DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT

NO. 2293 **18 July 2022**

CONSULTATION ON THE DRAFT GAME MEAT STRATEGY FOR SOUTH AFRICA, 2022

I, Barbara Dallas Creecy, Minister of Forestry, Fisheries and the Environment, hereby consult on my intention to publish the draft game meat strategy for South Africa, 2022, for public comment, as set out in the Schedule herein.

The draft game meat strategy for South Africa, 2022 formulates the approach and implementation plan to expand, differentiate and formalise the game meat industry in South Africa which has shown considerable potential for growth. If developed properly, considered from a sustainability perspective, this market is compatible with biodiversity conservation and could contribute favourably to economic development, job creation, food security and sectoral transformation. The game meat industry performs predominantly in the informal market whilst about 10% of game meat enters the retail market following the formal (compliant) related process. The industry in general is very fragmented. The aim of this strategy will be to create a formalised game meat industry, to achieve economies of scale necessary for commercial ventures based primarily on game meat production, harvesting, processing, distribution, and marketing.

Members of the public are invited to submit, within 30 days from the date of the publication of this notice in the ***Gazette or in the newspaper, whichever date is the last date***, written comments on the draft game meat strategy, 2022, to any of the following addresses:

By post to: The Director General: Department of Forestry, Fisheries and the Environment
Attention: Mr. Khorommbi Matibe
Private Bag x 447
PRETORIA
0001

By hand at: Reception, Environment House, 473 Steve Biko Road, Arcadia, Pretoria, 0083

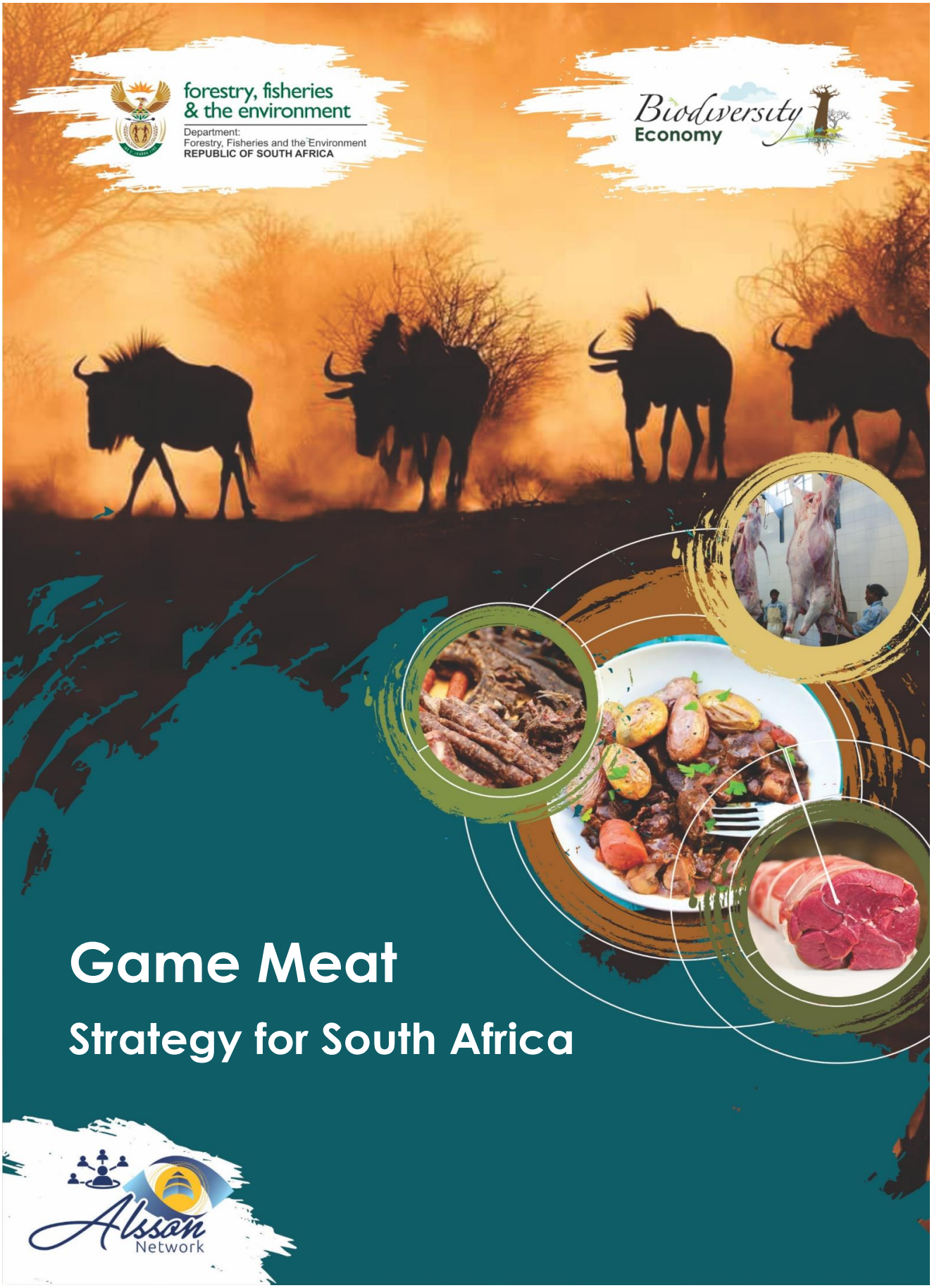
By e-mail: emasemola@dffe.gov.za or mmathole@dffe.gov.za

Any inquiries in connection with the draft Game Meat Strategy, 2022 can be directed to Ms Tseleng Mabunda on +27 63 750 3691 or Tmabunda@dffe.gov.za

An electronic copies of the Government Notice can also be downloaded from the link: https://www.dffe.gov.za/legislation/gazetted_notices.

Comments received after the closing date may be disregarded.

BARBARA DALLAS CREECY
MINISTER OF FORESTRY, FISHERIES AND THE ENVIRONMENT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REPUBLIC OF SOUTH AFRICA
Biodiversity
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Game Meat
Strategy for South Africa
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Network

Executive Summary

South Africa (SA), renowned internationally for its abundant wildlife provides experience of Africa's unique landscape, the variety of our game species, notably ecotourism, hunting and then most importantly, market opportunities that could derive from the production of game meat and related value-added products.

This report formulates the strategy and implementation plan to expand, differentiate and formalise the Game Meat Industry in South Africa which has shown considerable potential for growth. If developed properly, considered from a sustainability perspective, this market is compatible with biodiversity conservation and could contribute favorably to economic development, job creation, food security and sectoral transformation. From research embarked on, it is evident that Limpopo is the most favored hunting destination, followed by the Free State, North West, Eastern Cape and the Northern Cape. The species mostly hunted for game meat are springbok, kudu, impala, blesbok, gemsbok and blue wildebeest.

In developing this strategy and complementary implementation plan, various guiding principles were considered based on extensive stakeholder engagement, namely to:

- Develop a feasible, competitive and sustainable game meat value chain in South Africa that contributes to the country's developmental goals, specifically in relation to the economic potential of the industry, the potential to create additional employment opportunities and to contribute to food security.
- Create a conducive environment that enables the development of the game meat value chain in South Africa including attracting investment as well as opening local, regional and international market opportunities.
- Invest in the integrity of the game meat value chain which encapsulates increased compliance to rules and regulations, amongst others, to increase meat safety and product quality.
- Recognise that there is a need to improve on the status quo which implies that behavioral change is necessary to create a win-win situation that catalyses the potential of the industry and to ensure that there is an enabling environment for growth, sustainability and that meaningful transformation is achieved.
- Where possible, consider and reduce the ease of doing business for ranchers, outfitters, hunters, processors and other value chain actors, ranging from streamlined and aligned legislation, permitting system to creating value for money for the consumer.
- Increase the volume of game meat sales, as a commodity, in the local market.
- Leverage the knowledge and experience of industry to assist with the implementation of this strategy.

Due to the Foot and Mouth Disease (FMD) ban, limited interventions for the export market were considered as the disease is not contained (currently) in the country and SA is banned from exporting game meat that emanates from cloven-hoofed animals until such time that FMD disease-free status could be obtained. Nonetheless, with the population of over sixty million this provides a lucrative domestic market.

Furthermore, the game meat industry performs predominantly in the informal market whilst about 10% of game meat enters the retail market following the formal (compliant) related

process. The industry in general is very fragmented. The aim of this strategy will thus be to create a formalised game meat industry, to achieve economies of scale necessary for commercial ventures based primarily on game meat production, harvesting, processing, distribution, and marketing.

The game meat industry is largely untransformed, and there is a very low participation rate of previously disadvantaged individuals. In addition, there are large areas of community owned land that is suitable for plains game, and which provides opportunity for community based enterprises to drive rural socio-economic development. There are also high barriers to entry, which would need to be addressed.

A major constraint faced during the strategy development process was the lack of information related to the size, scale and performance of the wildlife economy, with specific reference to animal numbers (game census), game meat volumes and the flow of game meat into the market. Information available in the public domain is fragmented and does not provide accurate data that quantifies the amount of game meat in the formal and / or informal markets.

Vision Statement for the SA Game Meat Industry

The vision statement proposed for the Game Meat Industry follows: **A formalised, thriving and transformed game meat industry in South Africa that contributes to food security and sustainable socio-economic growth.**

Strategic Objectives

Ten distinctive strategic objectives were identified to grow and transform the Game Meat Industry in South Africa. These objectives are depicted below.

The key strategic outcomes will be:

1. Shift from informal sector where game meat production and harvesting is secondary to hunting, to formal commercial ventures focused on game meat production and the associated full value chain.
2. Reconfigured industry model that promotes economies of scale necessary for substantial and sustainable growth of the sector.
3. Larger game production systems that can consistently meet increased consumer demand.
4. Areas of community owned land repurposed for large-scale commercial game meat production.
5. Commercialised harvesting and processing enterprises ensure effective value-add.
6. Innovative solutions to animal disease constraints on production, marketing, and export.
7. Meaningful ownership of commercial game meat based ventures by previously disadvantaged individuals.
8. Widespread and consistent marketing of game meat with increased demand driving sustainable scaled up production and processing.

Quick Wins

Given the complex environment encapsulated in the Wildlife Economy and the opportunity to grow the Game Meat Industry locally – before even considering export growth opportunities, some quick wins could be implemented with relative ease. Some of these quick wins are:

1. Reviving and upgrading existing game meat processing facilities and investing in new technologies such as Rural Throughput- or mobile abattoirs.
2. Leverage on existing SMMEs support models such as the Biodiversity Economy Node, the District model and the AgriPark model to create a network system for agro processing, production, training, logistics, marketing and extension service.
3. Leverage on the meat opportunity and to negotiate with major retailers to provide shelf space for game meat products.
4. Through existing partnerships with existing research institution, game meat focused research to be prioritised to address the knowledge gap.
5. Train youth in meat inspection to capture opportunities (employment or SMMEs) within the game meat value chain.

The Way Forward

The next deliverable, the Implementation Plan, will be created post further stakeholder engagement and will then be formalised into short, medium and long-term implementation plans. The same applies for prioritising interventions as well as to identify project champions per intervention. Integration with related projects embarked on by the Department of Fisheries, Forestry and the Environment (DFFE) would also be imminent.

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Abbreviations

ABET	Adult Basic Education and Training
AGRA	African Game Ranchers Association
APNR	Associated Private Nature Reserves
BEE	Black Economic Empowerment
CAE	Certificates of Adequate Enclosure
CASP	Comprehensive Agricultural Support Programme
CIC	International Council for Game and Wildlife Conservation
CPA	Communal Property Associations
DALRRD	Department of Agriculture, Land Reform and Rural Development
DFFE	Department of Forestry, Fisheries and the Environment
DoH	Department of Health
DINZ	Deer Industry New Zealand
DTIC	Department of Trade, Industry and Competition
EU	European Union
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
GIBSA	Game Meat Industry Board of South Africa
GIS	Geographic Information System
GMD	Game Meat Desk
HS	Harmonised System
Kg	Kilogramme
KZN	KwaZulu Natal
Mil	Million
NATSHOOT	National Hunting and Shooting Association
NDP	National Development Plan
NZ	New Zealand
OIE	World Organisation for Animal Health
PCOASA	Professional Culling Operators Association of South Africa
PDI	Previously Disadvantaged Individual
PH	Professional Hunter
PHASA	Professional Hunters Association of South Africa
PNR	Private Nature Reserve
PPP	Public Private Partnership
ROI	Return on Investment
RTA	Rural Throughput Abattoir
SA / RSA	South Africa (Republic of)
SAMIC	South African Meat Industry Company
SANBI	South African National Biodiversity Institute
SARS	South African Revenue Services
SEDA	Small Enterprise Development Agency
SEFA	Small Enterprise Finance Agency
SETA	Sector Education and Training Authorities
SITA	State Information Technology Agency
SO	Strategic Objective
SOE	State Owned Enterprises
SPV	Special Purpose Vehicle
T	Tons
TVET	Technical and Vocational Education and Training
USDA	United States Department of Agriculture
USP	Unique Selling Proposition
VPH	Veterinary Public Health
WCO	World Customs Union
WRSA	Wildlife Ranching South Africa

Section 1: Situational Analysis

1. Economic and Trade Analysis

1.1 Global Perspective

The global market for game meat is dominated, both in terms of exports and imports, by a small number of major players. To determine the size and nature of the global game meat market, a high-level analysis of the global import and export markets for game meat was undertaken.

The data and statistics depicted in this section were sourced from UN Comtrade[1] and served to determine where the largest import markets (potential opportunities) are as well as who are the largest export markets (potential threats).

The following Harmonised System (HS) codes (amalgamated) were considered the sum of the game meat market:

- '020850 – Fresh, chilled or frozen meat and edible offal of reptiles e.g. snakes, turtles, crocodiles.
- '020890 – Fresh, chilled or frozen meat and edible offal of pigeons, game, reindeer and other animals.
- '021093 – Meat and edible offal, salted, in brine, dried or smoked, and edible flours and meals of meat … of reptiles.
- '021099 – Meat and edible offal, salted, in brine, dried or smoked, and edible flours and meals of meat … of other animals.
- '160290 – Prepared or preserved meat, offal or blood excluding meat or offal of poultry, swine and bovine.

The year 2019 was used as reference, as a number of countries have not, at the time of publication of this report, finalised their data for 2020.

Figure 1 depicts the top 10 countries that imported game meat during 2019 from a value perspective (US Dollar denominated) whilst ***Figure 2*** informs of the import destinations from a volume (tonnage) perspective.

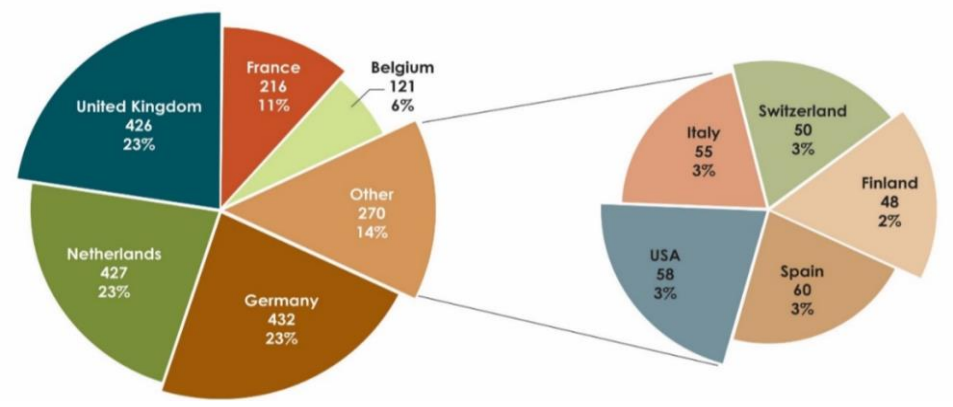

Figure 1: Top 10 import destinations for game meat in 2019 (US$ import value, %, UN Comtrade)

[1] UN Comtrade, 2021. United Nations Statistics Division –UN Comtrade Database. Available from: https://comtrade.un.org/data/

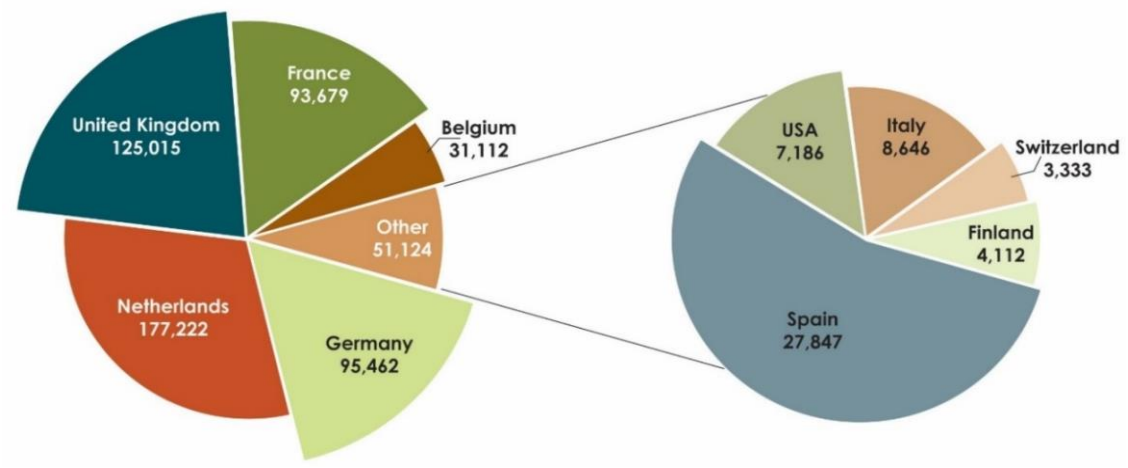

Figure 2: Top 10 import destinations for game meat in 2019 (Tons, UN Comtrade)

The analysis shows how valuable game meat is to the European market, with eight of the Top 10 importing markets being located in Europe (six of which are in the EU-27). This is pertinent as the Top 10 importers make up over three-quarters of the world's total value of imports for the game meat market (approximately 78% in 2019).

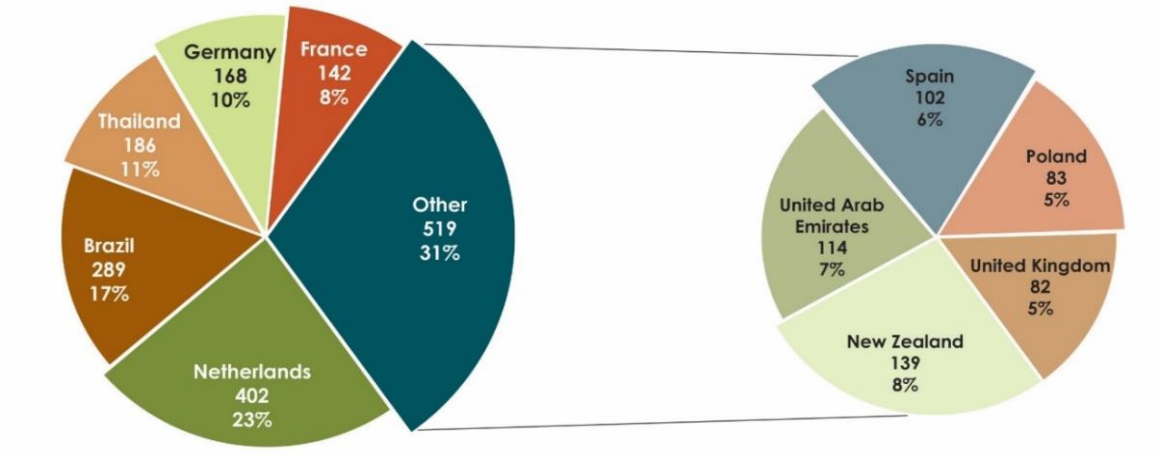

Figure 3: Top 10 export origins for game meat in 2019 (US$ export value, %, UN Comtrade)

The HS codes do not specify the game meat or the different species of game hunted and thus exported to the EU. Research asserts[2] that the list of species harvested and processed could be a combination of the following species:

- Partridge
- Pheasant
- Hare
- Deer including Roe Deer
- Red Deer
- Fallow Deer and European Elk
- Wild Boar
- Chamois.

[2] Pain, D. and Thomas, V., 2020. Setting maximum levels for lead in game meat in EC regulations: An adjunct to replacement of lead ammunition

In the United Arab Emirates (UAE)[3], there is also hunting activities associated with:

- Arabian Sand Gazelle
- Arabian Oryx
- Arabian Mountain Gazelle.

However, the game meat exported from the UAE tends to be more processed and prepared game meat, whilst the Netherlands is more focused on fresh game meat.

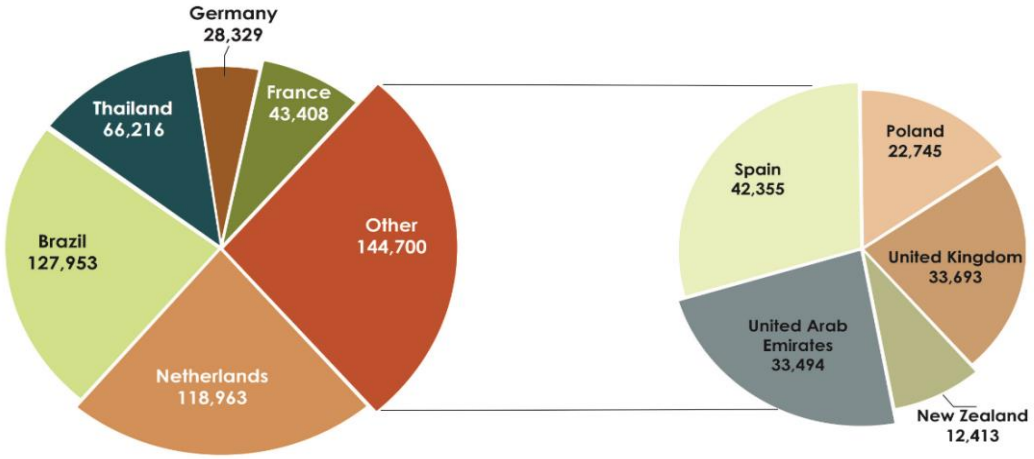

Figure 4: Top 10 export origins for game meat in 2019 (Tons, UN Comtrade)

Five of the Top 10 importing markets are also in the Top 10 exporting markets (as per ***Figure 3*** and ***Figure 4***). However, all but Spain are net importers of game meat in value terms. The remaining five exporters, for example New Zealand, pose a much larger threat to smaller game meat producing countries, such as SA whom UN Comtrade lists at position 27th worldwide across the five HS codes (with a combined trade value of US$12 million in 2019).

Overall, the Top 10 exporters make up over three-quarters of the world's total value of exports (approximately 76%), similar to the trend observed with the Top 10 importers (

Table **1**).

Table 1: RSA exports of game meat per HS code in 2019 (US$ million, rank and Tons)

RSA Exports (2019)	**Total**	'020850	'020890	'021093	'021090	'160290
Value (US$ million)	**12**	<1	4	-	<1	8
Rank (Total)	**27 (98)**	4 (22)	23 (69)	- (13)	34 (70)	13 (84)
Volume (Tons)	**3 010**	29	499	-	60	2 422

Source: UN Comtrade[4]

Note: Values less than 0.5 are represented by <1 due to rounding, whilst – denotes zero

Positioning South Africa into the global perspective reveals how small a player SA is on a global scale. SA's game meat industry only constitutes 0.6% of the global export value of US$2 243 million, and only 0.4% of total global tonnages (of 696 016 Tons).

[3] Dennehy, JK., 2018. The UAE's only wild hunting resort says visitor numbers are growing
[4] UN Comtrade, 2021. United Nations Statistics Division – UN Comtrade Database. Available from: https://comtrade.un.org/data/

South Africa does, however, rank relatively high (13th globally) for processed game meat (HS '160290) and outperforms some of the major export players for this commodity such as New Zealand.

1.2 Regional Perspective

While South Africa is a relatively minor player from an international perspective in the game meat industry, it is by far the largest exporter from a regional perspective. ***Table 2*** depicts a regional analysis that covers the African continent for the year 2019. However, restricting the analysis to neighbouring countries does not change the outcome drastically:

Table 2: Regional view of game meat (US$ million, regional rank, global rank, Tons)

Exports in 2019	Value (US$ million)	Regional rank (Value/27)	Global rank (Value/98)	Volume (Tons)	US$/Tons
South Africa	12.43	1 (27)	28 (98)	3 010	4 129
Zimbabwe	0.72	2 (27)	47 (98)	137	5 271
Ghana	0.43	3 (27)	53 (98)	47	9 265
Namibia	0.28	4 (27)	59 (98)	<1	3 271*
Egypt	0.18	5 (27)	61 (98)	114	1 548
Côte d'Ivoire	0.10	6 (27)	68 (98)	13	7 459
Zambia	0.09	7 (27)	70 (98)	27	3 249
Botswana	0.08	8 (27)	72 (98)	62	1 213
Benin	0.06	9 (27)	75 (98)	572	99
Mozambique	0.05	10 (27)	76 (98)	4	13 544
Morocco	0.01	11 (27)	83 (98)	5	2 920
Tunisia	<0.01	12 (27)	86 (98)	1	4 845
Kenya	<0.01	13 (27)	88 (98)	<1	5 867
Mauritius	<0.01	14 (27)	90 (98)	<1	9 588
Eswatini	<0.01	15 (27)	91 (98)	<1	50 040
DRC	<0.01	16 (27)	97 (98)	<1	3 000
Senegal	<0.01	17 (27)	98 (98)	<1	3 238
Total Regional	**14.43**	-	-	**3 992**	**3 613**

** While UN Comtrade has captured the Namibian value of exports in 2019, it has not fully captured the associated volumes. Therefore, the average price for all value transactions with a volume component were used to estimate the US$/Tons.*
Note: Values less than 0.01 are represented by <0.01 due to rounding, whilst – denotes zero.
Note: Volumes less than 1 are represented by <1 due to rounding, whilst – denotes zero.

Demonstrably, South Africa is the top game meat producer on the continent in both value (86%) and volume (75%) terms. While it does not fetch the highest prices on the global market, South Africa's game meat very clearly dominates the regional market.

Interestingly, the next largest exporter in 2019 was Zimbabwe. Though it only exported around 6% of South Africa's game meat in value terms (and 4% in volume terms), it commanded an almost 28% higher US$/ton price. South Africa's next largest direct competitor, Namibia, was only around a third of Zimbabwe's export value and commanded a lower US$/ton price for its game meat.

1.3 The South African Perspective

1.3.1 South African Economic Snapshot

The South African economy has traditionally been a powerhouse of the South African Customs Union (SACU) as well as the wider Sub-Saharan countries, being a major thoroughfare point for goods travelling from its regional neighbours.

South Africa has, however, been largely unable to maintain a strong growth profile since 2008 managing a barely positive average growth rate over the past years.

However, its population has been growing at almost triple the rate of its Gross Domestic Product (GDP) (***Figure 5***) over the same period.

This implies that the average disposable income (spending power) of each citizen has fallen, especially given the devastating impact of Covid-19 on the fragile economy in 2020 (***Figure 6***).

