



**EWT RESEARCH & TECHNICAL PAPER NO. 2**

# **UNDERSTANDING SOUTH AFRICA'S CAPTIVE LION SECTOR AND THE TRADE IN CAPTIVE AFRICAN LIONS**

**CHRISTINA HILLER**



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# ACRONYMS

<b>B2B</b>	Business to Business
<b>B-BBEE</b>	Broad-Based Black Economic Empowerment
<b>CITES</b>	The Convention on International Trade in Endangered Species of Wild Fauna and Flora
<b>CL</b>	Captive Lion
<b>CL-facility/facility</b>	Captive Lion Facility
<b>CL-owner/owner</b>	Captive Lion Owner
<b>CL-sector/sector</b>	Captive Lion Sector
<b>CMS</b>	Convention on the Conservation of Migratory Species of Wild Animals
<b>CoP</b>	Conference of the Parties
<b>DFFE</b>	Department of Forestry, Fisheries, and the Environment
<b>EMI</b>	Environmental Management Inspectorate
<b>ESA</b>	U.S. Endangered Species Act
<b>EWT</b>	Endangered Wildlife Trust
<b>GDPR</b>	General Data Protection Regulation (by the European Parliament and Council)
<b>HLP</b>	High-Level Panel
<b>ID-Code</b>	Identification Code
<b>IUCN</b>	International Union for Conservation of Nature
<b>NGO</b>	Non-Governmental Organisation
<b>NSPCA</b>	National Council of Societies for the Prevention of Cruelty to Animals
<b>PHASA</b>	Professional Hunters' Association of South Africa
<b>POPI</b>	Protection of Personal Information Act (for South Africa)
<b>RSA</b>	Republic of South Africa
<b>Sub-A</b>	Sub-Adult
<b>SAPA</b>	The South African Predator Association
<b>SC</b>	Supply Chain
<b>TOPS</b>	Threatened or Protected Species (Regulations)
<b>USFW</b>	U.S. Fish and Wildlife Service



# EXECUTIVE SUMMARY

This report comprises a detailed characterisation of South Africa's captive lion sector and the trade of captive lions and derivative products. The document outlines the complex structures and functioning of the sector under the influence of current contextual circumstances. Influencing factors include mainstream and social media pressure, regulatory conditions, and divergent perceptions about the meaning of sustainability and sustainable use in relation to an iconic species like the African Lion (*Panthera leo*), hereafter referred to as "lion". South Africa is currently the only country with an extensive captive lion sector where lions in captivity significantly outnumber wild and free-roaming animals. A polarised debate surrounds the practices of keeping lions for commercial use. Particularly, captive lion hunting, the lion part trade and human interaction practices such as cub-petting garner heavy criticism. Yet, details about the sector's structure and functioning as a prerequisite for sound decision-making and governance have not been examined.

We conducted 51 semi-structured interviews and verified and supplemented the findings through five focus-group sessions with experts from related fields and desk review activities. Interview parties consisted of 31 captive lion facilities in four provinces, i.e., the Free State, North West, Limpopo and Gauteng and 20 key players in the sector. These actors included professional hunters of captive lions, taxidermists, lion part traders, live lion traders, veterinarians, scientists, non-governmental organisations (NGOs) and provincial environmental management inspectors (EMIs). In addition, we collected quantitative data on captive lion facilities from the South African provinces where the interviews took place to augment the research findings further.

Our qualitative data analysis revealed the various facets responsible for the sector's overall complexity. Our results cover the internal, self-organising interactions of its actors, the dynamics of the sector's structures and processes, and the co-evolution of the entire sector in interrelation with its context.

In particular, we found that the underlying motives and deep-seated attitudes of captive lion owners form the basis of the uniqueness of every captive lion facility's (business) model. An individual mix of eleven different motives underpinned the decision for establishing and running a captive lion facility. Only four of those motives were

income-related, and facilities exclusively geared towards those motives were rare, suggesting the importance of personal drivers other than income generation and profit orientation. Furthermore, the attitude toward funding one's facility differed between facilities and provided valuable insights into the rationale to own and trade with captive lions. Interest in and understanding of the underlying motives and funding attitudes of captive lion owners proved essential to openly engage with active players about the structure and functioning of the sector.

Our research furthermore revealed the existence of five distinctly different sector clusters with corresponding trade-related patterns in the form of separate supply chains and typical breeding modes. The data suggest that lion derivatives do not represent a separate cluster, i.e. facilities do not specifically breed lions for their bones. The lion bone trade rather forms an integrated part of the hunting tourism cluster.

Cluster 1: No lion revenue cluster

Cluster 2: Sanctuary cluster

Cluster 3: Guest attraction cluster

Cluster 4: Live export cluster

Cluster 5: Hunting tourism cluster (incorporating the lion part trade)

Legal trade in each cluster turned out to be organised along a distinct supply chain (except for cluster 1 without lion-related trade activities). All supply chains in the sector are separate from each other, i.e., continuous links between these supply chains are not established. In other words, the dataset did not reveal an organised supply chain with sustained process steps for hunting captive lions after they have been used for human-lion interactions. However, a shared supply chain segment for selling lions to other South African facilities combined with a lack of traceability renders it feasible to move captive lions between clusters, especially between guest attraction, live export and hunting tourism. Overall, a lack of transparency became apparent more broadly due to inexistent, inefficient or inconsistent processes to collect, store, consolidate and share data about facilities and their trade activities. These challenges limited the assessment of the overall extent and dimensions of the sector and its clusters. Nevertheless, the

analysis strengthened the suggestion that the overall size of the sector is driven by the Free State and North West provinces.

In addition to these inherent complexities of the sector, we reveal how the increasingly restrictive and pressured context, both nationally and internationally, resulted in challenging trade conditions aggravated by the COVID-19 pandemic associated lockdowns. We found that trade conditions deteriorated markedly from 2015/2016, ascribed to activism pressure or mounting regulatory restrictions according to the interview data. A sharp drop in prices and sales volumes for live lions parallel to a significant price increase for lion skeletons signified the challenging trade conditions, hitting the hunting tourism cluster particularly hard. The COVID-19 pandemic exacerbated the already strained trade conditions, affecting all clusters and creating an overall impasse for the sector. As a result, most captive lion facilities are currently making losses that many cover through other, non-lion related income sources in the hope that trade will pick up beyond the COVID crisis.

These trade-related challenges are paired with significant inconsistencies in perceptions about the meaning of sustainability and sustainable use, resulting in an immense management complexity for captive lion facilities. The research data suggest that reasonable and tolerable management practices fall into five domains: financial

health, legality, conservation, animal welfare and social responsibility. Individualistic approaches characterise the practices of facilities in these management areas resulting in many corresponding concerns increasing the overall management complexity. Moreover, two specific areas emerged as seemingly insurmountable obstacles for the management of captive lion facilities. On the one hand, the data suggest that managing a captive lion facility and animal rights are mutually exclusive. On the other hand, the interviews revealed that transformation is not happening, which is why the facilities are deemed not acceptable.

Overall, the internal and context-driven complexities have driven the sector into a position of inertia, and the system is now paralysed, as the current circumstances are unfavourable for many of its players. Not attending to the status quo means ceding responsibility to deal with this crisis to each individual sector member. Such an approach would intensify the unpredictability and the risk of more undesirable outcomes. The insights of this research will support more robust decisions about the sector. We conclude that it will be critical to follow a nuanced approach to shape the sector's future, mindful of the five clusters. Simultaneously, immediate measures ought to be taken to prevent undesired loss or harm until a clear future scenario for the sector materialises.

# PART 1

## INTRODUCTION AND BACKGROUND TO THE STUDY

The African Lion (*Panthera leo*)<sup>1</sup>, hereafter referred to as “lion”, is an icon throughout Africa and serves as a flagship species to rally conservation awareness and action (Verissimo et al. 2011). High priority is placed on their conservation for the essential role lions play in driving and maintaining ecological processes (IUCN SSC Cat Specialist Group 2018; CITES 2020). Lions have suffered severe population declines across their range except for some countries in southern Africa, including South Africa, where the lion population is stable to increasing (Government of South Africa 2004; Riggio et al. 2013; Bauer et al. 2015; Miller et al. 2016). The main threats to lions are human-lion conflict, prey depletion and habitat loss or fragmentation. However, trade-related practices such as trophy hunting and lion bone sales have been added as risks for the species (Bauer et al. 2018), although the nature of the impact of captive lion trade activities on lions in the wild is still poorly understood (Coals et al. 2020).

Against this backdrop, a captive lion sector has developed in South Africa since the 1990s and has sparked polarisation and conflict about captive lions and especially about using lions for various commercial purposes (Williams et al. 2015; Williams & 't Sas-Rolfes 2019). Controversial non-lethal uses include activities like viewing, cub-petting and other lion encounters, volunteer programmes and live sales of lions, often to destinations outside Africa. Trophy-hunting and the trade of lion body parts like bones, teeth or claws are common examples of extractive lion utilisation (Williams & 't Sas-Rolfes 2019). Beyond that, some regard breeding and rearing of lions for conservation as a legitimate use of captive lions for potential future reintroductions to the wild and for maintaining genetic diversity (Abell et al. 2013; Callealta et al. 2019). A wide range of facets fuel the polarised controversy about captive lions. The debate is largely driven by normative values based on moral and ethical judgements (Coals et al. 2019).

Additionally, concerns about a lack of animal welfare provoke strong criticism and have even resulted in a high court judgement declaring lion bone quotas unlawful by disregarding animal welfare (The High Court of South Africa 2019). Furthermore, positions clash about the

alleged conservation value of captive-bred lions, including conservation genetics (Hunter et al. 2013; Miller et al. 2014; Hiller & MacMillan 2021). In addition to these considerations, there are concerns about whether this sector stimulates illegal trade of lions and their derivatives and whether it leads to increased poaching (Williams & 't Sas-Rolfes 2019; Coals et al. 2020; Williams et al. 2021). Moreover, there are differing interpretations of the concept of sustainability and sustainable use, which add to the conflict (Hiller & MacMillan 2021).

The controversy about South Africa's captive lions has resulted in two prominent court cases and brought about various national and international interventions to regulate and inhibit trade. Litigation started in 2007 over the contentious subject of hunting captive lions, even before the first permits to export lion skeletons to Southeast Asia were issued in 2008 (Williams et al. 2015). The South African Predator Breeders Association took the Minister of Environment to court, challenging the decision to include lions as a listed large predator in the Threatened or Protected Species Regulations (TOPS), stipulating a release period of 24 months (South African Department of Forestry Fisheries and the Environment 2014). A final decision on the matter was only reached in 2010 when the South African Supreme Court of Appeal ruled in favour of the breeders, and lions were excluded from the listed predators in the TOPS regulations.

