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Market Intelligence report: Macadamia Nuts Industry

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Executive Summary

The macadamia nut industry is one of the fastest-growing agricultural industries in South Africa, both in terms of area planted, gross value added and also benefits from foreign earnings. In line with South African policy to promote high-value, labour-intensive and export-led growth, this industry has the potential to drive inclusive growth and create 27 000 jobs along the value chain in 2019. In this report, the economic contribution of the macadamia nut industry is highlighted, and it shows that for every hectare under production, using full-time equivalence, an average of 0.53 workers per hectare (not more than one person to conduct all the activities per hectare relative to the hours required for all the activities). South Africa's total production was 46 256 tons in 2020. The world macadamia market is set to grow at a compound annual rate (CAGR) of 6.6% along with global demand. Western Cape has planted 197 hectares (ha) of macadamia in 2019, this leading to a total area planted close to 500 ha when using 2017 as a baseline year and this would mean there were around 264 jobs created on the Western Cape farms. Most of the macadamia production (70%) in the Western Cape takes place in George and Mosselbay.

In terms of export revenues, the country's macadamias have maintained their leading position in the world. In value terms, exports to the world market increased from R105 million in 2007 to R4.6 billion in 2019; growing at an average annual growth rate of 37 % over the 12 years. With the increasing global demand and consumption of macadamias, South Africa's macadamia industry is forecast to improve job creation and demand for the input sector shortly. About 93% of the South Africa macadamia nuts are exported as either nut in shell (NIS) or shell. The industry's future growth is largely dependent on finding access in attractive markets. A Market Attractive Index (MAI) was used to identify these markets. For NIS, Hong Kong, Malaysia and China were the top SA's attractive markets, while for shelled macadamias, Kuwait, Saudi Arabia and the United States of America (USA) were the leading attractive markets. Using the Relative Trade Index, the South African macadamia nut industry is competitive in the world stage, recording the highest value of 74.3 in 2014 and a dip decline in 2016. Therefore, the findings of this report recommend that the macadamia nut industry as the highly exported commodity should be further prioritised for market access to

improve its export position that will extend its economic and socio-economic contribution to the South African economy

1.Introduction

Agriculture is one of the major contributing economic sectors in African countries; in Sub-Saharan Africa, it contributes 15% to gross domestic product (GDP) and employs 50% of the labour force (Morokong & Dirk, 2020). The Maputo declaration in which various heads of state agreed to commit 10% of their public expenditure towards agriculture affirms the important role played by this sector (AU&NEPAD, 2014). The high-value, intensive agricultural products such as blueberry and macadamia nuts have proven to contribute to economic growth and job creation. These industries are aligned to South Africa's National Development Plan (NDP), the Agricultural Policy Action Plan (APAP) and the New Growth Path (NGP) toward the need to expand the export-led, labour-intensive and irrigation farming (Pienaar, 2018; DAFF, 2014; NDP, 2011; NGP, 2011).

Macadamias remain at the forefront of global nut consumption growth. The major consumers of nuts (i.e. macadamias) are in the high-income countries, led by the United States of America (USA), European countries, Japan and China in 2019 (INC, 2020; Kalaba, 2019). World macadamia production in 2019/20 is forecast to remain the same as in 2018, at 60 000 tons (kernel basis), further growth stifled by the ongoing drought and fires in Australia. Australia's macadamia production is expected to be 35 000 tons nut in shell (NIS), this volume might be less than the 2019 crop estimate of 42 900 tons. South Africa's climate is favourable for the production of a variety of nuts, macadamia nuts being the most dominant nut produced (SAMAC, 2020).

In 2020, the macadamia crop in South Africa is expected to grow steadily due to maturing young orchards, to around 64 000 NIS tons, up from the 2019 crop of 60 000 tons. The growing global trends in eating healthier foods drives tree nut production around the world, with an increase of 24% growth over the past ten years (Venter, 2020; USDA, 2020). The macadamia market is expected to grow at a compound annual growth rate (CAGR) of 6.6% (USDA, 2020; INC, 2020), along with the increasing world demand, mainly coming from the European countries, China, Japan and USA. The global demand of macadamia nuts is driven by the wide application and use of processed tree nuts in the food, cosmetics, and personal care industries. Nuts and

dried fruits are rich in nutrients, bioactive, and antioxidants and are good for promoting a health-living lifestyle (Fontana, 2020).

The collaborative Alternative Crops Fund (ACF), funded by the Western Cape Department of Agriculture (WCDoA), enabled investment of R9.2 million in research for the alternative crops to improve their growth (WCDoA, 2019). Through this concerted effort, there has been an expansion of alternative crops such as berries, cherries, nuts, pomegranates and since 2013 growing the provinces' export market share. With the increasing global demand for macadamias, there is an incentive for more investment in this industry. This report provides an industry profile on the macadamia nuts industry and the extent to which the market supply has saturated in the market's response to local and international demand. This information is essential for information planning and decision making in the industry.

The report is divided into three sections, section one is the overview of the macadamia nut industry at the global level, from production to distribution. The second section gives an overview of the South African macadamia nut industry and its distribution. Lastly, in the third section, an analysis aimed at identifying suitable and attractive markets are done to support future macadamias exports.

2.Overview of the Global nut industry

The world macadamia nut production can be broadly defined either as the production tons measured in the nut in shell (NIS) or based on the kernel basis, which excludes the mass of the shell. Using the former metric, world production showed a continued growth (refer to Figure 1), adding up to more than 60 000 tons in 2019 (INC, 2019a). In 2009, the total supply of macadamia nuts were 28 000 tons, which translates into a 57% increase over the past decade.

2.1 World Macadamia nut production trends

Given the current production and the macadamia new tree plantings, the production is expected to increase in the next ten years (Pretorius, 2020). With the world share of 29% (17 550 tons: kernel) in 2019, South Africa maintained its leading position in the world macadamia nut production (see Figure 2). Australia followed in the second

position, producing 13 300 tons, with a 22% share of the world macadamia nut production.

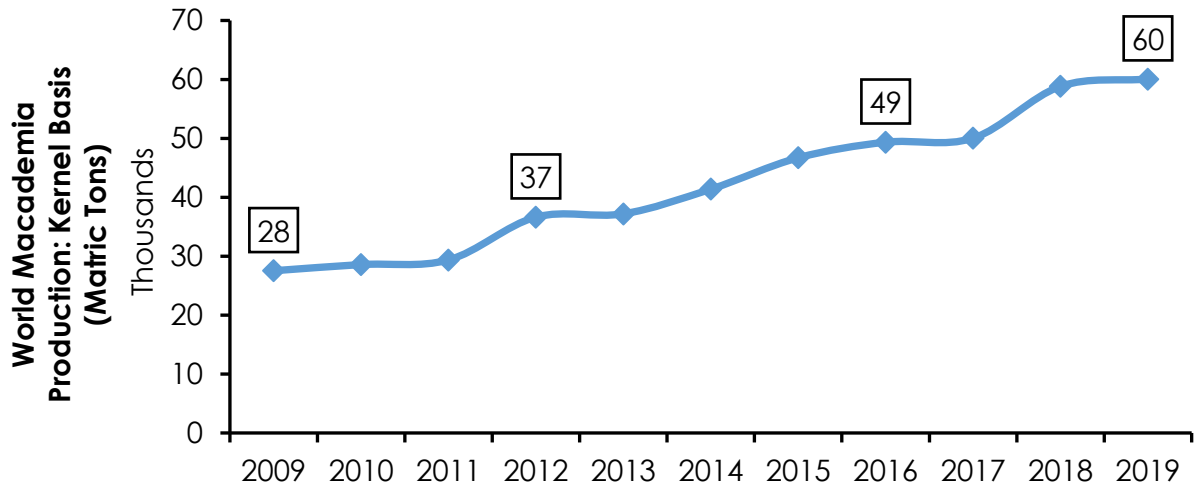

Figure 1: *The world macadamia nut production in Metric tonnes (MT)*

Source: INC (2020)

Kenya is the third-largest macadamia nut producer at 12% of the world share (7 350 tons: kernel), and the second-largest macadamia producing country in Africa. Such production levels are quite remarkable considering that the majority of Kenyan macadamia nuts is produced by 200 000 smallholder farmers (Quiroz *e.t al.,* 2019). With the increased area under the macadamia crop, the Kenyan macadamia nut production is forecast to reach 60 000 tonnes NIS by 2022.

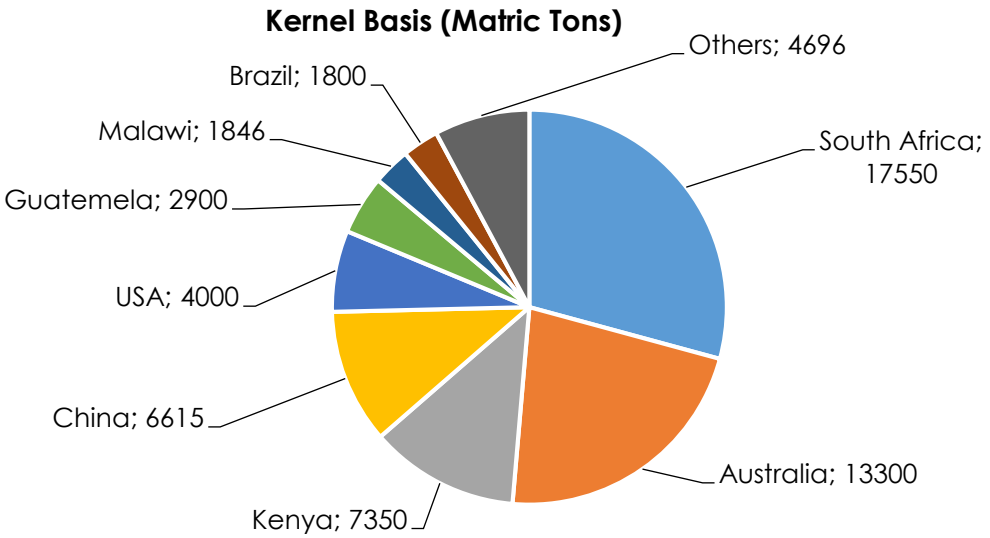

Figure 2: *Major Macadamia Nut Producing countries (Metric Tonnes): Kernel Basis*

Source: INC (2020)

China and the USA had a world share total of 11% and 7% respectively and are among the top five macadamia producers from the northern hemisphere in the 2019 season. The significant growth in production of macadamias in 2019 was from the following regions: Guatemala (35%), Vietnam (21%), Brazil (16%), Malawi (12%), China (10%) and Kenya (2%) respectively, excluding South Africa and Australia (INC, 2020a).

From Table 1 it is clear that South Africa and Australia each had a 27% share in macadamia production. This can be attributed to the extended area under production, new varieties and continuous investment in the macadamia nut industry in South Africa and Australia.