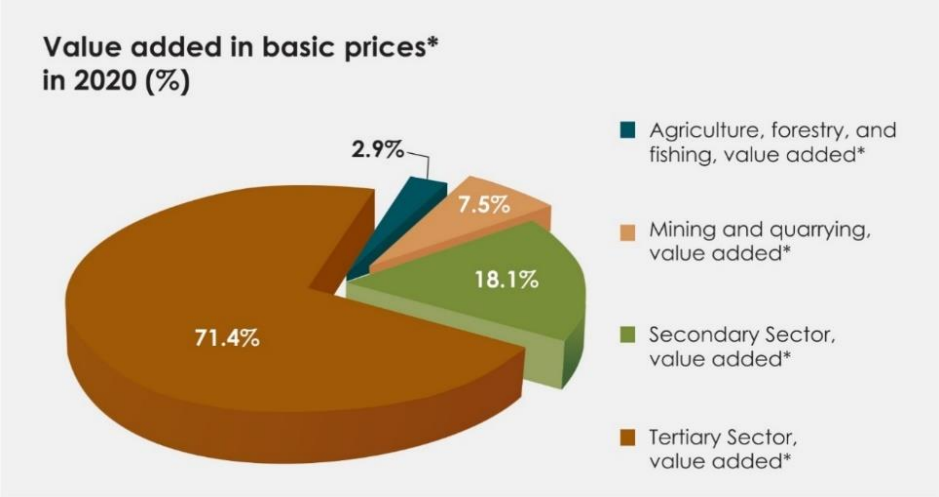

Figure 5: Performance of Sectors in SA

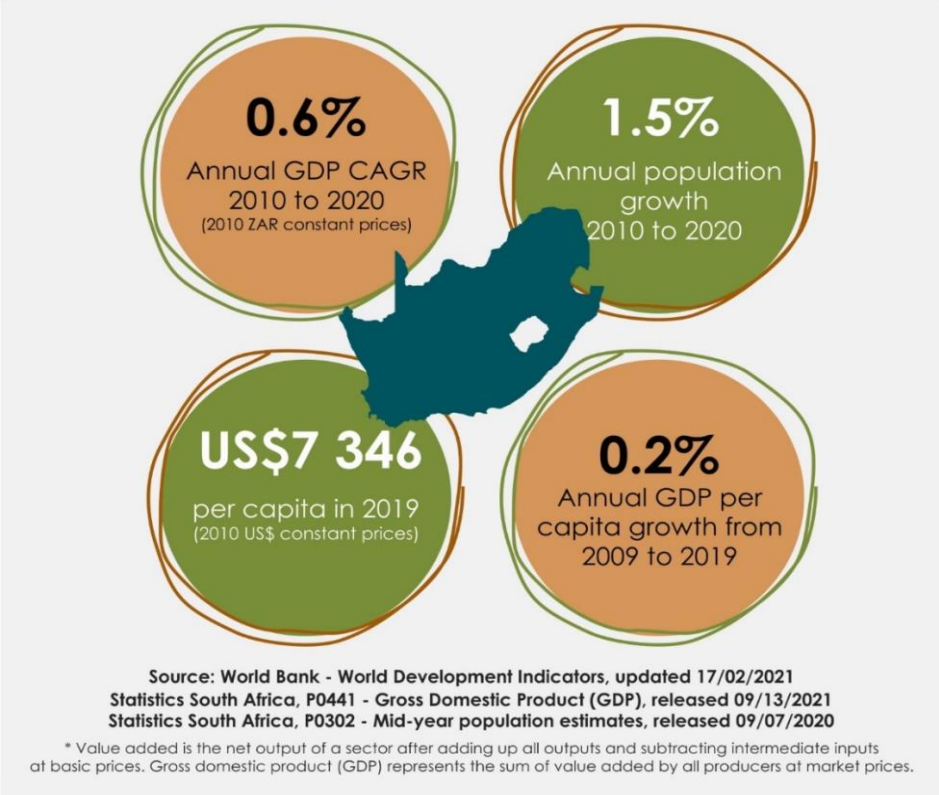

Figure 6: SA Economic Snapshot

1.3.2 South Africa and the impact of Covid-19

An annual economic outlook of 2020[5] released by Statistics South Africa (StatsSA) indicated that the South African economy had been severely and negatively impacted by Covid-19 and its consequent lockdown, particularly in the second quarter of 2020.

Despite economic gains in the third and fourth quarters, the severity of the economic impact has caused a sharp decline in the economy of roughly 7%, returning the GDP to levels around 2012 in constant 2010 prices.

GDP per capita reached levels seen last around 2005, providing further proof of the serious negative impact of Covid-19 as depicted in ***Figure 7***.

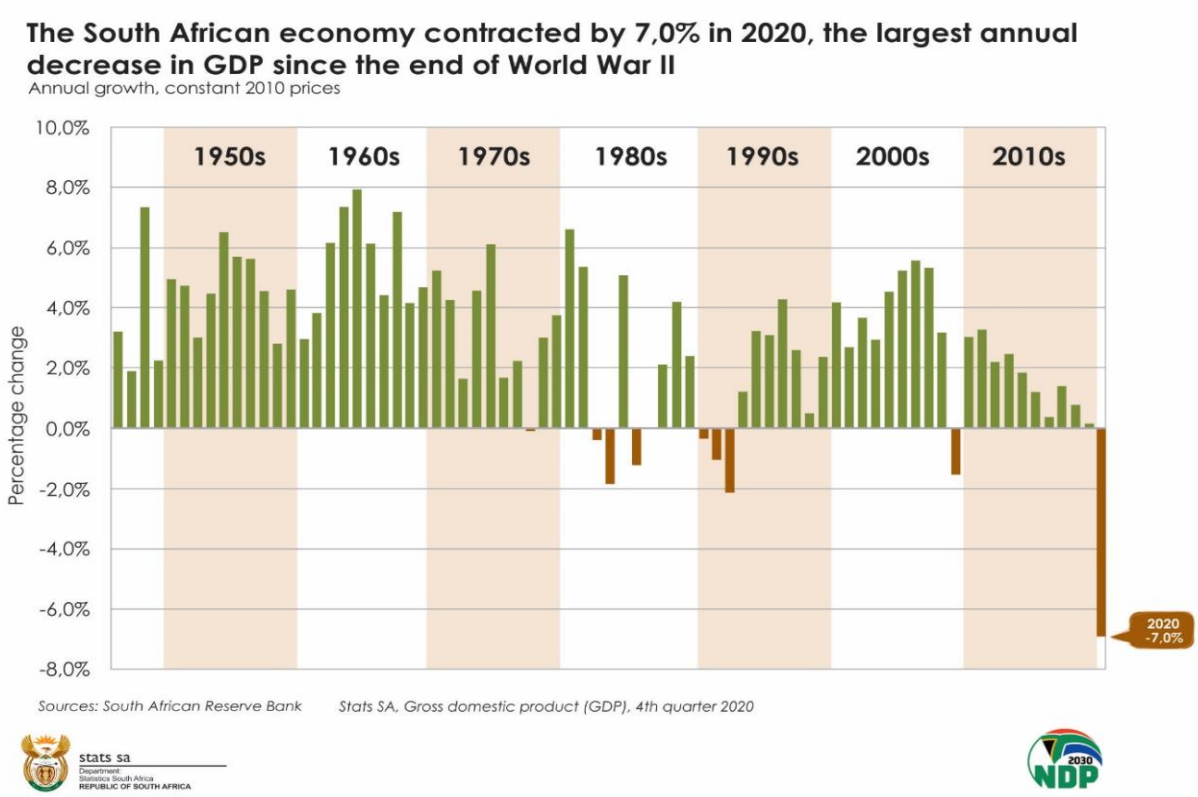

Figure 7: South Africa's GDP growth from 1946 to 2020 (StatsSA)

One positive that was prevalent in 2020, however, was the growth in the agricultural sector which provided a boost to downstream industries such as processed food.

Along with an agricultural growth rate of 13.1% during 2020, the decline in food and non-alcoholic beverages were limited to a drop of only 0.6%[6]. This implies that, even in an unprecedented year that South Africa faced, agricultural and food related sectors proved resilient.

[5] StatsSA a., 2021. GDP: Quantifying SA's economic performance in 2020
[6] StatsSA b., 2021 P0441 - Gross Domestic Product (GDP), 4th Quarter 2020

The South African game and game meat sector exhibited strong growth since 2007 and is currently ranked 27th in the world in terms of exports. However, statistics detailing game meat contribution to GDP are difficult to obtain.

To give an indicative measure of game meat, the growth in the wildlife economy's revenue contribution was calculated using historic information to 2014 and a recent estimated contribution to GDP[7].

Figure 8 thus estimates the wildlife economy's contribution to be about R20 billion, taking cognisance of wildlife products, live game sales, hunting (international as well as local).

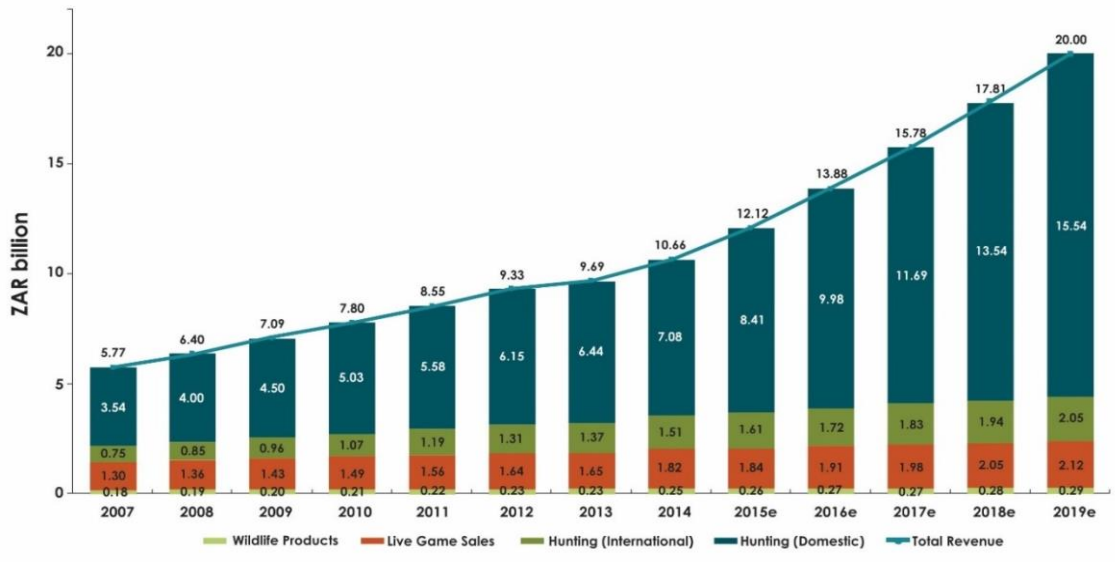

Figure 8: Wildlife Economy contribution to SA's GDP 2017 to 2019e (DEA, own calculations)

But what happened in the SA Game Meat Industry during the Covid-19 period?

However, the same was not necessarily true for the game meat industry. Due to travel restrictions implemented under Lockdown Levels 2 to 5, international travel to and from South Africa was not allowed (except for repatriation flights) and thus international hunters were unable to travel to SA which affected the trophy hunting sector severely.

Concurrently, subsistence (biltong) hunters were unable to hunt at the start of the hunting season, however, this market segment managed to be resilient, and most ranchers found ways to sustain themselves.

Ranches that offer eco-tourism and its associated facilities, were severely impacted financially. This effect was felt across all of the wildlife industry, which suffered major losses as a result of the lockdown[8].

[7] (DEFF, 2018) Biodiversity Colloquium; with Minister. Available from: https://pmg.org.za/committee-meeting/25856/
[8] (Braczkowski, A., 2020) COVID-19, Africa's conservation and trophy hunting dilemma

1.3.3 South Africa's Game and Game Meat Industry

When discussing game meat in South Africa, there are three broad categories that this analysis covers:

- Ostriches;
- Other game (e.g. the meat of impala, kudu, crocodiles); and
- Trade statistics for game meat.

For discussing the production and/or origin of game and game meat, reference is made to both the StatsSA Census of Commercial Agriculture (CCA)[9] as well as game meat statistics recorded by the Food and Agriculture Organisation of the United Nations' Statistics (FAOStat) within their Livestock Primary database[10].

With regards to the StatsSA CCA, a total of 40 122 farms were contacted for the census, of which only a subset were game ranches. The Department of Agriculture, Land Reform and Rural Development (DALRRD) provided statistics stating that there are about 13 000 game ranches, of which more than 6 300 are fenced properties (thus obtained Certificates of Adequate Enclosure (CAE)). It is unlikely that all game ranches were contacted for the StatsSA CCA. Thus, the information presented for the StatsSA CCA should be taken as indicative of the game industry – rather than a comprehensive view which would require a separate study of all game ranches and parks (both private and public) in South Africa.

When discussing exports and imports, however, reference is made to the proprietary information provided by the South African Revenue Services (SARS) for the purposes of drafting this National Game Meat Industry Strategy – specifically to provide the best possible trade statistics for game and game meat entering and leaving SA. For the purposes of drafting a viable and realistic game meat strategy, it is important to consider competitors both from a regional and an international perspective. In the TOR, Namibia was recognised as a regional competitor whilst New Zealand was identified as potential benchmark internationally.

For the local, regional and international comparison, an export-import view of the three countries under analysis (South Africa, Namibia and New Zealand) were provided using data obtained from UN Comtrade[11]. Using a single source allows for a fairer comparison between the three countries, however it implies that the data obtained from UN Comtrade may not necessarily align to the numbers received from SARS. For comparison purposes, this is likely sufficient to determine the competitive framework between the three countries.

In addition to the sources mentioned above, when considering game and game meat, the consulting team focused on the following Harmonised System codes at the 6-digit level (HS6) and definitions when analysing the data from various sources:

Table 3: HS6 codes, definitions and applicable source(s)

HS6 Code	HS6 Definition	Applicable source(s)
'010611*	Live primates	SARS
'010613	Live camels and other camelids [Camelidae]	SARS, StatsSA CCA**
'010619	Live mammals (excluding primates, whales, dolphins and porpoises, manatees and dugongs, seals, …)	SARS, StatsSA CCA

[9] StatsSA, 2020. Census of commercial agriculture, 2017: Financial and production statistics
[10] FAOStat, 2021. Production Data Domain: Livestock Primary. Available from: http://www.fao.org/faostat/en/#data/QL
[11] UN Comtrade, 2021. United Nations Statistics Division – UN Comtrade Database

HS6 Code	HS6 Definition	Applicable source(s)
‘010620	Live reptiles "e.g. snakes, turtles, alligators, caymans, iguanas, gavials and lizards"	SARS, StatsSA CCA**
‘010633	Live ostriches, and emus [Dromaius novaehollandiae]	SARS, StatsSA CCA
‘010639	Live birds (excluding birds of prey, psittaciformes, parrots, parrakeets, macaws, cockatoos, …)	SARS, StatsSA CCA**
‘010690	Live animals (excluding mammals, reptiles, birds, insects, fish, crustaceans, molluscs and …)	SARS, StatsSA CCA
‘020850	Fresh, chilled or frozen meat and edible offal of reptiles "e.g. snakes, turtles, crocodiles"	SARS, UN Comtrade
‘020890	Fresh, chilled or frozen meat and edible offal of pigeons, game, reindeer and other animals …	SARS, StatsSA CCA, FAOStat, UN Comtrade
‘021093	Meat and edible offal, salted, in brine, dried or smoked, and edible flours and meals of meat …of reptiles	SARS, UN Comtrade
‘021099	Meat and edible offal, salted, in brine, dried or smoked, and edible flours and meals of meat … of other animals	SARS, UN Comtrade
‘160290	Prepared or preserved meat, offal or blood (excluding meat or offal of poultry, swine and bovine …	SARS, UN Comtrade

* Animals under these codes are likely misclassified and belong in another applicable code but have been included to maintain association with the SARS data.
** The StatsSA CCA could potentially cover these codes in its definition of ‘other live game’.

1.3.4 Ostriches

South Africa has the largest market share of ostriches in the world — as around 70% of the world’s ostriches are located in SA and exports around 90% of ostrich products, according to the Profile of the South African Ostrich Market Value Chain 2019 published by the former Department of Agriculture, Forestry and Fisheries (DAFF)[12]. The largest concentration of ostriches in South Africa was in the Western Cape, which contained over 73% of all ostriches in 2017[13]. Limpopo, the Free State and the Eastern Cape contain another 25%, with the remainder spread across the other five provinces (***Figure 9***).

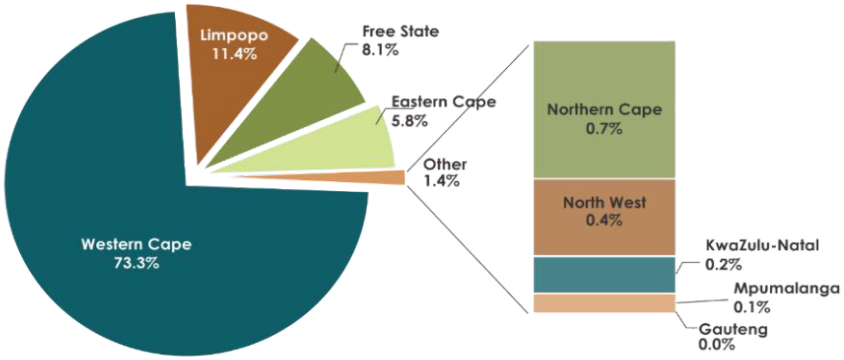

Figure 9: South Africa’s ostriches per province in 2017 (%, StatsSA CCA)

Despite the concentration of live ostriches in the Western Cape, however, production of ostrich meat was split almost evenly between the Western Cape and Limpopo[14]. This implies that the ostriches raised in Limpopo are more likely raised for meat production, whilst there is a demand for a broader range of products from ostriches farmed in the Western Cape (***Figure 10***).

[12] DAFF, 2019. A Profile of the South African Ostrich Market Value Chain 2019
[13] StatsSA, 2020. Census of commercial agriculture, 2017: Financial and production statistics
[14] StatsSA, 2020. Census of commercial agriculture, 2017: Financial and production statistics

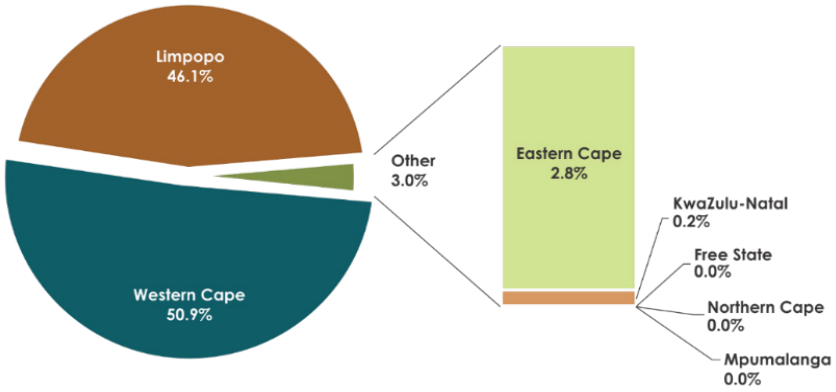

Figure 10: South Africa's ostrich meat production per province in 2017 (%, StatsSA CCA)

According to the Ostrich Market Value Chain 2019 publication[15], South Africa has been self-sufficient in terms of production for local consumption since 2008. This became especially prominent during the EU import sales ban from 2011 to 2014 due to an Avian Influenza outbreak, when exporters turned to growing local demand for ostrich meat to compensate for the export ban.

Despite the subsequent outbreak again in 2017, South Africa remains the primary export country for ostrich meat on a global scale and it remains a major player due to its sheer volume of ostriches.

1.3.5 Game Meat (excluding Ostriches)

Game meat, originally classified as venison (since other countries produce venison whilst SA refers to the product(s) as game meat) suffers from a number of stigmas that potentially dissuade casual consumption. One of these stigmas involve it being classified as 'other meat', potentially something 'exotic' unlike the standard beef, pork, lamb and chicken.

However, game hunting is only one facet of the industry. There are also wildlife production systems, wildlife tourism and wildlife products, of which the largest component of wildlife products is game meat[16].

Game in SA comprises of a number of different animal species spread across the nine provinces of the country. The largest concentration of game[17] in 2017 was in the Limpopo province, followed by the Eastern Cape, Free State and Northern Cape (***Figure 11***). These four provinces accounted for over 80% of the game population in South Africa, with the other five provinces captured the remaining game population.

[15] DAFF, 2019. A Profile of the South African Ostrich Market Value Chain 2019
[16] Janovsky, E. 2015. Wildlife industry expected to continue to grow
[17] StatsSA, 2020. Census of commercial agriculture, 2017: Financial and production statistics

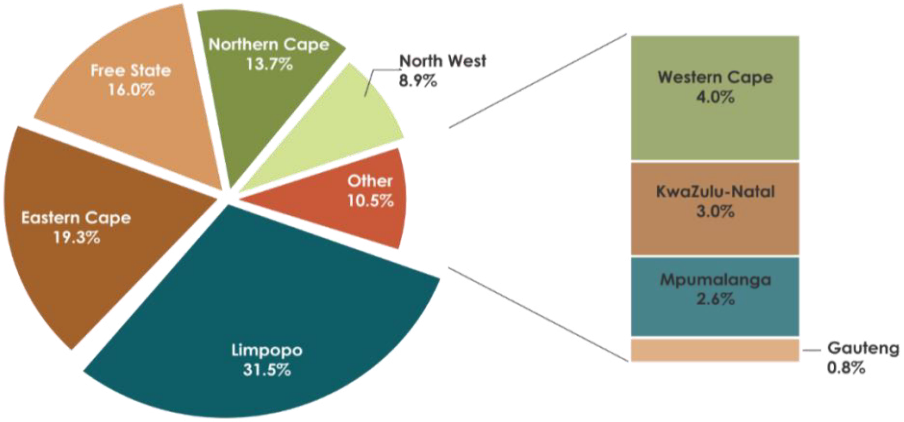

Figure 11: South Africa's live game per province in 2017 (%, StatsSA CCA)

Game, despite its ubiquitous classification of 'other animals' in South Africa, is largely dominated by a few classification types. In 2017[18], the largest components of game were dominated by plains game such as Impala, Springbok and Kudu, who together, accounted for almost 60% of game numbers in the Census (***Figure 12***). Including Wildebeest and Zebra, brings the individually defined game population to over 70% of the ranches under consideration[19].

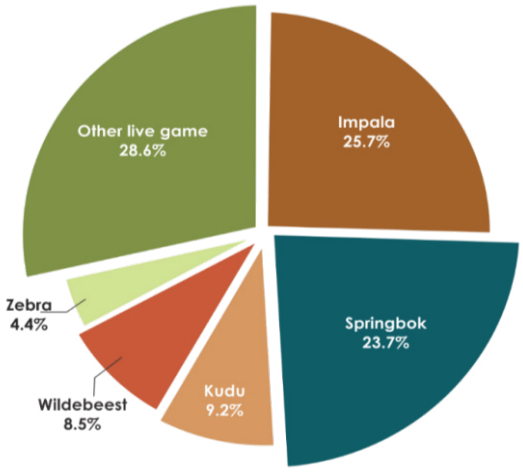

Figure 12: South Africa's live game per species in 2017 (%, StatsSA CCA)

To supplement the analysis emanating from the StatsSA CCA, FAOStat[20] provides a time series for game meat production, in volume and value terms based on the HS6 code:

'020890 – "Meat and offal of wild animals, whether fresh, chilled or frozen"

In addition to South Africa, FAOStat provided data for New Zealand and Namibia's game meat production. This allowed for a preliminary comparison between the three countries, specifically at a production level (***Figure 13*** and ***Figure 14***). The full export profile will be detailed later in the report, with a focus on the HS codes as well as a value/volume comparison.

[18] StatsSA, 2020. Census of commercial agriculture, 2017: Financial and production statistics
[19] StatsSA, 2020. Census of commercial agriculture, 2017: Financial and production statistics
[20] FAOStat, 2021. Production Data Domain: Livestock Primary

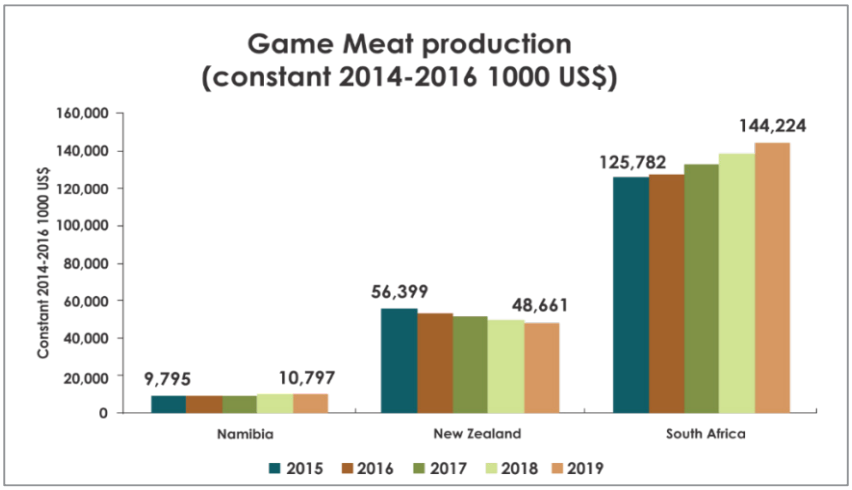

Figure 13: Game meat production for RSA, Namibia and NZ1000 US$
Source: FAOStat – Value of Agricultural Production

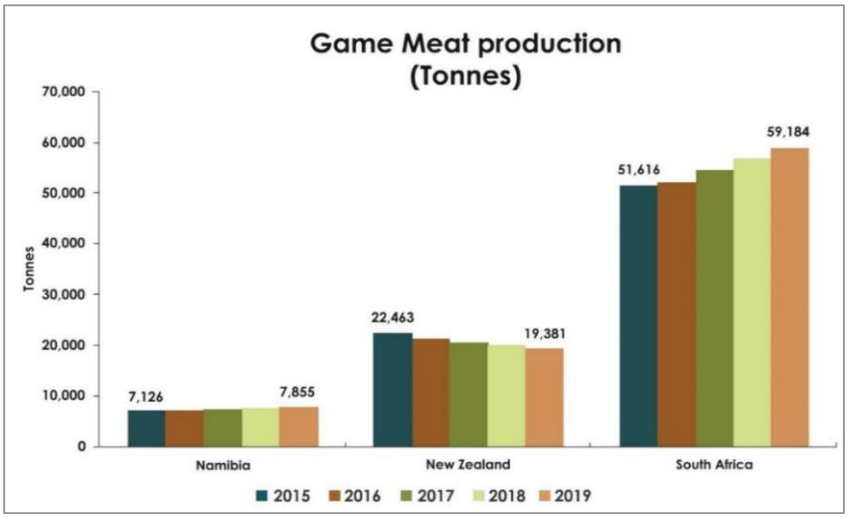

Figure 14: Game meat production for RSA, Namibia and NZ
Source: FAOStat – Value of Agricultural Production

Considering these two graphs, both Namibia and South Africa are trending positive growth whilst New Zealand is trending negatively. Similar trends by country in terms of value and volume imply that relative prices (excluding inflationary pressures) are fairly consistent. While this does translate somewhat into the export profiles of the countries involved, there is a large disparity between the production versus the export profiles.

1.3.6 Trade Statistics Comparisons

While the production profile from FAOStat[21] indicates that South Africa is the largest of the three producer countries (***Figure 15***), New Zealand by far dominates the export market for venison, according to UN Comtrade[22].

[21] FAOStat, 2021. Production Data Domain: Livestock Primary
[22] UN Comtrade, 2021. United Nations Statistics Division – UN Comtrade Database

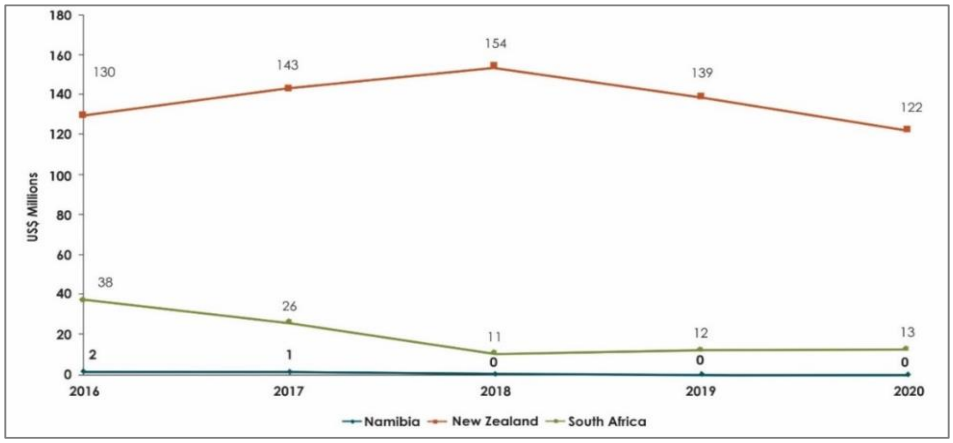

Figure 15: Game meat export profile for RSA, Namibia and NZ (US$ million, UN Comtrade)

Between 2016 and 2018 as per ***Figure 16***, New Zealand grew its value of exports whilst South Africa lost over two-thirds of its export value, likely connected to the EU ban on South African meat due to FMD. However, from 2019 onwards, New Zealand's value of exports has been declining even while its tonnages increased (implying a lower US$ per ton).