The captive lion sector suffered a significant setback as international trade restrictions materialised, especially by constraints affecting the import of trophies from hunts of captive bred lions to the U.S.A. The African lion, subspecies *P. l. melanochaita* (southern and eastern Africa), is a threatened species under the U.S. Endangered Species Act (ESA or Act) and is regulated under a species-specific 4(d) rule, 50 C.F.R. § 17.40(r) that provides specific conservation measures for this subspecies (US Fish and Wildlife Service 2015). Under the 4(d) rule for *P. l. melanochaita*, all of the prohibitions and provisions of 50 C.F.R. § 17.31 and 50 C.F.R. § 17.32 apply to *P. l. melanochaita specimens*, including all captive lions in South Africa. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export any lion

1. The classification of two subspecies of African Lions by Bertola et al. 2016, namely *Panthera leo melanochaita* from South and East Africa and *Panthera leo leo* from West and Central Africa, was provisionally adopted by the Cat Classification Task Force of the IUCN SSC Cat Specialist Group and the U.S. Endangered Species Act. By comparison, the IUCN Red List of Threatened Species (Bauer et al. 2016) distinguishes Asian subpopulations (*Panthera leo persica*) and African subpopulations (*Panthera leo leo*).

specimens. Although the import of the lion subspecies *P. l. melanochaita* is a prohibited activity under the Act, exceptions may be made in accordance with the 4(d) rule at 50 C.F.R. § 17.40(r) when the import activity qualifies for, and the Service issues, an ESA threatened-species permit under 50 C.F.R. § 17.32(a). The preamble to the 4(d) rulemaking, 80 Fed. Reg. 79999, 80043-46 (Dec. 23, 2015) explains the factors the Service considers when making an enhancement finding for the importation of sport-hunted trophies of *P. l. melanochaita*.

Additionally, although the CITES CoP17 called for an annual export quota for lion bone parts from captive facilities to be determined by the South African Minister of Forestry, Fisheries and the Environment (DFFE) (CITES 2017), a court case in 2019 brought by the South African National Council of Societies for the Prevention of Cruelty to Animals (NSPCA) successfully challenged the lion bone quotas set by the Minister of Environment in 2017 and 2018 (The High Court of South Africa 2019). The court declared both quotas unlawful and constitutionally invalid and required the Department to consider the welfare of lions in the future determination of the export quota.

Subsequently, the Minister of Environment appointed an advisory panel in 2019: the high-level panel of experts for the review of policies, legislation and practices on matters of elephant (*Loxodonta africana*), lion (*Panthera leo*), leopard (*Panthera pardus*), and rhinoceros (*Ceratotherium simum/ Diceros bicornis*) management, breeding, hunting, trade and handling, widely referred to as high-level panel (HLP), (Republic of South Africa: Department of Environment 2019a, 2019b). In December 2020, after fieldwork for this study concluded, the outcomes and recommendations of the HLP were presented (High-level Panel 2020). The HLP-report has informed a draft policy position by the South African Department of Forestry, Fisheries and the Environment (DFFE) on the conservation and ecologically sustainable use of elephant, lion, leopard and rhino, which was put out for extended public review for the period 28 June to 29 September 2021 (Department of Forestry Fisheries and the Environment 2021).

Within this context, a clear need emerged to assess the size, scale and complexity of the captive lion sector and to evaluate its socio-economic and environmental impacts based on a detailed understanding of its structures and functioning and the supply chains for captive lions. This knowledge will assist the government and the South African CITES authority make more informed decisions and guide policy to bring about constructive change through regulation and management interventions. In particular, this report aims to enhance meaningful discussion about the sector and help effect desired changes. Despite existing research, it must be borne in mind that a comprehensive, deep understanding of the captive lion sector and the captive lion trade still does not exist.

This study was initiated to close this information gap by developing an improved understanding of the captive lion sector in South Africa and the trade of captive lion products and services, including a critical assessment of the concept of sustainability and sustainable use in relation to the sector. The research aimed to supply the South African government and the local CITES authority with sound information supporting the implementation of measures related to future policy decisions to adequately address the sector's influences on environmental, economic, and social outcomes and developments. Internationally, the study was part of a broader initiative funded by the U.S. Fish and Wildlife Service (USFW): "Saving Africa's lions through the development of range-wide threat mitigation and monitoring plan, based on improved understanding of threats and associated lion mortalities." Furthermore, the research was aligned with CITES decisions 18.244, 18.246 and 18.249 and is linked to the African Carnivore Initiative, a joint undertaking of The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS) (CITES 2018, 2020). The objectives of this research were:

1. To identify role-players in the captive lion sector and develop a comprehensive stakeholder map for the South African captive lion sector.
2. To explore and document the variety of existing business models based on consumptive and non-consumptive use of lions/products and investigate their (i) value propositions and end-users, (ii) production/value-added chains, (iii) financial viability, (iv) activities, both ongoing and in the past, aimed at finding new markets or growing existing market shares.
3. To develop detailed depictions of the supply chain(s) characterising the captive lion sector in South Africa and describe the role of different players within it as well as develop an overview of the complete trade chain for all identified lion products.
4. To discuss stakeholder views and further explore the socio-economic and environmental influences of the captive lion sector as well as the opportunities and risks associated with the current business models, especially threats to legal trade.
5. To elicit stakeholder views on the meaning of sustainable use for the captive lion sector and discuss those in the light of South Africa's Constitution and academic/scientific understanding.

This report consists of five sections. In section 1, we provide the background to the study and outline its aims. Thereafter, we describe the research design, methodology and ethics in Section 2. The research data and results in Section 3 are split into two major parts. In the first Results section, we summarise and discuss the comprehensive insights into the inherent complexity of the captive lion sector by means of a general characterisation. In the second Results section, we focus on the complexity arising from contextual influences. We present the findings and deliberate implications on trade conditions and the management complexity for captive lion facilities in light of sustainability and sustainable use discussions. In Section 4, we give our conclusion, followed by a brief review of insights into the management of complex, adaptive systems and our recommendations in Section 5. We have added (sub)section summaries throughout the document. These brief abstracts outline the main findings and key messages for the various research parts to help the reader gauge where to engage with the details of the presented results.



# PART 2

## RESEARCH DESIGN AND METHODOLOGY

### 2.1 RESEARCH DESIGN

This study followed a qualitative social science approach (Newing et al. 2011). A strong focus on qualitative data analysis guided by inductive core principles was key for adequately addressing this study's research aim. This approach allowed us to develop an in-depth and nuanced understanding of the sector in South Africa and the captive lion trade (Khan 2014). An initial stakeholder analysis served to design and plan the sampling strategy and data collection (Reed et al. 2009). The methodology incorporated both qualitative and quantitative research

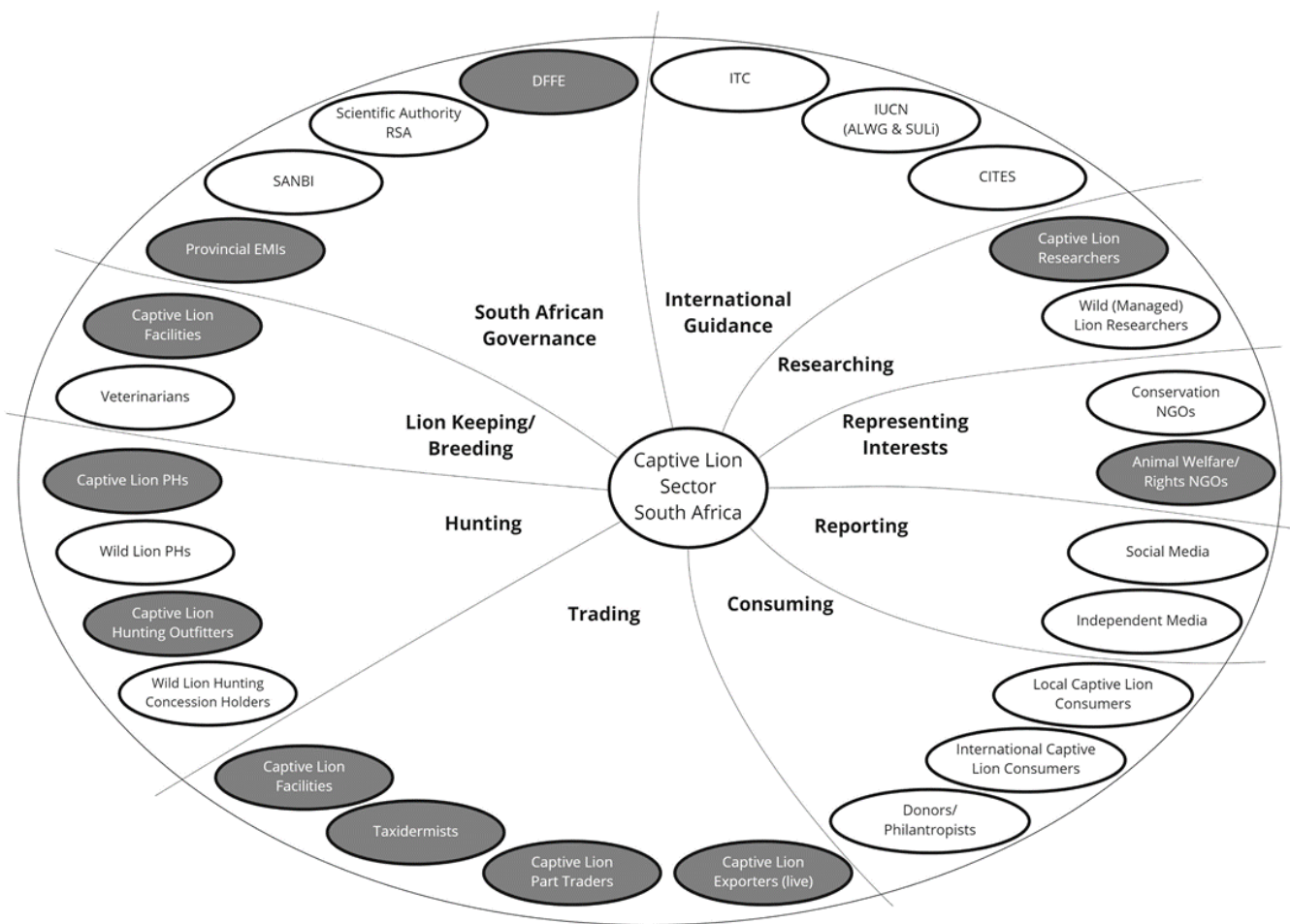
methods. Semi-structured interviews with representatives from the identified stakeholder groups represented the centrepiece of the qualitative exploration of the sector. We applied other qualitative research methods, such as desktop review and focus group discussions, to triangulate and supplement the interview results. In addition, we collected quantitative data from three South African provinces where the interviews took place. The descriptive statistics from these data further augment the exploratory research findings.