Table1: *Five-Year Average Macadamia Production: Kernel Basis (Tonnes)*

Countries	***Kernel Basis (Metric Tons)***	***%Share***
South Africa	14 288	27
Australia	14 192	27
Kenya	7 022	13
USA	4 153	8
China	3 859	7
Guatemala	2 190	4
Malawi	1 620	3
Brazil	1 450	3
Others	4 215	8

Source: INC, 2020

In 2019, South Africa had 44 775 hectares under macadamia production, with 2019 seeing 5 962 new hectares planted (SAMC, 2020). Australian macadamia production was driven by recent tree plantings coming into production, and the expected recovery in 2019/20 from the drought and wildfire impact. Over the past 10 years, Australia's macadamia nut area planted increased from 18 000 ha in 2011 to 26 000 in 2019 (USDA, 2020).

The nut supply value is estimated as the production per its unitary price averaged annually (i.e. customs paid on arrival in Europe). The overall macadamia nut supply value increased steadily over the past 10 years, averaged at $1.93 billion per year, recording a total of $35.5 billion in 2019/20 (INC, 2020). Figure 3 shows the macadamia tree nut supply values since 2009/10, compared to all other types of nuts traded. Over this period macadamia nuts showed an increasing trend reaching $1.11 billion in 2019/20.

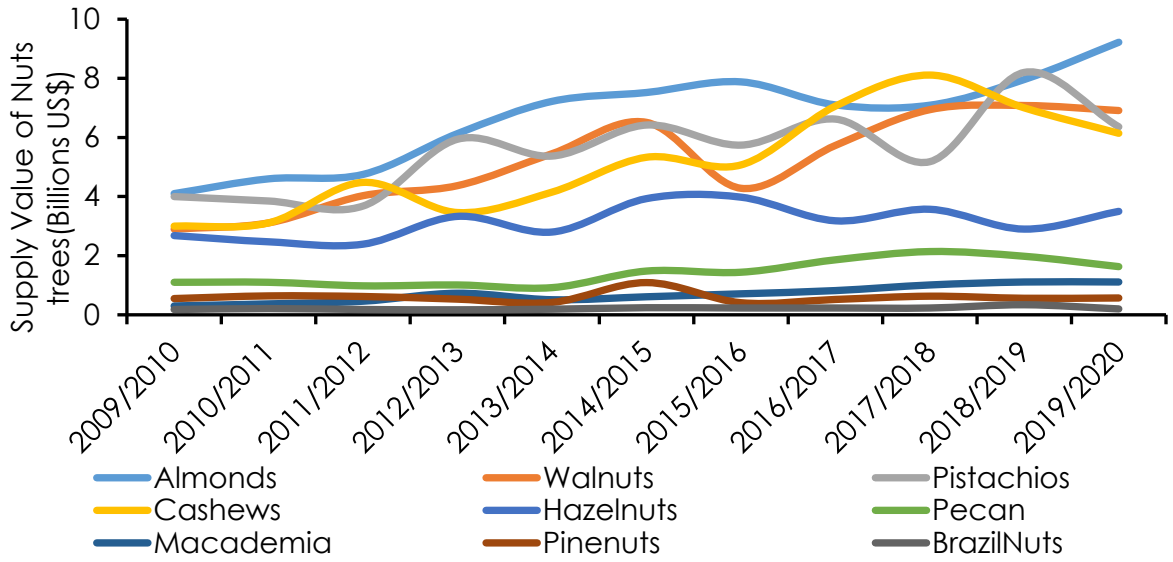

Figure 3: *World Nut tree Supply Value (Billions $): Kernel Basis, except pistachios nut in-shell.*

Source: INC (2020a)

It is clear from the figure that macadamia production or planting is comparatively small compared to almonds, pistachios and cashew nuts which made up the top three in value terms in 2019/20. The growth in macadamia trees supply values can be attributed to the significant planting of new macadamia orchards.

2.2 World Macadamia nut consumption and distribution trends

Over the past decade, the global increase towards healthy eating has driven the growth in the macadamia nut industry, increasing by 24% compared to the previous decade (Wood, 2020; Venter, 2019). In general, nuts such as macadamias contain plant-based proteins, unsaturated fats (good for heart health), fibre, vitamins, minerals and bioactive compounds such as phytosterols and phenolic compounds (King *et al*., 2007; Venter, 2019). These compounds are said to prevent cell damage and consequently better ageing to elderly people. The growth in macadamia per capita consumption is also driven by rapid population growth (i.e. China) around the world, driving significant demand increases for high-value agricultural commodities (OECD-FAO,2016). Figure 4 shows the world macadamia nut consumption, both in terms of overall consumption and per capita.

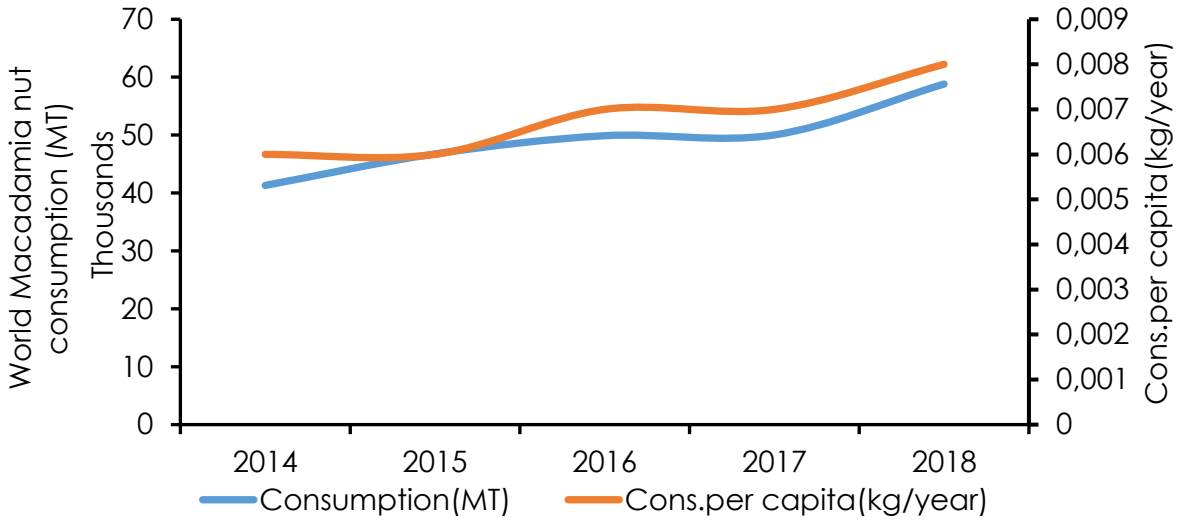

Figure 4: World Nut consumption (Metric Tonnes)

*Source**:** INC (2020)*

The world consumption increased from 41 thousand tons in 2014 to 59 thousand tons in 2018, and the per capita consumption of 0.008 kg/year was recorded in 2018. Nuts consumption is dominant in high-income countries, with the United States of America, China, Japan and European countries being the largest consumers.

Table 2 shows the leading countries in terms of world macadamia nut consumption in 2018 in tons and consumption per capita. At a country level, the USA was the leading consumer with an annual average intake of more than 15 thousand tons (kernel Basis), followed by China at 7 433 tons, while Germany at 4 212 tons (INC, 2020). China is the

world's second-largest consumer and importer of macadamia nuts (Atlas, 2018). Per capita macadamia nut consumption was high in Australia, amounting to 0.161, followed by Germany (0.051) in second and third place respectively.

The world macadamia consumption can be attributed to the growing demand, the popularity of the commodity, population growth and per capita income in Gross Domestic Product (GDP) among other things (Phil, 2019). The application of processed macadamia nut in different industry segments like the food and beverage industry, and cosmetics and personal care industry contributes to the growing consumption of macadamia nuts globally.

Table 2: *Leading consumers of macadamia nut*

Top 10	***2018***	***Cons. Per capita***
USA	15 104	0,046
China	7 433	0,005
Germany	4 212	0,051
Australia	3 999	0,161
Japan	2 772	0,022
Brazil	1 048	0,005
Spain	892	0,019
Korea Rep	879	0,017
Canada	797	0,021
France	509	0,008

Source: (NCI, 2020a)

The processing and snack industry remain the largest consumers of macadamia nuts both as an ingredient and for traditional sweets and pastries.

2.3 The trade performance of the Macadamia nut industry

This report is conducted when the world is faced with the COVID-19 pandemic, disrupting the agricultural trade and supply chain (ITC, 2020). The world food market has seen lockdown stringent measures such as cross-border closure, export bans and physical involvement of farm labour (WTO, 2020; Tralac, 2020). With the existing trade restriction and regulations stricter in some countries; different countries have prioritised the food and agricultural supply chains as part of emergency measures or essential services responsive to the COVID-19 global impact.

Macadamias constitute a small sub-sector of all nuts on the world stage market, with only 1.28 % of the total market share (Coetzee, 2019). Macadamias are still viewed as a luxury product. World macadamia nut exports in volume terms are summarised in Figure 5 below and show that the highest recorded level of 115 thousand tons was exported in 2019. There was a change in the macadamia HS-classification in 2012 which allows for these volumes to be divided into the shelled and non-shelled portions, whilst the value of world exports are also given in Rand values. Before 2013, the volume of total macadamia nut exports was increasing at around 2.7% per annum, but since then the annual growth has increased to 6.5% toward 2019. In Figure 5 the majority (61% in 2019) of macadamia nuts are exported as NIS nuts, but this percentage share has declined since 2017. World exports of NIS nuts totalled 70 209 tons in 2019, whilst 44 860 tons of shelled nut were exported. In terms of the value of exports, these have followed a similar increasing trend which has also grown at a faster rate since 2013. World exports have therefore increased from R1.1 billion in 2007 to around 13.4 billion in 2019.