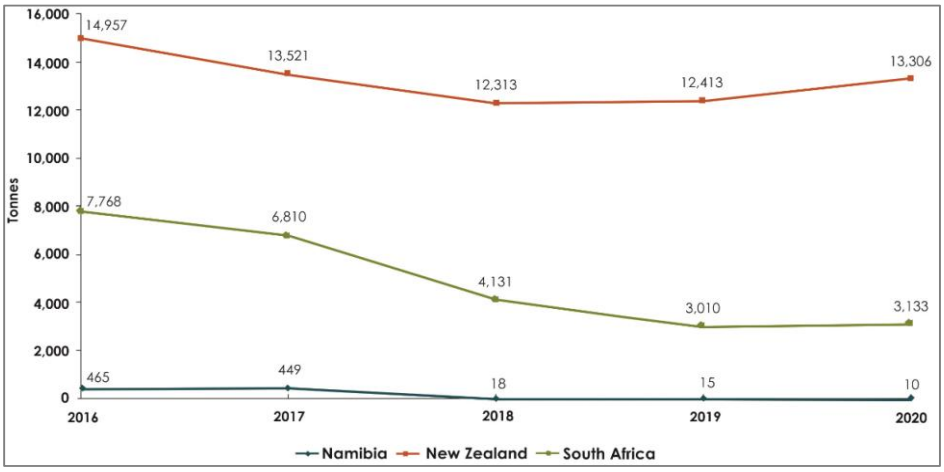

Figure 16: Game meat export profile for RSA, Namibia and NZ (Tons, UN Comtrade)

In contrast, South Africa's export value has increased over the same period with lower volume, implying an increase in value per ton. In between this, Namibia has been slowly losing export value and by 2020 has become almost completely absent from the world market in terms of its export profile.

When considering ***Table 4***, it is important to note that the price profile shown is at current prices and includes in-country inflation. Thus, the US$/ton price reflects changes both in the value and the volume of the exports for the period 2016 to 2020.

Table 4: Average export US$/ton for RSA, Namibia and NZ from 2016 to 2020 (UN Comtrade)

Country	2016	2017	2018	2019	2020
South Africa	4 842	3 821	2 590	4 129	4 076
Namibia	3 913	3 104	5 948	7 203	3 903
New Zealand	8 662	10 582	12 502	11 182	9 204

Source: UN Comtrade statistics, retrieved: 20th March 2021 from: https://comtrade.un.org/data/

Despite the value and volume changes between 2016 and 2020, New Zealand remains the highest value per ton of game meat and increased its price from 2016 to 2020, although it has been on a downward trajectory from its peak in 2018. However, South Africa followed the exact opposite pattern to New Zealand and is currently trending upwards from a low in 2018.

Despite its small market share, Namibia, interestingly exhibited a sharp increase in its US$/tons as South African prices declined in 2018 and 2019, potentially linked to the EU ban on SA exports. In 2020, however, Namibian game meat prices decreased to around its 2016 levels and remains at a level close to South Africa's 2020 prices.

When considering the export of game meat, it is worth taking cognisance of the type of meat being exported by each country per HS code. For simplicity, only the 2020 values and volumes are detailed in ***Table 5***.

Table 5: Export profile for RSA, Namibia and NZ in 2020 by HS code (UN Comtrade)

Country HS code	Value in 2020 (US$ thousand)	%	Volume in 2020 (Tons)	%
South Africa	12 769		3 133	
'020850	185	1.4%	33	1.0%
'020890	4 557	35.7%	392	12.5%
'021093	–	–	–	–
'021099	106	0.8%	43	1.4%
'160290	7 921	62.0%	2 665	85.1%
Namibia	39		10	
'020890	3	7.0%	2	15.3%
'021099	1	2.0%	<1	0.9%
'160290	35	91.1%	8	83.8%
New Zealand	122 464		13 306	
'020890	109 146	89.1%	12 192	91.6%
'021099	8 409	6.9%	372	2.8%
'160290	4 909	4.0%	743	5.6%

Source: UN Comtrade statistics, retrieved: 20th March 2021 from: https://comtrade.un.org/data/
Note: Volumes less than 0.5 are represented by <1 due to rounding, whilst – denotes zero

While New Zealand has the largest export value due to its '020890 [Meat and offal of wild animals, whether fresh, chilled or frozen], South Africa has a market lead in '160290 [Prepared or preserved meat, offal or blood (excluding meat or offal of poultry, swine and bovine …)]. New Zealand does, however, command higher US$/ton in both of these commodities, which demonstrates a higher perceived value of New Zealand venison meat versus that on offer by SA.

The imports of game meat to SA, Namibia and New Zealand are largely unconnected to the profile of exports (***Figure 17***).

The following conclusions can be reached from the data analysed in tandem:

- Both New Zealand and South Africa's imports of game meat are negligible compared to their exports.
- South Africa's consumption of foreign game meat has dropped sharply after the peak in 2017, implying a larger emphasis on local supply for domestic consumption.
- New Zealand is importing more game meat, unlike South Africa and Namibia whose foreign consumption has dropped over the period.

- Namibia's imports fell after a spike in 2017 – most likely as a result of severe drought experienced and have been slowly recovering.

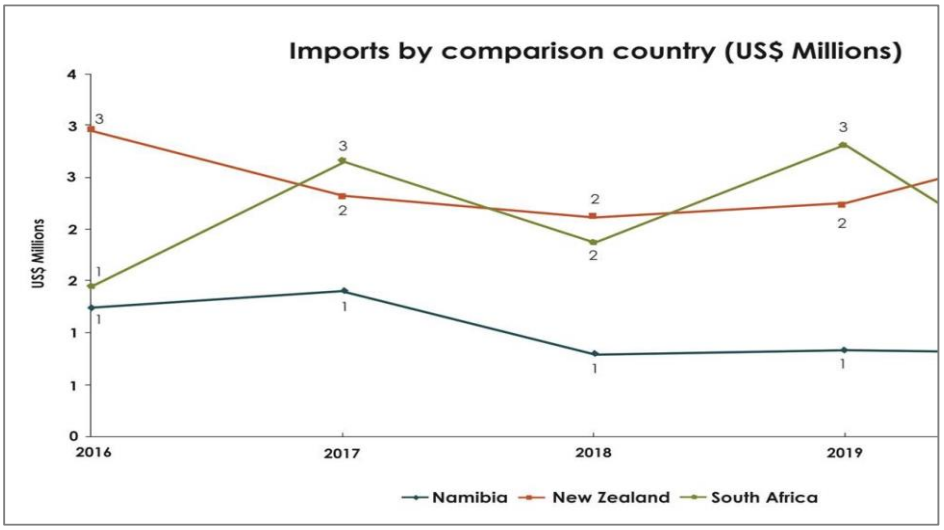

Figure 17: Game meat import profile for RSA, Namibia and NZ (US$ million, UN Comtrade)

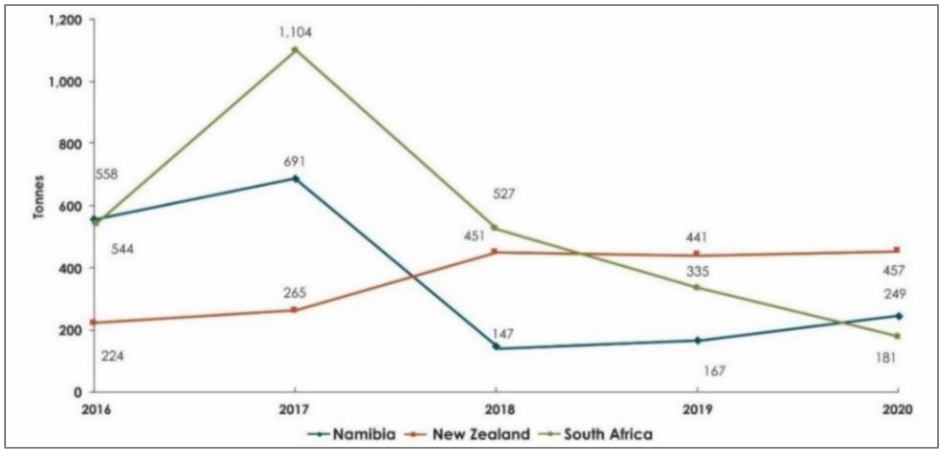

Figure 18: Game meat import profile for RSA, Namibia and NZ (Tons, UN Comtrade)

As a point of comparison, ***Table 6*** details the import value per ton for South Africa, Namibia and New Zealand.

Table 6: Average import US$/ton for RSA, Namibia and NZ from 2016 to 2020 (UN Comtrade)

Country	2016	2017	2018	2019	2020
South Africa	2 669	2 407	3 546	8 394	7 257
Namibia	2 231	2 034	5 478	4 992	3 234
New Zealand	13 191	8 723	4 718	5 103	6 293

Source: UN Comtrade statistics, retrieved: 20th March 2021 from: https://comtrade.un.org/data/

Both South Africa and Namibia have been facing higher import prices for imported game meat, whilst New Zealand has seen a decreasing cost of importing foreign game meat, as detailed in ***Table 7***.

Table 7: Import profile for RSA, Namibia and NZ in 2020 by HS code (UN Comtrade)

Country HS code	Value in 2020 (US$ thousand)	%	Volume in 2020 (Tons)	%
South Africa	**1 311**		**181**	
'020850	–	–	–	–
'020890	54	4.1%	26	14.1%
'021099	1 149	87.7%	102	56.5%
'160290	107	8.2%	53	29.3%
Namibia	**805**		**249**	
'020890	50	6.2%	19	7.6%
'021093	–	–	–	–
'021099	44	5.4%	27	11.0%
'160290	711	88.3%	203	81.4%
New Zealand	**2 874**		**457**	
'020850	–	–	–	–
'020890	1 244	43.3%	75	16.4%
'021093	–	–	–	–
'021099	1	0.0%	<1	0.0%
'160290	1 629	56.7%	382	83.6%

Source: UN Comtrade statistics, retrieved: 20th March 2021 from: https://comtrade.un.org/data/
Note: Volumes less than 0.5 are represented by <1 due to rounding, whilst – denotes zero

Whilst both New Zealand and Namibia's largest imports of game meat are '160290 [Prepared or preserved meat, offal or blood (excluding meat or offal of poultry, swine and bovine …)], South Africa's primary import of game meat resorts under '021099 [Meat and edible offal, salted, in brine, dried or smoked, and edible flours and meals of meat … of other animals].

1.3.7 Trade Statistics SA's Export Profile according to SARS

To gain a deeper understanding of the export profile of South Africa, the SARS data was analysed to identify foreign trade trends and patterns of game meat as detailed in ***Figure 19***. The majority of export game meat trade is contained within:

- '020890: Prepared or preserved meat, offal or blood (excluding meat or offal of poultry, swine and bovine …)
- '160290: Meat and edible offal, salted, in brine, dried or smoked, and edible flours and meals of meat … of other animals.

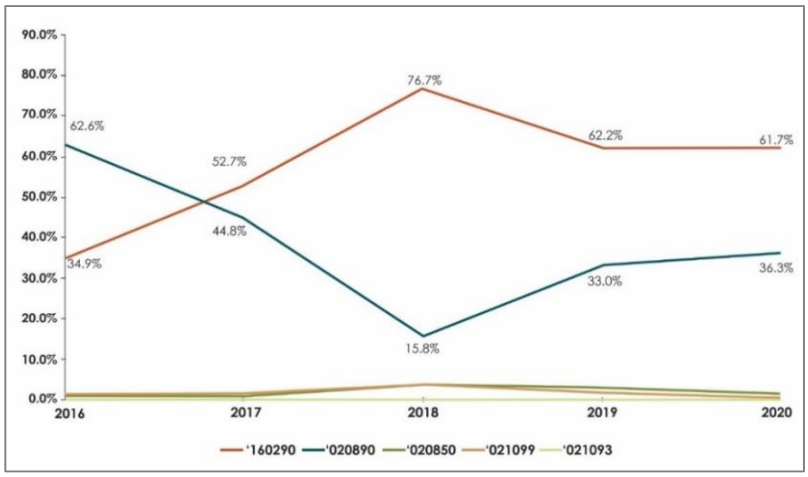

Figure 19: Game meat export profile for RSA by HS6 code (% of total export value, SARS)

From 2017 to 2020, there has been a shift from exports of fresh meat to processed meat. While the major decline in 2017 and 2018, with the subsequent recovery in 2019, could be attributed to the EU ban on SA game meat as a result of FMD[23], the prominence of processed over fresh meat could also be indicative of a structural shift in the export of game meat. When considering the shift in exports, it is important to take cognisance of the export price to determine if any material change has brought about the trends observed in the HS6 code graph.

Table 8: Average export R/ton for RSA by HS6 code from 2016 to 2020 (SARS)

HS6 Code	Rand per Ton				
	2016	**2017**	**2018**	**2019**	**2020**
'160290	39 544	40 779	29 365	46 280	48 877
'020890	128 549	85 886	78 866	117 827	189 878
'020850	77 193	94 619	71 546	181 454	91 740
'021099	49 117	11 075	76 020	80 738	81 623
'021093	541 000	106 365	–	–	8 156
Average	**70 790**	**50 975**	**34 321**	**60 143**	**67 730**

The marked drop and recovery of the Rand per ton in '020890 is consistent with the EU ban on game meat due to FMD[24] (***Table 8***). However, the recovery of the price did not translate to a switch back, which reinforces a more permanent structural change in exports from SA.

The export profile of game meat may also be described by the following internal classification:

- Prepared meat
- Fresh, chilled or frozen meat
- Pastes
- Biltong.

Applying this internal classification to the SARS data provides the following export profile for the year 2020 as depicted in ***Figure 20***:

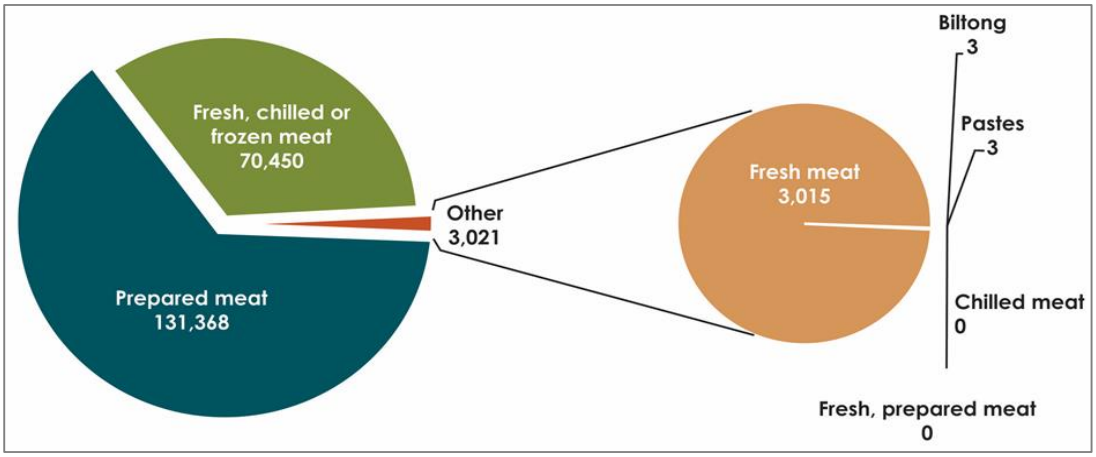

Figure 20: Game meat export profile for RSA by internal classification 2020 (R'000, SARS)

[23] Makgopa, M. 2020. South Africa Unable to Stifle Latest Outbreak of Foot and Mouth Disease. USDA GAIN
[24] Makgopa, M. 2020. South Africa Unable to Stifle Latest Outbreak of Foot and Mouth Disease. USDA GAIN

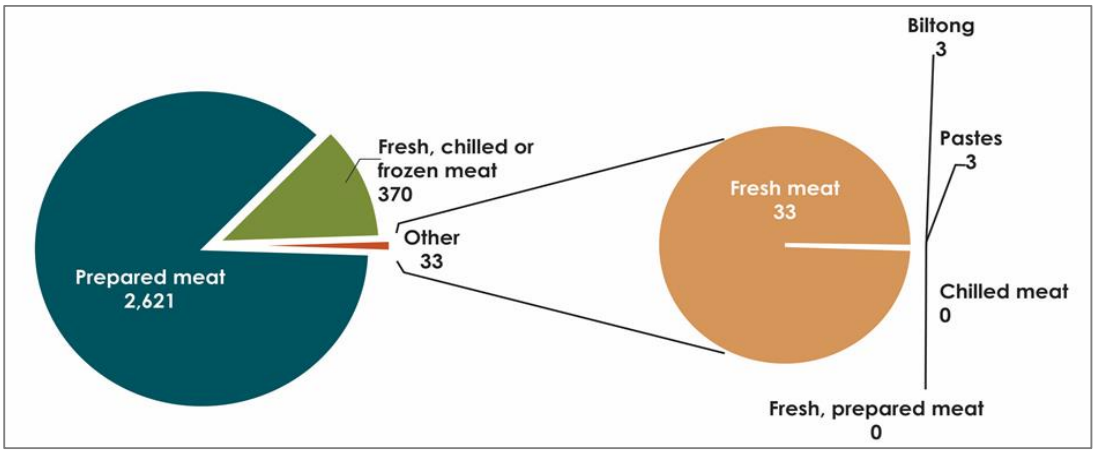

Figure 21: Game meat export profile for RSA by internal classification 2020 (Tons, SARS)

The internal classification aligns with the narrative emerging from the HS code, which shows that even though fresh meat fetches a higher price per ton from importing countries, there is a large portion of the game meat market that has switched to prepared game meat (***Figure 21***).

Table 9: Top 10 importers of game meat from RSA in 2020 (SARS)

Importer	Value (R'000)	% of Total	Volume (Tons)	R/Ton
Netherlands	62 928	30.7%	280	224 694
Germany	37 494	18.3%	214	175 002
Belgium	25 385	12.4%	234	108 649
Lesotho	17 912	8.7%	696	25 741
Eswatini	13 903	6.8%	923	15 063
Namibia	11 220	5.5%	269	41 645
Botswana	5 405	2.6%	90	60 093
France	8 079	3.9%	48	166 964
United Kingdom	5 509	2.7%	28	198 584
Switzerland	4 369	2.1%	16	276 904
Top 10 Sub-Total	*192 204*	*93.8%*	*2 798*	*68 692*
Total Exports	**204 839**	**100.0%**	**3 024**	**67 730**

The top 10 importers constitute over 90% of the value of SA's exports. From the Top 10 importers, the following countries are member countries of the EU: Netherlands (1); Germany (2); Belgium (3); and France (8).

This means that SA is very dependent on its largest importers and the lack of diversification could be a risk – especially if further bans on SA game meat[25] are imposed.

1.3.8 Trade Statistics: SA's Import Profile according to SARS

To complement the export analysis, the imports of game meat into SA were analysed to see if any trends emerged from the SARS data. When analysing the HS codes that comprise import game meat, the same two HS codes as exports constitute the majority of import trade:

[25] Makgopa, M., 2020. South Africa Unable to Stifle Latest Outbreak of Foot and Mouth Disease

- '020890: Prepared or preserved meat, offal or blood (excluding meat or offal of poultry, swine and bovine …)
- '160290: Meat and edible offal, salted, in brine, dried or smoked, and edible flours and meals of meat … of other animals (***Figure 22***).

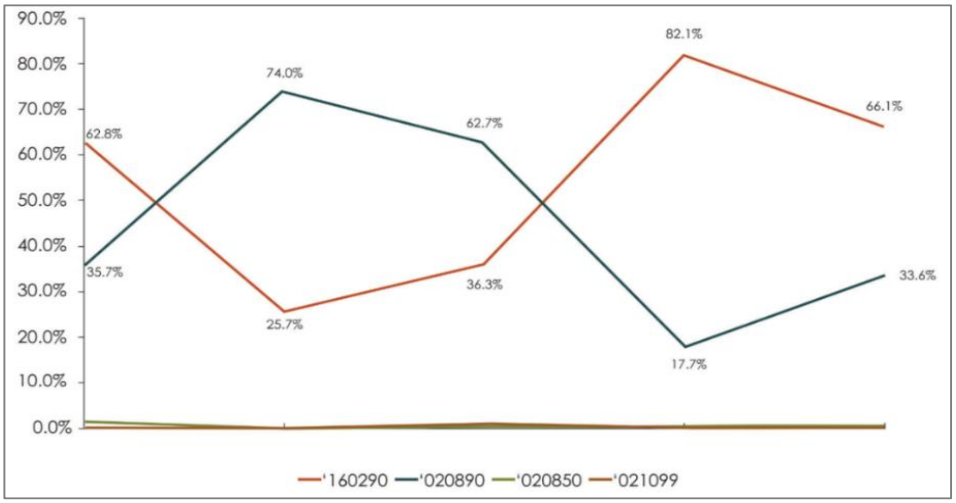

Figure 22: Game meat import profile for RSA by HS6 code (% of total import value, SARS)

Interestingly, prepared versus fresh game meat supplant each other as the majority of imports, with a changeover that occurred between 2016 and 2017 as well as between 2018 and 2019.

As consumer demand, coupled with local production capability determines import profiles, it is interesting that the demand for fresh game meat increased at a time when there should have been an abundance of such fresh meat in the market, which is exacerbated by the sharp incline in prepared game meat in 2019[26]. To supplement the analysis, ***Table 10*** details the price of imported game meat per HS6 code from 2016 to 2020.

Table 10: Average import R/ton for RSA by HS6 code from 2016 to 2020 (SARS)

HS6 Code	Rand Per Ton				
	2016	**2017**	**2018**	**2019**	**2020**
'160290	85 816	107 206	63 026	70 768	32 918
'020890	19 615	25 768	34 028	33 243	34 730
'021099	106 531	90 861	80 845	237 832	35 312
'020850	150 533	16 950	15 137	0	0
Average	38 994	32 049	40 498	59 089	33 514

Note: For R/ton – denotes zero.

The price increase and subsequent decline in '160290 is consistent with the decline and recovery of the market share except for the year 2020, which should have seen a further increase in the market share but instead saw a noticeable decrease. The same logic does not hold true for '020890, which despite a price that trended upwards, has exhibited market share movements which appear to directly counteract '160290 – irrespective of the price.

The implication of this is that the import price does not dictate the demand for fresh game meat, but rather the demand (or lack thereof) for prepared game meat as the deciding factor.

[26] Makgopa, M., 2020. South Africa Unable to Stifle Latest Outbreak of Foot and Mouth Disease

The import profile of game meat may also be described by the following classification, prepared internally:

- Prepared meat
- Fresh, chilled or frozen meat
- Pastes
- Biltong.

Applying this internal classification to the SARS data provides the following import profile for the year 2020 (***Figure 23*** in value whilst ***Figure 24*** portrays the data in volume):

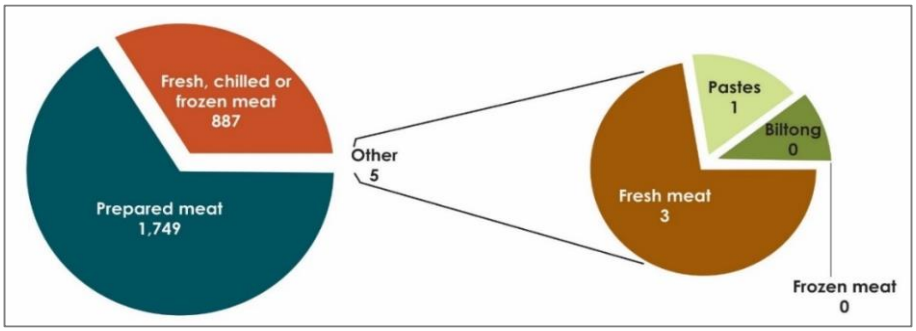

Figure 23: Game meat import profile for RSA by internal classification 2020 (R'000, SARS)

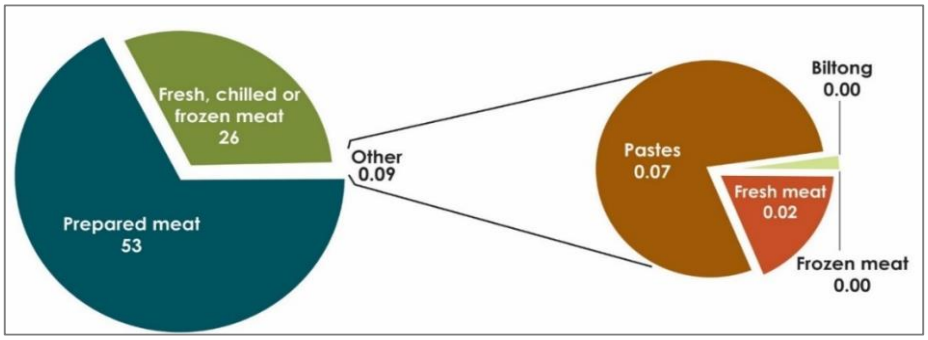

Figure 24: Game meat import profile for RSA by internal classification 2020 (Tons, SARS)

The internal classification shows a tight correlation between the value and volume of the two major imports by internal classification. However, unlike the export profile, there is no further insight as to why the HS6 codes behave as they do.

The Top Five origin countries for South African imports of game meat are detailed in ***Table 11*** and constitute 99.9% of South Africa's game meat imports.

Table 11: Top 5 exporters of game meat to RSA in 2020 (SARS)

Importer	Value (R'000)	% of total	Volume (Tons)	R/Ton
Namibia	1 581	59.9%	20	78 531
Australia	821	31.1%	23	35 644
Botswana	222	8.4%	35	6 302
South Korea	12	0.5%	<1	56 377
Lesotho	2	0.1%	<1	26 356
Top 5 Sub-Total	*2 639*	*99.9%*	*79*	*33 538*
Total Exports	**2 641**	**100.0%**	**79**	**33 514**

Note: Volumes less than 0.5 are represented by <1 due to rounding, whilst – denotes zero

In terms of exporters, the top five performers comprise almost 100% of the value of South Africa's imports. This denotes that SA is largely dependent on five countries for its game meat imports. Given the strong ties with neighbouring countries such as Namibia, Botswana and Lesotho, as well as the relative stability of Australia, there is not a great concern in future demand for game meat.

2. The SA Game Meat Industry

2.1 Background and Evolution

Game meat was, in prehistoric times, a man's sole source of meat. The meat of game has been and still is an essential source of protein as well as income for local communities and ranchers all over the world. South Africa is no different and is naturally endowed with rich wildlife. The country is renowned for its game ranching industry for example privately owned game ranches whilst the revenue generated is not only from conservation, tourism, game viewing and trophy hunting, but also from game meat hunted, processed and consumed.

With the domestication of animals, game meat ceased to be the most important food source in most parts of the world, but with the rise of game ranching activities in the second half of the 20th century, game meat production and consumption started to regain relevance again. With the change in legislation in 1991, allowing landowners ownership of game, combined with a demand amongst international tourists for hunting and an 'African Safari' experience, game ranching emerged as an economically viable alternative to traditional agricultural land use practices. The establishment of game ranches for hunting and tourism led to a demand in live plains game species to stock the ranches, resulting in wildlife production systems of plains game[27], amongst others.

The South African agricultural industry was shaped over the past years by various elements like climate change, which impacted on the profitability of crop and livestock farming. Wildlife species have resilience to drought conditions and a move towards wildlife ranching saw an increase in production systems and live game sale. Other elements are diseases and parasites that complicate cattle and sheep farming. According to Wassenaar (2016), plains game has been found to be more resistant to some diseases and parasites which complicate domestic livestock production of cattle and sheep. Thus, under semi-extensive and extensive conditions, game does not generally require antibiotics and immunisation, supporting consumer preferences for 'clean' meat or alternatively referred to as free range game meat.

Theft is another element that influences the agricultural industry as game species are considered to be more difficult to pilfer than domestic livestock. The Game Theft Act 105 of 1991, established ownership rights of wild animals and provided greater incentives for game ranching[28]. The production of game meat forms part of the wildlife economy that comprises of three sub-sectors namely:

- Wildlife ranching (wildlife production systems, live game sales, veterinary services)
- Wildlife activities (game viewing, trophy- and subsistence (biltong) hunting, taxidermy)
- Wildlife products (game meat processing, skin and hide production, curios etc.).

[27] Wassenaar, A (2016). Exploring South African consumers' attitudes toward game meat
[28] Taylor A, Lindsey P and Davies-Mostert H. (2016). An assessment of the economic, social and conservation value of the wildlife ranching industry and its potential to support the green economy in South Africa

There is more to game meat than the traditional biltong and droëwors products that have been homemade over many years. The SA domestic game meat market is not well developed, and it is estimated that only about 8% of processed game meat is sold in the formal retail market. Some reasons contributing to this effect are:

- Based on the Meat Safety Act only meat that has been slaughtered at an approved abattoir may be sold for human consumption.
- Misconceptions exist about the taste and quality of game meat.
- General perception that game meat is tougher and drier than other red meat.
- Negative perceptions about the preparation requirements of game meat.
- Some consumers perceive game meat as only available during winter months (typically referred to as the 'hunting season').