### 2.2 STUDY AREA AND SAMPLING

This research focused on South Africa, currently the only country where an extensive captive lion sector has developed (Williams & 't Sas-Rolfes 2019). We developed a stakeholder analysis depicted in Figure 1 (Reed et al. 2009) to plan the sampling strategy by engaging with a wide key informant network built during previous research experience with the sector (Hiller & MacMillan 2021). A stakeholder group was selected for the semi-structured interviews only if the group members played an active part in the sector and could thus contribute personal, hands-on knowledge and experience about its structure and functioning. The selected stakeholder groups for the interviews are marked as grey ellipses in bold font in Figure 1. Due to the sensitivity of the study topic, many potential interview participants were hesitant to engage

with us, making it essential to conduct interviews in person. This approach helped build rapport with participants who had decided to take part voluntarily opening a platform for them to speak freely and openly (Young et al. 2018).

Furthermore, one-on-one conversations allowed us to gather detailed, qualitative data in a relatively short fieldwork period of four months, as it was possible to coordinate single interviews mindful of any time and spatial limitations of the interviewees (Drury et al. 2011). The sampling strategy needed to account for travel time to separate locations quite far apart and in-person interviews that often lasted more than three hours. Thus, it was only feasible to conduct one interview per day during field work periods in most cases.



- CITES The Convention on International Trade in Endangered Species of Wild Fauna and Flora
- DFFE The Department of Forestry, Fisheries and the Environment
- EMI Environmental Management Inspectorate
- IUCN International Union for Conservation of Nature and Natural Resources
- ITC International Trade Centre
- ALWG African Lion Working Group
- NGO Non-Governmental Organisation
- PH Professional Hunter
- RSA Republic of South Africa
- SANBI South African National Biodiversity Institute
- SULi Specialist Group on Sustainable Use and Livelihoods

**Figure 1: Initial stakeholder analysis for the South African captive lion sector based on the researcher’s previous study experience supplemented by early engagements with a wide key informant network. Individuals from the stakeholder groups in grey ellipses were included in the semi-structured interviews, as these stakeholders play an active part in the sector.**

The sampling strategy needed to balance making interviews long enough to gather sufficient data against conducting enough interviews to capture the variability within the sector (Newing et al. 2011). Captive lion facilities play a central role in understanding the sector’s nuanced functioning as they hold a stake in both the breeding/keeping of captive lions and the structures and processes to facilitate trade. Consequently, they formed the core group for the interviews.

There is no comprehensive, up-to-date list of all registered captive lion facilities in South Africa held on a national or even provincial level. Instead, we obtained a list of 327 South African facilities with contact details from the South African Predator Association (SAPA) during the initial

stakeholder engagements. While we cannot be certain that this represents a complete and current compilation of all South African captive lion facilities, we believe it is fairly comprehensive because it compares favourably to the total number of TOPS registered captive lion facilities reported in Williams & ’t Sas-Rolfes (2019), which was 321 in 2016. The informant occasionally updates the list and includes new registrations, hence the larger number of facilities. We sampled facilities randomly from this list but recognise that the list might be incomplete. Our sampling process might not have included all captive lion facilities, thus potentially excluding rare business models from being presented in this report. The random sampling approach alleviated the common limitations associated with

purposive or snowballing strategies, including the concern that the range of viewpoints and information shared by interviewees will be limited to a specific group of people who know each other.

The number of facilities in the list varied widely between provinces (Table 1), with 89% of facilities being located in the Free State, North West, Limpopo and Gauteng. Thus, we randomly selected facilities for interviews from these four provinces only. Based on the time constraints listed above, we estimated that we could feasibly sample 10% of all listed facilities (see below for a description of how we determined we had sampled sufficiently to cover all business types). We divided facilities by province to ensure proportional representation and assigned random numbers to each facility according to these provinces. Gauteng and Limpopo were lumped together because

they had comparatively low numbers of facilities. We then attempted to contact facilities in the order in which they were randomly assigned. We made three attempts to contact each randomly selected facility, after which they were removed from the list. If contact details were incorrect or outdated, we attempted to locate them through internet searches. We also used internet searches to affirm that our sample included different types of facilities. We randomly selected and contacted facilities in each sample area until the 10% target was reached. Once selected facilities agreed to participate, we arranged interviews in geographic clusters, which allowed us to optimise travel logistics and keep travel time to a minimum. Limpopo and Gauteng were combined into one sampling area due to the spatial vicinity of those two provinces.

**Table 1: Numbers and percentages of captive lion facilities with contact details included in a list obtained by one of the key informants during stakeholder identification. Random sampling was limited to the provinces highlighted in grey, amounting to 89% of all listed facilities.**

<b>Province</b>	<b>No. of CLF</b>	<b>% of listed CLF</b>
<b>TOTAL</b>	<b>327</b>	<b>100%</b>
Eastern Cape	12	4%
<b>Free State</b>	<b>174</b>	<b>53%</b>
<b>Gauteng</b>	<b>18</b>	<b>6%</b>
KwaZulu Natal	1	0%
<b>Limpopo</b>	<b>23</b>	<b>7%</b>
Mpumalanga	7	2%
Northern Cape	0	0%
<b>North West</b>	<b>74</b>	<b>23%</b>
Western Cape	18	6%

Overall, we pursued 78 randomly selected facilities to arrange 31 interviews, equalling a success rate of 39.7%. The following cases represented “drop-outs” during the sampling and selection process: (a) outdated or invalid contact details that could not be updated through internet searches (n=22|28.2%), (b) facilities that did not respond to at least three attempts to establish communication (n=3|3.8%), (c) facilities that refused to be interviewed (n=8|10.3%), (d) facilities that stated to have discontinued their lion operation (n=10|12.8%), (e) people who should not have been on the list as they claimed never having owned/kept lions (n=4|5.1%). Overall, we arranged 31 interviews with captive lion facilities through our random sampling process.

We applied a purposive sampling technique to recruit other key players for interviews (Bernard & Ryan 2010; Newing et al. 2011). We identified and contacted potential interviewees utilising the lead researcher’s existing informant network and two direct contact people at the Endangered Wildlife Trust (EWT) for referrals or introductions to persons of interest. The key players included professional hunters and hunting outfitters of captive lions (CLs), taxidermists, CL part traders, traders of live CLs, NGOs engaged in animal welfare/wellbeing investigations, scientists engaged in CL research, as well as representatives of national and provincial governments involved in permit processes for CLs. Table 2 provides an overview of the number of interviewed facilities and key players in the sector for this study.

**Table 2: Number of interviewees and their roles as part of South Africa’s captive lion sector.**

<b>Role</b>	<b>No. of interviews</b>	<b>% of interviews</b>
<b>Captive lion facilities:</b>	<b>31</b>	<b>61%</b>
Free State	20	39%
North West Province	8	16%
Limpopo and Gauteng	3	6%
<b>Key players in the captive lion sector</b>	<b>20</b>	<b>39%</b>
Professional hunters of captive lions	2	4%
Taxidermists	2	4%
Lion part traders	2	4%
Live lion traders	2	4%
Veterinarians	6	11%
Captive lion scientists	2	4%
Non-governmental organisations	2	4%
Provincial environmental management inspectors	2	4
<b>TOTAL</b>	<b>51</b>	<b>100%</b>

## 2.3 DATA COLLECTION AND VERIFICATION

Semi-structured interviews constituted the central instrument for collecting qualitative data to develop an in-depth and nuanced understanding of the sector and proved successful in collecting qualitative data from facilities and key players. The technique is particularly well suited for gathering high-quality data for complex situations with hard-to-access stakeholder groups (Drury et al. 2011). It allows a set of standard interview questions or topics to be explored from various angles while the researcher can follow new aspects as they emerge (Young et al. 2018).

The lead researcher personally conducted all fifty-one semi-structured interviews in English. All but four interviews took place during the fieldwork period between September and December 2020. We applied standard academic ethical protocols (see subsection 2.5 for details on research ethics). The four final interviews with actors of the sector took place in January, March, April, and June 2021, respectively. We met 43 interviewees (84%) in person, including 29 of the 31 facilities, all four lion traders, all six veterinarians, and both taxidermists. The remaining eight interviews proceeded either telephonically or via a virtual meeting platform (MS-Teams or Zoom). One facility owner was only willing to give a brief 16-minute telephonic interview. The in-person interview with another facility had to be converted into a telephonic one on short

notice after the interviewee tested positive for COVID-19 the day before the interview. On average, the in-depth interviews took 2 hours with a minimum duration of 1 hour and 2 minutes (except for the one very short interview of 16 minutes mentioned above) and a maximum of 3 hours and 52 minutes. In addition to the interview data, the lead researcher visited all but seven facilities and noted personal observations. We compared the observations with the interview on the same day and later during data analysis and used annotations for validations and inconsistencies. No observations could be made on the two facilities with telephonic interviews as well as in five cases where the interview was arranged to take place at a different location than the facility.

We have added the detailed interview guide in Appendix A outlining the core topics and guiding questions for the semi-structured interview as well as structured questions for captive lion facilities. The overall structure for the interview included the exploration of core topics related to existing business models in the sector, organisational aspects and questions about performance and success. The guide was available in five different versions adjusted to the perspectives of (a) facilities, (b) traders, (c) veterinarians, (d) government representatives and (e) other active sector stakeholders. All interviews

with facilities incorporated an additional, structured questionnaire part after exploring the core topics of the interview guide. The following is a summarised version of the core topics that were covered in the semi-structure interviews:

### **BUSINESS MODEL**

- Reasons and rationale for establishing and maintaining a captive lion facility
- Products/services offered and value proposition of captive lion facilities
- Customers of captive lion facilities and consumers of captive lion products/services
- Supply chains, distribution channels and key partnerships for captive lion facilities

### **OPERATIONS AND ORGANISATION**

- Operational practices of captive lion facilities
- Lion welfare and wellbeing
- Reproductive management practices, including genetics and cub-rearing

### **PERFORMANCE AND SUCCESS**

- Financial/business performance of captive lion facilities
- Environmental performance of captive lion facilities
- Working conditions at captive lion facilities
- Sustainability of captive lion facilities and the future of the captive lion sector

Adopting a neutral stance towards all interviewees and all aspects associated with the controversial captive lion sector proved crucial to engaging and leading an open and informative conversation with the respondents. We adjusted the order and phrasing of the open-ended questions to attune to the conversation flow during each interview. The interview started with explaining the research aims and reiterated the assurance of anonymity to keep personal information confidential as stated in the informed consent form sent to each interviewee before they agreed to the interview (see subsection 2.5 for details on research ethics). We requested permission to record the interview verbally, which was granted by 49 interviewees. In addition to the interview recording, we also took notes during each interview. In two cases where respondents did not agree to the recording, detailed note-taking during and immediately after the conversation became the main source for data analysis. Each interview was post-processed on the same day, preparing detailed, hand-written field notes, including depictions of supply chains and operational structures of captive lion facilities, as well as personal observations in the form of memo-writing (Corbin & Strauss 1990; Newing et al. 2011).

