-harvest losses carrots are also utilized as animal fodder. A greenway farm is producing 100% natural carrot juice, which is the first successful innovation in the world. Research is being conducted to establish the benefits of carrot juice in fighting chronic diseases like HIV.

7.2 Challenges

The major concern is the production of a disease-free high-quality clean carrot root. Other essential part of carrot production and marketing is the need to define the quality standards necessary for consumer acceptance. Product physical defects can be readily measured, but the flavour and sweetness characteristics must be defined and the parameters affecting these important factors understood. Numerous root diseases affect carrots, but proper cultural practices can keep them under control. Carrot growers also face strong market competition from national and international producers.

8. ACKNOWLEDGEMENTS

The following organizations are acknowledged

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Quantec Easy Data
www.easydata.co.za

Market Access Map
www.macmap.org
www.trademap.org

Economic Research Service/USDA

www.wikipedia.co.za

Food and Agriculture organization of the United Nations
www.fao.org

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