Game meat was perceived as an inferior product in the past and given to ranch workers as part of their remuneration. The evolution of the health-conscious consumer changed the image of game meat as this consumer group favour the fatty-acid composition of game meat more than that contained in beef or lamb.

Over the past few years, the consumption of game meat evolved to become a delicacy amongst urban people as they pay higher prices than rural consumers for the same meat. Game meat is considered a healthy source of protein due to its low-fat content. The increase in demand encouraged hunters in rural areas as well as commercial harvesters to increase harvesting or to hunt more animals to serve the needs of the market. Advances in hunting technologies such as better hunting rifles, accessories and equipment allowed hunters greater penetration to wild animal habitats which have accelerated game meat offtakes.

Likewise, increased transport and market access are associated with the expansion of infrastructure which attracted large numbers of workers, hunters and traders as well as their families into previously undisturbed areas. This development opened doors for more game meat consumption locally, regionally and internationally.

Taylor *et al*[29] asserts that there is a lack of information on a national level in terms of wildlife ranching. Limited information is available in an integrated manner about the various segments of this sector, which includes the game meat industry. It is evident that further research into the wildlife industry has to be done to overcome the lack of data and information.

2.2 The Game Meat Value Chain

The significance of embarking on a value chain analysis lies in the value added during each step of the chain. From a definitive perspective, Value Chains are used:

- As a first step to conduct an industry analysis to determine the basis for competitive advantage;
- To codify and define a particular industry which is useful in building a 'common language' amongst stakeholders;
- To identify potential sources of economic advantage by dividing the activities performed in each step of the value chain and to understand how companies or an industry can gain advantage through differentiation from competitors; and

[29] Taylor A, Lindsey P and Davies-Mostert H. (2016). An assessment of the economic, social and conservation value of the wildlife ranching industry and its potential to support the green economy in South Africa

- To provide insight into the core functions and actors within the industry that could contribute towards sectoral growth.

Based on the aforementioned, the current Game Meat Value Chain is depicted in ***Figure 25***.

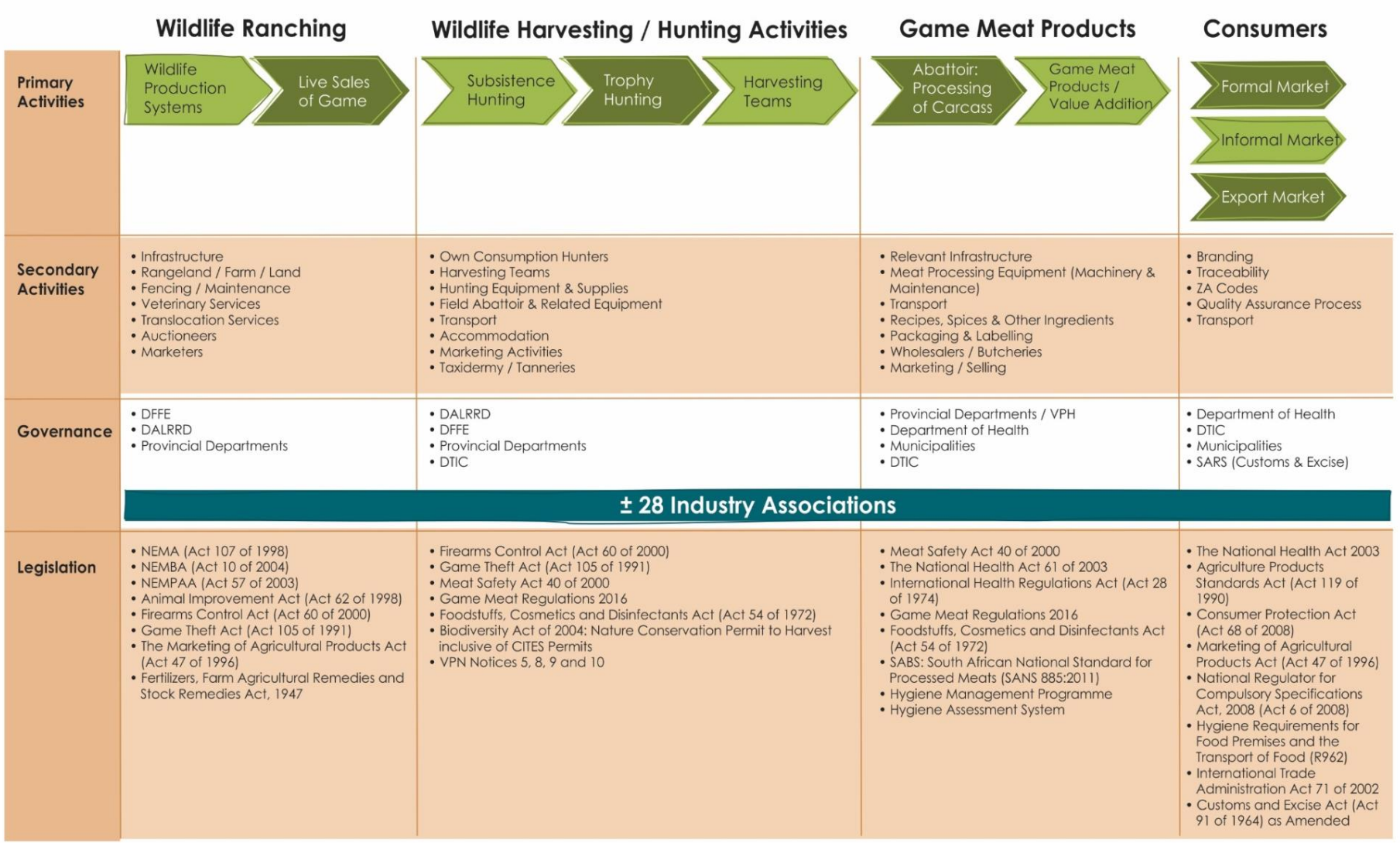

Figure 25: Game Meat Value Chain

2.3 Game Meat Value Chain Description

A brief description of each value chain step is detailed below.

2.3.1 Wildlife Production Systems

2.3.1.1 Game Ranching

The primary production segment of the game meat value chain is composed of two economic activities, game ranching and hunting or harvesting. Game ranching is characterised by semi-extensive sustainable raising of a wide range of game species, as a primary production activity, animal production (thus breeding) and raising of game at about 13 000 ranching operations in the country. These ranchers need to ensure that there is consistent supply as it will feed the value chain.

2.3.1.2 Commercial Harvesting

Commercial harvesting of game is executed by professional marksmen and is therefore a primary activity classified under hunting and related service activities. This also includes all other value chain operations carried out in the field, namely eviscerating and removing of heads, feet and red offal in field abattoirs.

Once the need arises for harvesting, the owner of the game ranch would discuss the harvesting requirements of game with the harvesting teams or the individual hunters. An agreement will be reached in relation to:

- The number of game to be harvested.
- The specie(s) of game to be harvested.
- The price per kg to be paid for the carcasses.
- The date(s) for the harvest to take place.

The game owner then embarks on an application to the relevant Provincial Department or Agency for a permit to harvest – specifically the number(s) and specie(s) of game.

It is noteworthy to mention that a permit will only be issued if the application meets all the requirements, of which there are many, however the most important being:

- That the animals to be harvested are not listed ‘threatened’ or ‘protected’ species such as listed under the Biodiversity Act of 2004 as Critically Endangered, Endangered, Vulnerable or Protected.
- That the culling method to be used is not a prohibited method.

2.3.1.3 Abattoirs

During hunting or commercial harvesting processes, carcasses are continually brought into field, rural throughput or other types of abattoirs. Once the carcasses have been eviscerated, heads removed, feet removed, and inspected, it should be tagged and weighed.

Thereafter the carcasses are loaded into a refrigerated vehicle. Each carcass – together with the red offal, is individually tagged with a unique number for traceability purposes. On completion of the harvest the refrigerated truck is sealed by the State appointed game meat

inspector and the carcasses are transported to the registered processing plant accompanied by the relevant inspection documents, which provide full details of the harvest.

2.3.1.4 Butcheries

Most of these economic activities comprise basic and advanced meat processing activities. These consist of dehiding/deskinning, deboning and the production of fresh, chilled and frozen game meat, whether as carcasses, cuts or individual portions.

A range of value-added products as well as the production of dried, salted or smoked game meat and game meat products such as biltong and droëwors are then produced.

However, manufacturing ready-made prepared meals and dishes in canned or frozen form which also contain ingredients other than game meat and seasonings (e.g. canned game goulash) would fall under the manufacturing of prepared meals and dishes. Activities related to packaging game meat cuts and offal, in vacuum bags and cartons according to buyer requirements, are also part of the industrial segment of the game meat value chain.

2.3.1.5 Market

The distribution and trade segment of the value chain falls under wholesale and retail. Due to demand by health-conscious consumers, game meat has developed from its traditional use – being mostly eaten in dried form – to use in a large number of dishes in various industries.

2.4 Classification and Characteristics of SA Game Meat Products

In recent years consumers have become more aware of the health implications of the food they eat. Meat, especially red meat, has been labelled as containing high levels of unsaturated fat and high cholesterol. On the contrary, the average fat content of most game species is less than 3%, thus being significantly lower than that of domesticated livestock species such as beef and lamb[30]. Game meat can be classified mainly in two categories, namely raw meat cuts and dried meat products. Raw game meat cuts are perishable and are kept chilled (<7°C) or frozen (minimum -12°C). When cooked or fried, game meat has a very distinctive taste and is regarded a niche product.

Raw game meat comprises the production of fresh, chilled and frozen game meat, whether as carcasses, cuts or individual portions. Examples of raw game meat portions include steaks, sausages, lean mince, patties, meatballs and carpaccio, to name a few.

Dried meat products comprise mainly of game biltong and game droëwors. Biltong and droëwors is a popular trademark of South African snacks and part of the food culture. The popularity of this ready-to-eat, dried meat snack at many events is contributing to this overall trend. Dried meat is considered a safe product, as it is high in salt and has low water activity. According to Jones[31], dried salted meat products and the storing thereof in modified atmosphere packaging, have shown the products have an inherent estimated shelf-life of up to six months.

[30] Schönfeldt, H.C. (1993). Nutritional content of venison. Symposium: Venison Industry – Research requirements and possibilities
[31] Jones, M. (2017). Profiling of traditional South African biltong in terms of processing, physicochemical properties and microbial stability during storage

Although the game meat consumption opportunity is vast and ready for growth, the current use of game meat is limited due to misconceptions and consumer attitudes that South African consumers hold toward game meat. According to Wassenaar[32], the following product attributes may play a major role in creating a positive image of game meat:

2.4.1 Sensory Characteristics

Flavour, texture and appearance including tenderness and juiciness are considered important indicators of meat quality by consumers. The characteristics of meat that drive consumer purchasing decisions lies in its quality. It can be defined by the physical measurements (water-holding capacity, colour and tenderness), the compositional quality (chemical composition) and the palatability (juiciness, tenderness, flavour and aroma) of the meat[33].

It is important that animals are hunted or harvested without unnecessary stress and the meat handled correctly to ensure high quality meat products since it has a significant effect on meat quality and sensory characteristics. The colour of red meat is used by consumers as an indicator of freshness and therefore the appearance of meat is often the only visible sensory characteristic at point of purchase. The texture of game meat is greatly influenced by harvesting methods, age of the animal and preparation methods.

Game meat's advantage over other domestic red meat is its high mineral and vitamin content. It is also an important source of B vitamins (B1, B2, B6 and B12) as well as vitamins A and D. Game meat is dark red in colour which is a sign of high blood and myoglobin content. It is rich in niacin, iron, zinc, and phosphorus. Compared to beef, lamb, pork and poultry, game meat contains higher B12, iron, zinc and selenium concentrations[34].

It is imperative that the perceptions and expectations of what consumers believe regarding the sensory characteristics of game meat be addressed and misconceptions be rectified, coupled with promoting the advantages of consuming game meat products and recommended preparation methods.

Interestingly, from a consumer preference point of view, research asserts that only 0.7% of consumers that eat meat prefers game meat over other sources of protein. The following information is prudent to note:

- The average South African preferred meal consists of 41% starch, mostly bread, and 26% meat[35], mostly chicken across demographic groups.
- Meat from poultry is the highest consumed source of protein (32%), followed by beef (15.4%), then fish and seafood (7.5%), pig meat (6.8%), eggs (6.7%), offal (4.7%) and mutton or goat meat (3.8%). Game meat is the least consumed meat (0.7%).
- A guestimate of potential demand for game meat is about 4,577 tons per annum as per ***Figure 26***.

[32] Wassenaar, A (2016). Exploring South African consumers' attitudes toward game meat
[33] Mostert, A.C. (2006). Meat quality of kudu (tragelaphus strepsiceros) and impala (aepyceros melampus)
[34] Kalandarishvili, A. (2019). The ethics of game meat
[35] https://www.businessinsider.co.za/typical-south-african-plates-are-starch-and-meat-heavy-everywhere-and-for-everyone

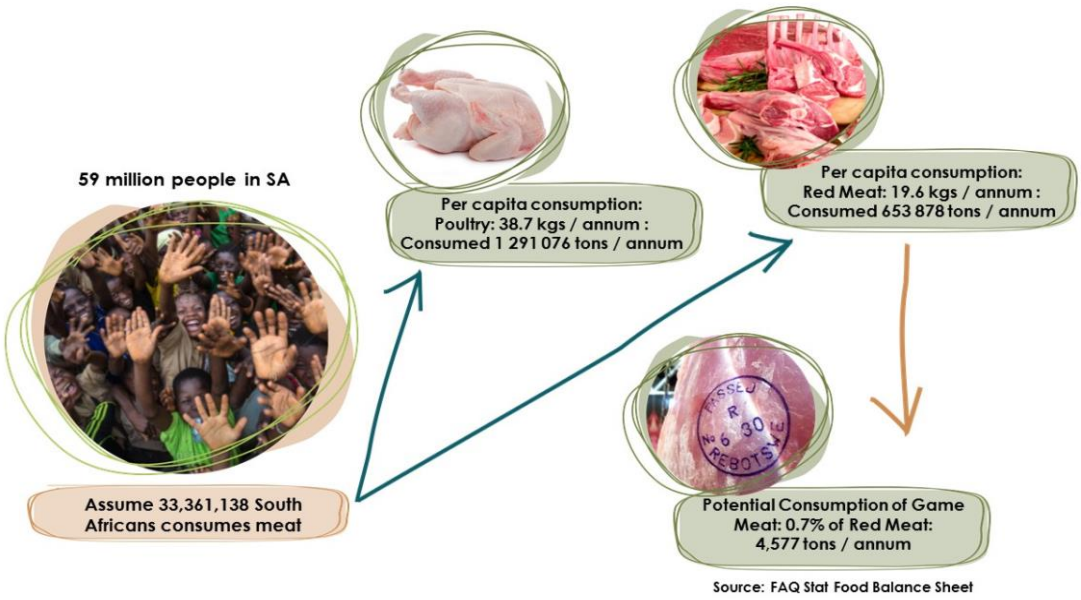

Figure 26: Guestimate of Demand for Game Meat

Wassenaar indicated that consumers prefer fresh meat rather than frozen meat since it is easier to judge the quality visible on fresh meat.

2.4.2 Health Benefits

South African game meat is considered free-range in contrast with many game species that have been semi-domesticated or farmed in other parts of the world. Worldwide consumers are becoming more concerned with healthy eating habits and consequently increasingly demand leaner sources of meat.

Health benefits such as the low fat and low cholesterol content found in game meat, are a positive influence in the choice of consuming game meat. Because of its low-fat content, game meat has in the past been promoted in many magazines and publications for people who want or need to lose weight. Healthy diets include game meat for its leanness, protein content and its muscle-enhancing ability.

The most commonly produced and consumed game meat in South Africa is impala, kudu, wildebeest, blesbok and springbok. Although ostrich meat is game meat, (based on HS Codes), it is predominantly produced through conventional livestock farming methods.

As detailed by Wassenaar (2016) there is an uncertainty among South African consumers regarding the nutritional value and quality of different types of meat. It was indicated that consumers were familiar with its low-fat content, but generally unfamiliar with the other health benefits of game meat. This opens the door for game meant to be promoted differently!

The calories in game meat either come from proteins or from fat since it contains no carbohydrates at all. Therefore, it's a great source of lean protein. Game meat also has a very good balance of omega-3 and omega-6 fatty acids. Omega-6 is pro-inflammatory and omega-3 is anti-inflammatory.

Game meat contains much more omega-3 and much less omega-6 than the meat of beef and mutton. Furthermore, game meat has a number of features that have a positive impact on human health and body functioning, which is a result of its good nutrient composition (proteins, unsaturated fatty acids, vitamins, macro- and microelements) in comparison with other sources of farmed meat.

2.4.3 Conservation and Production Ethics

Conservation, ethics and animal welfare is of great concern to everyone. Today hunters not only provide economic support to conservation programs but also honour the culture of hunting itself. That is the very reason why we see such an abundance of wildlife today.

Domestic game meat production is hampered by the lack of promulgated legislation pertaining specifically to game meat within the Meat Safety Act. Consumers are increasingly concerned with conservation, environmental and ethical concerns regarding meat production and are placing increased pressure on producers to provide meat in a sustainable manner while adhering to socially acceptable environmental practices. According to Wassenaar, consumers felt that as long as animals were harvested responsibly and humanely, it is ethical to consume such meat.

Meat that hunters harvest is done with no damage to the habitat. The ethical harvesting of game, whether it is for recreation or profit, normally represents a quota from the population that should be removed annually without having a negative impact on the game population. Game meat regulations must ensure that game meat that is sold commercially has been harvested and processed professionally, with independent inspection, which will present the consumer with a final product of far greater quality.

2.4.4 Animal Welfare

During harvesting the typical reaction of wild animals is to flight or fight. For this reason, behaviour must be accounted for when handling, transporting, and during hunting activities at the ranch – if optimal meat quality and the welfare of the animal are to be achieved.

High levels of animal welfare were considered a good indicator of meat safety and high quality by consumers. Internationally and locally, a trend is visible among consumers indicating a preference for meat from animals that were treated humanely throughout the entire production process and that requires reliable certification.

Research furthermore asserts that an animal that is stressed prior to death, causes a depletion of muscle glycogen resulting in the meat to have an unattractive dark colour which is associated with dark, tough and dry meat. Harvesting practices must consequently be conducted whilst causing the least possible amount of stress to animals.

2.4.5 Meat Safety

Meat, and thus food safety has become an important consideration for consumers worldwide. Consumers are more informed and consider meat safety seriously and insist on improved safety control measures, traceability back to ranch and more information on meat production.

The Meat Safety Act prohibits the selling of meat that has not been inspected, approved and slaughtered in an approved facility such as an abattoir. By implication, game meat available

in the local market (both raw and processed) that has not been inspected, approved and slaughtered in a registered abattoir is deemed illegal. Customers who buy game meat from a conventional retail store would be well advised to verify labels for traceability.

Domestically, a major issue noted is the lack of promulgated regulations governing the supply through to sale of game meat. Absence of meat inspection during hunting or harvesting or processing phases and limited meat hygiene or food safety systems calls for concern, however, as stated earlier in this report the Game Meat Regulations is under review.

Van der Merwe *et al* researched the biological and food safety requirements of the EU in terms of different meat production systems in South Africa. They divided the game meat industry in South Africa into two systems: on the one hand, the strict regulatory system for game meat intended for export purposes and on the other, an uncontrolled system applicable to game meat in the local market.

They found that safe game meat is ensured by good hygiene practices and effective meat hygiene training. Their results clearly indicated higher bacterial counts on game carcasses intended for the local market but not exceeding the legal standard (thus still within acceptable levels).

Aspects that are important ensuring high quality safe game meat are veld type, shot placement and bleeding methods. Further aspects investigated by Van Der Merwe *et al* are hygiene management systems, traceability compliance and training of ranch staff involved in the process of obtaining game carcasses.

In order to produce safe game meat, it is expected that the hunter or harvester provide a professional team consisting of well trained and experienced marksmen as well as trained and accredited veld abattoir staff.

Equipment provided by the hunter to execute the hunting or culling swiftly and professionally, include suitable rifles, spotlights, special equipped vehicles, a mobile field abattoir constructed according to state veterinary specifications, scales, sterilizers and generators. In addition, he/she must follow the correct prescribed veterinary procedures and ensure the highest levels of hygiene during the entire harvesting process. Correctly dressed and inspected carcasses are then transported within prescribed time schedules by refrigerated trucks to the abattoir.

The meat flow from ranch to butchery to market is a cause of concern. It is estimated that >80% of game meat in the retail market penetrates the market as ‘grey’ meat. A potential opportunity that could be explored is to upskill professional hunter(s) as meat inspectors as this could potentially facilitate the conversion to ensure an influx of more ‘legal’ meat into the SA retail market.

2.4.6 Availability

Availability of game meat to consumers is an important attribute. Traditionally hunting only takes place during the colder winter months from May to July, but the hunting season in South Africa has been extended from March to August. Game ranches that have exempted status may hunt year-round.

However, traditionally hunting season was instituted due to high summer temperatures making it difficult to harvest game in the veld and keeping it cool enough until it could be dressed and

chilled for meat safety purposes, as well as to avoid hunting animals with very young lambs / calves. If this can be overcome, it may be possible to harvest year-round.

The different cuts of meat and where it is available is important to game meat consumers. More should be done by the game meat producers and processors to market the availability of their products to all consumers. Game biltong is more readily available due to its longer shelf life. Raw meat cuts can be stored chilled and frozen to ensure continuous supply, thus advancing availability.

2.4.7 Price

Price seems to play a major role in consumers' decision to procure game meat. Although restricted data is available on meat quality of game species, it is well known that the consumer is willing to pay more for meat that is 100% natural / organic, free of micro-organisms, antibiotics and hormones.

Meat of game that is hunted is inexpensive compared to prices of other sources of red meat. However, there is some price sensitivity among meat consumers, and this would mean they will purchase where the most affordable price is offered. ***Table 12*** is indicative of game meat prices for various products (local retail). These prices were obtained online during March 2021.

Table 12: Price Comparisons of Game Meat Products – Retail Prices March 2021

Retailer	Product	Price Per KG
Woolworths	Ostrich Extra Lean Mince	R135,98
	Ostrich Sausage	R140,00
	Ostrich Stake	R180,00
	Ostrich Fillet	R280,00
	Ostrich Droëwors	R479,94
	Ostrich Sliced Biltong	R569,94
	Free Range Venison Droëwors Nibbles	R509,94
	Free Range Venison Biltong	R665,82
	Free Range Venison Burger Patties	R118,11
	Free Range Venison Steak	R180,00
	Free Range Venison Sausage	R140,00
	Free Range Venison Fillet	R280,00
Shoprite	Bushveld Pride Venison Patties	R82,99
	Bushveld Pride Venison Meatballs	R82,99
	Bushveld's Finest Venison Mince	R82,99
	Bushveld's Finest Venison Boerewors	R82,99
PicknPay	Ostrich Mince	R119,98
	Ostrich Prime Steak	R159,98

2.4.8 Preparation

Generally South Africans lack adequate experience and knowledge to prepare game meat. Poor preparation could influence the taste and texture of the meat negatively. De Villiers[36] asserts that although they do not know how to prepare game meat, it is slowly changing with television shows, cooking competitions and magazines providing recipes and correct

[36] De Villiers, C. (2018). Game meat market outlook. Consumption tourism

preparation methods. If the meat is of good quality, preparation is quite simple. In cases where consumers have had a bad experience with game meat, for instance where meat was tainted or was tough and inedible, its root cause is most probably the age of the animal, harvesting methods, and the way the meat was processed post harvesting. For the game meat industry in SA to succeed, the development of a scientific basis of knowledge on the quality of game meat as well as extensive marketing is essential.

2.4.9 Promotion

Promotion relates to the activities that communicate the merits of the product with the expressed aim of persuading target customers to procure game meat products. It is regarded as the simplest way to increase consumer preference for the product. Many South African consumers, chefs and restaurant managers are unfamiliar with the health benefits of game meat. Various methods to promote game meat should be explored. Efforts should be made to exploit the willingness of game meat consumers as well as restaurants, guesthouses, lodges, hotels etc. to offer game meat on their menus.

Consumer education is an important intervention for increasing game meat consumption in South Africa. Game meat producers should invest in marketing campaigns in order to establish consumer trust as well as winning over potential 'new' consumers. Retailers and wholesalers should become part of this process as an enabler to effectively promote their products for serving the local market.

2.5 Link between Game Meat Production and Processing Initiatives

Game meat production and processing initiatives currently being implemented are individualised, sporadic and often uncoordinated. Whilst numerous game ranches are registered in South Africa, the lack of extensive or semi-extensive nature of game production for harvesting limits the industry's ability to compete effectively with domestic livestock meat production.

Several ranches do cooperate in order to produce game for the game meat industry, however, challenges such as irregular access to markets due to diseases, complicated permitting systems as well as the costs and seasonality of harvesting animals all contributed to a fragmented industry that is still facing challenges to formally participate in the market. Unified strategies to brand and market game meat as a unique product are lacking and organisations with approved export abattoir facilities export and market their products on an individual basis.

Due to the fact that the northern Provinces of the country were declared as FMD infected areas and could not export game meat, Zebra and Ostrich formed the main sources of game meat for export. With the improved zoning legislation of the OIE, only areas around the Kruger National Park and areas bordering neighboring countries with FMD, were declared infected zones. The areas around infected zones were proclaimed as protected zones. This opened the market to allow hunting or harvesting of game outside these FMD proclaimed areas. However, outbreaks of FMD outside of these areas as well as outbreaks of other controlled diseases, such as Rift Valley Fever, limits export opportunities – which is challenging the implementation of a consistent branding and marketing plan for South African Game Meat.

The abundance of game in the FMD protection and infected zones stimulated entrepreneurs that sought opportunities to develop this market. The current constraint, due to FMD protocols

for the movement of animals and animal products, however, necessitates a compliant abattoir, deboning and processing plant. Abattoirs are only enabling instruments to convert a live animal to meat and the profit lies in the deboning and processing of a saleable product where value addition can occur for retail to consumers. Should commodity-based trade principles be implemented, further processing plants could also develop. Currently only dried or cooked products may be sold out of the areas and if an organisation has the requisite financial means, they may do further processing such as canning of game meat or game meat pies. Some entrepreneurs are adding value to the process by utilising the skin or hides for the production of gelatin.

While game meat has been available informally in the local market, legislative, processing and marketing processes still require significant development to exploit the potential of the local market and generate a return on investment. While the game ranchers, harvesting teams and processing facilities are all functioning as independent businesses or organisations, there are interdependencies and some dialogue that occurs between these entities through different industry associations.

All the above initiatives are independent and does not have any common developing initiative bar for the possible business and profit it may generate. Most operators however understand that to have an acceptable income, the entire industry needs to overcome fragmented initiatives and build the value chain from ranch to retail, through a well-developed branding and marketing strategy.

2.6 Barriers to Entry

The purpose of detailing Barriers to Entry for the game meat industry is to protect market share and the industry's ability to generate revenue, and ultimately positive financial performance. Based on direct stakeholder engagement and related research, the barriers to entry into this market segment is, holistically speaking, relatively high as portrayed in ***Figure 27***.

Barrier to Entry	Why is it a Barrier?
1 Access to Land	Access to adequate land for use of game ranching is costly. The availability of land for game ranching for PDI's and other new entrants are a cause of concern
2 Capital Intensive	Cost of capex to start farm, fencing, breeding, production, and construction of abattoirs are high
3 Legislative Framework	Bureaucratic processes to obtain permitting requirements of firearms and harvesting is costly, time consuming and not integrated nor governed effectively
4 Lack of Economies of Scale	Lack of consistent supply throughout the year to serve the needs of the local market as well as the differentiated needs of the export market
5 Lack of Accurate Information related to Market Size (Supply and Demand)	Lack of accurate industry related data and statistics to make informed decisions. There is not one single depository of industry related data to understand supply or demand (market size) of the SA Game Meat Industry

Barrier to Entry	Why is it a Barrier?
6 Skills and Know-How	Wildlife related skills and know-how for new entrants in the industry is limited which ranges from breeding, raising, harvesting, meat safety, conservation to eco-tourism
7 Creating a Brand and Markets	Access to local and international distribution channels and to develop an export market is costly and takes time. High costs in spending on advertising, marketing, research and development
8 Network Effect / Competition with other Red Meat Producers	Due to strong network of livestock meat consumers, game meat consumers fail to gain sufficient numbers versus the consumption of other red meat and sometimes on offer at exploitative prices. Furthermore, the nature of game ranching results in higher cost to harvest than meat production processes from domesticated livestock, yet the price of the final products are compared (as equal) upon purchase
9 Disease Outbreaks	Resulting in interrupted / inconsistent export supply opportunities and therefore interrupted periods of marketing as a brand in export markets. Specific examples include FMD and AI
10 Consumer Confidence in Product	Overcoming the reputation of 'poor' quality game meat that entered the market in the past, as well as regaining consumer trust after meat adultery scandals
11 Product Differentiation	Loyal consumers resist to change from other red meat products to game meat due to misconceptions about game meat, preparation and availability

Figure 27: Barriers to Entry

2.7 Business Environment (STEEP Analysis)

Business environment is best described as the sum of all external and internal factors that influences an industry. In this section, an analysis was embarked on to understand how environmental influences work together and/or how it may affect the game meat industry.