After the initial analysis of the qualitative interview data, five focus groups and targeted desk research served to triangulate the preliminary research results. The goal of the small focus groups was to ascertain that the sector's descriptions were thorough and accurate and to collect more data through comments, feedback and discussion (Newing et al. 2011; O.Nyumba et al. 2018). By the same token, consensus-building in terms of finding or defining a solution for what should happen to the sector was out of scope. Based on the preliminary research results, we assembled the following topical focus groups consisting of four or five members in line with a typical sample size of three to five focus groups for clear-cut studies (Morgan & Kruger 1998):

- Lion welfare (five group members)
- Lion conservation (including genetics) (four group members)
- Illegal trade (four group members; a fifth member could not join due to technical issues)
- Legal trade and market development (four group members)
- Transformation and working conditions (five group members).

Focus group members had to be knowledgeable about the respective group topic and familiar with the sector. We used purposive sampling to identify and contact them (Bernard & Ryan 2010), tapping into the lead researcher's network extended by the contacts of direct collaborators at the EWT. All five focus group sessions lasted 1.5 hours and took place virtually on MS-Teams during one week in April 2021. Participants had to be familiar with relevant, preliminary research results to contribute meaningfully to the group discussion and achieve the triangulation objective of the sessions. Thus, we invited all focus group members to join a 1.5-hour presentation of selected results in the week preceding the focus group sessions. We recorded the virtual presentation and made the recording available to those participants who were unable to attend the presentation session. The lead researcher facilitated all focus group discussions, prompting the participants to reflect on (i) their general reactions to the preliminary results, (ii) highlights and surprises, (iii) hot topics or areas of concern as well as (iv) recommendations to strengthen the characterisation of the sector. We recorded all five focus group sessions upon receipt of permission from all group members at the beginning of the session. Similar to the semi-structured interviews, the topics for the focus groups were not necessarily addressed in a strict order allowing the discussion to follow new threads in a natural, conversational flow as they emerged (Newing et al. 2011; Young et al.



2018). All interviewees and focus group members accepted the offer to receive a copy of the final report.

In addition to the focus groups, targeted desk research activities served to triangulate and supplement the qualitative research results. These efforts included contacting selected interviewees to confirm or provide additional data where appropriate. Beyond that, we engaged with government officials of the Free State, North West, and Limpopo Provinces. The aim was to receive anonymised, quantitative data on all provincial facilities and for government officials and Environmental Management Inspectorates (EMIs) to share the legislation and guidelines deemed relevant for the sector. Desk research proved to be lengthy and time-consuming. Efforts to identify the correct contacts within provincial and national government agencies and obtain the required research permits commenced at the same time as fieldwork, only two months into the project. Nevertheless, it took nine months for the first province to provide data and access to information and twelve months for all three provinces

to do so. All attempts to sign a research agreement with the DFFE remained unsuccessful. In addition to lengthy permitting processes, collating the requested quantitative data on captive lion facilities turned out to be an arduous process within the respective provincial departments due to a lack of central data storage. The structure of the returned data differed between provinces, and data were partly sketchy. Nonetheless, the desk research activities yielded anonymised facility data from three provinces, additional data from eleven facilities and two lion part traders, as well as written responses from an Asian lion part importer to questions based on the preliminary research results. The questions to the Asian lion part importer are included in Appendix B.

Despite the limitations mentioned in this subsection, the applied mix of multiple methods for data collection provided breadth and depth of perspectives and formed a solid basis to account for the complexity within the sector with appropriate rigour (Denzin 2012).

## 2.4 RESEARCH PROCESS AND DATA ANALYSIS

The research process centred around the analysis of the qualitative data collected during fieldwork to develop in-depth descriptions characterising the sector (Newing et al. 2011). The study featured four distinct phases summarised in Table 3. Unstructured key informant engagements

formed the basis for the initial stakeholder analysis during phase 1 and served to prepare the subsequent fieldwork phase. Details about the stakeholder analysis can be found in subsection 2.2.

**Table 3: Overview of the research process**

Research Phase	Timeframe	Research Activities
<b>Phase 1:</b> Stakeholder analysis and fieldwork preparation	Jul–Aug 2020	<ul style="list-style-type: none"> <li>Engagements with key informants to introduce the study and plan data collection and sampling strategy</li> <li>Stakeholder analysis to identify relevant interview groups and determine study areas</li> <li>Development of interview guide (for different stakeholder groups)</li> <li>Ethical clearance</li> </ul>
<b>Phase 2:</b> Fieldwork: semi-structured interviews and memo-writing	Sep–Dec 2020	<ul style="list-style-type: none"> <li>Semi-structured interviews with 31 captive lion facilities in three geographical areas (Free State, North West and Limpopo/Gauteng) based on random sampling</li> <li>Semi-structured interviews with 16 active key players in the captive lion sector based on purposive sampling</li> <li>Annotations and memo-writing of field notes</li> </ul>
<b>Phase 3:</b> Initial coding and analysis of qualitative interview data	Jan–Mar 2021	<ul style="list-style-type: none"> <li>Partial transcription of all semi-structured interviews and delineation of all described business models, supply chains and breeding modes</li> <li>Comparison of qualitative data and identification of emerging themes</li> <li>Semi-structured interviews with two active key players in the captive lion sector, including annotations and memo-writing of field notes</li> </ul>

Research Phase	Timeframe	Research Activities
<p><b>Phase 4:</b></p> <p>Detailed coding and analysis plus cross-method triangulation</p>	Mar–Jun 2021	<ul style="list-style-type: none"> <li>• Detailed coding and quote extraction from interviews</li> <li>• Detailed comparison of similarities and differences between all coded interviews and refinement of emergent themes data synthesis</li> <li>• Recruitment of focus group members and organisation and facilitation of five focus group sessions</li> <li>• Evidencing of preliminary research themes with focus group data</li> <li>• Semi-structured interviews with two active key players in the captive lion sector, including annotations and memo-writing of field notes</li> <li>• Collection of supplementary quantitative data from interviewees and three provinces and desk review of legislation and regulations</li> </ul>
<p><b>Phase 3:</b></p> <p>Report compilation and dissemination</p>	May–Aug 2021	<ul style="list-style-type: none"> <li>• Summarising research results</li> <li>• Initial report compilation and review</li> <li>• Report completion and dissemination</li> <li>• Extraction of presentation outline and policy briefing documents</li> </ul>

During the second and third study phases, qualitative data analysis involved annotations with open codes and memo-writing of the partly transcribed interviews and focus group workshops (Corbin & Strauss 1990; Newing et al. 2011). We wrote annotations and started coding our interview notes on the same day as the interview and used pre-defined codes derived from the interview guide, such as “rationale”, “client”, or “product”. Simultaneously, we identified and noted informant terms and codes in relation to the interview notes, referred to as “open coding” (Strauss & Corbin 1994; Gioia et al. 2013), e.g. “funding approach”. As part of this process, we also created detailed memos (Newing et al. 2011), including depictions of the gathered supply-chain information and operational structure of captive lion facilities. Coding, extracting and comparing interview data provided the means to formulate and continuously revise emergent concepts and their links. Of the fifty-one interviews, forty-eight were partly transcribed using the online Tool Sonix.ai for the initial conversion of the interview recordings into a text version. The poor quality of one recording made a text conversion impossible, and the researcher extracted careful notes and quotations from listening to the poor-quality recording. For the two cases where interviewees did not give permission to record the interview, data analysis relied exclusively on the detailed interview- and field notes.

We coded the interview transcripts based on the predefined and the open coding system initially developed while post-processing the interviews during fieldwork. Coding of the interview transcripts yielded more detailed codes and sub-codes. Additionally, the interview transcripts and field notes served to create comprehensive depictions of the individual business models, supply chains and breeding modes described during each interview. The next analysis step involved a detailed comparison of the codes seeking

similarities and differences to identify coherent categories or even further aggregate dimensions referred to as “axial coding” (Corbin & Strauss 1990). The descriptors for these themes preferably retain terms from the interviews (Gioia et al. 2013). The themes and dimensions then served to develop the theoretical model for a nuanced understanding of the captive lion sector in the form of graphical representations to present the interview data faithfully. In addition, we selected meaningful interview quotes to exemplify the data categories and various themes (Strauss & Corbin 1994; Gioia et al. 2013). These themes do not necessarily represent the views of the author. Furthermore, we supplemented the insights into these categories by analysing data extracted from the structured interview part with facilities.

Careful analysis of the coded interview data provided the first tier to verify the various findings. The sample size set in advance for the semi-structured interviews proved sufficient to reach saturation during the last month of fieldwork. The concept of saturation is important to determine the sample size for qualitative research. It refers to a data collection stage when obtaining more data by adding individuals to the sample elicits no new insights or understanding relevant to the research (Starks & Trinidad 2007; Newing et al. 2011). At this stage, data gathering can conclude. For this study, saturation was achieved during the final fieldwork trip in December 2020. Subsequently, the third research phase served to further evidence and refine the sector’s in-depth characterisation, thereby creating a representative storyline. Overall, the research could have benefitted from additional time for initial data analysis and the ability to specify and follow-up additional data requests to governmental agencies way in advance and more regularly.

## 2.5 RESEARCH ETHICS

Researching the captive lion sector fell under the category of “socially sensitive research” due to the controversy about subjecting this iconic species to denounced lethal and non-lethal trade activities. Furthermore, the research required asking questions about illegal activities prevalent in the sector (Sieber & Stanley 1988). Hence, ethical considerations played a crucial role in successful data collection to gather quality data while being mindful of the impact on research participants. The EWT independent Ethics Committee approved an ethics clearance submission for this project on 15 September 2020. This subsection highlights the ethical standards adopted for the study, including informed consent, anonymity and confidentiality of identifying information, the neutrality of the researcher, data storage, participant compensation and research funding.

We obtained informed consent from all research participants, i.e. interviewees or focus group members. Contacted people received an informed consent form before agreeing to be interviewed or take part in a focus group session. Participants consented verbally or via written messages upon agreeing to take part in the study. The informed consent form included

- the purpose of the research and that the data will only be processed for this identified purpose (as per POPI/ GDPR guidelines),
- information on the background and funding of the study,
- information on the interview/focus group content,
- that participation is voluntary and that the participant may withdraw at any time from the research without having to state reasons or any other consequences following,
- that the participant is free not to answer questions without giving reasons,
- that all data will be anonymised for analysis to protect the participant’s identity and that the data will be kept confidential,
- that any recording device will only be used with the participant’s consent and only for transcription purposes,
- that, should the participant not agree to the recording, only written notes will be taken during the interview/ focus group,
- that all data will be stored in a password-protected filing system in EWT’s cloud and on the researcher’s password-protected,
- that direct quotes might be included in the report but only in an anonymous way (i.e., using the randomised participant ID-code),
- an offer to receive a copy of the report.