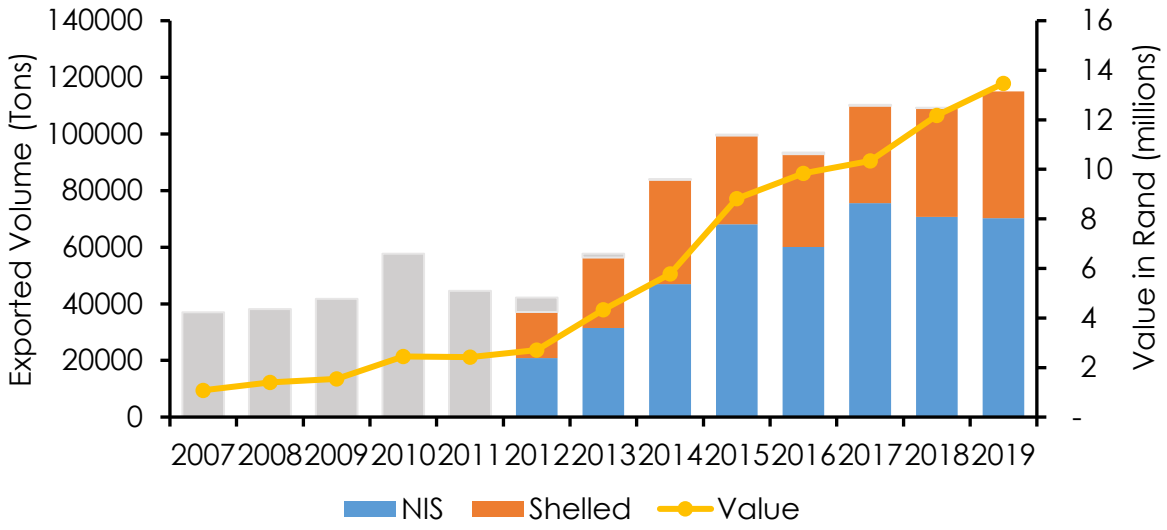

Figure 5: *World Macadamia exports*

Source: (ITC, 2020)

South Africa and Australia were the top world exporters of macadamia nuts accounting for 37 and 23 thousand tons respectively in 2019 (ITC, 2020) (see Table 3). About 43% of the South African macadamias were exported as shelled nuts (HS: 080262), whilst the remaining majority (56%) were NIS nuts. World macadamias exports

continue to indicate a growth driven by a rapid increase in production and world demand (USDA, 2020a).

South Africa remained the leading exporter of macadamias in volume terms, recording 37 thousand tons in 2019, with a 5.3 % five-year market share growth, followed by Australia with 23 057 thousand tons and Hong Kong at 10 897 tons. Australia's five-year export growth was 32%, whilst Hong Kong's exports decline by10 % (ITC, 2020; USDA, 2020).

Table 3: *Leading World Exporters and Importers of Macadamias*

Rank	***Exporters***	***Tons: 2019***	***5-Year Growth (%)***	***Importers***	***Tons: 2019***	***5-Year Growth (%)***
1	South Africa	37440	5,89	China	28354	22,44
2	Australia	23057	32,02	Hong Kong	14757	-7,87
3	Hong Kong	10897	-10,02	USA	12704	6,04
4	Zimbabwe	7426	21,60	Kyrgyzstan	4668	0,00
5	Guatemala	6792	19,99	Germany	3705	5,81
6	USA	5760	9,41	South Africa	3317	20,36
7	Kenya	5322	1,70	Japan	3161	6,39
8	China	4572	6,17	Viet Nam	3071	0,00
9	Brazil	2131	22,14	Netherlands	2230	-1,52
10	Netherlands	1934	-18,76	Thailand	1702	44,30
	Others	9503	3,56	Others	11703	5,75

Source: ITC, 2020 & INC, 2020

In terms of imported volumes, China, Hong Kong and the USA were the largest importers of the world macadamia nuts, recording 28 354 thousand, 14 757 thousand, and 12 704 thousand tons (ITC, 2020; USDA, 2019). The macadamia nuts trade is expected to grow as investment margins in this industry remain lucrative.

2.3.1 The SA Macadamia Nut trade Market Performance

The 2020 global macadamia crop production dropped by 3% due to unfavourable weather conditions, South Africa remained the major producer and net exporter (Botha, 2020).

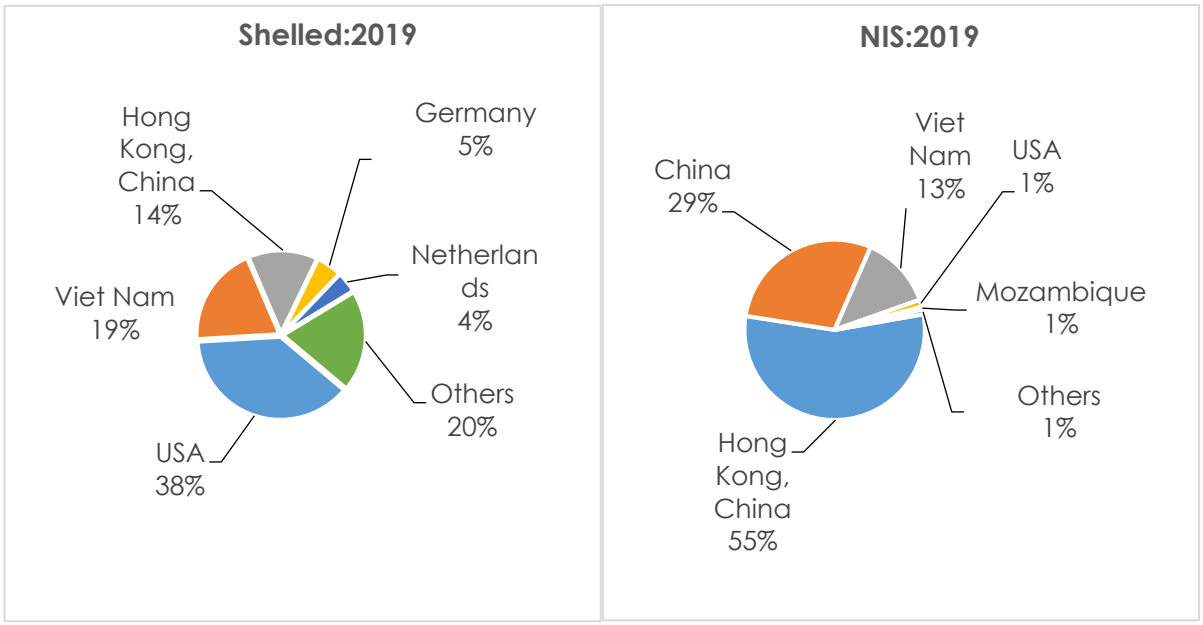

Figure 6: *South African Macadamia nut Export volumes shares (Tonnes)*

Source: ITC (2020)

In 2019, USA, Viet Nam, and Hong Kong, remained as the top three importing markets of the South Africa's macadamia shelled in volume terms and these markets make up a combined 71% share of the South Africa's world exports volumes of this commodity (See Figure 6). In terms of South Africa's NIS export volumes, Hong Kong (55%), China (29%), and Viet Nam (13%), were the top importing markets of this commodity. The existing South Africa's rivals in these top macadamia nut markets are Australia and Kenya.

The total value of the SA macadamia nuts exports recorded the highest export value of R4.5 billion in 2019 (ITC,2020), this was determined by the country's recovery plan seen in 2018. As Chinese consumers continue to prefer high-quality, well-priced and nutritious foods, and buying online becoming more popular, this presents more market opportunities for South Africa macadamia nuts (SAMAC, 2016). However, trade restrictions do exist for South African macadamia export into the Chine's market. The

recent signed China-Australian Free Trade Agreement came into effect in 2016, with an import tax of 14.9% levied on Australian macadamia nuts compared to the 19% imposed on South African macadamia exports (SAMAC, 2016). Moving forward, the South African and Chinese government, together with the industry stakeholders should pursue bilateral relations that would ensure lower tariffs so that Chinese consumers would enjoy more macadamias from South Africa.

3. South Africa's nut industry performance

The South African diverse climate, ecology and weather conditions are well suited for macadamia nut production. Macadamia nuts is the most dominant tree nut grown in South Africa, whilst other nuts such as pecans, almonds, pistachios make out much smaller shares (SAMAC, 2020a; Macaskill, 2019). Over the past 10 years, a growth rate of 24% in macadamia nut production has been recorded in South Africa (Kalaba, 2019).

On average, the growth in production and establishment of new orchards is at least 10% per annum, responding to the increasing world macadamia nut demand from major import markets including the United States, Asia and Europe. Moreover, there are high returns per hectare on macadamias relative to other crops such as sugar cane, wine grapes, bananas and lumber in South Africa.

3.1 Domestic macadamia production

Biacuana (2019) confirms that the South African macadamia nut production showed a pronounced exponential growth over the recent years. The macadamia nut industry has sustained a lead on the production of the country's nuts, and it is among the fastest-growing industries in the country (SAMAC, 2020; Kalaba, 2019). The total area planted of macadamia nuts established in South Africa stands at 44 775 hectares (see Figure 7). The country's total macadamia production is expected to grow in the near future driven by the new tree plantings

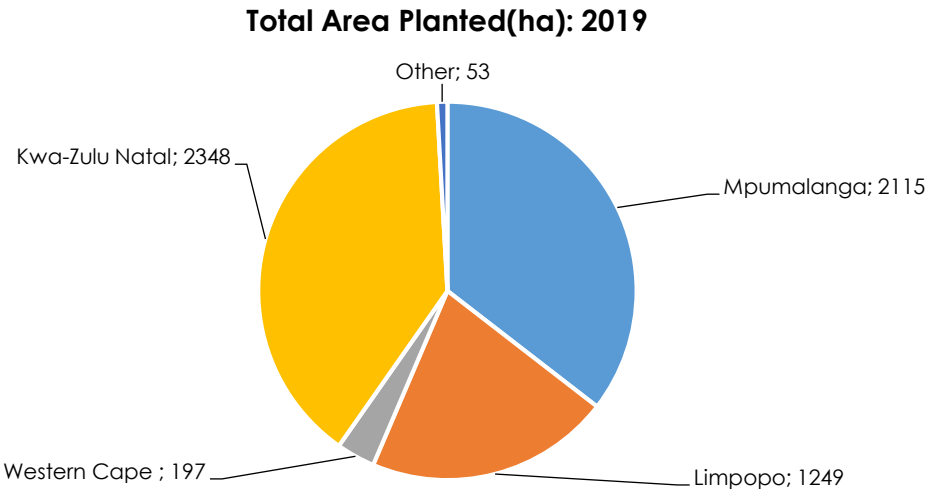

Figure 7: *South African Macadamia established hectares per Province in 2019*

Source: SAMAC (2020)

As shown in Figure 8, the main production areas for macadamia's are Levubu and Tzaneen, located in Limpopo. Around 36% of total hectares planted took place in this province in 2019. Other notable production areas include Hazy view to Barberton (Mpumalanga) and some of the coastal regions of Kwa-Zulu Natal and the Eastern Cape.