2.7.1 Social Factors

Factors like cultures, attitudes, religion, values, and lifestyles influence what, how, where, and when people purchase products. They are difficult to predict, define and measure as it is very subjective. Consumers are increasingly becoming concerned about healthy and safe products and the demand for these products is escalating.

According to González *et al*[37] there is an urgent need to change the dietary habits of most people, at least in developed western countries, and especially, to reduce meat consumption. More consumers focus on less red meat intake but healthier meat. Game meat that is brought to the market has shown its high nutritional value, that it is wholesome, fresh and lean. However, due to misconceptions, game meat is still negatively perceived which leaves room for improvement to amend perceptions among non-consumers of game meat products.

Benefits from growth within the wildlife industry stretches beyond the economic scope as the sector also contributes towards conservation and the management of biodiversity. For

[37] González, N. Marquès, M., Nadal, M. and Domingo, J.L. (2020). Meat consumption: Which are the current global risks. Journal – Food Research International 137

conservation to succeed, wildlife must be economically sustainable and able to compete with commercial ranching.

2.7.2 Demographic

In order to help the game meat industry to determine and understand market preferences and requirements for game meat products, it is important to determine the size and composition of meat consumers. Wassenaar (2016) stated that the game ranching industry relies on a variety of income opportunities to be successful economically. Game ranchers have four possible markets for their animals namely game meat exports, the sale of live animals, trophy hunting and the local game meat market.

When food (particularly meat) consumption is explored, it is important to account for the different population groups as each group has their own customs and traditions. In addition, factors such as religion, age and income also play a role in consumer (buying) behaviour.

The current population of SA for 2021 is 59 847 352[38] which portrays a 1.24% increase from 2020. As the population will continue to increase it also becomes more diverse. It is important to take note of the unique shopping preferences of the different generations, which each require differentiated marketing approaches and goods targeted to specific needs.

The millennial generation, born between 1981 and 1997, are technologically advanced and prosperous young people, who disburse to enjoy a convenient lifestyle of which a classical example is ready-made cooked meals. Younger consumers are also increasingly averse to food produced using growth hormones, the blanket use of antibiotics, inhumane and unethical practices, and other issues. They often state a willingness to pay a premium for such brands.

Generation X is people born between 1965 and 1980 and they have their own spending patterns. Baby boomers were born between 1946 and 1964 and as they are in or near retirement age, they are willing to spend more on their health by means of consuming healthier products. With regards to the game meat industry there is limited to no data available to depict consumer behaviour for game meat produce. To ensure effective and targeted marketing strategies in relation to meat products, more research is needed to understand the preferences related to gender, age, race, ethnicity and cultural practices.

A recent report on the food consumption changes in South Africa highlights the fact that meat consumption has increased, particularly that of poultry and pork which retails at roughly 60% and 30% lower than that of beef and lamb/mutton. The trend is that consumers will purchase meat that is more cost-effective.

More game meat information and knowledge should be shared with the public in general. As there is a definite niche market for game meat production to be exploited, it is of utmost importance that the right marketing strategy be developed and deployed.

2.7.3 Technology

The overall ability to maintain and build wealth depends in large on the speed and effectiveness with which technology is used. To stay abreast of the required standards, the game meat industry must invent and adapt more efficient ways and equipment to improve the

[38] https://www.worldometers.info/world-population/south-africa-population/

production and the handling of the meat when harvested. Requirements to grow the export market of game meat also see the application of technology to become more prominent.

The use of technology to create change, improve efficiencies and streamline operations in the game meat industry is no exception. Developments related to improved hunting equipment over the years are already observable. Practices on game ranches, like wildlife production systems, culling or hunting as well as the meat handling and cold storage facilities improved as the game meat industry expanded.

The latest development in technology includes the mobile or rural throughput approved abattoir concepts and software products that increases traceability of meat. Mobile technology is widely used on game ranches to communicate with all the stakeholders ranging from employees, consumers as well as suppliers and is therefore seen as critical to the industry's success.

2.7.4 Economic

When economic activity is strong, unemployment rates are low, and income levels rise. Game ranching contributes significantly to the South African economy. It was noted by the DFFE that the wildlife economy created over 100,000 jobs and it has the potential to create even more direct and indirect jobs. The majority of the wildlife economy is still untransformed, and it is envisaged that transformation should be supported through Public Private Partnership (PPP) Co-operatives, land redistribution programs, sponsorship and training of Previously Disadvantaged Individuals and communities to own and manage game ranches, abattoirs, meat processing facilities and sales of products.

Due to Covid-19 and the effect of global lockdowns, the game industry as a whole suffered severely. Tourist related travel and game hunting declined to unprecedented levels. Consequently, this resulted in less income, job losses, closing down of game ranches as well as restaurants and ultimately less consumption of game meat.

On the positive side it was noted that there was a worldwide increase in the demand for red meat over the past 40 years. Locally, meat is imported due to the fact that red meat production, thus supply, in South Africa is not sufficient to cater for demand. The production of game meat is a viable option to ensure accessibility of red meat to the local market as well as to the export market. Generally, this will have a positive contribution to the South African economy.

2.7.5 Environmental

Game ranching is considered to be an environmentally friendly agricultural practice due to sustainable land management practices and the conservation of biodiversity. Game ranching can have a positive environmental impact on an area by conserving the habitat while also increasing the amount of wildlife. Climate change as well as the pressure on water availability limits agricultural production in SA. However, game is better adapted to the marginal conditions, and is not as likely to suffer from the effects of global climate change as severely as domesticated livestock.

It is well-known that climate change could have an effect on meat quality and also on meat safety. Potential effects of climate change could result in higher mortality during transport or

higher contamination of carcasses with Escherichia Coli or Salmonella, which means an overall reduction in the quality of meat.

Almost 80% of South African agricultural land is considered marginal agricultural land, fit only for animal production (Wassenaar 2016). Studies have shown that wildlife adapted better to dry environments than cattle, since they make use of both browsing and grazing material. Therefore, game ranching can be extended which could lead to growth in game meat production. Furthermore, game ranching could have a positive environmental impact on an area by conserving the habitat while also increasing the number of game. By conserving the habitat of the utilised species, the habitat of other non-utilised species can also be protected. Because owners of game ranches obtain an income from the animals, they use sustainable land management practices to contribute to natural habitat and vegetation conservation.

2.7.6 Political and Legal

The South African context of meat is deeply rooted in the heritage of our people. The demand is greatly influenced by its availability, price and traditional (cultural) usage as well as the consumer's associations and perceptions. Domestic animals and wild game are the main meat sources, where the meat as well as the offal are utilised and incorporated into traditional dishes. The informal game meat market provides meat to a large portion of the population yet, it is poorly regulated. On the other hand, the formal market is strictly regulated to ensure that safety and quality of the meat are maintained.

Ownership rights of wild animals provided a positive change in South Africa's legislation through the Game Theft Act 105 of 1991. This legislation provides greater incentives for game ranching and grant landholders the right to use wildlife commercially and to gain an economic advantage from wildlife on their ranches.

The current red meat regulations in SA require animals to be alive when delivered to an abattoir. According to Janovsky[39] the local game meat market is undeveloped in this department. Registered game abattoirs have implemented red meat regulations on all their game products. This ensures safer and more hygienic practices within the game meat industry, especially since the popularity of meat and dried meat products (biltong and droëwors) from wild game species have lately increased due to consumer needs for leaner foods with more exotic qualities (Erasmus and Hoffman 2017).

The regulatory bodies responsible for food legislation in South Africa include the Department of Health (DoH), the DFFE, DALRRD, and the Department of Trade, Industry and Competition (DTIC). Related to meat, these national departments regulate the harvesting of animals as well as the safety, quality, sale and labelling of fresh and processed meat products.

Game meat exported from SA should comply with the South African Policy for the Export of Game Meat, which is based on the European Economic Community Council directives as a guideline. This ensures that there is traceability of the meat back to the ranch of origin and detailed information available about the health status of the animals. The ostrich meat exporters have been applying these regulations for years with great success.

From a summative perspective, the STEEP factors are depicted in ***Figure 28***.

[39] Janovsky, E. (2015). Wildlife industry expected to continue to grow. ABSA. South Africa

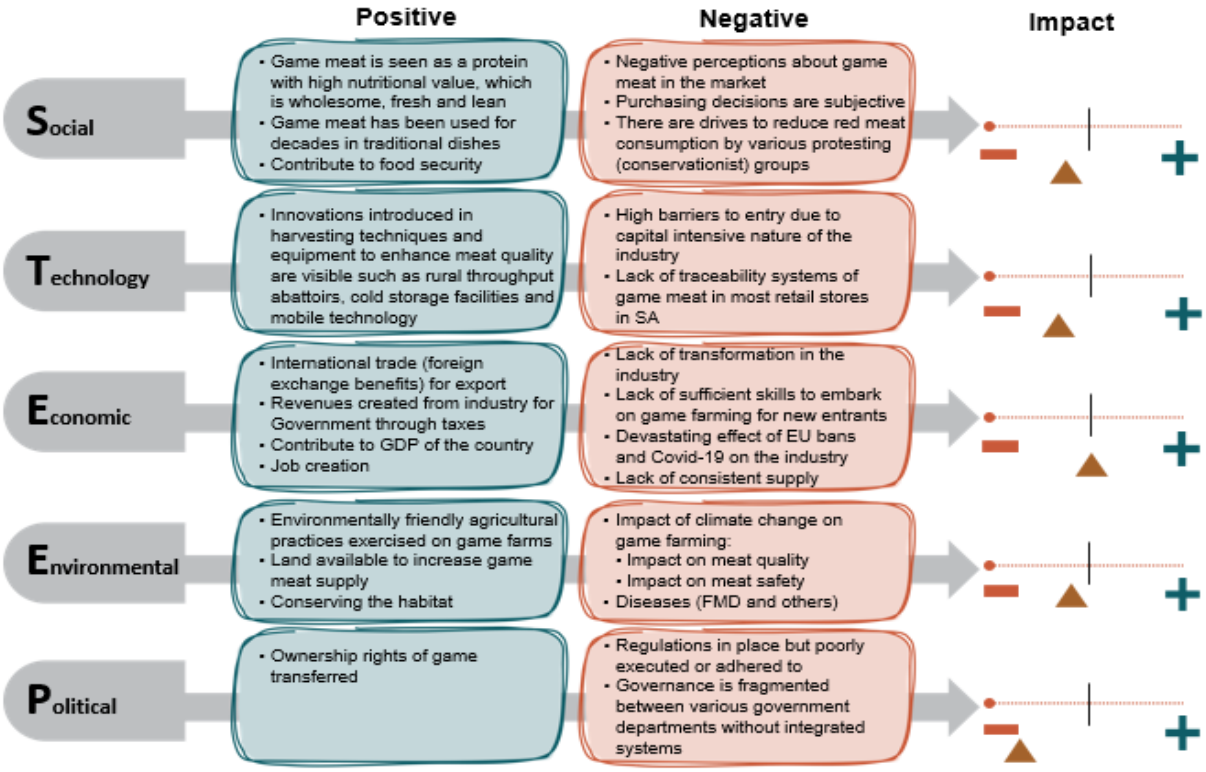

Figure 28: STEEP Factors of the SA Game Meat Industry

2.8 The Game Meat Industry and Food Security

Food security exists when every person has access to sufficient food to sustain a healthy and productive life, where malnutrition is absent, and where food originates from efficient and effective food systems that are compatible with sustainable use of natural resources[40].

Research further asserts that there are synergies between food security, unemployment, poverty and inequality. In SA's National Development Plan (NDP), it is explicitly stated that food insecurity is both a cause and a consequence of poverty. Statistics SA[41] stated that SA experienced an increase in the proportion of people living below the food poverty line. Albeit significant efforts that have been embarked on by the State to promote food security, 25.5% of our citizens are living below the poverty line, of which most struggle to feed themselves.

Game meat is a significant source of protein for South Africans. As SA is an importer of protein, thus not meeting own national protein demand, the increase of another healthy protein source in the market could contribute positively to food security.

Considering the challenging circumstances of how to 'feed the nation', the game meat industry could invariably play a major role in improved food security. Based on the lack of data and statistics about the flow of game meat into the market, it is difficult to state how much game meat are consumed by impoverished families.

[40] https://link.springer.com/article/10.1007/s12571-013-0241-4
[41] Statistics SA: Towards measuring the extend of food security in SA. 2014

2.9 The Meat Opportunity

2.9.1 Case Study 1

An analysis of value addition of a Kudu cow carcass was undertaken. The findings of this analysis are depicted in ***Figure 29*** and were based on data obtained from a rancher as well as the related retail prices in retail stores. It should be noted that all other value chain activities such as tourism, the hunting experience, and other peripheral products that could derive for example from the skin, trophy etc. were not included in this analysis.

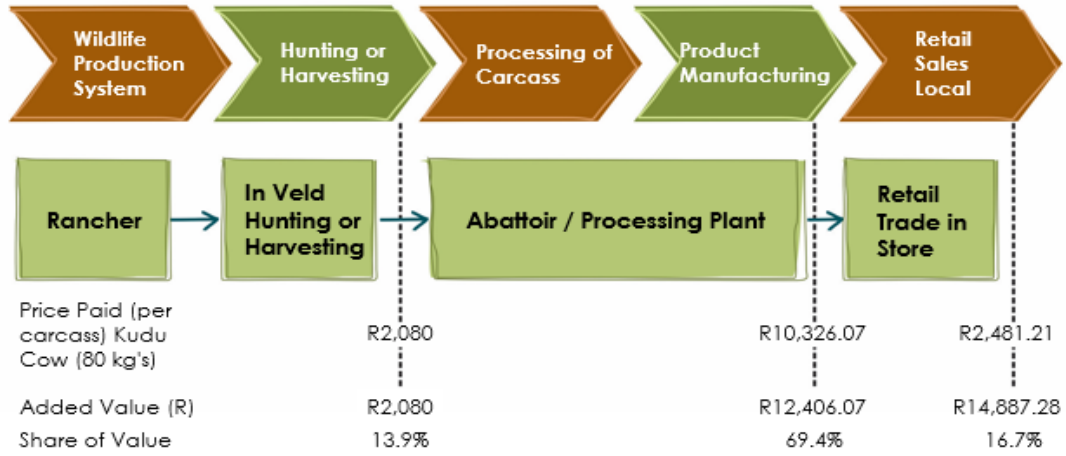

Figure 29: Value Addition of a Kudu Cow

The following key assumptions were used:

- Carcass weight: 80 kg of which average yield (ex bones) is 53 kg.
- 70% of useable kudu meat processed into a combination of potjie, burger patties, sausage and other products at an average retail price of R93.31 per kg.
- Taking cognisance of the margin a store retains, the rancher should be able to fetch R3 452.47 for 37 kgs of mixed kudu meat products.
- 30% of useable meat processed for kudu biltong / droëwors at an average retail price of R559.60 based on 16 kgs of product the rancher could fetch about R8 953.60.
- Thus: the rancher should be able to fetch approximately R12 406.07 from a 80 kg kudu cow carcass whilst the retail price is R14 887.28 as the retail store margin is 20%.
- Operational expenditure varies per species and per product range and is calculated based on actual costs on ranch. Opex ranges from R47.54 to R59.42 per kilogramme.
- This ranch has an approved Rural Throughput Abattoir and conforms to all relevant protocols.
- Net profit margin ranges between 30 to 35%.

2.9.2 Case Study 2: The Meat Opportunity of a CPA-owned Reserve

A site visit to a KwaZulu Natal CPA-owned Big-5 Game Reserve with limited game meat processing facilities was undertaken. Given the situational analysis on the game reserve, the following emanated from deliberations:

- The CPA currently sells dressed carcasses ex-gate at a fixed price to a wholesaler.
- An opportunity exists to generate more revenue (***Figure 30***) for the community as well as to create more jobs in this poverty-stricken area.

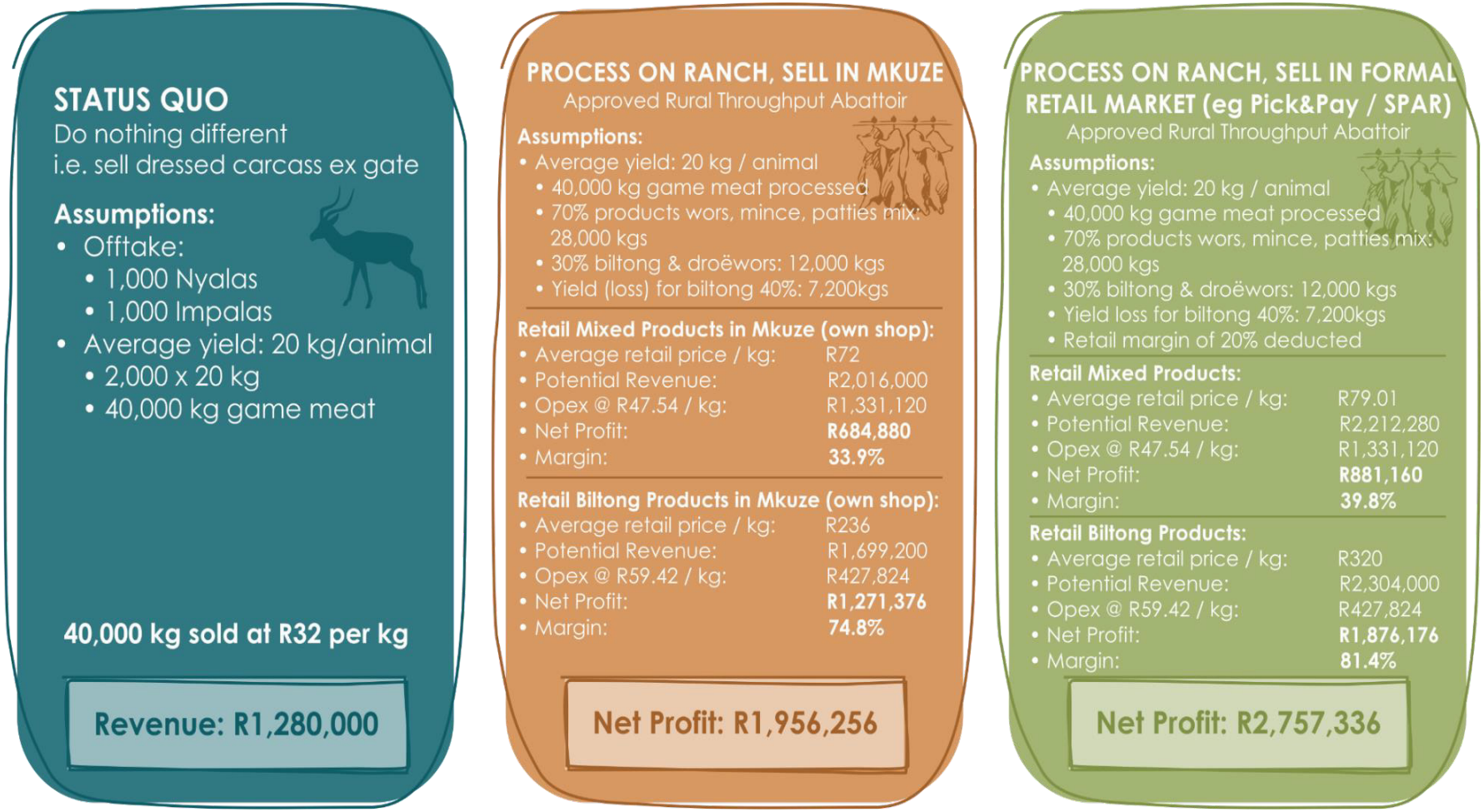

Figure 30: The Meat Opportunity through Value Addition

2.10 SWOT Analysis

A SWOT analysis was undertaken to identify the strengths, weaknesses, opportunities and threats of:

- Primary Production;
- Processing of Meat (which caters for harvesting to processing in an abattoir); and
- Catering for the Market or alternatively referred to as Commercialisation.

The findings are depicted overleaf.

2.10.1 Primary Production

The SWOT analysis detailing primary production follows in ***Figure 31***.

Figure 31: SWOT Primary Production

2.10.2 Processing of Meat

The SWOT analysis related to harvesting and processing of meat is depicted in ***Figure 32***.

Figure 32: SWOT Harvesting and Processing of Meat

2.10.3 Commercialisation

The SWOT analysis for commercialisation of game meat products follow in ***Figure 33***.

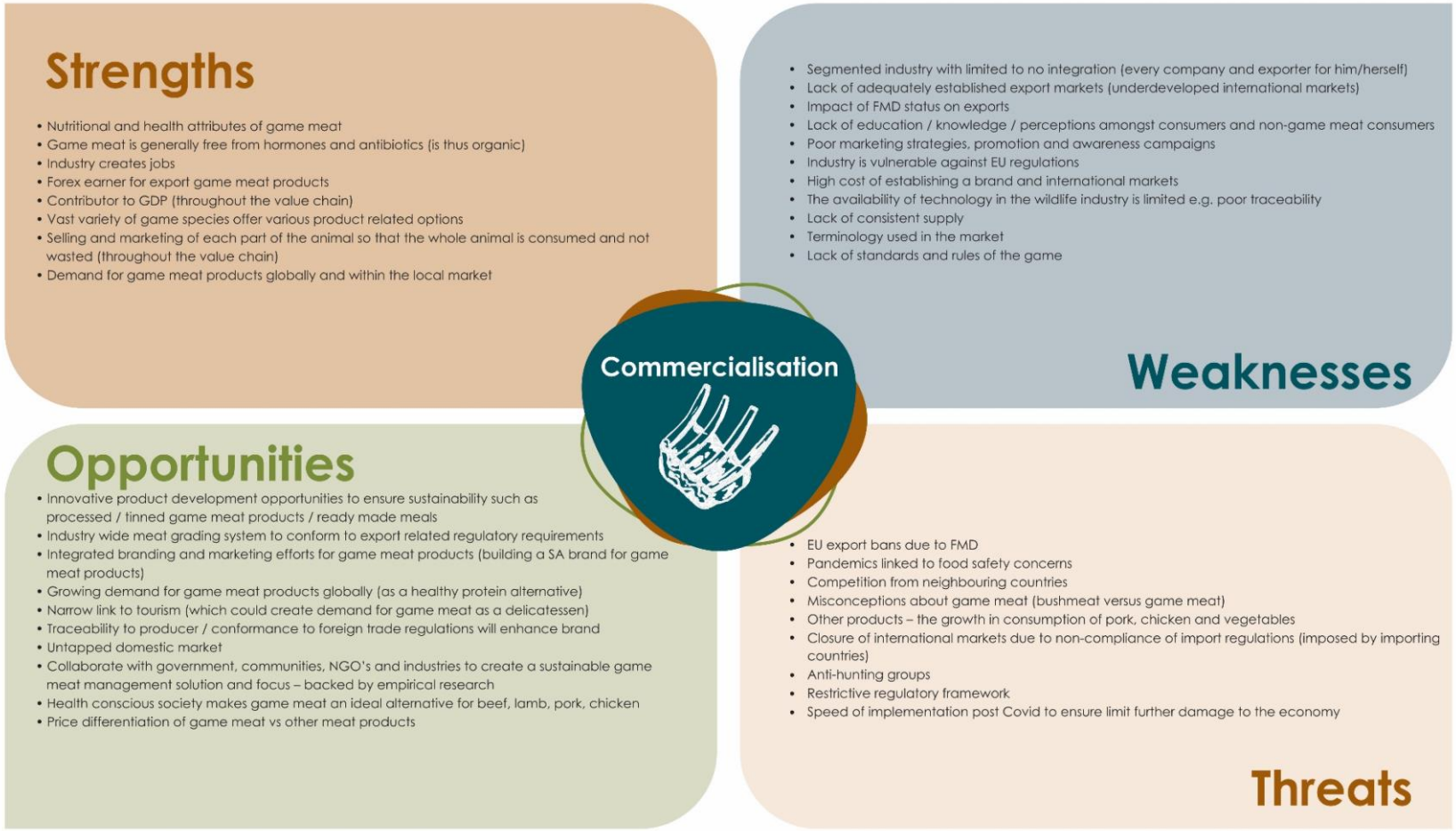

Figure 33: SWOT Commercialisation

2.11 Risks related to the Game Meat Industry

As per the requirements detailed in the TOR, a risk analysis that details reputational risks, climate change, sanitary and phytosanitary measures and the impact of FMD should be reported on, as detailed below.

2.11.1 Reputational Risks related to the Game Meat Industry

Reputational risk is the combination of threats to and consequences of public perceptions on businesses or industries[42], such as the game meat industry (***Table 13***). Threats could include negative media coverage or disinvestment campaigns, whilst consequences tend to be more financially damaging, such as lost sales due to perceptions around the game meat industry.

Table 13: Reputational risks related to Ecosystem Elements

Element	Threat	Consequence
Conservation	Inadequate communication on conservation efforts to the public	Less funds available leading to reduced conservation efforts and consequently negative environmental impacts
Animal welfare	Perceived impacts on protected or vulnerable species, or inadequate care of current species	Disinvestment in sector due to negative public perceptions
Ethics	Negative media coverage of the sector and/or other associated activities as a result of perceived unethical harvesting methods	Loss of sales and potential disinvestment from the sector
Sustainable harvesting	Perceived impact on grazing area for more domesticated animals	Negative environmental impacts as more land would need to be dedicated to domesticated animals. Alternatively, game numbers would need to be reduced

A major reputational risk to game meat is inadequate information and communication related to operations and the vast health benefits of game meat. With no official government-backed communication channel as to how game meat contributes to sustainable harvesting or conservation, perceptions of game meat are instead informed by other channels of communication.

One such channel is the wide-reaching media and social media coverage of game meat and its associated industries. However, the need to sell news influences the public's perceptions of game meat without innovative educational activities about the game meat industry and its benefits. This brings indirect reputational risk to game meat due to the ethical debates around animal welfare within, for example, the trophy hunting industry.

Potential mitigations and other information to counter reputational risks, include but are not limited to:

- Initiate and implement a Wildlife Economy backed game meat communication channel to highlight aspects such as sustainable land use management, ethics and contribution to the fiscus to improve the perceived negative public image of the industry.

[42] Anderson et al, 2019. The Nature of Risk

- The wildlife economy is profitable and provides more jobs per hectare than conventional livestock farming[43].
- Research asserted that the perception re scale and extent of breeding camps are based on perception rather than fact as, on average, camps sizes are 100 hectares, much larger than perceptions[44].
- Further, the Biodiversity and Tourism Lab as well as the hunting sector confirmed a need for industry standards to be developed. These standards, including a green certification system to distinguish responsible hunting, would further help mitigate reputational risks[45].
- Ultimately, public perceptions of hunting will be shaped by the combined efforts of government and key industry stakeholders through coordinated communication, an enabling policy framework coupled with effective implementation.

2.11.2 Climate Change

Climate change is defined as a change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels. For the purposes of this report, climate change is the phenomena experienced through global warming. Besides incrementally increasing global temperatures, climate change is witnessed through other ecological changes[46], such as:

- Large-scale shifts in weather patterns, including longer periods of drought or increased tropical storms and cyclones; and
- Increased desertification, land degradation and wildfire potential[47].

When considering the impact of climate change on the game meat sector, there are three points to consider:

- The impact on game habitats, especially considering ownership through fencing[48].
- Transportation of meat, including higher mortality rates and increased chances of viral infections[49].
- The impact of game versus other animals and their contributions to climate change[50].

Game is only considered owned when isolated in a fenced[51] or wildlife area. Ownership is therefore dependent on the enclosed environment being suitable to raising and maintaining those animals.