All respondents were informed that this comprehensive study of the captive lion sector is part of an initiative funded by USFW through a grant to the EWT. The information also included that the lead researcher was hired as an independent contractor to conduct the research and that there are no intended commercial benefits to be derived from the work. Even though research participants did not stand to benefit directly or immediately from the research results other than receiving a copy of the final report, respondents participated voluntarily and did not receive compensation for the information shared or the time spent during the interviews and focus groups.

Due to the sensitivity of the topic and the resulting reluctance of key players to partake in the study, anonymity and confidentiality about identifying information were of utmost importance to establish an open and trustful conversation. At the beginning of each interview, we reiterated the commitment to strict anonymity, asked for permission to record the interview or focus group session, and pointed out that we would be taking notes during the conversation. In case a participant declined, the interview proceeded with a focus on detailed note-taking without being recorded. We also reminded participants that they are not required to answer any questions they are not comfortable with. After each interview, we replaced the respondents’ names with an anonymous letter-number code for analysis purposes. The letters in the code referred to the role of the interviewee in the sector (see Table 4). Upon converting the audio recordings to text versions, the researcher took great care to anonymise names, places and other information that could lead to the identification of individual research participants.

**Table 4: Interview code structure referring to the role of interviewees in the captive lion sector**

<b>Interviewee-Code</b> (Letter code combined with a double-digit number)	<b>Role in the captive lion sector</b>
<b>CLF##</b>	Captive lion facility
<b>CLBTr##</b>	Trader of captive lion parts
<b>CLPH##</b>	Professional hunter of captive lions
<b>CLTr##</b>	Trader of captive lions (live)
<b>CLSci##</b>	Scientist with research background in captive lions
<b>NGO##</b>	Representative of non-government organisation
<b>PGOV##</b>	Provincial government official
<b>TAX##</b>	Taxidermist
<b>VET##</b>	Veterinarian

We saved all collected data in password-protected files in an access-restricted folder on EWT’s cloud and the password-protected laptop of the researcher. To further ensure confidentiality and anonymity of any identifiable information, the collected and stored data will only be accessible to the researcher and the project coordinator at the EWT, both bound to confidentiality as part of the ethical clearance and their conduct as professional researchers. No data will be shared with any third parties.

To mitigate the risk of discomfort or distress of research participants and build trust and rapport, we undertook concerted efforts to establish relationships on an equal level. Adopting a neutral ‘not-knowing stance’ about all aspects

associated with the sector constituted the cornerstone of these efforts, in addition to the above-mentioned measures taken to protect anonymity and confidentiality. Furthermore, participants chose the place and time for the interview within the researcher’s available fieldwork timeframe. The conversational style of interviews and focus groups encouraged research participants to assume considerable, implicit control over the interview process (Corbin & Morse 2003). In particular, the researcher sought to phrase all questions carefully and in an open-ended way. At the same time, participants were reminded of their choice not to respond to questions they deemed uncomfortable.

## 2.6 RESEARCH CHALLENGES AND LIMITATIONS

In subsection 2.3, we referred to the research challenges experienced during our engagement with the provincial governments of the Free State, Limpopo and the North West province, as well as the DFFE. We described the lengthy and partly unsuccessful pursuit of permission processes and the limitations of quantitative data from captive lion facilities. Obtained data was frequently incomplete, unavailable, or inconsistent, as data capture methods are not standardized between provinces and, in some cases, even between districts of the same province.

In addition to these obstacles and constraints, this final subsection deals with data limitations pertaining to the qualitative nature of the study. While qualitative research might appear informal from a quantitative science perspective due to the lack of statistical analysis, qualitative social research is an appropriate means to provide a comprehensive, overall picture and disentangle complexities of situations and issues by examining different perspectives in-depth (Newing et al. 2011).

Voiced concerns often revolve around the reliability and accuracy of the information shared by research participants. Newing et al. (2011) summarise that inaccuracies could

stem from false memories of the research participants potentially distorted by their prejudices or a general lack of knowledge. As a consequence, they might revert to reporting on hearsay instead of their own experience or share statements that are meant to say what the respondent thinks the interviewer wants to hear or that put the respondent in a good light. For this study, the EWT’s positionality as a conservation NGO contracting the research and the USFW as the funding organisation (shared with all respondents before they consented to their participation) could have also impacted the responses during the interviews.

We addressed these concerns in several ways to minimise any limitations in the interview data. We ensured to approach interviewees with a neutral, not-knowing stance (Young et al. 2018). Furthermore, we applied interview skills from coaching psychology to establish rapport, create an open, trust-building interview setting and listen and ask in ways conducive to facilitating a rich and unbiased conversation (International Coaching Federation 2019). Beyond that, our interviews were guided by the nominative questioning technique described by Nuno & St. John (2015) for sensitive areas involving illicit behaviour.

# PART 3

## RESEARCH RESULTS

### INHERENT COMPLEXITY WITHIN THE CAPTIVE LION SECTOR

#### SECTION SUMMARY

This section covers the following research insights and key messages for an overall understanding of the nuances and complexities within the South African captive lion sector:

**1. Numerous individually unique captive lion facilities drive the sector's complexity.**

(see subsection 3.2 and subsection 3.3 for details)

Captive lion facilities are individually distinct from each other based on their goals and rationale. They form the centrepiece of the sector, and their uniqueness is the driving force for the overall complexity in the sector that has developed since the 1990s. In three provinces where we conducted interviews, the Free State, Limpopo and North West Province, the captive lion sector comprises 237 captive lion facilities with 7,437 lions. Each unique facility model is grounded in intrinsic motivational factors. Captive lion owners or managers express these motives firstly through a unique mix of various aspirations and desires associated with the decision to set up and maintain a captive lion facility, the so-called 'motive mix'. Secondly, their motives are shaped by deep-seated attitudes about their approach to funding their captive lion facility.

**2. Captive lion facilities link into five distinct sector clusters.** (see subsection 3.1 for details)

The research uncovered five distinctly different captive lion sector clusters. These clusters encompass the trade activities within the cluster and are distinguished according to primary products/services offered to meet the needs of specific customers. Lion derivatives do not represent a separate cluster, i.e. facilities do not specifically breed lions for their bones.

Cluster 1: No lion revenue

Cluster 2: Sanctuary

Cluster 3: Guest attraction

Cluster 4: Live export

Cluster 5: Hunting tourism (incorporating the lion part trade)

Captive lion owners/managers tie their facility into these clusters based on their 'motive mix' and their funding attitude.

**3. The five captive lion sector clusters feature typical functional patterns for supply chains and reproduction/breeding, including cub-rearing.**(see subsection 3.3 for details)

The operations of captive lion facilities vary widely in terms of how they handle matters of reproduction, including cub-rearing and which supply chains are relevant when animals are sold. However, typical patterns have emerged within the five sector clusters.

Legal trade in each cluster is organised along a distinct supply chain (except for cluster 1, where no lion-related trade takes place), separate from all other supply chains in the sector. Each supply chain integrates clear and stable process steps to generate and deliver the intended products/services to particular consumers. Sustained process steps to link these supply chains with each other are not established. Consequently, an organised supply chain with sustained process steps for hunting captive lions after being used for lion interaction does not exist.

The way captive lion facilities handle matters of lion reproduction ranges from no reproduction via natural reproduction to lion breeding. The "no reproduction" and "natural reproduction" approaches were commonly found in cluster 1 (no trade), cluster 2 (sanctuary) and cluster 3 (guest attraction). Cluster 5 (hunting tourism) and clusters 3 and 4 (guest attraction and live export) each feature a typical breeding mode, i.e. reproduction is planned and controlled to achieve intended breeding results in terms of annual lion numbers and quality as part of a business model.



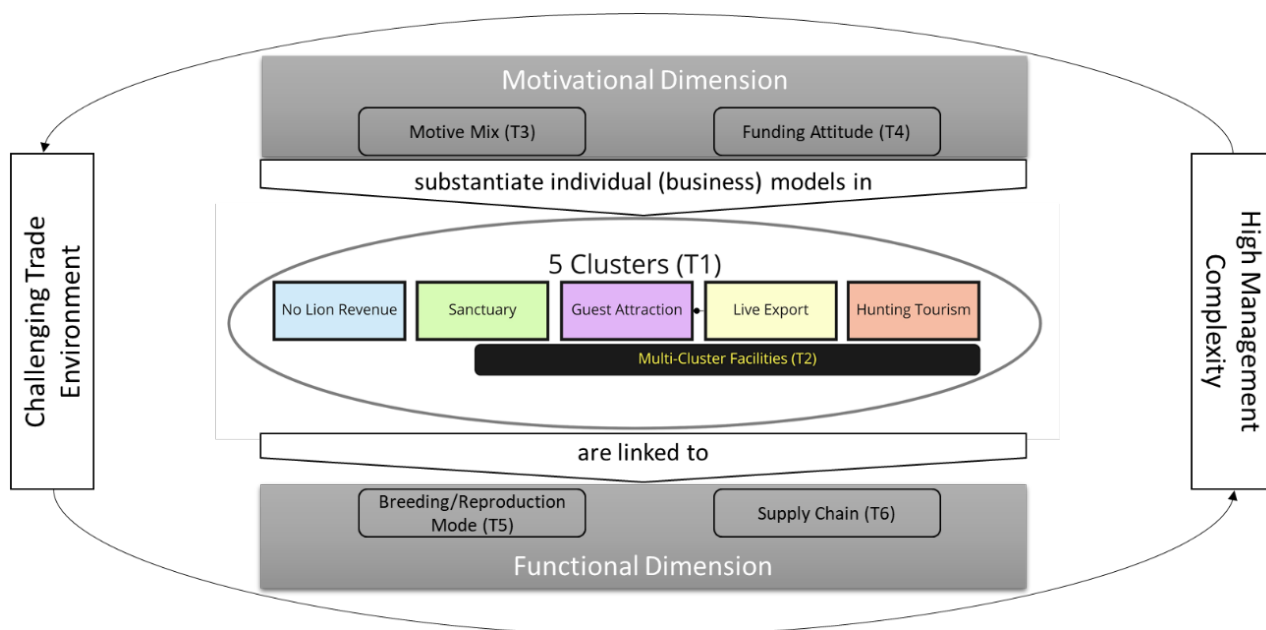
The qualitative data analysis uncovered the following three interrelated core elements to understand the complexity of the captive lion sector in South Africa:

1. At its core, the sector is made up of unique (business) models linked to five sector clusters.
2. A motivational dimension is responsible for the uniqueness of each (business) model.
3. The functional dimension differs according to the sector cluster.