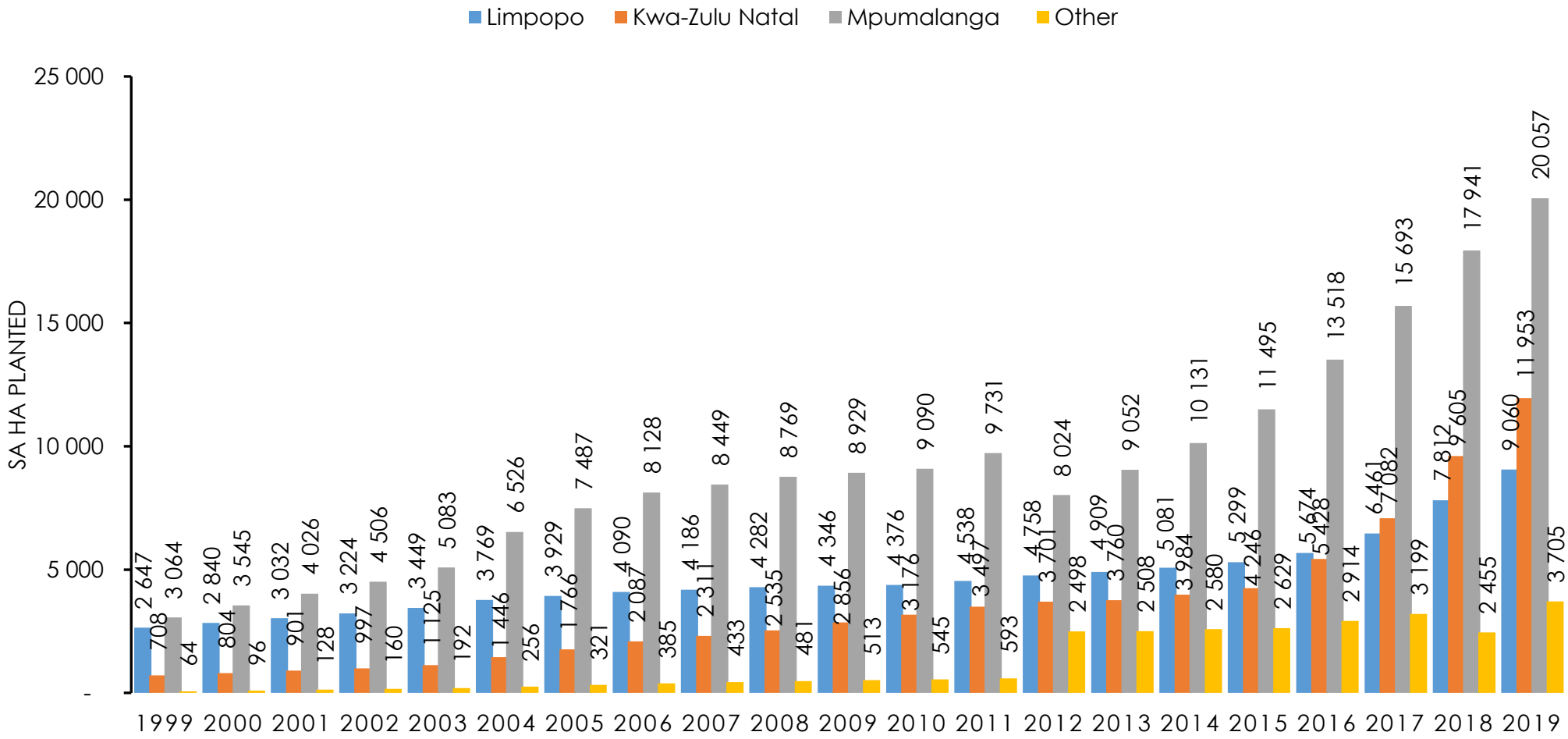

Figure 8: *Historic SA Provincial Hectares Planted: 1999 to 2019*

Source: SAMAC, 2020

Interestingly, hectares planted in the Western Cape has increased substantially by 3% of the total hectares in 2019. In 2019, there were around 5 887 new hectares (ha) of macadamias established, with 197 hectares located in the Western Cape. As expected the bulk of these new planting was in Kwa-Zulu Natal (2 348 ha), followed by Mpumalanga (2 115 ha) and the Limpopo Province (1 249 ha) (SAMAC,2020b).

In line with the increasing trend of hectares, the production of macadamia nut in-shell (measure at 1.5% kernel moisture content) production has increased from 9 036 tonnes in 2001 to 59 050 tons in 2019 before a significant decline (30% from the previous season) to 46 256 tons in 2020 (StatsSA, 2020: SAMAC, 2020)(see Figure 9)(. The SA's macadamia nut industry has experienced a series of challenges over the recent years; drought, dry and hot weather in late 2019 being the far most amongst them. The drought has lowered macadamia nuts yields significantly. Pest and theft during production have been established as the other major problems that impacted this industry. This could be specifically the case with the sudden drop in macadamia production tons in 2020, to 46 256 tons from 59 050 tons in 2019, a 17.1% decline (see Figure 10).

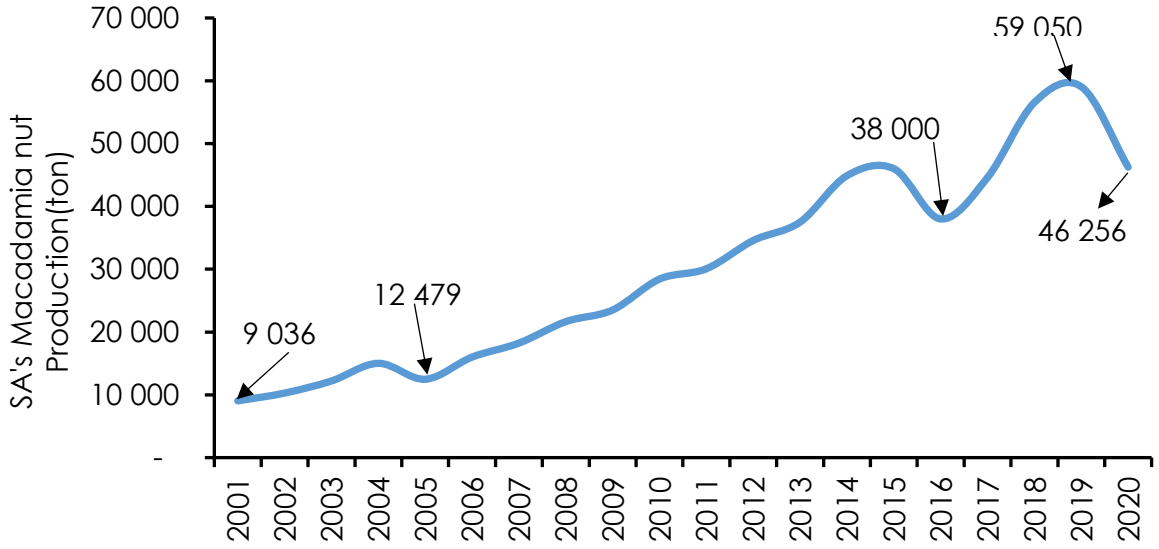

Figure 9: *South African Macadamia total production in tonnes*

Source: SAMAC (2020)

The latest commercial agricultural census conducted for the year 2017 provides further information on the macadamia industry, which aligns closely to the data provided by SAMAC. Table 4 give a breakdown of production and hectares per province, and

gives the average annual growth since the last time that the census was undertaken in 2007.

Table 4: *Macadamia Production and Hectares per Province*

Province	***2017***			
	Tons	Hectares	Average Yield (T/ha)	10-year annual growth in tons
Western Cape	294	202	1.46	28.5
Free State	20	10	2.00	-
Kwa-Zulu Natal	8 778	7 956	1.10	19.5
North West	66	42	1.57	-2.6
Mpumalanga	28 121	16 236	1.73	16.3
Limpopo	11 887	9 724	1.22	1.3
South Africa	49 169	34 431	1.43	10.4

Source: SAMAC (2020) & Census, 2020

The average yield in South Africa was 1.43 tons per hectare and the fastest growing the region, although from a very small base, was the Western Cape with annual growth of 28.5% in 2017. In total, macadamia output volume has grown 10.4% every year for the past decade. In terms of the number of trees planted, there were around 3.6 million non-bearing trees and around 6.3 million trees of bearing age. This is expected since there has been a considerable increase in area planted in recent years, with trees reaching bearing age within around four years after being planted (for grafted trees). The growth of macadamia trees is however dependent on climate, soils, planting density and the type of cultivar planted among other factors. Beaumont is the widely planted SA macadamia nut cultivar, accounting 48% of the total area planted, followed by variety A4 (24 %), variety 816 (16%), variety 814 (4%), Nelmak (2%), and variety 788 (2%) (SAMAC, 2020b).

3.2 South African Macadamia value chain

The South African macadamia industry consists of around 500 growers, 21 handlers, 18 nurseries and 61 other associated members registered with Macadamias South Africa NPC (SAMAC). This industry's body was established in the 1970's by a group of growers to support further growth and to solve common problems and is funded by a statutory levy and voluntary membership contributions (SAMAC, 2020). In order to get a sense of the macadamia value chain, Figure 10 provides a schematic overview of the

various actors and activities taking place as macadamia products reach final consumers. This was compiled using various sources (SAMAC, 2020; DAFF, 2019; Mordor Intelligence, 2020; Census, 2020).

Firstly, the macadamia nut value chain starts off with growers using various inputs and primary activities to support on-farm production. According to SAMAC (2020), the average operating cost per hectare to produce macadamia's is around R25 000 (weeding, fertilising and irrigation) and another R100 000 to establish new orchards. All of these activities directly translates into the industry creating economic opportunities for primary inputs applied in the cultivation of macadamias including seedling, fertilizers, crop protection chemicals, research of cultivars, and agricultural equipment, contractors and other businesses services.

Next, the production of macadamia nuts is provided by a wide range of small-scale and commercial producers. Generally, small-scale macadamia growers sell NIS nuts to brokers, and the processing units for further grading and distribution of both shelled and nut in-shell macadamias. Commercial macadamia nut producers operate as a cooperative with vertical ownership in processing facilities. In total, local production of macadamia nuts were 49 169 tons, whilst around 2 600 NIS tons were imported into South Africa in 2020.

Following that, macadamia nuts are either moved to the next phase of processing or exported as NIS. With the former, processors buy the nuts in the husk and continue with de-husking, drying, roasting and finally grading the nuts for further trade and domestic consumption. The de-husking machines use rollers to split the husk and derive the nut, while the process of drying involves reducing moisture until it reaches the level of 8%-10%. Processing involves different steps and maintaining the quality of the nut is critical in all these steps. Value-add investment continues to rise in macadamias and more investment is needed in cracking facilities and processors.