The risk posed by climate change is the possible degradation of the enclosed areas, including less grazing area and greater possibility of wildfires, compounded by a historic scarcity of

[43] SANBI: Sustainable Wildlife Economics Project Presentation April 2021
[44] SANBI: Sustainable Wildlife Economics Project Presentation April 2021
[45] (Nel, E.J., 2018) Potential Risks and Collateral Damage that the Shooting of Intensively and Selectively Bred Game, Including Captive-Bred Lions, May Have on the Contribution by the Hunting Sector to the Biodiversity Economy
[46] IPCC, 2019. Climate Change and Land
[47] Dunne, D. et al., 2020. Media reaction: Australia's bushfires and climate change. CarbonBrief
[48] Blackmore, A., 2020. Climate change and the ownership of game: A concern for fenced wildlife areas
[49] González, N et al., 2020. Meat consumption: Which are the current global risks? A review of recent (2010–2020) evidences
[50] Six, L., et al., 2017. Using the product environmental footprint for supply chain management: lessons learned
[51] Game Theft Act 105 of 1991

water in SA[52]. There is also a risk of the loss of ownership if game escape the enclosure due to the impact of climate change.

When analysing the impact of climate change on animals, such as game, it is important to note that the selfsame animals have an impact on climate change. This is because climate change is caused in part by increased CO_2 emissions, which animal husbandry has been linked to[53], specifically the need to feed animals.

The following constructive observations related to climate change is noted:

- Wildlife based land use increases residual grass biomass and forage production potential is sustained within wildlife production systems[54].
- Wildlife is more mobile than livestock in the landscape which leads to higher levels of grass recovery.
- Less enteric greenhouse gas emissions per capita wildlife.
- The NBES goal is to add an additional 10 million hectares of wildlife land in South Africa by 2030.

A way of mitigating these risks is to encourage game ranching or mixed farm systems as opposed to focus on feed-dependent animals. Incentives for game farming could help spur game ranching, whilst climate change penalties could disincentivise additional feed-dependent animal husbandry.

2.11.3 Sanitary and Phytosanitary Measures

According to the World Trade Organization (WTO)[55], sanitary and phytosanitary (SPS) measures are put in place if there are concerns around the application of food safety, animal and plant health regulations. However, SPS measures are not designed to be a barrier to trade or tool of protectionism and exist solely for concerns related to food safety.

The DAFF, now DALRRD published a guideline[56] for when SPS measures could be considered, noting that a Technical Barrier to Trade is not considered an equivalent to SPS as per ***Table 14***:

Table 14: What are SPS measures used to protect and what do they protect from

SPS measures protect	From
Human life	Risks from toxins, contaminants, food additives, or disease-causing organisms in food and beverages
	Diseases carried by animals, plants or products thereof
Animal life, including fish and fauna	Risks from toxins, contaminants, food additives, or disease-causing organisms in feedstuffs
	The entry, establishment or spread of pests, diseases, disease-carrying or disease-causing organisms
Plant life, including forests and wild flora	The entry, establishment or spread of pests, diseases, disease-carrying or diseases-causing organisms
Territory of a country	Damage from entry, establishment or spread of pests (including weeds)

[52] Makelane, H., 2020. South Africa approaching physical water scarcity by 2025
[53] Humane Society of the United States, 2010. Greenhouse Gas Emissions from Animal Agriculture
[54] SANBI: Sustainable Wildlife Economics Project Presentation April 2021
[55] World Trade Organization, 1998. Understanding the WTO Agreement on Sanitary and Phytosanitary Measures
[56] Department of Agriculture, Forestry and Fisheries, 2010. Animal health sanitary and phytosanitary regulations

Following containment strategies for disease outbreaks are the safest way to mitigate the risks of SPS measures. For example, the DALRRD has a comprehensive set of strategies within two Veterinary Procedural Notices for containing FMD:

- Veterinary Procedural Notice for Foot and Mouth Disease Control in South Africa, 2014[57]
- Veterinary Procedural Notice for Buffalo Disease Risk Management in South Africa, 2017[58].

Additionally, isolation of game that is earmarked for export would reduce the risk of disease outbreaks and thus SPS measures in response to disease outbreaks. It is also possible to mitigate the risk around proving disease containment by allowing foreign observers, such as the EU FVO mission, access to the country to expedite the process of removing SPS restrictive measures. Otherwise, it is difficult to mitigate the risk of SPS measures as they are put in place themselves to mitigate risk from viral outbreaks that could potentially harm human and animal life.

2.11.4 Implications of FMD

FMD is a severe, highly contagious viral disease of cloven-hoofed livestock characterised by fever and blister-like sores[59]. While FMD is not a concern to humans, it may have a devastating effect on susceptible animal populations and thus countries declared 'FMD-free' have strict controls in place to prevent outbreaks or risk losing their status.

SA is an endemic zone for FMD and lost its FMD-free status due to the permanent FMD infection of African buffalo within the Kruger National Park[60]. Despite the vaccination of cloven-hoofed animals in the Buffer Zone, outbreaks do occur due to risk infected animals[61] as well as trade of meat from infected animals[62].

A number of plains game animals are cloven-hoofed, which means that any FMD that gets into those populations can spread quickly. Some examples of game susceptible[63] to FMD are:

- African Buffalo (permanently infected in the Kruger National Park)
- Giraffe
- Impala, Kudu and other plains game.

Despite attempts by government to contain the spread within the FMD-controlled area, and provide vaccines to animals within the Buffer Zone, FMD does occasionally escape into wider game population. This is problematic due to the free movement of game, especially if there is no game-proof fence to enclose and isolate infected animals.

The EU, the largest game import market, bans game meat originating from SA if the OIE does not declare the game meat origin FMD-free. Despite the potential to sell to the local market, gross profit is lower than exporting the same meat[64]. While trade agreements with countries combined with processing of the game meat to remove FMD (which does not always

[57] Department of Agriculture, Forestry and Fisheries, 2014. Veterinary procedural notice for foot and mouth disease control in South Africa
[58] Department of Agriculture, Forestry and Fisheries, 2017. Veterinary Procedural Notice for Buffalo Disease Risk Management in South Africa
[59] World Organisation for Animal Health. FMD
[60] National Department of Agriculture, 2000. Foot-and-mouth disease
[61] DAFF, 2020. Agriculture, Forestry and Fisheries gives update on FMD in Limpopo
[62] USDA Foreign Agricultural Service, 2020. South Africa Unable to Stifle Latest Outbreak of FMD
[63] Department of Agriculture, Forestry and Fisheries, 2014. Veterinary procedural notice for FMD control in South Africa
[64] Uys, G., 2015. Game exports after FMD

guarantee exports) do exist and provide an export channel for some game meat, the average price per ton of processed game meat is much lower than fresh game meat[65]. Despite the VPN containment strategies, FMD continues to escape the controlled area and infect animals within the Buffer Zone and occasionally outside the Zone.

To mitigate the risks posed by FMD to the Game Meat Industry, the relevant stakeholders should apply the containment strategies within the VPNs to help contain FMD. These include state vet services and FMD field researchers[66] who are able to identify FMD as it spreads and construct fences to limit the movement of infected animals.

If SA can contain the spread of FMD, it will allow game ranchers to supply the export market again under FMD-free status. While this means that, in the short- to medium-term, exports to the regional market and the large import markets in EU, it also allows farmers to begin export expansions into potential new markets in Asia, such as Vietnam[67].

2.11.5 Biodiversity and Conservation Risks

A concern was raised pertaining to the potential of biodiversity and conservation related risks if this Game Meat Strategy will be implemented. However, and as per the risks detailed in the preceding sections, the following risks should be taken cognisance of to ensure sustainability and the integrity of the ecosystem:

- Intensive breeding of species for commercial purposes.
- Population abundance: species growth rate, population variability and density dependence.
- Risk of over-exploitation to serve the commercial market (thus the risk of population / species extinction).
- Unsustainable movement of species from the wild into controlled environments (camps and fences).
- The risks associated with introducing species to habitats where they do not naturally occur.
- Practice of intensive and selective breeding of species.
- Domestication of species which could result in a loss of their ability to adapt to conditions in the wild.
- Disease regulation in relation to stock remedies and veterinary medicines.
- Overgrazing and trampling which could impact on the ecosystem.
- Land intensification practices could have an adverse effect on the ecosystem.
- Natural vegetation should be left in place without human intervention.
- The impact of predation on a ranch that focuses on plains game to serve the commercial needs of the game meat market.
- Irresponsible hunting practices.
- Lead contamination in game meat from the use of lead-containing bullets.

Reputational risks, socio-economic and conservation impacts should be carefully considered, and risks mitigated during the implementation phase of this Strategy.

[65] SARS, 2021. Proprietary Information for Export-Import Trade Statistics
[66] Uys, G., 2015. Game exports after FMD
[67] Shairp, R. *et al*, 2016. Understanding Urban Demand for Wild Meat in Vietnam: Implications for Conservation Actions

2.12 The need for Capacity Building throughout the Value Chain

In order to grow the game meat market, capacity building will be prudent to sectoral growth. Skills are graphically depicted in ***Figure 34*** below.

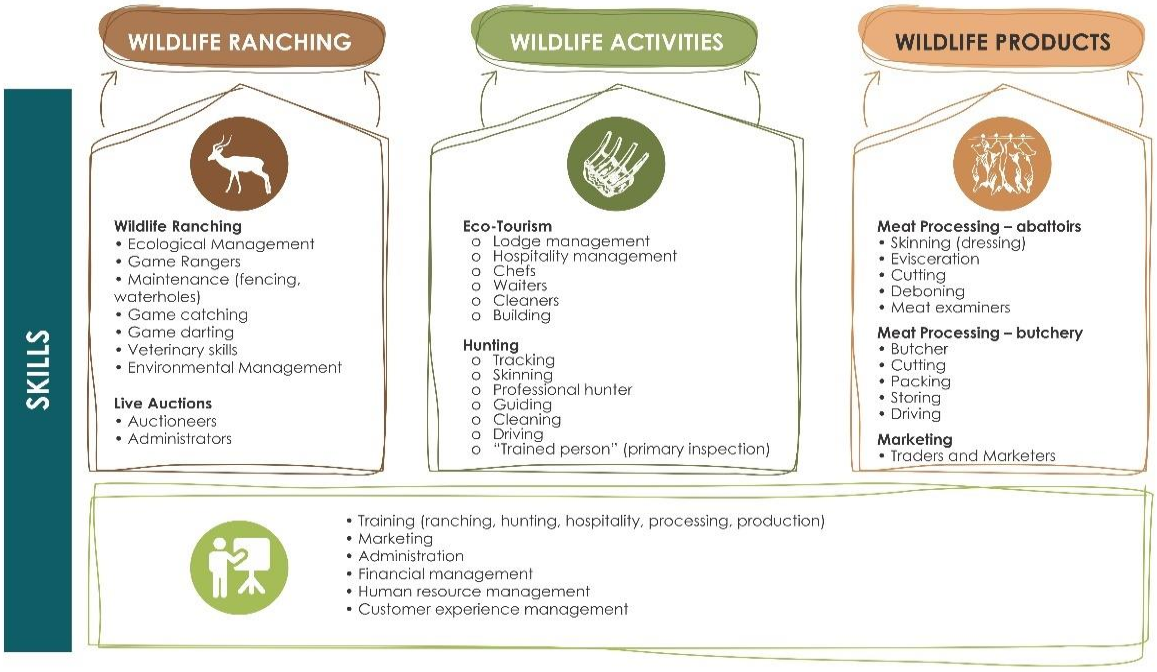

Figure 34: Capacity Building throughout the Value Chain

3. Business Models deployed in the Game Meat Industry

3.1 Business Models Analysed and Potential New Business Models

During the situational analysis phase of the Game Meat Strategy development process, various business models were observed – specifically related to ranching, how mix farming systems work, how communal areas operate and generate revenue (inclusive of community property associations) as well as how protected areas (inclusive of national and private nature reserves) contribute to either one of the following:

- The game meat industry and its associated revenue streams (inclusive of value addition);
- Job creation;
- Food security; and
- Transformation of the industry.

Transformation today revolves around the need to generate new value, to unlock new opportunities, to drive new growth and to deliver new efficiencies which will require change throughout the value chain!

To this effect, a high-level outline of these varying types of business models follows.

3.2 Wildlife Ranching Business Model

As a result of stakeholder engagement, various business models are deployed within the Wildlife Ranching Industry. The focus of the model depicted in ***Figure 35*** is only on hunting or harvesting of game meat, its meat processing methods, pricing related trends as well as payment terms and conditions.

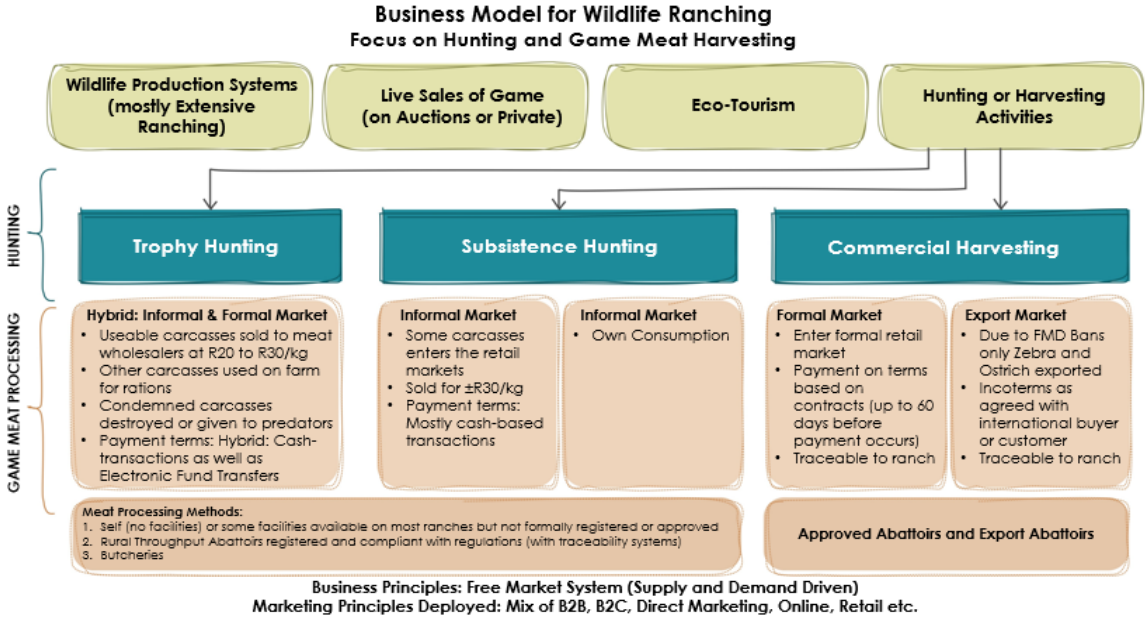

Figure 35: Business Model: Wildlife Ranching

It is noteworthy to mention that ranchers deploy a hybrid of ranching business models. Having said this, it implicates that business models will vary based on the unique species on the ranch, the facilities that are available on the ranch, conservation targets as well as ranch owner needs and wants.

For instance, some ranchers could focus only on breeding, others only on Eco-Tourism whilst most ranchers or outfitters that offer trophy hunting, does offer facilities related to accommodation (thus bed nights) to complement the hunting experience. This is also applicable to the subsistence hunter that does not own a ranch but that hunts game meat for own consumption.

3.3 Mixed Farm Systems Business Model

In order to penetrate the game meat industry, and in an aid to curb the high barriers of entry, it is possible to enter the industry by deploying mixed farming systems. This business model makes provision for various farming options, as portrayed in ***Figure 36***.

As per this business model it entails that a farmer has land and that he/she embarks on livestock production. However, they also plant, for instance mealies, to be self-sufficient in relation to animal feed. Apart from the aforementioned, the farmer developed a number of chalets on the farm which could be used for eco-tourism purposes. Based on this model, the farmer could add game onto the farm whereby they either focus on eco-tourism with no hunting activities, bar for live animal sales or they offer hunting as an additional source of revenue.

This business model then follows the Wildlife Ranching Model, however, revenue streams will emanate from the four divisions (or a combination of the four).

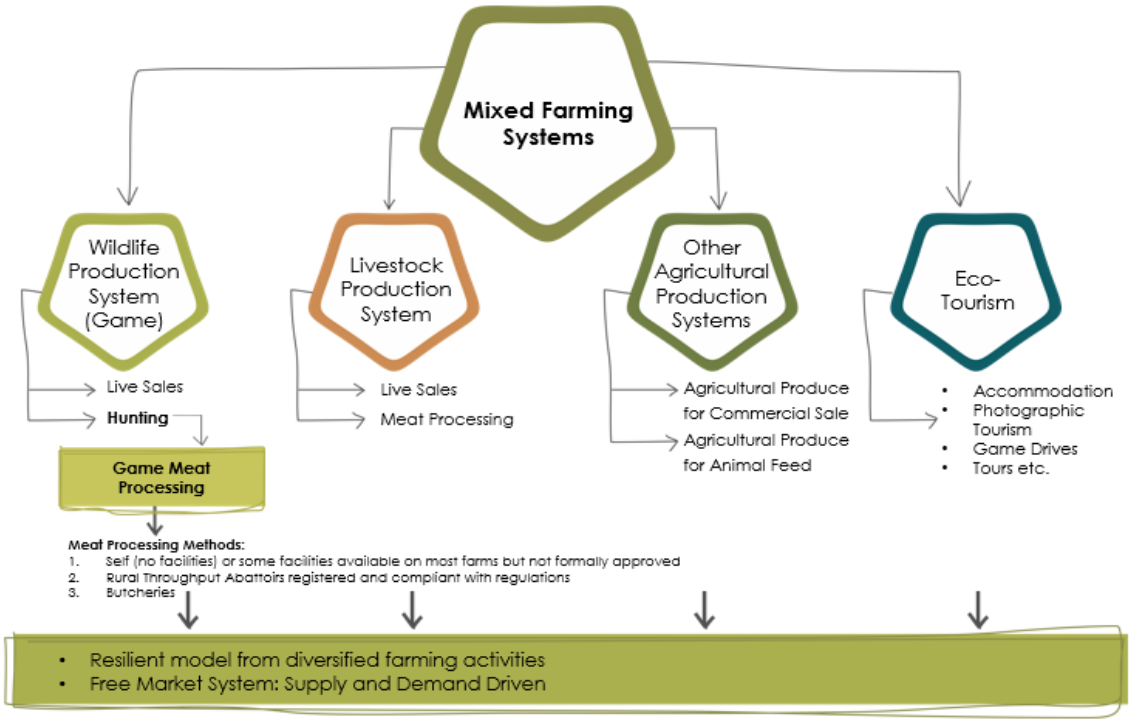

Figure 36: Mixed Farming Business Model

3.4 Large Scale Game Production and Harvesting Commercial Focus Business Model

Current business models in game ranching focus on production of game for live sale and hunting. Game meat is produced as a by-product of hunting, rather than a focus in itself. Operations tend to be small, often individual farm based. As indicated earlier in the strategy, this is largely a subsistence rather than a commercial model. Such an approach cannot achieve economies of scale, or consistent supply, and there are also increased risks to food safety. Such models also have large barriers to entry, as indicated above.

An alternative approach is to follow practices in commercial livestock production, where operations had to increase in scale in order to be competitive. Applying such a model to game meat production would require larger, consolidated areas, which can carry large numbers of game that can be harvested throughout the year. Harvesting would be through large culls, which reduces input costs such as inspection and abattoirs. In such ventures, ecotourism, live sales, trophy hunting, and biltong hunting would be secondary, but not incompatible activities, and would increase the viability and resilience of ventures.

Land and game acquisition would be major barriers to entry, but commercial ventures of this scale should be able to raise capital investment through a range of options. This would be an ideal model to facilitate quick entry for PDIs into commercially viable ventures. Opportunies therefore exist in communal buffer areas surrounding or bordering protected areas including communal areas far away from protected areas where such ventures can be explored. This model would also be appropriate for community public-private partnerships linked into

community owned enterprises. Mechanisms would need to be created to link small operators into these ventures, possibly through associations or partnerships, as they may otherwise be outcompeted and struggle to survive. This may lead to takeovers of small operators, reducing the number of game farmers, as occurred with small commercial livestock farmers.

3.5 Communal Areas and CPA Business Models

Various private- and other nature reserves are owned by communities as a result of successful land claims. Although various CPA's have been engaged with, not many proved to be successful and sustainable. However, one prime example of a successful CPA model could be found close to Ladysmith in KwaZulu Natal.

The Game Reserve hosts an abundance of wildlife and vast opportunities to get sight of the Big 5. Furthermore, it provides for a truly authentic African feel whereby the Reserve reflects the serenity of its surrounds with neutral colours representing life, renewal, nature and energy.

Some key lessons learned is that the reserve is owned by one community with 120 families which all benefits from the operations of the Reserve, apart from the fact that the CPA owns one of the ten lodges.

Their business model follows in ***Figure 37***.

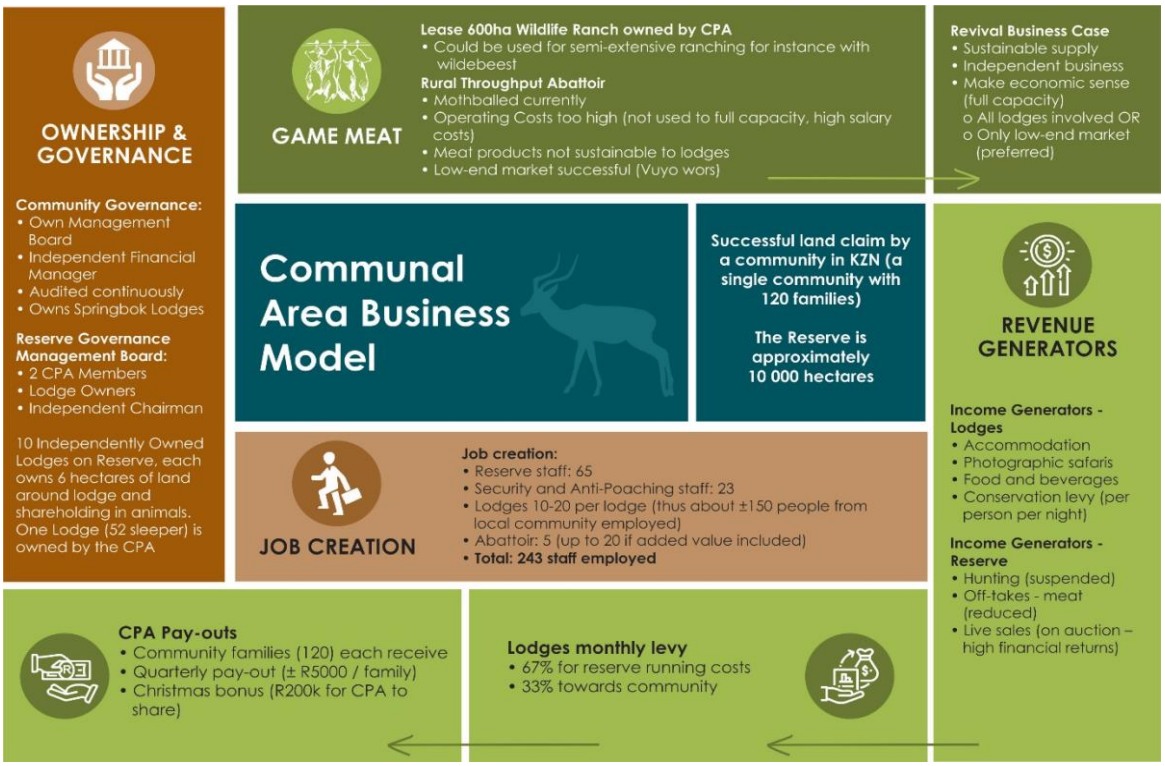

Figure 37: Communal Area Business Model

Benchmarked information obtained from Namibia, where a conservancy model is utilised albeit over much larger land areas, similar attributes to what is evident at this CPA surfaced. This includes governance structures such as the institutional framework, for instance, the Board of both the community and independent entities, independent financial management functions to curb prospective maladministration, meat supply to communities and job creation

at various levels in the conservancy. The only difference in this model is that most income is generated utilising the trophy hunting model and not eco-tourism as is the case at Communal Area Business Model.

3.6 Game Farming for Meat Production on Extensive Communal Land

There are large areas of communal land that is natural, and used for subsistence livestock farming. This is in addition to the communally owned reserves mentioned above. There is potential for these areas to convert to game production for meat, adopting the large business enterprise approach outlined in Section 3.4 above. It may be possible to manage such areas as extensive wildlife areas free roaming game. This would require dealing with complicated governance issues in establishing the approach and business model.

Investment would be necessary to build the herds of game necessary to sustain commercial harvesting, and these areas should be targeted as recipients of game donations to build these herds. Ventures based on this model would be formal commercial ventures, which can attract both government and private sector investment. Game can co-exist with livestock, as disease will not be the same concern as with commercial livestock production and game.

This will provide opportunities for mixed farming models which can also promote commercialisation of communal livestock production. Harvesting would be through large culls, which reduces input costs such as inspection and abattoirs. In such ventures, ecotourism, live sales, trophy hunting, and biltong hunting would be secondary, but not incompatible activities, and would increase the viability and resilience of ventures. A byproduct of this model is that it could lead to a large increase in the conservation area of South Africa, to improvement of conservation and ecosystem services.

3.7 National Parks and Protected Areas

Vast research has been undertaken by Conservation Outcomes in relation to national and provincial protected areas, specifically Biodiversity Stewardship Sites. An operational model was depicted that details the flow of game meat within protected areas to the market as is evident in ***Figure 38***.

The model represents the operational ecosystem proposed for the harvesting of game meat, specifically where overpopulation adversely impacts the ecological environment. Throughout South Africa, various protected areas present an opportunity for effective game population management and the opportunity to economically benefit from offtakes. However, caution should be taken to ensure scientific methods are used to determine off-take quantities.

Harvesting game needs to be done in a sustainable manner. To define sustainability in this context, considerations are given to the effect of the harvesting process on social and economic levels, as well as the impact of biodiversity.

The game population selected for harvesting is based on proportional ecological parameters. Offtakes will be done in an ethical manner, considering international best practices (as per the Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1975).

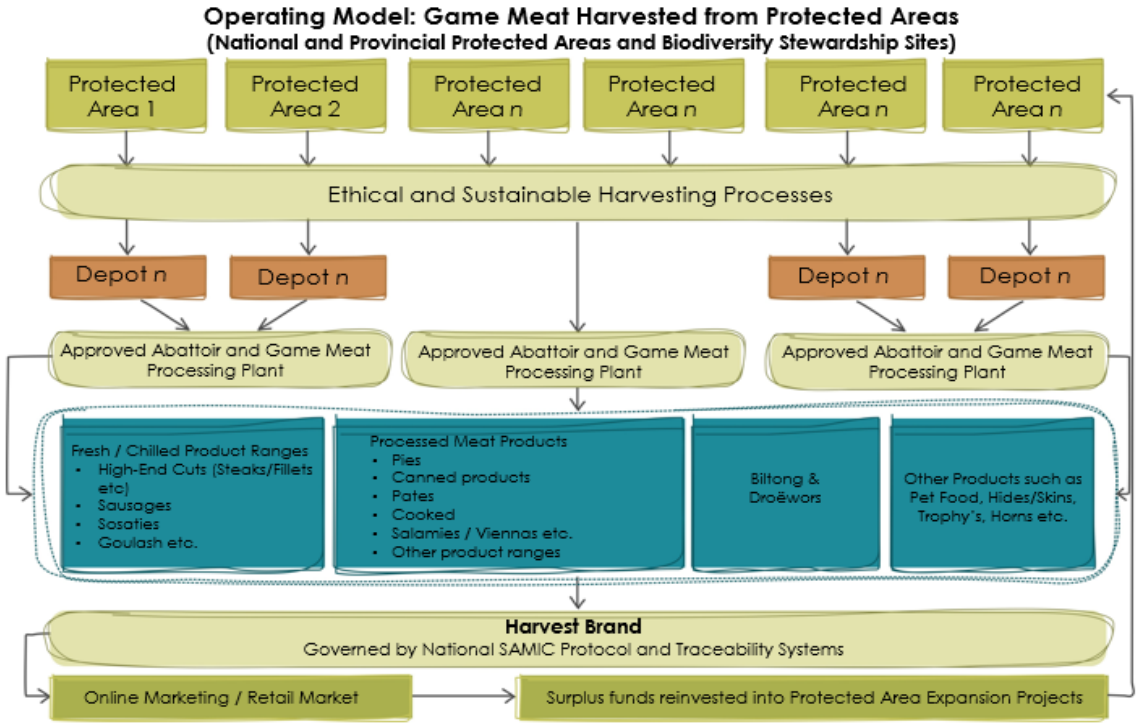

Figure 38: Operational Model Protected Areas

Once game meat is harvested in protected area(s), the carcasses will be transferred to depots (or refrigerated vehicles) and thereafter to approved abattoirs. The processing plants will serve as manufacturers of game meat processing and associated value addition to produce various game meat products to avail to the local market.