The analysis, furthermore, highlighted the importance of the context influencing the sector distinguished by a challenging trade environment and an enormous management complexity

grounded in differing concepts of sustainability/sustainable use. Figure 2 constitutes the frame of reference for all results presented in this report. Each subsection links back to this general framework, progressively detailing the main themes and findings within the three core elements.

Five sector clusters are central to the overall understanding of the sector (Figure 2). The trade in lion derivatives does not constitute a separate cluster, as might be expected. In addition, two emergent themes in the motivational dimension explain how captive lion owners rationalise their individually unique models, typically associating their facility with one particular cluster, although cases of multi-cluster facilities exist.



Code	Core Element/Theme	Full theme description
<b>Central Core Element</b>		<b>The South African captive lion sector consists of unique (business) models linked to five sector clusters.</b>
T1	Five Sector Clusters	The South African captive lion sector features five distinct clusters.
T2	Multi-Cluster Facilities	Some facilities operate in more than one cluster.
<b>Core Element: Motivational Dimension</b>		<b>The existence of the South African captive lion sector rests on human motives and attitudes.</b>
T3	Motive Mix	Each captive lion facility features a unique motive mix that is used to rationalise the individual (business) model.
T4	Funding Attitude	The personal attitude of captive lion owners towards ways to fund a captive lion facility is used to rationalise an individual (business) model.
<b>Core Element: Functional Dimension</b>		<b>The five different captive lion sector clusters feature unique functional patterns.</b>
T5	Reproduction/Breeding Mode	The reproduction/breeding modes, including cub-rearing, differ according to the cluster
T6	Distinct Supply Chains	Clusters are linked to distinct supply chains, while two shared supply chain segments exist.
<b>Context: Challenging Trade Environment</b>		<b>Since 2015/2016, the South African captive lion sector has been operating in a challenging trade environment.</b>
<b>Context: High Management Complexity</b>		<b>Managing captive lion facilities is complex grounded in the different perceptions about the meaning of sustainable use.</b>

**Figure 2: Overview of the three defining core elements (1) five sector cluster, (2) motivational dimension, (3) functional dimension and their emerging main themes, as well as two contextual elements (A) challenging trade environment and (B) high management complexity for a comprehensive and nuanced understanding of the South African captive lion sector<sup>2</sup>.**

2. Letter 'T'-number combinations in brackets refer to the main themes for each core element in the depiction

# 3.1 FIVE CAPTIVE LION SECTOR CLUSTERS

## SECTION SUMMARY

Five different sector clusters, differentiated by the product/service portfolio of facilities, emerged during data analysis:

Cluster 1: No lion revenue

Cluster 2: Sanctuary

Cluster 3: Guest attraction

Cluster 4: Live export

Cluster 5: Hunting tourism (incorporating the lion part trade)

This subsection describes the detailed research insights for an overall understanding of the nuances related to these clusters:

### 1. Clusters 3, 4 and 5 represent the main trading clusters. (see Table 5)

Typically, captive lion facilities operate in a single cluster. However, facilities in clusters 4 (live export) and 2 (sanctuary) combined their product/service portfolios with cluster 3 (guest attraction). Multi-cluster facilities combining all three product/service portfolios were rare but existed.

### 2. A “pre-cluster” selling lions to other captive lion facilities exists.

The product/service portfolio of captive lion facilities in the three main trading clusters can be supplemented with sales of lions to other captive lion facilities. For these “pre-cluster” sales, lions are often sold as breeding stock or without a clear end consumer in mind.

### 3. The trade of captive lion bones does not constitute a separate sector cluster.

From a product portfolio perspective, the lion carcasses are either sold as a hunting by-product or from animal mortalities in the facility. We found no evidence that captive lion facilities are breeding lions specifically for bones, as interviewees found lion derivative products hard to relate to.

An exploration of the (business) models uncovered patterns for specific product and service portfolios offered by any particular facility, focussing on the needs of different end consumers. However, a business to business (B2B) segment, selling lions to other facilities as breeding stock or

without a clear end consumer in mind, is often added to the product and services portfolio. In two cases, “pre-cluster” B2B sales even comprised the only revenue source. Overall, five sector clusters surfaced based on the typical patterns of product and service offerings (Table 5).

**Table 5: Captive lion sector clusters based on emerging patterns of product and service portfolios to meet the demand of different consumers**

No.	Cluster	Emerging Product/Services Portfolio	Consumers
1	No Lion Revenue	<ul style="list-style-type: none"> <li>No lion-related products or services offered or sold</li> </ul>	N/A
2	Sanctuary	<ul style="list-style-type: none"> <li>Care contributions through donations supplemented by                             <ul style="list-style-type: none"> <li>- lion viewing/display</li> <li>- volunteer experience</li> </ul> </li> </ul>	Private/Organisational Donors [On-site Day Visitors or Overnight Guests in RSA] [On-site Volunteer Guests in RSA]
3	Guest Attraction	<ul style="list-style-type: none"> <li>Lion viewing/display as part of game drive/bush experience OR</li> <li>Lion viewing/display only (predator park/zoo)</li> </ul> <p><i>Both occasionally combined with</i></p> <ul style="list-style-type: none"> <li>- lion/animal interaction</li> <li>- volunteer experience</li> </ul> <p><i>Both sometimes supplemented by</i></p> <ul style="list-style-type: none"> <li>- B2B-sales to other CL-facilities in South Africa</li> <li>- Sales of carcasses from fatalities in CL-facility</li> </ul>	[On-site Day Visitors or Overnight Guests in RSA] [On-site Volunteer Guests in RSA] <i>Final consumer unclear or undetermined</i> [Lion/Tiger Part Users (Asia/Local Communities)]
4	Live Export	<ul style="list-style-type: none"> <li>Lions (mostly cubs or sub-adults) for export</li> </ul> <p><i>In all cases combined with guest attraction portfolio (see above)</i></p>	Day Visitors or Overnight Guests overseas OR Private Collectors
5	Hunting Tourism	<ul style="list-style-type: none"> <li>Adult lions for hunting (incl. carcass utilisation)</li> </ul> <p><i>in almost all cases combined with</i></p> <ul style="list-style-type: none"> <li>B2B-sales to CL-facilities in South Africa</li> </ul> <p><i>very often supplemented by</i></p> <ul style="list-style-type: none"> <li>Sales of carcasses from fatalities in CL-facility</li> </ul>	CL-Trophy or Photo Hunter & Lion/Tiger Part User (Asia/Local Communities) <i>Final consumer unclear or undetermined</i> [Lion/Tiger Part User (Asia/Local Communities)]

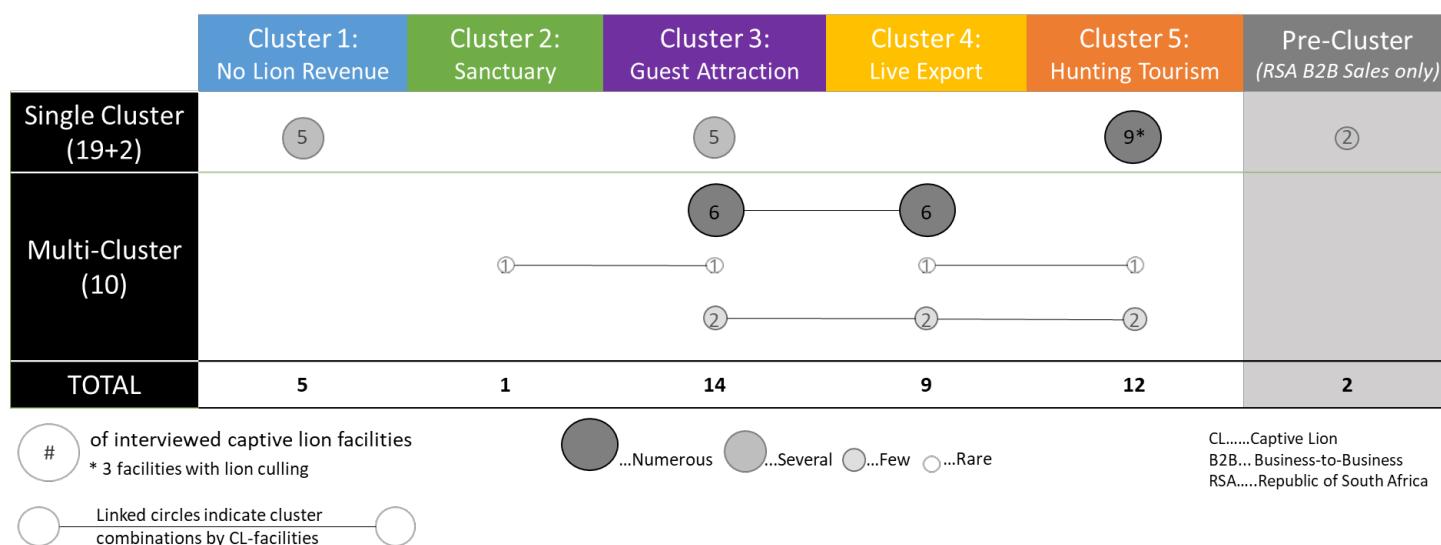
B2B... Business-to-Business  
 CL.....Captive Lion  
 N/A.....Not Applicable  
 RSA.....Republic of South Africa

Consumer types in square brackets are linked to product/service offerings that are not offered by all captive lion facilities in the respective cluster

Figure 3 provides a summary of the representation of interviewed facilities in the five different clusters. The majority of interviewed facilities (19 out of 31; 61%) are associated with a single cluster. This association means that the facilities offer only the corresponding product/service portfolio described in Table 5. However, multi-cluster facilities exist, most often as a double-cluster combination. Cluster 4 (live export) is frequently coupled with sector 3 (guest attraction) to the extent that all six interviewed facilities engaged in the export market also offer the product/service portfolio of the guest attraction cluster.

Other cluster combinations were rare. The one facility out of 31 (3%) that qualified as a sanctuary, i.e., keeping and caring for rescued lions (mostly imported from different European countries) financed through donations, also

operated in cluster 3 (guest attraction). This facility supplemented donations from private individuals or donor organisations with revenue from on-site day visitors and overnight guests. In other infrequent cases (3 out of 31; 10%), cluster 4 (live export) was combined with cluster 5 (hunting tourism). Two of these facilities (6%) further expanded their product/service portfolio to cluster 3 (guest attraction). Consequently, those two facilities encompassed all three main trading clusters. Finally, two of the 31 captive lion facilities (6%) could not be linked to one of the clusters that are related to specific end-users. As they sell lions solely to other South African facilities, the utilisation of these lions remained unclear, an insight that will be further detailed in subsection 3.3.2 about the sector's supply chains.