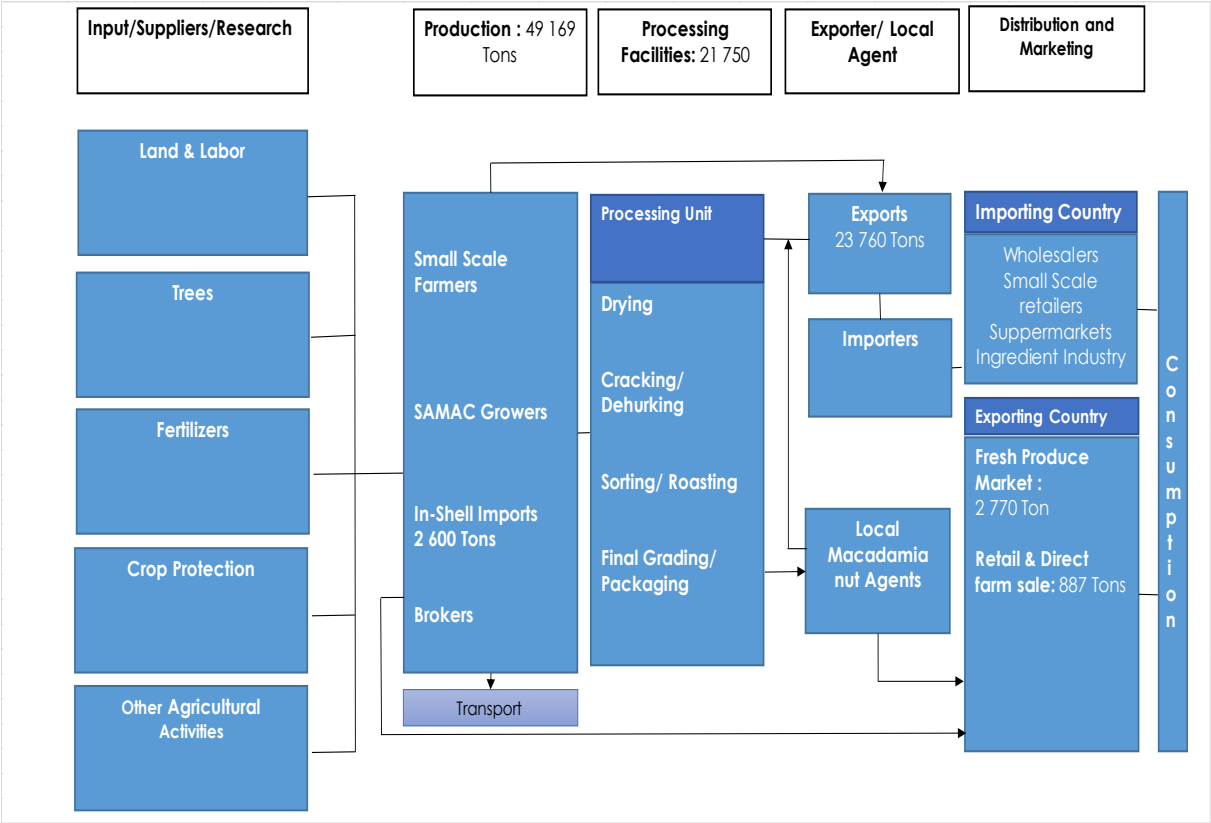

Figure 10: *Macadamia Value Chain*

Source: Adopted from DAFF, 2019; Mordor Intelligence, 2020 & StatsSA, 2020a

South Africa has the world's largest processor named Green Farms Nut Company (GFNC) in Mpumalanga Province. This explains why around 50% of all macadamia processing takes place in this province (StatsSA, 2020a). Macadamia nuts locally are often used as a snack, in savoury and sweet dishes (i.e., ingredient industries). In 2017 around 44% or 21 750 tons of the total macadamia production were processed, through packaging and value-added such as spreads, oil, chocolates, confectionery, and flour, also the majority of these products are exported as well. This characteristic of the industry is important within South Africa where additional economic growth in agro-processing is crucially needed.

Around 48% (23 760 tons) of the total production are exported to the various international markets as NIS, which suggest there are ample opportunities to increase the proportion being processed in South Africa and exported as shelled nuts, which fetch a much higher price. The same applies to the 2 770 tons of nuts distributed through the various Fresh Produce Markets, as well as the 887 tons sold directly to retailers and local customers. This implies that less than 7 % of the South African

macadamia nuts are consumed by the local market. The use of macadamias by the confectionery and baking industry presents more opportunities for South African macadamia nut producers and processors.

3.2 South African Macadamia nut Trade Performance

Since about 93% of South Africa macadamia nuts production is exported to international markets; it is important to analyse the export performance more broadly and to assess attractive opportunities in new markets. The macadamia export volumes of South Africa maintained an upward trend from 2007 to 2019, with a dip in 2016, probably a reflection of loss in production due to national drought (Symington, 2019; SAMAC, 2016). Figure 11, shows the South African trade performance in both volume and value terms.

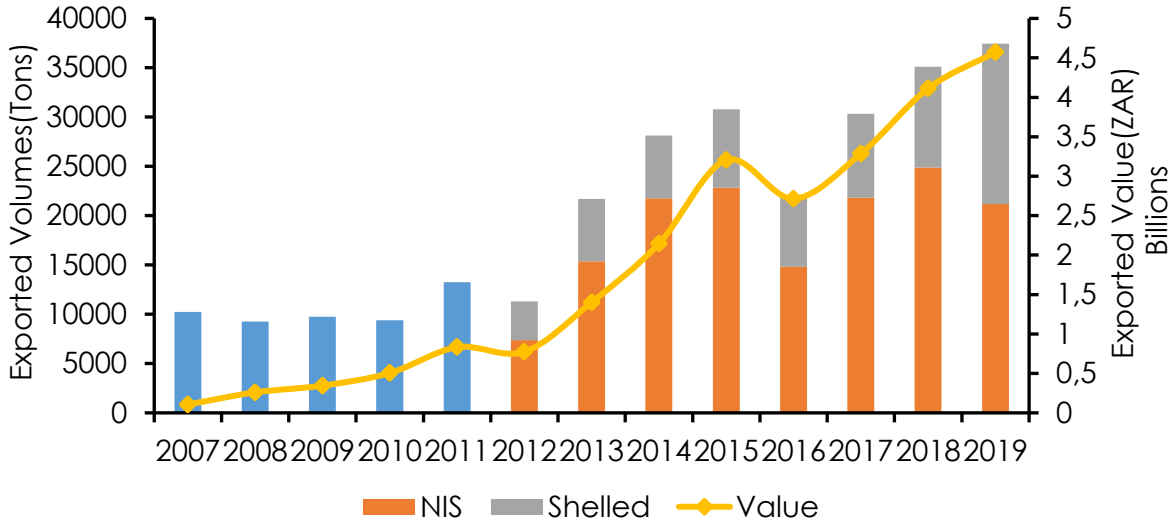

Figure 11: *South African macadamia exports in value and volume*

Source: ITC, 2020

In terms of macadamia export values, South Africa showed a pronounced growth from 2009, growing from R345 million to R4.5 billion in 2019 (ITC, 2020). This increase in value was largely driven by a similar increase in the volumes, but also some support in terms of price levels. The most prominent export value was recorded in 2019, when the country reached R4.6 Billion (ITC, 2020).

Most of the South African macadamia NIS products were exported to East Asia and Southeast Asia (97%), while macadamia kernel is shipped into North America, the

European Union and the UK, and the Middle East. The fluctuating growth in values is driven by many factors, including investment in production, economics of scales in the nuts industry, expansion of the area under tree nut plantation, and the growing international demand for tree nuts.

Figure 12 sheds more light on this given the unit price of macadamia exports per ton in both US dollar (US$) terms and in South African Rand (ZAR). Clearly, export prices have seen growth over this period, and although the weakening of the Rand evidently assisted higher prices before 2015, the Dollar and Rand price have both trended together since then. Overall, the strong demand growth for macadamia nuts have meant that the prevailing supply could not match the increase, driving prices higher

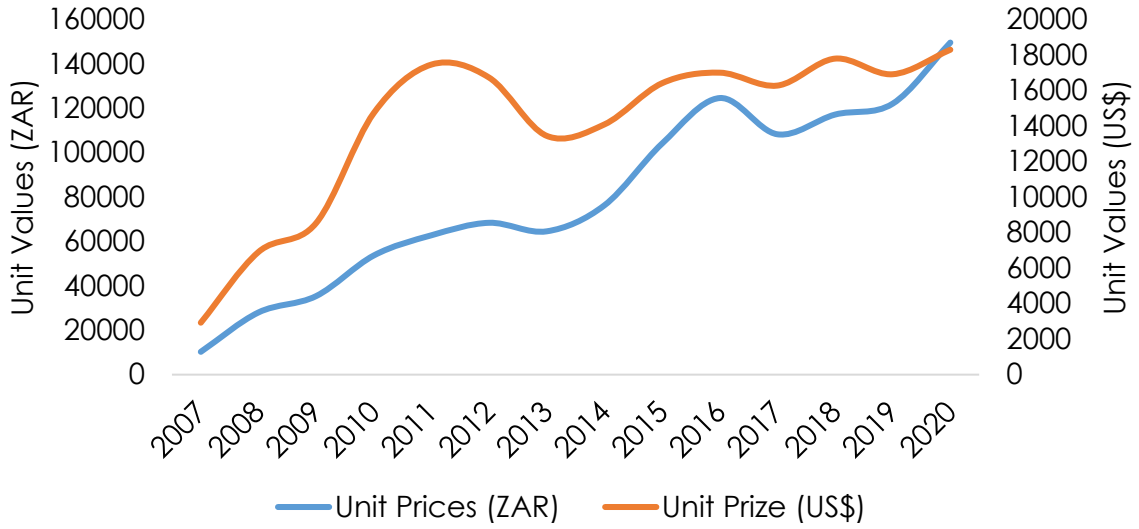

Figure 12: *Unit Prices of Macadamia Exports per Ton*

Source: ITC, 2021

The positive export trend has been influenced by the expansion in the area under macadamia and the growing global demand (Kalaba, 2019). The general observation is, South Africa's macadamia nut exports showed a resilient growth from 2001 to 2019 marketing year.

In an attempt to show the major importers of South African macadamia nuts, Figure 13 shows the breakdown volumes for both NIS and shelled exports in 2019.