A brand, **Harvest** ignited and various steps of brand building is currently in process of implementation. It will be required that the brand have sound governance frameworks (as per SAMIC Protocol) and to ensure traceability systems are effectively implemented.

A typical retail business model that caters for perishable produce will offer an opportunity to efficiently market various game meat products, complemented by online marketing platforms that will be deployed.

4. Benchmarking

As New Zealand (NZ) is seen as the largest exporter of venison products globally, benchmarked information related to governance, government involvement and production systems are detailed in this section. The purpose is to extract key lessons learned which could add value in terms of developing an effective Game Meat Industry Strategy for South Africa.

4.1 Governance Model

New Zealand pioneered deer farming and leads the world in venison production for retail purposes. The key sectors of the New Zealand Venison Industry are:

- Production sector: focusing on deer farming in New Zealand as well as the supply and demand factors influencing farming activities.
- Processing sector: focus on processing facilities as well as industry efficiencies.

The following associations govern the deer industry:

4.1.1 Deer Industry New Zealand (DINZ)

The NZ deer farmers combined the New Zealand Deer Farmers Association and the New Zealand Game Industry Body in 2001 to form the DINZ (Shadbolt, 2008). The mission of DINZ is to promote and assist the development of the New Zealand deer industry with the aim to develop and ensure a strong, stable, profitable industry for all participants.

The DINZ is a levy-funded organisation with a small, but diverse team skilled in marketing, research, advocacy, communications, farm production, quality assurance and culinary skills development (Deer Industry New Zealand, 2020). DINZ collaborate with deer farmers, processors and marketers to promote a profitable and sustainable deer industry.

The primary functions of DINZ are:

- Promotion: DINZ promotes NZ venison, velvet and co-products in both NZ and a range of export markets.
- Quality Assurance: DINZ co-ordinates and administers industry quality assurance programmes – on farms, at processors, stock and station agents and transport operators.
- Research and Development: DINZ carries out research on behalf of the deer industry related to:
  - Research to support international trade negotiations for deer products.
  - Production research to improve farming systems and on-farm practices.
  - Quality and food safety standards research programmes for venison and velvet.
- Market Access and Industry Representation: DINZ acts on behalf of the deer industry to assist NZ government agencies to improve market access and to promote selling conditions.

DINZ has the mandated power to collect a levy off all venison producers, all venison processors and all velvet producers. Currently the levy is:

- Venison: 19c/kg
- Velvet: $3.25/kg.

This is collected at the first point of sale from all farmers of velvet and collected on Hot Carcass Weight for all farm raised venison produced in NZ.

Apart from the primary functions mentioned above, DINZ's objectives are to:

- Enhance the quality of game animal herds while remaining consistent with conservation values.
- Develop positive relationships between the Game Animal Council and stakeholders.
- Promote hunter safety.
- Reduce conflict among stakeholders.
- Improve the acceptance of hunting as a safe and legitimate activity.
- Promote standards for hunting and management of game animals.
- Their key activities include, but are not limited to:
  - Advising the Minister of Conservation on hunting related issues.
  - Providing information and education to the sector.

- Promoting safety initiatives.
- Conducting game animal research.
- Undertake management functions for designated herds of special interest.

An overview of most of the governing associations of the Deer Industry are depicted in ***Figure 39***.

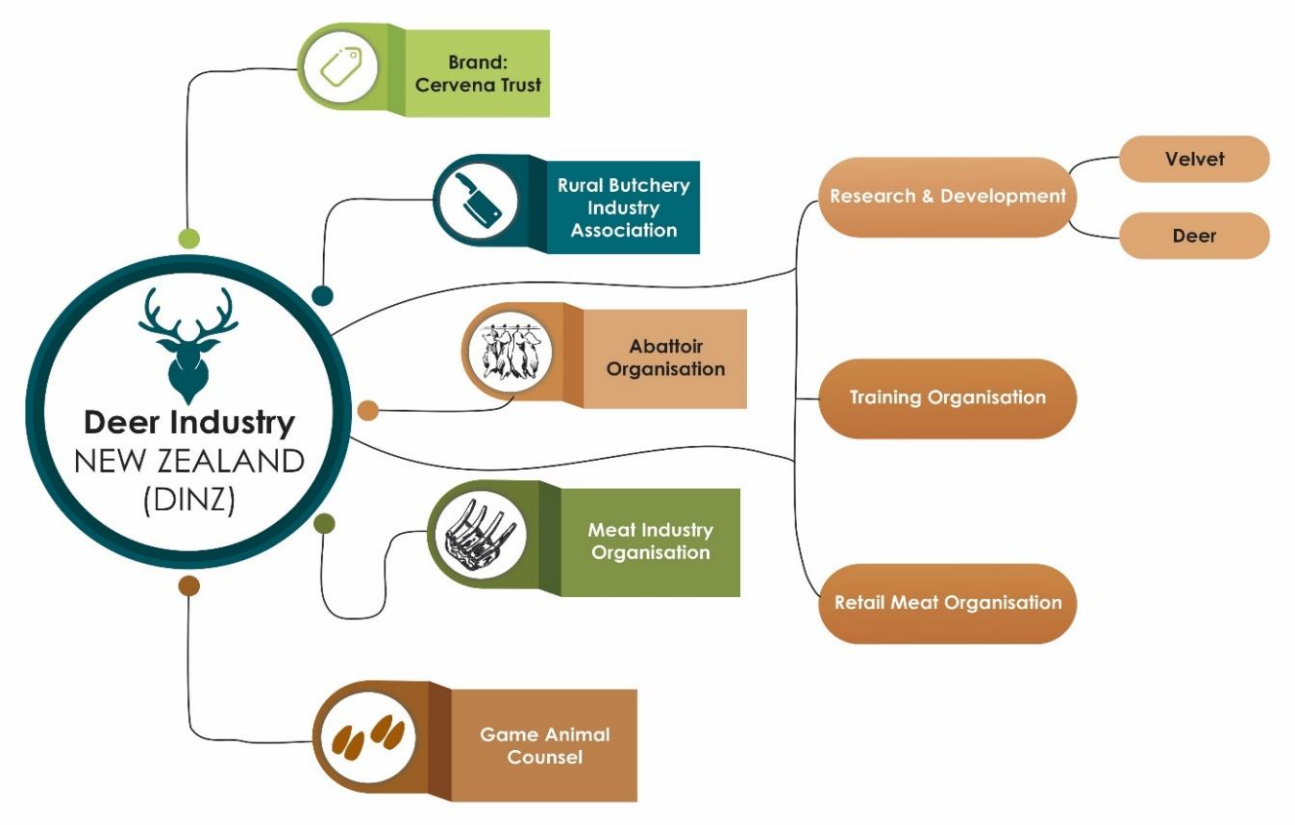

Figure 39: New Zealand Deer Farming Governance Structure

4.1.2 New Zealand Game Animal Counsel (GAC)

From the New Zealand Game Animal Counsel's (GAC) annual report of 2016 to 2017 it was noted that the Game Animal Council detailed a work programme with eight goals:

1. Enhance the quality of game animal herds (remaining consistent with conservation values):
   - National Integrated Game Animal Management Strategy
   - Herds of special interest
   - Partnerships for managing game animals outside those herds, including partnerships with landowners
   - Information about game animals' location, best hunting techniques, and better access for hunters
   - Research strategy
2. Develop positive relationships through effective communication
   - Communications strategy
   - Relationships with iwi (Maori communities)
3. Promote hunter safety

- Training for recreational hunters: firearms, bow, outdoor health and safety, and animal welfare
- Training for hunting guides: client safety, animal welfare, health and safety
- Training for commercial hunters: animal welfare, health and safety

4. Reduce conflict among people with different interests in game animal management
   - Forum and dispute resolution procedure
   - Codes of practice to support issue resolution, as for example with Aerially Assisted Trophy Hunting
5. Improve acceptance of hunting as a safe, legitimate activity
   - Educate at a public level about hunting safety
   - Educate widely about diverse values of introduced game species
   - Educate on hunters as game animal managers and conservationists
6. Promote standards for hunting and management of game animals
   - Codes of conduct for recreational hunting
   - Standards for guiding, commercial hunting and game estates
   - Hunter understanding of standards and regulations and need to comply
7. Manage the Council effectively
8. Promote the interests of the game animal sector – legislation, policy and planning.

Like all statutory bodies the Council performs an important public service and provides value to a range of stakeholders, including the general public of NZ. There is a strong case for this broad benefit to be partially funded directly by government.

A fundamental and long-term challenge for the Council is ensuring that the benefits of managing NZ's game animals effectively is understood and valued broadly to provide a strong social licence for hunting related activities to continue across both private and commercial interests and to contribute to improved conservation and commercial outcomes (Hammond, 2017).

4.1.3 Velvet Antler Research New Zealand LTD (VARNZ)

VARNZ is a joint venture between the DINZ and AgResearch. Its objectives are to embark on research related to velvet antler as well as to control and manage the results of that research for the benefit of the NZ deer industry.

4.1.4 DEEResearch LTD

DEEResearch is a joint venture between DINZ and AgResearch with the objective to undertake research on deer production and venison and co-product processing.

4.1.5 Cervena Trust Limited

The Cervena Trust Limited administers the Cervena brand on behalf of producers of venison in New Zealand.

According to Silver Fern Farms (2021), New Zealand venison farmers wanted a way to identify their best quality venison. They started with the Latin name for deer: **Cervidae** + **ven**ison + **a** which formed the brand **Cervena**.

Cervena is a controlled brand which means that farmers need to meet a number of requirements to use this name, in order to guarantee quality attributes such as flavour and tenderness that consumers expect.

It always guarantees free-range, naturally pasture-raised, grass-fed with only minimal supplemental feed such as hay, deer meat, from deer just under 3 years old to ensure tenderness. A truly all-natural product, Cervena Venison is always free of hormones, antibiotics and genetically engineered feeding.

4.1.6 Meat Industry Organisation of New Zealand Inc (MIA)

This voluntary trade association represents New Zealand red meat processors, marketers, and exporters.

4.1.7 Abattoir Association of New Zealand

An industry group representing the interests of abattoirs licensed to process ovine, porcine, and bovine species. Retail Meat New Zealand is the secretariat for the association.

4.1.8 Retail Meat New Zealand (RMNZ)

RMNZ represents the interests and views of butchers, supermarket meat departments, smallgoods manufacturers, wholesalers, and local meat processors involved in the retail markets.

4.1.9 Federated Farmers Rural Butchers Industry Group

This group represents the interests of rural butchers, including dual operators, homekill butchers, and homekill contractors ("homekill" refers to the slaughtering and butchering of farmed animals for own use and consumption. This may be done by a farmer, hunter, or by a listed service provider. It is illegal to sell or trade homekill meat).

4.1.10 Primary Industry Training Organisation (Primary ITO)

The Primary ITO works with industry bodies to develop training and qualifications that align with best practice and industry expectations. It is dedicated to help people that work in the primary sectors improve their skills and knowledge in the workplace.

4.2 Government Involvement

The New Zealand Government has had a major impact (both positive and negative) on the development of the deer industry. From the outset, government:

- Encouraged deer to be introduced into New Zealand. Along with acclimatisation societies, government encouraged the transport and release of deer in New Zealand.
- Has been at the forefront of attempts to control deer through various associations such as government organised hunting, bounty payments, and export markets for skins.
- Declared deer a noxious animal, under the Noxious Animals Act (1956), which meant that farming with deer was prohibited.

- Allowed, through amendments to the Noxious Animals Act in 1969 the development of deer farming. The Deer Farming Regulations were introduced providing for licencing of deer farms subject to specific conditions.
- Attempted to control poaching deer through the Wild Animal Control Act (1977): it made the provision that all deer carcasses must have their 'head on' when delivered to the game packing houses. This had an enormously positive impact on the confidence of overseas buyers. As Yerex (2001, p99), pointed out, quoting an unnamed British game exporter: 'New Zealand, the country whose game exports are expanding rapidly, is also **the only country with regulations controlling the processing of game**'.
- Encouraged speculation in deer farming through the introduction of tax incentives in the 1970's (NZIER – NZTC paper no 31 24): entrepreneurs flooded the industry and live deer prices increased dramatically. According to Yerex (1982), the Inland Revenue Department (IRD) permitted buyers of live deer to adopt 'standard values' equivalent to sheep and cattle, enabling them to write off initial high capital costs of livestock and farm development against their income (tax incentives up to 50%). When the tax incentive was withdrawn in 1979, prices tumbled.
- Integrated the deer industry into the New Zealand agricultural industry. Once the initial establishment period was completed, the government ensured that deer farming was treated in a similar fashion to other farming activities.

4.3 Market Drivers and General Information

According to the New Zealand Meat Industry Association (2017), the country's success related to deer meat is attributed to three key drivers:

- Ideal climate and soil which contribute to low production costs.
- Efficient people and systems trusted by consumers.
- Location and markets with a significant share in key products.

New Zealand's venison industry relied on markets where demand was seasonal, and not in sync with their venison supply. There was a need to integrate new technologies and processes into farming practices to improve productivity and better respond to market demands.

New Zealand's five major venison marketing companies, DINZ, agreed to work together to transform the New Zealand venison industry. The Passion2Profit (P2P) program was established initiate several projects to reflect the passion of the industry for deer and venison, as well as the need for all involved in the industry to make greater profits. P2P is co-funded by the government's Primary Growth Partnership.

These projects aim to correct the mismatch between venison production and demand in traditional markets, while progressively developing new markets that demand quality venison at sustainable prices all year round. The programme brings together producers, processors and marketers (representing 95% of the industry). The programme's aim is to position New Zealand venison as a premium non-seasonal meat in new markets which will inform a national farming quality assurance scheme, production and processing standards. The collaborative approach by processing and marketing companies allows for the development and positioning of common brand values for New Zealand venison in new markets.

Through technology and knowledge sharing, venison producers are able to access the information and expertise necessary to improve on-farm performance and respond to consumer demand. As a result of this programme, the venison industry sees collaboration at all levels of the value chain to deliver greater productivity and profitability in the future.

4.4 Production Systems

Game ranching in South Africa is unique, not only in terms of species diversity, but also in terms of our institutional environment, i.e. South Africa is one of only a few countries in the world where conditional ownership of wildlife is vested with private landowners, which presents game ranchers with a comparative advantage second to none – there is no reason why game ranching cannot become or remain one of the leading agricultural land use options in the years to come (Cloete, 2013).

According to Dugmore (2013), game ranching is more like ranching cattle than managing a nature reserve and has different objectives. He believes the only difference between domestic animal ranching and wildlife ranching is that domestic animals are 'tame products of the land', and wild animals are 'wild products of the land'.

4.4.1 Game Ranching versus Game Farming

According to Furstenburg (2010), a definite distinction is to be made between game production farming (implementation of livestock farming principles to an extend fitting the natural limitations of individual game species, thus breeding) and game ranching (managing game as part of the bigger ecological biodiversity system).

Wildlife ranching is defined as the management of free-living animals on large, primarily fenced areas on private or communal land that are utilised for the purpose of hunting, live-game sales, trophy hunting, wildlife meat or tourism (SANParks, 2019*). Game farming* refers to the rearing of wildlife in an enclosed and controlled environment for wildlife conservation, trade and recreation (Law Insider, 2021).

Game ranching comprises the maintenance of wild animals in defined areas delineated by fences. It is a form of husbandry like cattle ranching, where the animals are managed on natural vegetation although the habitat may be manipulated to improve production efficiency.

From literature it is difficult to conclude a prominent difference between game farming and game ranching. In South Africa both game farms and game ranches are seen as land areas with the required game fences (for CAE certification).

Table 15 illustrates the main differences between game ranching and game farming:

Table 15: Game Ranching versus Game Farming

Game Ranching	Game Farming
Game is free ranging in larger areas or camps and is fed of natural sources only	Game farming implies that game is found in smaller camps and receives additional fodder (to the natural feed sources available)
Utilising extensive and natural methods of game management	Utilises intensive farming methods to improve productivity and throughput

Game Ranching	Game Farming
No additional feeding, except in extreme drought conditions	Receives additional feeding and even potentially growth licks (no hormones)
Sustainable breeding is allowed through nature's law of survival of the fittest	Breeding manipulation by removal of sub-standard males from the population or selection of breeding stock
Conservation, ecotourism (including hunting) and economic activities which can be conducted in semi-extensive and extensive systems (defined well under definitions) are key drivers	Although wildlife farming is not aimed at the protection of endangered species, it can and does play a role in wildlife conservation (de Vos, 1982) by increasing animal numbers through economic value created
Hunting, mostly for trophy and subsistence hunting primarily and limited to official hunting season	Hunting, or in most cases rather harvesting, is conducted all year round mostly for meat supply for further processing

Where South Africa's primarily focus is on game ranching, with limited game farming applied although it is growing and may well be key in the game meat strategy related to food security. Many ranches in South Africa however survive by subsidy from external commercial businesses rather than the formalised game meat industry.

In some mixed-farming systems, game and cattle share the same grazing camps, however the norm is to keep game separate.

In New Zealand, deer farming is primarily following conventional agricultural practices including organic, grazing, some or all stock may be housed in the winter (not all year round). Nutritional and mineral supplements are provided when necessary to maintain the deer's health, injuries and health problems receive prompt veterinary attention. Calves are usually weaned, antlers, certainly of the young stock, are removed for safety reasons.

Animals raised for venison require grain supplements to ensure increased weight gain and conditioning before slaughter. Mineral-fortified salt blocks are available in pastures throughout the year. Routine soil and blood tests are conducted to determine mineral supplement requirements of deer. Clean, fresh water should be made available year-round, and heated systems should be provided to ensure fresh water under freezing conditions (Chaffer 2005).

A major limitation to deer production from natural pasture is the imbalance between the seasonal forage supply and animal demand that occurs due to the late spring calving of deer compared to sheep and cattle. Ryegrass/white clover pastures produce high quality feed in spring, with peak production in late spring, followed by reduced summer growth and a decline in quality.

The addition of specialist pastures and crops such as chicory is used in the farm system to provide high quality feed at appropriate times of the year to match deer's nutritional requirements with the normal seasonal pattern of pasture production (SRUC, no date). Supplementary feeds in winter may include silage, hay, grain or forage crops. No hormones or growth stimulants are used in farming NZ deer (Teara, 2008).

4.4.2 Free Range versus Organic systems

Free range refers to an animal that has, from birth leading up to culling, roamed freely in the veld without being confined to a feedlot or a small enclosure.

According to Silver Fern Farms in NZ (2021) the highest-quality venison comes from New Zealand, where the temperate / climate allows deer to be raised out on pastures, grazing on naturally growing grasses all year round.

Organic food is grown without the use of synthetic chemicals, such as human-made pesticides and fertilisers, and does not contain genetically modified organisms (GMOs) (Adamchak, no date). It relies on ecological processes, biodiversity and animals adapted to local conditions, rather than the use of inputs with adverse effects.

Animals on organic farms:

- Must have access to pasture (when weather and ground conditions permit) and are truly free range and must have plenty of space and comfort to allow animals to move and express their natural behaviour.
- Are fed a diet that is as natural as possible and free from GMOs.
- Graze and forage naturally on organic pasture (grasses and other crops) where only natural fertilisers are used and pesticides are severely restricted.
- Must not routinely be given antibiotics and or fed growth stimulants.

According to Sibi and Kumar (2020), in the European Union alone, there is a huge demand for organic farmed products as well as for the products from organic livestock.

In addition, while all organically raised food is automatically free range (certified organic standards require this), all food raised free range is not necessarily organic.

According to Mitchell (2018) game cannot be officially organic because the animals are truly free range as it cannot guarantee that the animals will not have contact with synthetic chemicals during their wanderings.

New Zealand have free range and organic meat in the Cervena brand (as it forms part of the Cervena requirements) but the majority of farmed meat does not conform to the free range standards.

4.4.3 Venison versus Game Meat

Venison is a specific term commonly used today to describe game meat from deer but historically the word, derived from the Latin '**venatio**' which means **to hunt**, was used to define meat eaten from many hunted game animals.

Although individuals have hunted and eaten these species for years for personal consumption, animals killed in the wild that are processed to enter, for instance, the USA's commercial food supply chain must comply with applicable state and federal food safety regulations. Having such regulations helps protect the public because the health history of a hunted animal is unknown (Klein, 2004).

GAME SA stated that European demand for SA game meat was very high (before the ban on exports) and the situational analysis indicated a higher price per kilogram was fetched than New Zealand venison. This was attributed to the fact that 'game meat' from South Africa is seen as free range, versus the venison from e.g. New Zealand seen as 'farmed'.

Some processors in South Africa however also use the term venison and not 'game meat' or a specific specie name, e.g. Springbok, mainly as a result of the lack of specification of a specific specie (with venison encompassing all species). One processor however did acknowledge that higher prices have been achieved if specie specific branding was utilised.

There is a definite opportunity for creating a South African game meat brand focused on the export market to align with processors' local brand to further enhance the value-added opportunities in the game meat industry.

4.4.4 Regulations and Industry Standards for Meat Safety

The growth of the game meat industry highlights the importance of having regulations that addresses disease control, movement of animals, animal identification, slaughter inspection, and food processing practices which are similar to the regulations for traditional livestock production.

Some benchmarked information related to the regulatory responsibility with regards to game meat in the USA as well as New Zealand is briefly discussed in this section.

In the USA the industry may be regulated either by the state agriculture department, the state wildlife agency, the state public health department, or by shared responsibilities between the state agencies, causing a lack of consistent regulations among states. Also state agriculture departments generally have regulations or policies for importation into the state of game animals and their products but may not continue to regulate these products once they are in intra-state commerce.

However, the federal agencies have regulations for inter-state commerce designed to ensure the health and welfare of these animals, as well as the safety of the food products derived from them.

There are four federal agencies that protect human and animal health, food safety and wildlife conservation and has jurisdiction over the Animal Health Protection Act and animal quarantine laws to inspect, detain, quarantine, seize and destroy animals, meat and meat products in interstate commerce or those being imported into the USA that poses a risk of introducing a pest or foreign animal disease such as FMD or AI to USA-based domestic livestock and poultry.

As with any other food intended for human consumption in the USA, game should be raised in accordance with good animal husbandry practices and then processed and packaged in accordance with pristine manufacturing practices. This includes proper feeding, appropriate living conditions and adequate veterinary attention (in a game farming model) so as to ensure that the animal is healthy when slaughtered and not harbouring a disease that could be spread to humans or other animals. Packaged meat should also adhere to the relevant labelling requirements for traceability. (Klein, 2004).

New Zealand follows a contemporary risk-based approach to meat hygiene. It requires that hygiene measures should be applied at those points in the food chain where they will be of greatest value in reducing food-borne risks to consumers. This should be reflected in application of specific measures based on science and risk assessments, with a greater emphasis on prevention and control of contamination during all aspects of production of meat and its further processing. Application of HACCP principles are an essential element.

As a maximum, New Zealand Cervena venison must be:

- Raised free range on pasture.
- Fed only on grass and only supplemented with natural feed during winter shortages.
- Raised without growth hormones or steroids.
- Under three years old at time of processing.
- Transported and processed to strict, audited quality standards.
- Off the farm, strict quality rules apply:
    - Transport drivers are trained in maintaining the welfare and safety of the deer.
    - Production plants are held to the highest industry standards and audited frequently.

According to the Ministry for Primary Industries a New Zealand meat, game, ostrich or emu supplier, processor, hunter, exporter or importer, such as a butcher and abattoir, must follow the Animal Products Act 1999 (APA) regulations and requirements.

The purpose of the Animal Products Act 1999 is to:

- Regulate the production and processing of animal material and animal products in New Zealand;
- Govern the slaughter, processing and sale of some food intended for human and animal consumption, including farmed meat and wild game, seafood, honey and bee products, eggs and dairy products;
- Manage physical, biological and chemical hazards that might present a risk, irrespective of where in the production or processing chain they occur;
- Ensure that products produced under the APA are wholesome and truthfully labelled;
- Facilitate the entry of animal material and products into overseas markets by providing the controls and mechanisms needed to give and to safeguard official assurances for entry into those markets.

Part 2 of the APA provides the main means for:

- Ensuring that animal products are fit for their intended purpose; and
- The production and processing of certain animal materials and products to occur under one or more registered risk management programmes (RMP).

An RMP is a documented programme to identify and manage known biological, chemical and physical hazards, and other risk factors. The RMP is based on the principles of Hazard Analysis and Critical Control Point (HACCP).

RMPs usually relate to the individual business, but can be based on a code of practice, model or template. A single RMP can be applied to a number of comparable businesses, if approved by the Director General.

Section 13 of the APA requires the following businesses to operate under a RMP:

- Primary processors of animal material;
- Secondary processors of animal products intended for human or animal consumption, except to the extent that they are subject to the Food Act regime;
- Retail butchers who are dual operator butchers; and
- Other persons specified by Order in Council under section 15 of the APA as required to operate under an RMP.

A secondary processor of animal products intended for export with an official assurance must have an RMP to comply with overseas market access or official assurance requirements. Meat from wild animals can only be traded if the hunter and the person supplying the meat to the primary processor is certified. This ensures that collection, hygiene, and processing of hunted animal products is controlled and monitored before the product reaches the consumer.

Commercial hunters may supply wild or game estate meat to a primary processor (slaughterhouse) as regulated meat. To become a commercial hunter and to supply killed game to a primary processor, they need to become a certified supplier with an operation manual or risk management plan approved by the primary processor. The operation manual must have information about how, when, and where you get the wild or game estate animals that are supplied and may be in any format, as long as the procedures are clear and easy to follow. This operations manual will be checked and verified whilst the verification costs are paid for by the primary processor.

4.5 Competitive Advantage

To ensure that South Africa's game meat market is competitive, the following factors are critical for success:

- Ability to survive – relative to competitors in the market (locally, regionally and internationally).
- Ability to develop a market efficiently.
- Delivering of superior quality products.
- Capacity to create value to consumers and ultimately to the National Economy.
- An enabling environment.

Given the context provided in this report and based on stakeholder engagement, the following information related to competitive advantages and or disadvantages is evident for New Zealand, Namibia and South Africa (***Table 16***).

Table 16: Competitive Advantage Matrix: New Zealand vs South Africa

New Zealand	**South Africa**
DINZ accountable for the industry and administers a quality assurance program	SA's industry is fragmented
Formalised and well-coordinated sector	Informal sector (>90%)
Centralised marketing structure	Individual companies do own marketing
One specie only (deer)	**Variety of game species**
Farmed deer (similar to livestock farming)	**Free range game meat**

New Zealand	South Africa
Products known and established in export markets	Due to FMD, SA only exports Zebra and Ostrich meat. SA loses market share as a result of FMD Status
Traceability systems deployed throughout the sector: for local and export markets	Traceability systems only deployed for the formal game meat market (±8% market share)
Advanced product development	Advanced product development
One Ministry responsible for sector	Three Government Departments responsible for the sector
Market intelligence: info related to size, scale and performance of the sector available	Limited information available to define the size, scale and performance of the sector. No empirical data exists
Support from government re international trade negotiations	Bilateral trade agreements may not be efficient
	Access to the biological assets and a thriving hunting / safari industry in SA

From a competitive advantage perspective, South Africa's abundance of species complemented by the fact that game meat is free-range, offers a competitive advantage above that of New Zealand (***Table 17***).