**Figure 3: Association of 31 interviewed captive lion facilities with five different clusters characterising the captive lion sector in South Africa.**

14 of 31 facilities (45%) supplemented their product/service portfolio with lion body parts. Details about the functioning of the lion part trade are presented in subsection 3.3.2. From a product portfolio perspective, the lion carcasses were either sold as a hunting by-product or to effectively dispose of animal fatalities in the facility, either from natural deaths or euthanasia of injured, sick or old individuals. In three cases (10%), facilities with the typical product/service portfolio of the hunting tourism cluster had commenced culling adult lions as early as 2018 as a means to manage or scale down the number of adult lions, especially females. Interviewees referred to the practice of lion culling as “bulk euthanasia” as it was conducted by veterinarians using standard euthanasia techniques normally used

for the purpose of ending the lives of suffering animals, although these lions were healthy. Even though these cases hint at a potentially emerging sector cluster for lion body parts, the research data did not reveal patterns that such a cluster already exists. The facilities selling lion body parts rather recognise this revenue stream as a side-perk to their business model. As exemplified in the following quotes, a theme of expressed disapproval and rejection to engage in lion body part sales as a core business focus emerged. Instead, interviewees found lion derivative products for Asian consumers hard to relate to and refrained from pro-actively developing the market for these end products.



“The Chinese come and ask for the bones because there’s no more tigers. ... They replaced the tiger bones with the lion bones, and it’s a big lion industry in South Africa.

Where else must they go in the world? There’s no other place for them to supply. ... I won’t get a local person or sell my lion for a lower price by telling him leave me the nails and the head, and you can just take the skin. I don’t want to ... do that. You know, that’s my personal thing. I don’t want to do it, ... because if you’re a breeder, just to breed an animal, you know, just for the bones, I feel ethically, that is not correct.” [CLF06]

“We’re going to get a permit for it because those are derivatives of legally hunted trophies, and it’s a by-product. ... I sell it as a derivative, as a by-product, from a hunted trophy. ... Then it goes through Laos or Vietnam ... and they use it to do whatever. I mean, you know, ... I am not an expert in that field, so I can’t really tell you what they’re using it for.” [CLF12]

“As I was saying, I’m not in the lion bone trade, but if there’s some sort of accident or something, then they go to N.N. {lion part trader}.” [CLF23]

“You know, we are not an abattoir. If there is old lions ... or something went wrong with a lion, and he dies, then yes. ... But that is the only time that ... we will we would do that. ... But to farm lions for the bones ... that’s not ethical for me.” [CLF24]

“I don’t have a problem if that is a by-product of what you’ve done. If that becomes your main product of why you have lions, then I have a problem with it. It’s not illegal. I just have a moral problem with just killing the lions purely for the bones.” [CLPH02]



# 3.2 MOTIVATIONAL DIMENSION UNDERPINNING INDIVIDUAL (BUSINESS) MODELS WITHIN THE FIVE CAPTIVE LION SECTOR CLUSTERS

## SECTION SUMMARY

Individual (business) models arise from two core motivational dimensions. Captive lion owners and managers brought up eleven different motives to start and maintain a captive lion facility. These motives are defined as desires based on will contributing to the decision to own captive lions. They also alluded to five different attitudes towards funding captive lion facilities. The particular combination of these motives and funding attitudes forms the basis for the uniqueness of each individual (business) model. This subsection summarises the detailed research insights to understand these two motivational aspects underpinning the complexity of the captive lion sector.

### 1. A unique mix of eleven different motives underpins the decision for establishing and running a captive lion facility, four of which are income-related. (see subsection 3.2.1 for details)

No two captive lion facilities featured the same “motive mix”. Facilities exclusively geared towards income-related motives, including income generation, breeding top-quality lions, providing guest attraction and leaving a legacy for descendants, are not common. Other motives such as fondness, conservation, security, a way of living, fostering respect, waste utilisation, or compassion represent important drivers to own lions.

A motivational dimension emerged as a relevant element to understand the complexities in the South African captive lion sector (Figure 2). When describing their individual models, facility owners and managers elaborated two main factors for their rationale to keep, breed or trade with lions: (1) their motive(s) for establishing and running,

### 2. Captive lion owners hold deep-seated beliefs about a responsible approach to funding a captive lion facility. (see subsection 3.2.2 for details)

An attitude towards the way one’s captive lion facility is funded constitutes the second main motivational factor why facilities differ from each other. Five different attitudes surfaced during the interviews. At the core, these attitudes differ according to deep-seated beliefs about the captive lion owner’s responsibility:

- “Investment Partnership”: It is the joint responsibility of the captive lion owner and their lions to create wealth via profits for the maintenance and enhancement of the facility
- “Good Businessman”: It is the captive lion owner’s individual responsibility to create wealth via profits through the lions to earn a livelihood and to care for and look after the lions.
- “Break-Even”: It is the captive lion owner’s individual responsibility to earn enough income through the lions to care for and look after them.
- “Subsidising Passion”: Responsible captive lion owners care for their lions solely funded through other, non-lion income sources.
- “Redistribution”: Money to fund the existence and care of rescued lions is humanity’s responsibility where the funds to pay for the lions are regarded not as being generated through the lions but as coming from otherwise existing money sources to support a good cause.

and (2) their attitude towards ways of funding their facility. Both these categories account for how captive lion owners substantiate their facility’s link to the five sector clusters. At the same time, the motive-mix, in combination with the funding attitude, forms the basis for the uniqueness of each individual (business) model.



## 3.2.1 MOTIVE MIX FOR CAPTIVE LION FACILITIES

Overall, the interviews revealed 11 different motives to set up a captive lion facility. With reference to Forbes 2011, motives apply to the desires based on will as catalysts for decisions and actions. Following this definition, we want to assert that it is unclear to what extent these stated motives translate into tangible outcomes. Table 6 provides an overview of the various emergent motives. Figure 4, in turn, shows that most facility owners/managers described that a mix of two or more motives substantiated the decision to enter the sector (27 of 31|87%). Each “motive mix” was unique, i.e., no two facilities shared the same mix. According to the interview data, 12 of 31 facilities (39%) are based on motives entirely unrelated to revenue or income generation. Conversely, five facilities (16%) reported a motive mix exclusively geared towards income or revenue generation. Nearly half of the interviewees spoke of a mix of income-related and other motives to rationalise their decision to operate a facility (14 of 31|45%).

Notably, 17 of 31 facilities (55%) described their fondness and love for lions as a driving motive to own their lions [2a – 2e]<sup>3</sup>. Conservation-related motives were also mentioned several times (10 of 3|32%). These interviewees referred to providing research opportunities [3a], preserving genetic potential [3b], protecting functioning eco-systems and habitat on hunting farms [3c], retaining a safety-net population for the future [3d], or serving as a buffer to shield wild (managed) lion populations from legal and illegal trade-related activities such as trophy hunting or poaching [3e].

The same number of facilities (10 of 31|32%) included the intention to generate income for their farm through this type of land-use model [8a – 8d] or the conviction that the lions represent an essential guest attraction for a viable business [9a – 9d] in their motive mix. Several captive lion owners/managers (8 of 31|26%) mentioned safety/security reasons as a motive for owning lions with the belief that lions will keep people away [4a – 4c]. Other facilities (6 of 31|19%) combined income-related motives such as breeding what they believe are top-quality lions [10a – 10c] or the intention to expand their land ownership and leave a legacy for future family generations [11a – 11c] into their motive mix. Furthermore, six facilities (19%) described that their lions form part of their deliberately chosen way of living in the rural wilderness of South Africa [5a – 5c]. Five facilities operating in cluster 4 (guest attraction) emphasised the difference between keeping lions for guest attraction and their intention to educate people and foster respect for the species [6a – 6b]. Waste utilisation, which refers to disposing of the remains of farm animals that cannot be sold for human consumption by feeding them to lions [7a – 7c], represented a motive for running a captive lion facility in three cases (10%). Finally, two interviewees (6%) explained how their devotion to caring for animals who have suffered at the hand of humans serves as the main driver for their facility [1a].

**Table 6: Quotes from interviews with captive lion facility owners/managers on the motives for establishing and operating their facility**

Note: The quotes are based on the interview analysis. Suitable quotes have been selected to represent the various themes and do not necessarily represent the author’s views or those of the EWT.

<b>Motives for running a captive lion facility</b>	<b>Quote Code</b>	<b>Quotation with interview-ID in square brackets (CLF...captive lion facility owner/manager)</b>
<b>1: Compassion</b>	1a	“Our mission and vision is ... more humanity towards animals. ... to give the animals a first chance ... to live ... as much as possible natural life.” [CLF27]
<b>2: Personal Joy/ Fondness</b>	2a	“It was a dream, I can say, but when we started the abattoir, it became reality. ... I’m a wildlife person, so I love it. I love the wild.” [CLF02]
	2b	“Our motivation is our love for the animals and creating something that will ensure that these animals are here in the future.” [CLF05]
	2c	“I actually just keep them or just to have the nice. It’s nice to have.” [CLF09]
	2d	“Let’s go back again. 20, 25 years. I always had a love for animals.” [CLF18]
	2e	“It’s for me, for the love of it {the lions} and for, you know, for my security purposes.” [CLF25]

3. Number-letter combinations in square brackets in the results section indicate the quote number in Table 6.

<b>Motives for running a captive lion facility</b>	<b>Quote Code</b>	<b>Quotation with interview-ID in square brackets</b> (CLF...captive lion facility owner/manager)
<b>3: Conservation:</b> - research - genetic potential - habitat protection - safety-net population - buffer for wild lions	3a	"So it {the facility} is there at the disposal of researchers ... that is one of the main goals is to provide that research opportunity." [CLF05]
	3b	"We want to conserve the animals or preserve the genetics and teach people." [CLF10]
	3c	"And secondly, I think it is also got a component of conservation in it. ... we create habitat..." [CLF12]
	3d	"We try to have as many species as possible on the farm just for the heck of it, you know, not for tourism or anything. ... So if nobody else does it, we still have it. It's more for preservation than tourism or any other aspect." [CLF13]
	3e	"If you breed something in South Africa, they leave the wild thing alone." [CLF15]
<b>4: Safety/Security</b>	4a	"It's a security measure because I prefer them. A lot of breeders of rhino ... that I know, their own security companies become involved later on {in poaching} because there's so much money ... and a lion won't do that. ... You can't bribe them." [CLF03]
	4b	"Mainly it was for security reasons ... because they broke into that house. Since I got the lions there, ... no problem anymore." [CLF23]
	4c	"My one neighbour was killed. They slit his throat. The other neighbour was shot five times in the head, and another neighbour on the opposite hill was also killed. I need these animals for protection." [CLF30]
<b>5: Way of Living</b>	5a	"Because he {father in law and owner} said if he goes to the Kruger or he goes to the Kalahari, it's nice to see the animals and all that. But he wants to have one of his own parks. So yeah, he loves the nature and the animals and everything. If he comes here, he just sits there and looks at the fish eagles or whatever. He just loves it." [CLF04]
	5b	"And we, from the beginning I said, it's a way of life that you must also add to the project." [CLF08]
	5c	"My personal opinion is ... we've just got to hang in there. Like N.N. also said, it's a way of living. We're going to have to learn to live with our circumstances." [CLF12]
<b>6: Education/Foster Respect</b>	6a	"You know, we are very, very staunch believers in connecting people with nature. There's no better way than to teach people hands-on." [CLF05]
	6b	"There's a purpose for my lions so that people can respect them and that people can respect themselves." [CLF20]
<b>7: Waste Utilisation</b>	7a	"So we started an abattoir on the farm, a sheep abattoir, and that's where the whole thing started because of all the rest, the remains that you have. ... So, it's always been ... a waste because there's nothing wrong with it. So then that's where it all started." [CLF02]
	7b	"We started with lions, can you say by accident. My husband was a game capturer. ... We were always sitting with carcasses. You know, animals dies during the capturing and in the transport. We were always sitting with this lot of meat. And it's a waste because what do we do with the meat. You can only give like one or two animals to your workers, and the rest gets thrown away. So we saw the possibility there." [CLF22]
	7c	"So I got the lions for the dead cattle that's dying, so that we don't have to bury the carcasses." [CLF28]