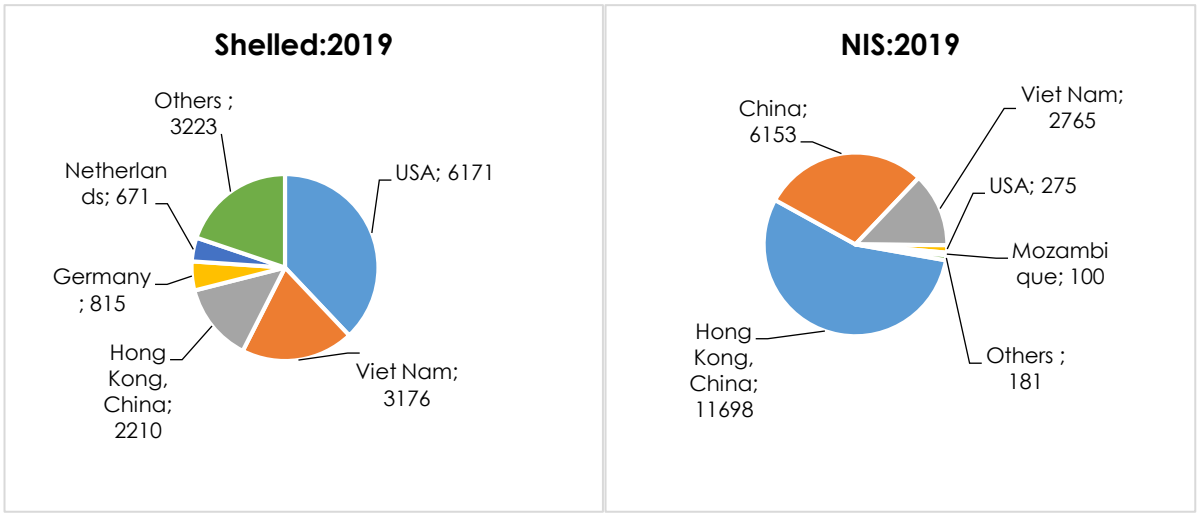

Figure 13: *South Africa's macadamia major importers in volume terms (Ton)*

Source: ITC, 2020

In volume terms, Hong Kong, and China remained the largest market of South Africa's NIS exports, absorbing about 55% (11 689 tons), followed by Viet Nam with 13% at 2 765 tons in 2019. Other major importers include the USA (2%), and Mozambique (1%) among the top importers (ITC, 2020). On the shelled macadamia nut exports from South Africa; the USA (38%), Viet Nam (20%) and Hong Kong (14%) were the three top importers, absorbing 6 171 tons, 3 176 tons and 275 tons respectively. Hong Kong and China as the bigger markets of the South African macadamia nut exports; the middle-class income growth, changing healthy diets and the population size of the economy makes this market more attractive to South Africa.

4.Employment opportunities in the Macadamia and Pecan nut industry

Macadamia nuts are among the major crops of the country's nut industry in South Africa and have a high-growth potential and labour intensive (Sihlobo, 2018). Most of the labour force employed in South Africa's macadamia nut industry is employed seasonally; for harvesting and processing from February to August. Table 5 gives a breakdown of the different types of employment in the industry according to specific job categories. According to SAMAC (2020), there were around 27 thousand people employed across the value chain, with 46% as permanent farm workers and another 40% employed as seasonal labour on macadamia farms. As noted earlier, the South African macadamia nut industry is forecast to continue grow by 6 300 ha per annum, using then full-time equivalents (0.53 workers per hectare), the industry is expected to

add around 36 000 jobs on macadamia farms in 2030. Full-time equivalent employment is calculated by the total hours worked by an individual divided by average annual hours worked in full-time jobs. This will ultimately culminate in more jobs off-farm as well and if the country can expand existing processing investment and capacity, many more jobs can be created in this industry. This would contribute towards achieving 1 million agricultural jobs outlined in the NDP.

Table 5: *SA Macadamia Nut Employment*

SA Macadamia employment (2018-2019)

Job Categories	**2018**	**2019**	**2019 Employment Share %**
Farm Permanent	11615	12684	46,2%
Farm Seasonal	10174	11111	40,4%
Factories Permanent	725	725	2,6%
Factories Seasonal	2356	2460	9,0%
Nurseries Permanent	440	416	1,5%
Nurseries Seasonal	80	76	0,3%
Total Employment	25390	27472	100%

Source: SAMAC, 2020

5. The Western Cape macadamia industry

This sections now focus on the opportunity for macadamia production in the Western Cape. Since there has been strong growth in the area planted as reported by SAMAC (2020), valuable insights into the industry in the Western Cape can assist further development of the value chain to be based in the province. Looking first at the changes and major area where production is taking place in the Western Cape, and trade analysis and market attractiveness assessment will follow.

5.1.1 Western Cape Macadamia nut production and trade performance

In terms of the total area under macadamias, the WCDoA's fly-over project identified at least 448 hectares of macadamia nuts planted in the Western Cape in 2017 (WCDoA, 2018). This is somewhat higher than the 2017 census value of 202 hectares in the same year, but probably a better figure considering that the latter is based on a questionnaire rather than the flyover's physical counting. Since then, there has been strong growth with around 197 hectares established just in 2019 alone as previously mentioned. This suggests that there is strong growth in macadamia output expected

in the next few years. Regardless of what source of information is used, the data still provides important insights.

For instance, Census (2020) shows that total hectares planted in the Western Cape increased from 20 hectares in 2007 to 202 hectares in 2017. This meant that production increased by more than 270 tons throughout this period. If this data represents an under-estimated production and if the actual hectares are closer to around 500 hectares, this would mean that there were around 264 jobs created on Western Cape farms. Figure 14 gives the total hectares planted for each municipality in the Western Cape. The biggest area for macadamia production in the Western Cape reflects the climatic condition characterised by more sub-tropical weather such as around George and Mosselbay where around 70% of the total hectares are located.

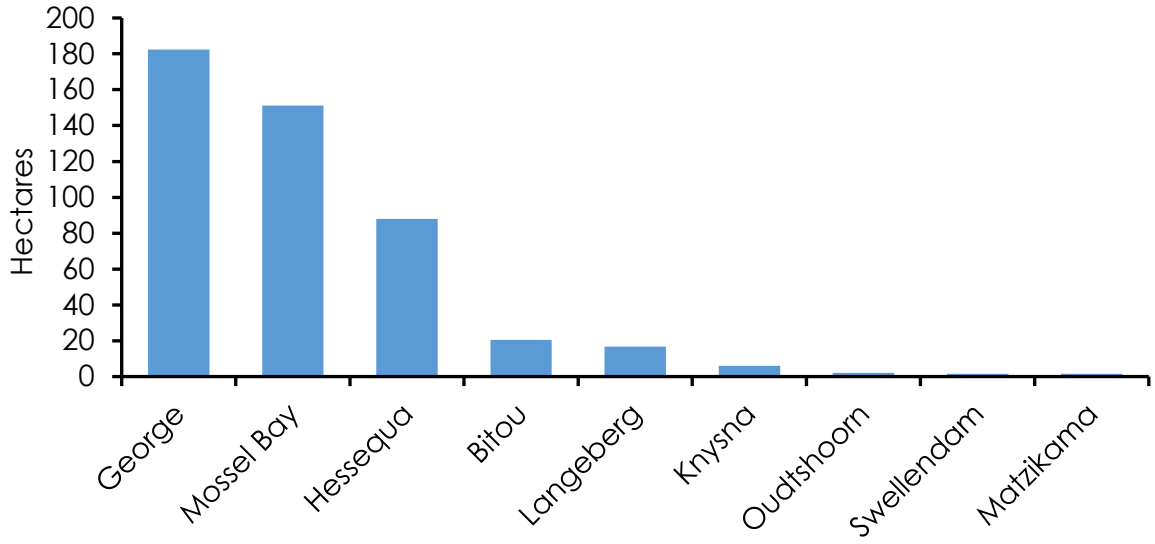

Figure 14: *Western Cape Municipality Macadamia Hectares Planted*

Source: Census, 2020

Hessequa and Bitou are adjacent to these municipalities, whilst a few hectares were more inland in Langeberg and Oudtshoorn. With the growth in area planted in other municipalities, this would improve production and the export position of the Province.

5.1.2 WC macadamia nut industry export trends and major importers

Although a relatively small proportion of South Africa's macadamia production and exports takes place in the Western Cape, a summary of the export performance and major markets indicates current performance.

Figure 15 gives the value of exports from the Western Cape for both NIS and shelled macadamia nuts (Quantec, 2020). There was a sharp increase in exports between 2012 and 2014, after which a steady decline is noted. A possible explanation for this declining trend is that Western Cape production may be brought by exporters and processors located in other provinces and then exported with the bulk of production that takes place in the rest of South Africa.

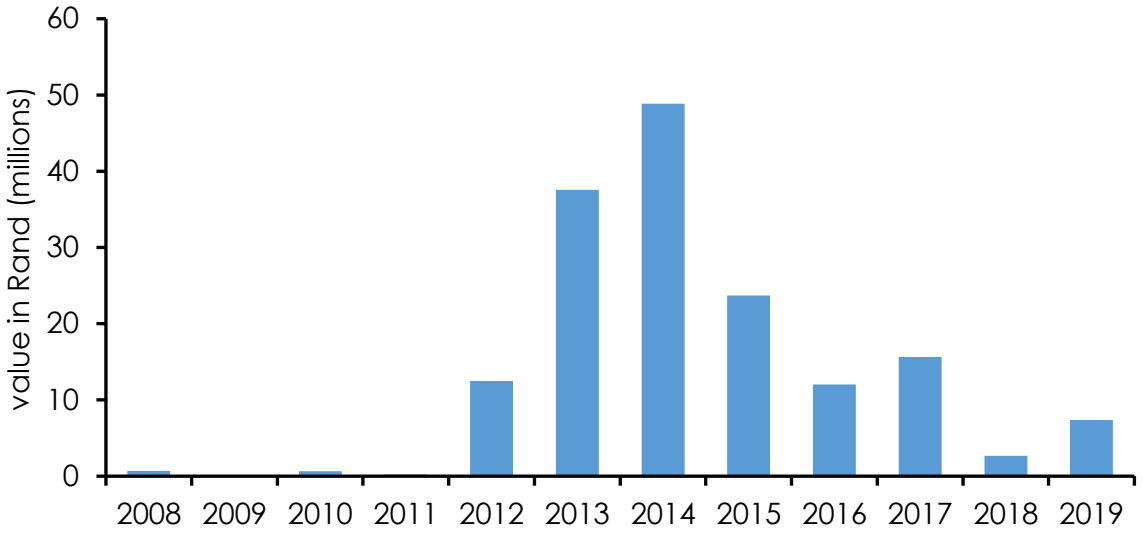

Figure 15: *Western Cape macadamia exports in value (ZAR)*

Source: Quantec, 2020

This suggests that if greater investment in hectares can be coupled with development in processing facilities located in the Western Cape, much more products are expected to be exported from the province. Figure 16 gives the Western Cape macadamia nuts export markets in 2019. A general observation is the Western Cape's macadamias are largely absorbed by the European and African markets.