Table 17: Comparative Analysis: Namibia Game Meat vs SA Game Meat Industry

Namibia	South Africa
Industry not formalised which impacts on competitiveness	Similar trend
High degree of informal trade	Similar trend
Low levels of sophistication at primary production level related to harvesting techniques	Similar trend
No grading system in place for game meat	Similar trend
Game provides for lower variable costs related to production (no need to inoculate, vaccinate or feed)	Similar trend
Innovations related to field abattoirs exist	Similar trend
Cost Benefit Analysis needs to proceed any investment in technology	Similar trend
Shooting ratio between males and females	Similar trend
Consistent supply and product quality are known challenges	Similar trend
Gross profit margin is 20%	Similar trend albeit a bit higher
Costly to maintain the cold chain	Similar trend
EU export ban	Similar trend
Funding / financing difficult to obtain	Similar trend
Project differentiation: free range and organic	Similar trend
Lack formal product development interventions	Similar trend
Joint industry visits to regional and international trade fairs and study tours	Similar trend
Purchasing power is growing (ability to buy)	Similar trend
Quality management, consistent supply, speed of delivery and shelf life are constraints	Similar trend
Marketing agents not preferred (add to cost of doing business)	Similar trend

Namibia	South Africa
Specialised business development and support facilities are non-existent	Similar trend
Lack of market information systems	Similar trend
No coherent standards, practices and procedures enforced by authorities	Similar trend
Maintenance and repair services need to be sourced from SA (add to cost of doing business)	SA has skills
Lack of trust-based relationships	Similar trend
Permitting system is an issue (challenging to get permits on time)	Similar trend
Quota system in place to determine offtakes	Good recommendation
Night harvesting occurs	Similar trend
Revising their Meat Safety Act would increase competitiveness (general regulatory reform required)	Similar trend
Public-private dialogue should be promoted	Similar trend
Growth at Home Strategy drives local value addition	Good recommendation

From a competitive advantage perspective, lessons to be learned from Namibia is a well-established policy that supports 'Growth at Home' as well as a formal quota system to determine the offtakes on an annual basis. The fact that SA has no empirical research as to how many game (heads) are in the country, and specifically species for game meat production, makes it difficult to determine demand and to plan for the future.

4.6 Lessons to be Learned

Governance

South Africa currently has the Game Meat Industry Forum (GMIF) with a mandate to be the unified voice of the industry in discussions with government, primarily on game meat safety regulations, as well as GAME SA representing registered processing facilities (specifically aimed at export market) as the only two bodies specifically aligned to any of the governance models as shown in New Zealand.

Entities such as the Red Meat Association and SAMIC is not mandated to oversee game meat, which leaves a major gap between Government (oversight and regulatory function) and the industry. This gap could well be a contributing factor for the vast amounts of grey meat in the market. GAME SA only governs the harvesting and processing processes and thus the meat supplied through GAME SA certified entities cannot be compared to the Cervena Venison brand which also governs animal growing- and feeding processes.

Government Involvement

Government involvement in South Africa is currently focusing on two areas:

1. Regulatory functions, responsible for the development and promulgation of game meat related regulations and protocols. It was however identified in the situational analysis that specifically the Meat Safety Act was found to be aligned to livestock processing and not entirely applicable to the game meat industry therefore the development of the game meat regulations which is now in draft format and process of legal vetting. Added

to that, it was also found through research that the Act may be too strict for local use as it is mainly focused to ensure compliance for an export market.

2. Oversight and audit functions, which were found to be under-capacitated could potentially be outsourced to an industry related agency (similar to the Game Animal Council as present in the New Zealand governance model).

Market Drivers

Except for GAME SA, which has a marketing and awareness mandate for, as well as to ensure standards are met in processing by all its members, South Africa's game meat industry is fragmented with little to no collaboration in any market related activities.

Production Systems

In South Africa, a predominantly free range model is applied (even in the 'game farming' models where animals still have access mostly to natural grass with supplementary feeding as and when the need requires). Although it was mentioned that for free range game meat the organic standard does not apply in the South African context. It can however be argued that the free range land is really free of any pesticides and fertilizers, as the natural vegetation is used, and can thus also be seen as organic (but no 'certified organic status').

Meat Safety Regulations

Similar to the USA, South Africa has importation requirements from one province to the next when trading with live animals. Carcasses, however, need to be delivered to an abattoir with the appropriate permits from the rancher or farmer before it can be used in the formal market. The registered harvesting teams in South Africa adheres to these, as well as cold chain regulations for transportation, similar to that in New Zealand.

This situation however is proven to be true for only a small portion of game meat processed in South Africa, where the majority of game meat, for subsistence or biltong hunting, is transported in non-cold chain conditions.

Section 2: Growing the Game Meat Industry

A strategy for growth and transformation encapsulates an industry-wide plan that lists interventions with an aim to overcome current and potential future challenges, as well as to achieve goals towards expanding the footprint of game meat in the local, regional and where possible, in the international market.

5.1 Problem Statement

Current hunting practices is the dominant factor in the industry that funds conservation efforts and ensure sustainable ecological management of South Africa's biodiversity – producing a by-product in the form of game meat. Game meat could be a healthy source of protein to South Africans, specifically from a food security perspective. However, this market is not yet optimally developed.

Furthermore, large volumes of proteins such as chicken, beef, etc. are imported – which could imply raising costs, increasing risks to food security if supply chains are disrupted and resulting in the sale of imported goods where a unique locally produced source of protein could have been successfully positioned in the local market.

Given this background, the problem statement is multifold in nature:

1. It is estimated that about 8% to 10% of total game meat produced is sold in the formal SA market, which implies that about 90% of game meat in the market does not conform to directives as detailed in the Draft Game Meat Regulations. Whilst the current regulatory framework aims to promote meat safety, disease control and the conservation of biodiversity, the complexity of various permitting and licencing systems, overlapping departmental mandates and the unique challenges presented by game meat harvesting, as opposed to livestock production, inhibits sectoral growth and compliance.
2. The industry is fragmented, ranging from non-integration between government departments, as well as other governance structures such as industry associations, across the game meat value chain. This factor may inhibit the formalisation, compliance and control of the game meat value chain ─ and thus the growth of the industry as a whole.
3. Limited available market intelligence on the supply, demand and consumption of game meat impacts the ability to postulate strategic direction on which to base informed decision making. Data related to the local market is not available in a single repository.
4. Inconsistent supply of game meat could be the main reason game meat is not available in retail stores on a continuous basis.
5. As a result of the FMD ban on game meat exports from South Africa only ostrich, crocodile and zebra meat are currently exported to the EU, China and to the UAE (in total just over 3 000 tons of meat were exported in 2019). The knowledge of the potential export market size and demand for game meat products is constrained.
6. The lack of adequate and appropriate technology and equipment, such as Rural / Low Throughput Abattoirs and cold chain transportation, due to a combination of limited capital investment and its commercial feasibility as well as bureaucratic processes for approval of compliance, place significant constraints on developing the game meat market to its full potential whilst simultaneously ensuring the integrity of the product.

7. The game meat industry is not representative of the South African demographic profile. Various barriers to enter the game meat market, such as the capital required and the meat volumes needed to ensure economically feasible operations, have been some of the main contributors that slows transformation in the game meat industry, with only about 4% of all value chain actors being Previously Disadvantaged Individuals (PDI). Similarly, the complex and laborious compliance and bureaucratic processes to deliver game meat to the formal market, as well as limited training and capacity building specifically aimed at game meat production among new entrants, further serves as a barrier to entry. This could result in other land-use options, such as subsistence farming, livestock production or tourism, often being preferred or conducted under transformation programmes, where game meat production might have presented significant potential on SA marginal agricultural land often facing drought conditions.
8. A lack of skills, awareness and knowledge throughout the entire value-chain, from best practice during harvesting, to meat inspection, to consumer awareness and culinary skills impact on the production and consumption of game meat.
9. Consistent and effective marketing and sales of game meat is currently lacking, impacting the ability to build a strong local game meat brand.

5.2 Vision Statement for the Game Meat Industry for South Africa

The proposed vision for the Game Meat Industry for South Africa follows:

A formalised, thriving and transformed game meat industry in South Africa that contributes to food security and sustainable socio-economic growth

5.3 Goals that could Enable Growth in the Game Meat Industry

Specific goals to ensure growth in the South African game meat industry are:

Goal 1: To increase game meat production from the current 59,184 tons per annum to >100,000 tons per annum by 2030.

Goal 2: Increased compliance (meat fit for human consumption) of game meat from the current 10% to 85% by 2030.

Goal 3: To increase the number of thriving PDI's, women and youth ranchers and other Game Meat Value Chain Actors from the current <4% to >25% by 2030.

Goal 4: To grow job opportunities in the game meat sector by 10% per annum by 2030.

Goal 5: Shift from an informal byproduct of hunting to commercial meat production, processing and marketing industry with >30 large production enterprises, >5 large harvesting enterprises, and >10 large processing enterprises by 2030.

Goal 6: 1 million hectares of community owned land brought into game meat production with associated localised value chains by 2030.

Goal 7: The game meat industry becomes consumer demand driven by 2030.5.4 Strategic Objectives

Given the elaborate stakeholder engagement process undertaken to extract the challenges that currently impede on sectoral growth, ten strategic objectives were identified.

These will form the baseline for steering the strategic direction of the game meat industry into a growth trajectory, as depicted in ***Figure 40***.

Figure 40: Strategic Objectives

In drafting this strategic plan, industry will be building on their strengths and address the weaknesses, which, in turn, will improve industry's ability to turn exciting ideas into tangible assets such as game meat products in every retail store in South Africa to maximise value addition, and ultimately financial returns.

Given the uniqueness of our country's landscape, its diverse species complemented by the health-related features of game meat could be a key driver to increase productivity. Some additional fundamentals that were considered are:

- To create a wildlife economy where everyone can improve their skills, knowledge and education at any stage of their life.
- That Government should commit to increased investment into infrastructure whilst providing greater certainty and a clear, long-term direction of the game meat industry.

Section 3: The Game Meat Strategy

6.1 Background

The investment of resources into the Game Meat Strategy Project, its associated value chains and the development of interventions proved to be valuable in terms of understanding the Game Meat Industry in South Africa and Government's commitment to augment industry growth. However, the critical actions to move a strategic plan from a document that sits on a shelf to actions that drive sectoral growth, is encompassed in this strategy and implementation plan.

In volatile market and economic conditions, especially during and post Covid-19, the allocation of resources such as funds, people and managerial attention to execute a strategy of this nature is not a once-off decision and may require constant and ongoing adjustment. This is because no implementation plan can remain static whilst the environment in which the business functions change continuously.

The guidelines provided in the strategy interventions and implementation plan should be used to further develop the suggested interventions once these projects have been scoped, budgeted for, approved and duly endorsed by the relevant Departments.

Three timelines were identified and used in the strategy and implementation plan, namely:

- Short Term (ST) which impacts the financial year 2023 to March 2024.
- Medium Term (MT) impacts the period from April 2024 to March 2027.
- Long Term (LT) is the period from April 2027 to March 2030.

6.2 A Case for Change

From the Status Quo and situational analysis through to the Strategy Development Process, the following core pain points within the Game Meat Industry were apparent:

1. The game meat industry is fragmented without a common and developmental-orientated goal.
2. The regulatory environment is not understood and deemed complex, tedious and impractical by industry.
3. The perceived market demand, consumption and market needs are not known.
4. A value chain approach with special emphasis on unlocking the game meat opportunity is needed to create cohesiveness within the industry.

A definite need exists for a robust business case to increase value that would enhance the Status Quo to ensure:

1. Increased compliance, specifically related to meat safety.
2. A consumer-focused retail market for game meat products.
3. Incentive for game ranchers to convert to a more commercialised approach.

Given the current context, most ranchers earn an ex-gate carcass price of about R30 per kilogramme, whilst the commercial opportunity of value addition – to convert a carcass into various products and retailing such to earn potential revenue of >R80 per kilogramme – is not

explored nor effectively developed. Currently, the financial benefit goes to middlemen instead of the rancher.

6.3 Proposed New Governance Structure for the Game Meat Industry

To create context and perspective for stakeholders that were not part of the core project team, it is proposed to transform the governance structure of the Game Meat Industry as graphically depicted in ***Figure 41***. This structure aims to ensure efficient collaboration between Government and Industry.

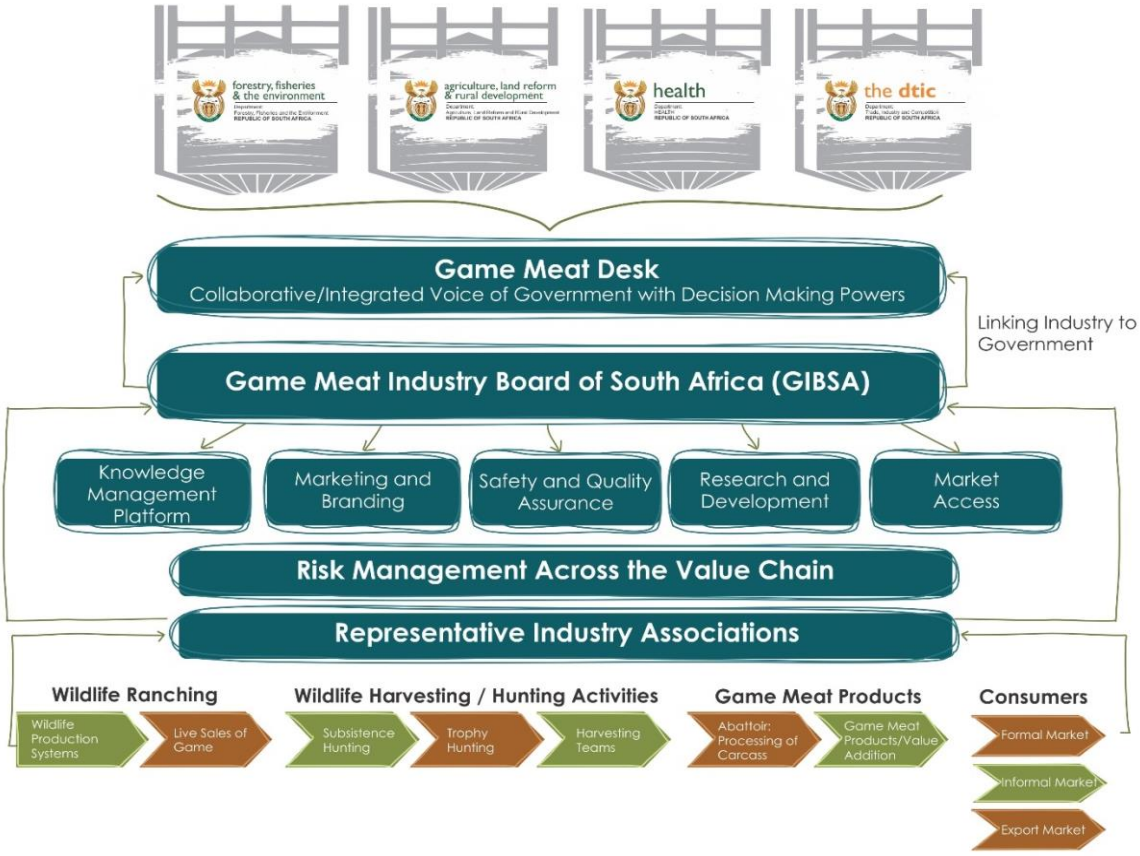

Figure 41: Proposed Governance Structure

7. Unpacking the Strategic Objectives

7.1 SO 1 Enabling Policy, Legal and Regulatory Environment

The first Strategic Objective (SO) is to create an enabling Policy, Legal and Regulatory Environment.

7.1.1 Strategic Objective 1: Problem Statement

The current policy, legal and regulatory framework inhibits sectoral growth. The permitting system is not optimal and consists of varying processes and systems deployed in each Province.

7.1.2 Strategic Objective 1: Aim

To harmonise and create an enabling policy, legal and regulatory framework that will bolster industrial growth – whilst ensuring meat safety, quality and compliance.

7.1.3 Strategic Interventions for SO 1

Based on the Game Meat Strategy deliverable, the following strategic interventions were identified and are:

Intervention 1: Align mandates of DALRRD, DFFE, DoH, DTIC and other relevant SOE's in the Game Meat Value Chain to ease Coordination and Integration.
Intervention 2: Draft Game Meat Regulations Clarification Workshops.
Intervention 3: Review Game Meat Regulations.
Intervention 4: Develop Industry Standards for Game Meat to ensure Product Safety / Quality.
Intervention 5: Refined and Improved Permitting and Licencing Systems.
Intervention 6: Regain SA FMD-free Status (if feasible focus on provinces with no FMD).

7.2 SO 2: Governance of the Game Meat Industry

The second SO addresses governance of the Game Meat Industry. An effective governance structure exhibits and applies best practice with the appropriate skills, complemented by efficient administrative functions, the appropriate mandate to execute decision-making powers.

7.2.1 Strategic Objective 2: Problem Statement

The Game Meat Industry is fragmented. The fragmentation could lead to the demise of an industry with vast growth potential.

7.2.2 Strategic Objective 2: Aim

To develop an effective governance structure. The Game Meat Desk should consolidate all government related activities that exhibits and applies best practice with the appropriate skills, supplemented by efficient administrative functions and with a mandate to execute and to make decisions. Its primary purpose will therefore be linked to oversight and control.

Consequently, to create a Game Meat Industry Board (GIBSA) to provide advisory, risk management, marketing and other market related functions to build and govern the game meat industry side of the wildlife economy. To complement this structure, it will be valuable for industry associations to create, build and foster closer collaboration and integration of functions.

7.2.3 Strategic Interventions for SO 2

The following strategic interventions were identified.

Intervention 1: Establish the Game Meat Desk.
Intervention 2: Establishment of the Game Meat Industry Board of South Africa.
Intervention 3: Determine feasibility and funding models to support GIBSA operations.
Intervention 4: Development and Management of Incentive Schemes.

7.3 SO 3: Market Intelligence

The third SO attends to market intelligence within the Game Meat Industry in SA.

7.3.1 Strategic Objective 3: Problem Statement

The informal and fragmented nature of the Game Meat Industry creates information gaps which makes it particularly difficult to postulate strategic direction, to define an accurate baseline and ultimately to make informed decisions.

7.3.2 Strategic Objective 3: Aim

The aim of this SO is to obtain reliable game meat industry intelligence and information to inform planning, effective implementation, monitoring, control and evaluation.

7.3.3 Strategic Interventions for SO 3

The strategic interventions were identified and follow overleaf.

Intervention 1: Collation of Data for the Game Meat Industry.
Intervention 2: Short term determination of the Size and Scale of the Game Meat Industry (in collaboration with Industry Associations).
Intervention 3: Determine the performance / economic value of the Game Meat Industry as part of the Biodiversity Economy Satellite Account.
Intervention 4: Obtain Industry Wide Trade Data and Statistics.
Intervention 5: Obtain data related to the number of RTA's and Game Meat Butcheries in SA.
Intervention 6: Obtain relevant data on the number of game ranches, CAE ranches and hectares used per ranch in SA.
Intervention 7: Develop a database of value chain actors and service providers.

7.4 SO 4: Supply, Demand and Consumption

The fourth SO deals with supply, demand and consumption of game meat products within SA.

7.4.1 Strategic Objective 4: Problem Statement

Without knowledge about supply, demand and consumption it becomes onerous to inform decision making, for instance, with regards to offtakes. There is demand for game meat products, however, no empirical research could be found that quantifies demand adequately. The same applies to supply and consumption. The question thus remains – which game meat products are mostly favoured by consumers and why, complemented by how much of the meat products should be produced to cater for demand.

7.4.2 Strategic Objective 4: Aim

The aim of this SO is therefore to obtain sufficient supply, demand and consumption related data to direct the strategic direction of the game meat industry as well as to source retail market opportunities.

7.4.3 Strategic Interventions for SO 4

Strategic interventions were identified and follow:

Intervention 1: Initial Market Analysis to determine Supply, Demand and Consumption.
Intervention 2: Detailed Market Analysis to determine Consumption and Consumer Behaviour.
Intervention 3: Empirical research on game meat health benefits.
Intervention 4: Product Development.
Intervention 5: Product Quality.
Intervention 6: Increase Supply (game meat production).

7.5 SO 5: Innovation, Research and Development

The fifth SO focuses on innovation, research and development.

7.5.1 Strategic Objective 5: Problem Statement

One of the major constraints faced by the game meat industry is the lack of adequate technology and equipment, for example Rural Throughput Abattoirs (RTA's) and cold chain transportation which are brought about by various factors such as practical or feasible access to these infrastructure, or the lack of capital to invest into infrastructure, bureaucratic processes towards approval of an abattoir, laborious meat safety compliance processes as well as traceability systems to increase the integrity and value of game meat.

7.5.2 Strategic Objective 5: Aim

The aim of this SO is to ensure an increase in economic and practical compliance / more safe game meat that enters the formal retail market through the enablement of technological improvements through financially feasible operations. Given the current context, SA has 575 registered abattoirs of which 65 relates to the game meat industry as depicted in ***Figure 42***.

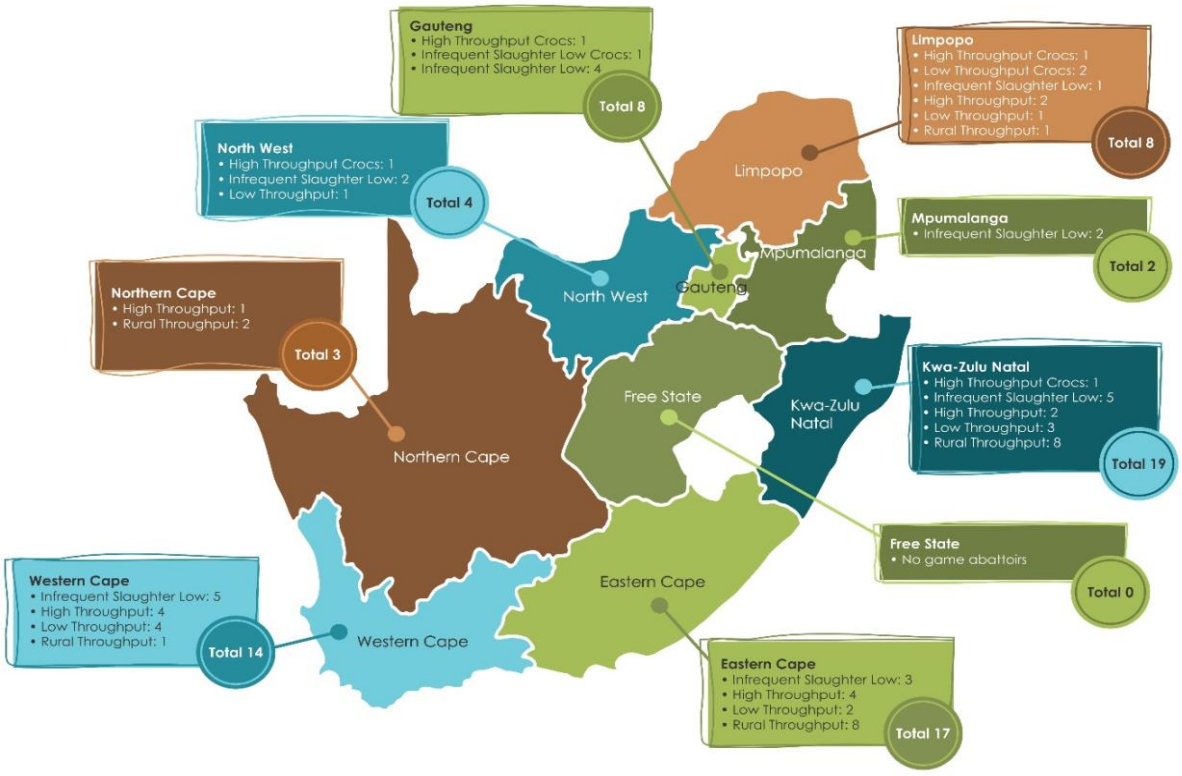

Figure 42: Game Meat Abattoirs in SA

7.5.3 Strategic Interventions for SO 5

The strategic interventions identified follow.

Intervention 1: Feasibility to construct and institute RTA's in SA.
Intervention 2: Traceability / Transparency Systems to improve game meat quality.
Intervention 3: Peripheral Technological Opportunities.

7.6 SO 6: Transformation and Inclusive Participation

The sixth SO attends to transformation and inclusive participation within the game meat industry.

7.6.1 Strategic Objective 6: Problem Statement

The Game Meat Industry is not representative of the demographics of our country. Apart from the lack of inclusivity, transformation is more than just demographic representation. Transformation also revolves around the need to generate new value, to unlock new opportunities, to drive new growth and to deliver new efficiencies which will require change throughout the value chain.

7.6.2 Strategic Objective 6: Aim

To encourage game meat production as a form of land use among PDI's, women and youth by creating an enabling environment and to grow the number of successful and sustainable PDI's, women and youth in the Game Meat Industry.

7.6.3 Strategic Interventions for SO 6

The strategic interventions to ensure transformation and inclusive participation follow.

Intervention 1: Education of New Entrants, CPA's, PDI's, Women and Youth.
Intervention 2: Funding schemes / game donations to enhance industry transformation.
Intervention 3: Funding schemes to enhance transformation for CPA's.
Intervention 4: Ensure inclusivity through a free-market mentorship programme.

7.7 SO 7: Skills, Knowledge and Sector Awareness

The seventh SO caters for skills, knowledge and the creation of industry or sectoral awareness.

7.7.1 Strategic Objective 7: Problem Statement

A lack of skills, knowledge and sector awareness had in the past, and still does, cause harm to the wildlife economy, conservation and hunting related activities. Apart from the aforementioned, a lack of consumer education, awareness and game meat culinary skills are also prevalent.

7.7.2 Strategic Objective 7: Aim

Increase skills, knowledge and awareness from hunting to meat inspection and then throughout the value chain, to serve respective markets, to prepare wholesome game meat meals as **knowledge is power**!

7.7.3 Strategic Interventions for SO 7

The strategic interventions identified were:

Intervention 7.1: Skills development to ensure meat integrity, safety and quality.
Intervention 7.2: Consumer awareness campaigns, marketing and education.
Intervention 7.3: Education related to Game Meat Processing.

7.8 SO 8 Marketing, Branding, Sales and Communications

The last SO caters for marketing, branding, sales and communications to grow the game meat industry.

7.8.1 Strategic Objective 8: Problem Statement

Currently marketing, inclusive of sales functions and branding are done by individual companies or ranches that service the needs of their respective market(s) through their respective brand(s). Furthermore, consumer perceptions and communications are done ineffectively or do not adequately address the benefits and nutritional value of game meat products. Misperceptions about the industry are also a cause of concern.

7.8.2 Strategic Objective 8: Aim

The aim of this SO is to devise a focused marketing, branding, sales and communications strategy that will encourage consumers to purchase more game meat products (thus increased volumes).

7.8.3 Strategic Interventions for SO 8

The strategic interventions were identified and are detailed below.

Intervention 8.1: Branding Business Case.
Intervention 8.2: Interventions related to marketing and communication.
Intervention 8.3: Marketing Campaign to Create Consumer Awareness.
Intervention 8.4: Develop a National Game Meat Sales Plan.
Intervention 8.5: Game Meat Marketing Events / Exhibitions.
Intervention 8.6: SPV to Create an Incubation Fund.

7.9 SO 9: Enabling Development of Large Commercial Ventures in the Game Meat Sector

The ninth SO caters for the development of large commercial ventures in production, harvesting, and processing of game meat.

7.9.1 Strategic Objective 9: Problem Statement

The current model for the game meat industry is based on meat as a by-product of other activities in the wildlife industry, such as hunting, and is informal rather than a formal business model. There are challenges with economies of scale, and with large and consistent production. Enterprises are individual based, with insufficient "muscle" to influence distributors and the major retail chains.

7.9.2 Strategic Objective 9: Aim

Demonstrate feasibility for large business enterprises along the game meat value chain, to draw investment funding, and initiate large new businesses.

7.9.3 Strategic Interventions for SO 9

The strategic interventions are:

Intervention 9.1: Develop generic business plans for large enterprises in production, harvesting, and game meat processing.
Intervention 9.2: Facilitate access to venture capital for initiating enterprises, especially led by PDIs, women and youth, including from government sources, development agencies, and the private sector.
Intervention 9.3: Identify and remove barriers to initial success for ventures.

7.10 SO 10: Enabling Development of Large Game Production and associated Value Chain in Community Owned Areas

The tenth SO caters for the development of large commercial ventures in community owned areas that are not necessarily based on game reserves.

7.10.1 Strategic Objective 10: Problem Statement

The wildlife industry in general is largely untransformed, and based on white owned private farms. There are large areas of community owned land that would be able to support large herds of plains game, but were denuded through historical hunting. These areas may be marginal in terms of livestock production, and are poverty stricken.

7.10.2 Strategic Objective 10: Aim

Demonstrate feasibility for large areas of community owned land for reintroduction of plains game in sufficient numbers to provide a basis for large scale harvesting for game meat, and for development of associated value chains.

7.10.3 Strategic Interventions for SO 10

The strategic interventions identified are:

Intervention 10.1: Undertake strategic land-use planning to identify five potential community areas for reintroduction of large herds of plains game, where this is ecologically viable, and will maximize return on investment for socio-economic development.
Intervention 10.2: Develop generic business plans for large enterprises in production, harvesting, and processing of game meat in these five areas.

Intervention 10.3: Facilitate access to venture capital for initiating enterprises, especially led by PDIs, women and youth, including from government sources, development agencies, and the private sector.
Intervention 10.4: Identify and remove barriers to initial success for ventures.

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