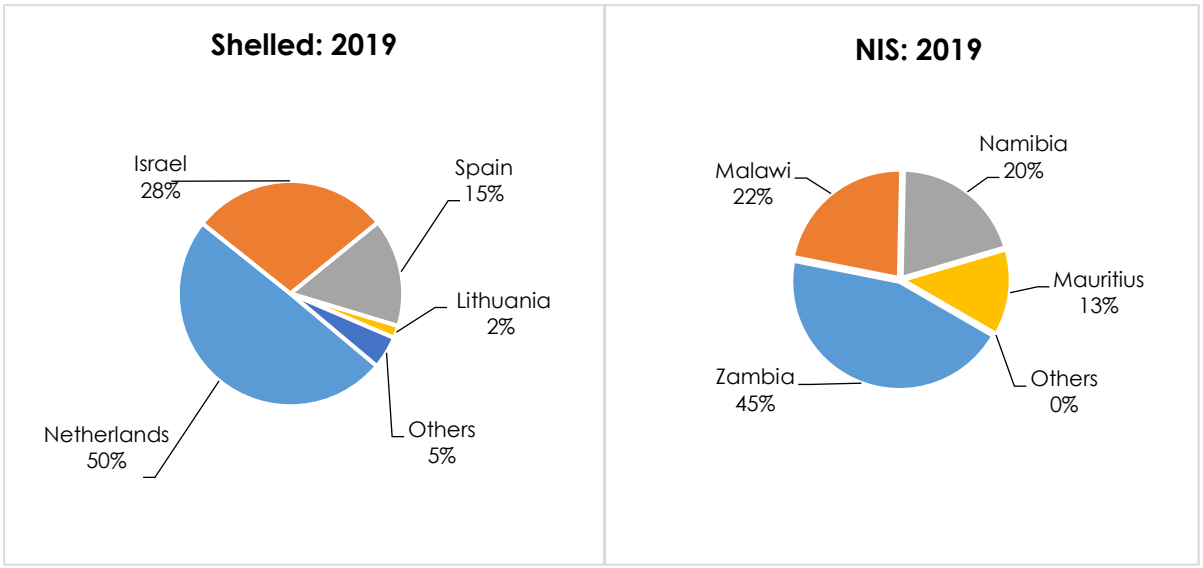

Figure 16: *Western Cape Macadamia Major Importers*

Source: Quantec, 2020

However, the Western Cape Province can take a trade advantage in the Chinese market due to a drop in production in the USA (major exporter to China) in 2018/19. The macadamias (shelled: HS080262) in value terms were largely absorbed by the Netherlands market (50%), accounting for R3.5 million, followed by Israel at R2 million (28%), and Spain at R112 thousand (15%) in 2019 marketing year. While macadamias (in-shell: HS080261) were exported to Zambia valued at R73 thousand (45%), followed by Malawi at R36 thousand (22%) and in the 3rd, the position is Namibia (R33 thousand) (20%) in 2019.

The former can be attributed to the distance and transaction cost the Western Cape have with these markets. China's macadamia nut production projected to grow by 40 per cent in 2019/20 from the previous year, accounting for close to 30 000 tons. While the total macadamia nut area planted is currently estimated at 160 000 ha. Western Cape can tap into this potential market as more Chinese customers learn about the nutritional benefits of tree nuts.

6.Competitiveness of South Africa macadamia exports?

Competitiveness is discussed in economic debates and policy development (Bouet & Odjo, 2019). The Global Competitiveness Report ranks 137 countries based on their competitive performance. The African Development Bank reported that competitiveness is overall stagnant among the African countries (WEF, 2017). To address stagnant competitiveness, the Malabo Declaration seek to restore the competitiveness of African economics with a particular focus on agricultural and agri-food sectors. Agricultural export competitiveness plays a major role in agricultural trade (Etuk & Ohen, 2017).

Competitiveness is difficult to define and it holds different meanings to different stakeholders along the agri-value-chains (Angala, 2015; Sibulali & Van Rooyen, 2019; Barr, 2019). Competitiveness can be understood as the comparison of prices of the same agricultural commodity produced in two different economic and geographic regions or be applied at a national level, as the "capacity of a country to sustainably improve the standard of living of its inhabitants and to provide them with a high level of employment and social cohesion". Alternatively, competitiveness is reviewed based on its impact on economic variables such level of a country's exports product relative to others.

One measure used to assess competitiveness for an exporting country is the Relative Trade Advantage (RTA) index. In short, RTA values incorporate both the Relative Export Advantage (RXA), as well as the Relative Import Advantage (RMA) to derive the RTA which measures the competitiveness of products under real-world conditions. The RTA shows a comprehensive analysis of competitive trade performance based on exports and imports at market prices (Barr, 2019). The index measures the relative trade advantage that a specific product or industry has over other products or industries within that same country or region. An RTA value greater than 1 indicates a competitive advantage, while a value of less than 1 indicate an absence of competitive advantage, also known as a competitive disadvantage (Frohberg and Hartmann, 1997).

Figure 17 below shows how South Africa's RTA value has changed and also show the South African world market share over the same period.

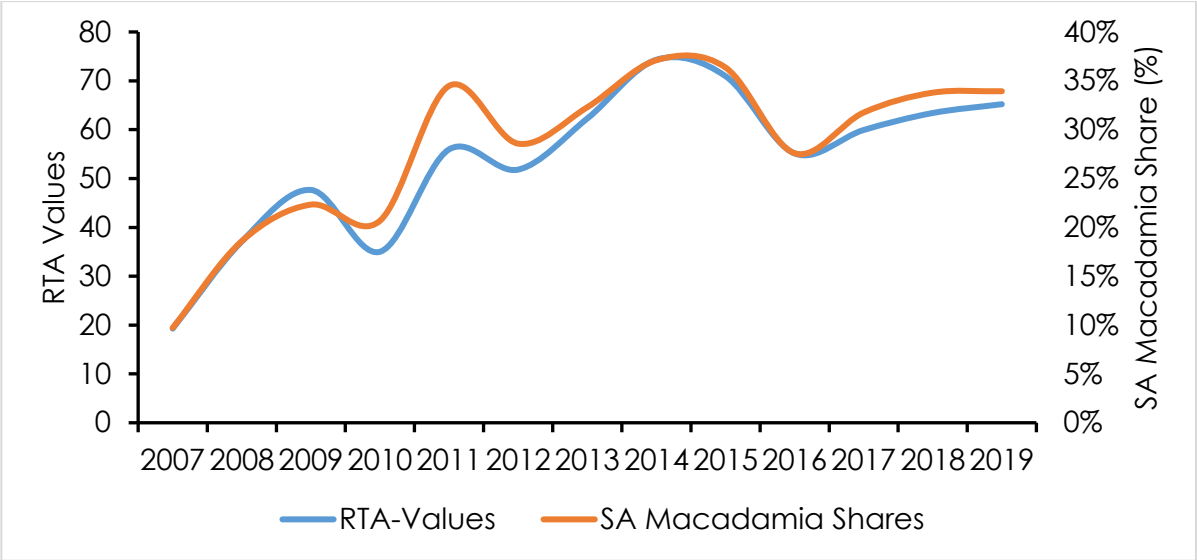

Figure 16: *RTA trends of South African macadamia nuts*

Source: ITC, 2020

The South Africa's RTA value reached the highest in 2014 recording 74.3 and showed a sharp decline in 2016. Generally, the South Africa's macadamia nut industry is competitive and has shown the RTA value above 1 in all the observed years. The growing competitiveness in exporting macadamia's and growing production levels expected over the next decade points to the need for the country to look for attractive markets. The next section will focus on identifying new and existing markets that exhibit potential to growth South Africa's exports.

7. Market Attractive Index (MAI)

This section of the report looks at analysing the world attractive exports markets for macadamias in terms of their attractiveness. To conduct this, the potential markets for South African producers and exporters will be identified and listed based on the Market Attractive Index (MAI) methodology used elsewhere (Morokong & Pienaar, 2019; Pienaar, 2019). MAI is the composite index, first developed by the International Trade Centre, consisting of multiple indicators associated with market attractiveness or potential markets. This index includes a range of indicators that reflects a particular importing country's demand and market access conditions. Figure 18 shows different indicators used to generate the final composite indicator and its sources.

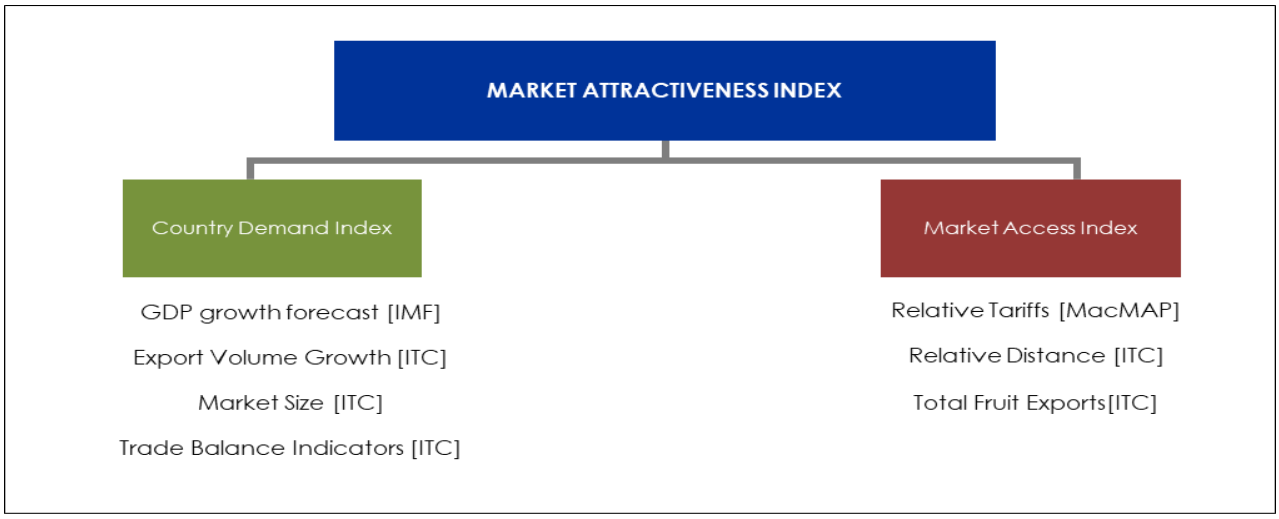

Figure 17: *Market Attractive Index*

Since the MAI index is based on several key indicators and aggregated into one composite indicator, the results should not be treated as an absolute measure of attractiveness but rather as relative attractiveness. Market conditions are dynamic and respond to endogenous and exogenous factors, and knowledge of such factors augments the MAI results. The results obtained from the MAI analysis give a relative framework to identify potential attractive markets (Table 6 & 7).

Macadamia nuts: 080261: In-Shell

Rank	Country	MAI	Market Access Index	Country Demand Index	World Import Growth: 2015-2019	RSA Annual Export Growth, 2015-2019
1	Hong Kong, China	71,03	89,49	52,68	-3,77	-7,55
2	Malaysia	70,09	81,86	58,04	3,91	-100,00
3	China	69,67	70,39	68,44	16,92	31,65
4	France	68,78	92,06	45,76	18,94	0,00
5	Canada	66,55	83,80	49,09	53,26	19,38
6	Greece	66,42	95,61	37,78	21,20	0,00
7	Japan	65,11	90,83	39,39	7,46	-2,40
8	Germany	64,49	98,28	30,60	5,02	-30,44
9	Saudi Arabia	63,87	80,64	49,52	88,72	0,00
10	Botswana	61,87	83,97	42,00	-100,00	-22,09
	Macadamia nuts: 080262: Shelled					
1	Kuwait	75,80	83,62	58,94	4,55	51,36
2	Saudi Arabia	75,54	84,54	57,72	19,71	8,17

3	USA	75,47	79,36	62,33	15,18	18,96
4	United Arab Emirates	75,00	82,95	58,15	29,84	0,00
5	Oman	74,37	80,57	58,85	137,96	0,00
6	Luxembourg	74,19	78,02	60,74	-2,03	0,00
7	Spain	74,03	79,78	58,29	16,10	16,54
8	Germany	73,83	82,80	55,07	11,37	19,02
9	Malaysia	73,77	73,40	64,22	17,71	0,00
10	Israel	73,53	77,45	60,02	11,11	9,43

Source: Own Compilation

The South African top 10 attractive markets of macadamia nuts are shown in Table 6, providing the final MAI index value between 0-100 and the other indicators to benchmark the findings. Thus, the higher the MAI index, the more favourable or attractive that particular market will be for South African exporters, based on the indicators used in compiling the index.

The top attractive markets for shelled macadamias (Hs: 080262) were Kuwait, Saudi Arabia and the USA as the top three. These all showed steady import growth over the period of assessment, coupled with strong favourable market access conditions. It is also worth mentioning that South Africa has also been able to grow exports to these nations. In fourth place, the United Arab Emirates is a highly attractive market, but South Africa has not been exporting shelled macadamia nut. This market presents a large opportunity as a new market, whose import value has increased by around 30% over the past four years.

The top attractive markets for NIS macadamias (HS: 080261) were Hong Kong, Malaysia, China, France and Canada. Interesting to note is that for the top two markets, South Africa has lost market share since these export value declined by 8% and 100% respectively. For the latter, the increase in value exported directly to China could explain such a dramatic decline. France and Canada were other markets in the top ten attractive markets with strong import growth. The findings presented here show that there are many attractive market opportunities, which South Africa should explore, especially as production is expected to increase.

8.Conclusion

The South African macadamia nut industry has shown considerable growth over the past decade, which is one of the sectors that can drive agricultural development and job creation through export-led expansion and enhanced agri-processing capacity.

There is a current strong demand momentum of macadamias driven by a sustained increase in supply in the world market. The analysis presented in this report shows the exponential growth in production over the past ten years, reaching approximately 60 000 metric tons (kernel bases) in 2019. South Africa (29%) and Australia (22%) remained the largest producers of the world macadamias (kernel basis) in 2018, largely exported to the EU and Asian markets. The growth in demand for macadamias is forecast to double by 2022. The continued growth in the supply of macadamias is also driven by the reinvestment into the sector and driver by a global movement towards healthier diets.

Macadamia nut exports across the globe increased by 112% over the last ten years. South Africa is the largest world producer of macadamias and has planted an average of 5 962 hectares of macadamias in 2019. The major importers of South African macadamias include Hong Kong, China, the USA and Viet Nam in value terms. The current expansion in macadamia production and trade has also been seen in the Western Cape recording 197 ha in 2019 and has the potential to create jobs in the province. One of the critical success factors for the industry is to improve competitiveness and optimise value-adding, whilst at the same time enable broader market access. The South African macadamia nut industry export is relatedly competitive at the global stage and has the highest RTA value of 74 in 2014. Given the global demand, Western Cape Province has the potential to increase investment in production for the latter crops to supply the markets in United States of America, Germany and Japan for Macadamias (Shelled), while potential markets for macadamia nuts (in-shell) are in UK, Malaysia and the United Arab Emirates among other markets.

9.Reference

AMS. (2020, 10 19). *Australian Macadamia Sociaty*. Retrieved from austrailianmacadamias.org: https://australianmacadamias.org/industry/facts-figures/australian-production

Andrew. (2018). *A promising Future Expected for South African Pecans.* Produce Report.

Angala, A. (2015). *An analysis of the competitive performance of the Namibian date industry- 2001 to 2013.* Stellenbosch, South Africa: University of Stellenbosch.

AU&NEPAD. (2014). *Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods.* Addis Ababa and Midrand: UN& NEPAD.

Barr, A. (2019). *Analysis of the factors impacting the competitive performance of the South African Wine Industry value chain.* Stellenbosch, South Africa: University of Stellenbosch.

Bergh, B., & Ellstrand, N. (1986). Taxonomy of the avocado. *California Avocado Society Yearbook*, 1350-145.

Botha, L. (2020). *Macadamia prices hold firm amid smaller crop.* South Africa: Farmer's Weekly.

Bouet, A., & Odjo, S. (2019). *Africa Agriculture Trade Monitor Report 2019.* Washington, DC: International Food Policy Research Institute(IFPRI).

Coetzee, J. (2019). *Macadamia nuts.* South Africa: ABSA.

DAFF. (2014). *Agricultural Policy Action Plan (APA).* South Africa, Pretoria: Department of Agriculture, Forestry and Fisheries.

DAFF. (2019). *A Profile of the South African Macadamia Nut Market Value Chain.* Republic of South Africa: Department of Agriculture Forest and Fisheries.

Durinck, A. (2020, March 16). *FlashPlaza*. Retrieved from FlashPlaza.com: https://www.freshplaza.com/article/9197639/demand-for-macadamia-nuts-outpaces-the-current-supply/

Etuk, E., & Ohen, S. (2017). Revealed Comparative Advantage and Competitiveness: The case of Palm oil Exports from Nigeri, Ghana and Cote d'Ivoire. *Journal of Agriculture and Veterinary Science*, 36-40.

Fontana, E. (2020). *Recent findings on the health benefits of nuts and dried fruits.* FreshPlaza.

INC. (2020a). *Nuts & Dried Fruits Statistical Yearbook: 2019/2020.* REUS, Spain: International Nut and Dried Fruit.

INC. (2020b). *INC Leadership Perspective on COVID-19.* International Nut and Dried Fruit Magazine.

ITC. (2020, 03 21). *International Trade Centre*. Retrieved from Trade Map: Trade Statistics for international business Development: https://www.trademap.org/Country_SelProduct_TS.aspx?nvpm=1%7c%7c%7c%7c%7c%7c119929%7c%7c6%7c1%7c1%7c2%7c2%7c1%7c2%7c2%7c1%7c1

Kadam, S., & Salunkhe, D. (1995). Avocado. *Handbook of Fruit Science and Technology*, 379-392.

Kalaba, M. (2019). *Local nut production continues to increase- South Africa.* South Africa: BFAP.

King, J. C., Blumberg, J., Ingwersen, L., Jenab, M., & Tucker, K. L. (2007). Tree Nuts and Peanuts as Components of a Healthy Diet. *The Journal of Nutrition*, 1736-1740.

Litz, R. (2009). Avocado. *Compendium of Transgenic Crop Plants*, 175-84.

Macaskill, C. (2019). *Tree Nuts.* South Africa, Gauteng: Agribook. digital.

Maraba, C., & Willemse, B. (2019). *Absa Agricultural Outlook: Summer Edition.* South Africa: Absa.

Morokong, T., & Dirk, T. (2020). Hot topics under discussion by African Agricultural Economists. *Agriprobe*, 37-39.

Morokong, T., & Pienaar, L. (2019). *A Macro-economic Report on the Africa Agenda: Western Cape Agriculture.* South Africa, WC: WCDoA.

Morokong, T., & Troskie, D. (2020). *Hot topics under discussion by African Economist.* Cape Town: Agri-proble.

NDP. (2011). *Our Future- make it work. National Development Plan 2030.* Republic of South Africa: National Planning commission.

NGP. (2011). *The New Growth Path (NGP).* Republic of South Africa: Economic Development Department.

Pere, A., & Minor, T. (2018). *Fruit and Tree Nuts Outlook, FTS-367, U.S Department of Agriculture, Economic Services.* United State Department of Agriculture.

Phil, K. (2019). *Analysis and forecast for China's Tree Nut Sector in 2019/20.* Produce Report.

Pienaar, L. (2019). *The Economic Contribution of the South African Blueberry Industry.* South Africa, WC: WCDoA.

Quiroz, D., Kuepper, B., Wachira, J., & Emmot, A. (2019). *Value Chian Analysis of Macadamia Nuts in Kenya.* Netherlands: CBI Ministry of Foreign Affairs.

SAAGA. (2020, March 05). *Industry*. Retrieved from Overview of SA avocado industry: https://www.avocado.co.za/overview-of-sa-avocado-industry/

SAMAC. (2016). *China's Massive Macadamia Market.* South Africa: Southern African Macadamia Association.

SAMAC. (2020, 11 19). *SAMAC Macadamia South Africa NPC*. Retrieved from samac.org.za: https://www.samac.org.za/industry-statistics/

SAMAC. (2020a). *Statistics on the Southern African Macadamia Industry.* South Africa: South African Macadamia Industry.

SAMAC. (2020b). *An overview of the South African Macadamia Industry.* South Africa: Southern African Macadamia Industry .

SAPPA. (2020). *Industry Statistics.* South Africa: South African Pecan Nut Producers Association.

Sibulali, A., & Van Rooyen, C. (2019). An analysis of competitiveness of the South African sub-tropical fruit industry. " *Growing a resilient and sustainable agriculture*" (pp. 1-25). Free State, South AfricaA: Agricultural Economics Association of South Africa.

Sihlobo, W. (2018). *Brief Reflections on SA's agricultural labour market in the context of changing farm structures.* South Africa, Pretoria: Agbiz.

StatsSA. (2020a). *Census of Commerical Agriculture, 2017: Financial and Production Statistics.* Republic of South Africa: Statistics South Africa.

Symington, W. (2019). *Impact of the drought on the agricultural sector: The crisis in rural South Africa.* South Africa, Pretoria: Agri SA.

USDA. (2019a). *Tree Nuts: World Markets and Trade.* United States of America: United States Department of Agriculture.

USDA. (2020). *Tree Nuts Annual: Australia.* Australia: United States Department of Agriculture.

USDA. (2020b). *Tree Nuts: World Markets and Trade.* United States of America: United States Department of Agriculture.

Venter, C. (2019). *Local nut production continues to grow.* Pretoria, South Africa: FarmBiz.

WCDoA. (2018). *The Western Cape Mapping of Agricultural Commodities and Infrastructure for 2017.* Cape Town: Western Cape Department of Agriculture.

WCDoA. (2019, March 14). *Western Cape Government*. Retrieved from westerncape.gov.za: https://www.westerncape.gov.za/news/alternative-crops-benefit-research-fund

WEF. (2017). *The African Competitiveness Report 2017: Addressing Africa's Demographic Dividend.* Geneva: World Economic Forum.

Wood, L. (2020). *Worldwide Macadamia Market (2020 to 2025)- Growth Trends and Forecasts.* Dublin: Business Wire.