<b>Motives for running a captive lion facility</b>	<b>Quote Code</b>	<b>Quotation with interview-ID in square brackets</b> (CLF...captive lion facility owner/manager)
<b>8: Income/Successful Farm</b>	8a	"It started off as being a pure business model and financially driven." [CLF12]
	8b	"I've decided when I'm 50, I want to come and live on my farm because I work hard. I want to enjoy what I really love. I don't really love something more than farming. ... So I decided I must do something on a small piece of land to get it viable. So I start, you know, do a bit of work on that and see what will be the best for me on a small piece of land ... and one of my friends told me that lion breeding is a good industry at that moment. ... So I do that research, and I start with that and start building my camps." [CLF14]
	8c	"I've got the infrastructure that I can't use for something else. ... That's why that's actually one of the reasons why I started with lions as well. That bush there, the game doesn't come there. If I had sheep ... or cattle, they don't graze there." [CLF17]
	8d	"But the main purpose is to breed and keep on breeding. ... what we want to achieve. It is success. It must go on. ... Because of we want to make money with it, ... and success." [CLF24]
<b>9: Guest Attraction</b>	9a	"So I decided, right, because of my love for animals, let's build a zoo. So, I start building a zoo ... that's different from any other zoo. ... Let's make it huge, and let's put the big five in it, which never happened. There is some of the big five here, but not all of them." [CLF11]
	9b	"The lions, because they are king of the forest, is one of the big attractions to my property for the tourism industry." [CLF14]
	9c	"So the attraction to have some of the big five there was important. There's a lot of people in {this area} that has never seen a lion." [CLF16]
	9d	"But it's for tourism. They {tourists} come in, and they walk through the crocodiles. They go to the lions, play a little bit, look at them." [CLF29]
<b>10: Top Quality</b>	10a	"I like to breed genetics, as I told you before ... because I'm proud of the genetics and stuff. It's a thing that I was born with. The English has got a saying: you must be cruel to be kind. What I mean by that is I only keep the best of the best in a litter for breeding." [CLF19]
	10b	"My passion was always to breed the best lion in the sense of my gene pool. Get it back to what I should think a lion would have looked like a few hundred years ago." [CLF22]
	10c	"So we decided we're going to put our name ... on the tag, and we're going to sell males and females to other breeders, and the rest will go to the hunting industry. So our main project ... we are still game breeders. We like breeding. So this is the father that this is the mother. This is a short nose, a longer nose like this one to that one. And then, at the end of the day, we'll get a proper lion ... that was our main motive." [CLF26]
<b>11: Expansion/ Legacy</b>	11a	"Well, because everything, my entire family's investment in what we've put down here, we put a lot into it. There's a lot of sweat and toil, money, emotion, dedication of my entire family is invested in this. It's not something you just say, well, let's do something else now." [CLF05]
	11b	"One day, we also want to have our grandchildren to take over my business, to take over this property and carry on with the legacy." [CLF06]
	11c	"And at the end of the day, none of this we take with us as long as we can leave some sort of a legacy when I'm not here, that I can say, you know when I left this place, there was this, that and the other thing. [CLF12]

	Compassion	Personal Joy/ Fondness	Conservation	Safety/Security	Way of Living	Education/ Foster Respect	Waste Utilization	Farm Income/ Successful Farm	Guest Attraction	Top Quality	Expansion/ Legacy
Income-related Motives (5 of 31 facilities; 16%)								CLF06 CLF24 CLF26 CLF14	CLF16 CLF14	CLF26 CLF14	CLF06 CLF26 CLF14
Other Motives (12 of 31 facilities; 39%)	CLF27 CLF07	CLF01 CLF03 CLF09 CLF13 CLF31	CLF01 CLF13 CLF31	CLF03 CLF31	CLF01 CLF31	CLF27	CLF20	CLF02			
Mixed Motives (14 of 31 facilities; 45%)		CLF04 CLF29 CLF30 CLF05 CLF10 CLF11 CLF18 CLF12 CLF19 CLF08 CLF21	CLF04 CLF05 CLF10 CLF17 CLF12 CLF19 CLF08	CLF04 CLF30 CLF17 CLF12 CLF19	CLF04 CLF18	CLF05 CLF10 CLF18	CLF04 CLF29 CLF30 CLF05 CLF10 CLF11 CLF17 CLF18 CLF12 CLF19 CLF08 CLF22	CLF04 CLF29 CLF30 CLF05 CLF10 CLF11 CLF17 CLF18 CLF12 CLF19 CLF28 CLF08	CLF04 CLF29 CLF30 CLF05 CLF10 CLF11 CLF17 CLF18 CLF12 CLF19 CLF08	CLF05 CLF17 CLF12 CLF19 CLF22	CLF12 CLF19 CLF12
<b>TOTAL</b>	<b>2</b>	<b>17</b>	<b>10</b>	<b>8</b>	<b>6</b>	<b>5</b>	<b>3</b>	<b>10</b>	<b>10</b>	<b>6</b>	<b>6</b>

● ...Cluster 1: No Revenue    ● ...Cluster 4: Live Export    ● ...Multi-Cluster Facility  
● ...Cluster 2: Sanctuary    ● ...Cluster 5: Hunting    ● ...Pre-Cluster Facility (RSA B2B Sales only)  
● ...Cluster 3: Attraction

B2B.....Business to Business  
 CLF#..... Captive Lion Facility Code  
 RSA.....Republic of South Africa

**Figure 4: Individual “motive mix” of 31 interviewed captive lion facilities expressed by the owner or manager of the facility arranged according to whether motives are purely income-related, purely non-income related or a mix of income-related and other motives**

## 3.2.2 ATTITUDE TOWARDS WAYS OF FUNDING CAPTIVE LION FACILITIES

Attitude towards the funding approach for a captive lion facility, framed in five different ways, emerged as the second theme used by owners/ managers to substantiate their decision to participate in the sector (Table 7). Overall, funding attitude combined with the motive mix summarised in the previous subsection provides the foundation of each interviewee's rationale for each unique (business) model.

By comparison, under the break-even narrative, economic activity only plays a role insofar as covering the incurred costs, i.e. avoiding losses, without any inclination to create monetary wealth for the owner [C]. This “break-even” attitude applied to a small number of facilities (3 of 31|10%) in the live export or hunting tourism clusters.

**Table 7: Quotes from interviews with captive lion facility owners/managers on their funding attitude substantiating the individual (business) model for owning and potentially breeding and trading captive lions (quote code as capital letters in round brackets preceding each quotation; interviewee-ID in square brackets following each quotation), and frequency of each funding attitude per captive lion sector cluster**

Note: The quotes are based on the interview analysis. Suitable quotes have been selected to represent the various themes and do not necessarily represent the author's views or those of the EWT.

Funding attitude	Cluster 1: No Revenue	Cluster 2: Sanctuary*	Cluster 3: Guest Attraction	Cluster 4: Live Export**	Cluster 5: Hunting Tourism	Multi-Cluster Facilities***	Pre-Cluster (RSA B2B only)
Investment partnership	(A) "They all need to, the lions, to bring in, contribute their part, the buffalo, the impala, every animal on this land contributes in the end to make my business successful. And each and every one got a value and I have to take care of it. If it is a thousand Rand or it's ten thousand Rand doesn't matter. He contributes to make it worthwhile having him here. There's nothing for free. Every animal costs me money, but every animal is also contributing something back to me. ... That's why I'll feed them, look after them, breed them, buy new genetics, new stock and spend a lot of money on it because they look after me as the owner and I'm putting back to say thank you." [CLF06]						
				①	③	①	①
Good business man (profitable land use option)	(B) "The main driving factor for the breeding of captivity lions is to make money in a sustainable use of it. There's no doubt about it. It's a business that has to be run. But in the parameters." [CLF23]						
			③	②	④	②	
Break-even	(C) "And even from my boss's perspective, he is not in this here to make money. And that's why we're not as pretty as a lot of the other places. He just doesn't want to lose money ... at least by the end of the year, we would try and break even. That's just the aim that we've got here." [CLF10]						
				①	②		
Subsidising passion/hobby	(D) "When you have a hobby or ..., call it whatever, you're going to spend money on that even if you don't make money. ... I'm lucky I generate money from my other businesses. I don't need to sell my animals. So I'm not under pressure to sell an animal." [CLF11]						
	⑤		②	②			①
Redistribution to support the good cause	(E) "...our clientele or our supporters are very much female over a certain age, and it's mainly in the middle aged and middle European. ... And then obviously we have big corporations, we have major donors." [CLF27]						
		①					

\* Facility supplements donation income with revenue associated with the guest attraction cluster

\*\* All 6 facilities in the live export cluster, also create revenue within the guest attraction cluster

\*\*\* Facilities combining revenues of the hunting tourism cluster with live export and/or guest attraction cluster(s)

●...Several ○...Few ○...Rare

B2B... Business-to-Business  
RSA....South Africa

A funding attitude emphasising the individual responsibility for wealth creation to sustain the facility underlies both the “investment partnership” and the “good businessman” approaches, argued by 6 of 31 (19%) and 11 of 31 (35%) of facilities, respectively. The difference between the two approaches can be explained by the perceived relationship with one's lions to achieve positive economic outcomes. The “investment partnership” approach ascribes lions to an active role in a business relationship with their owners. From this perspective, the relationship between owner and lion results in mutual benefits. The owner invests in and provides the best for the lions, while the animals, in return, enable the owner to grow and expand the business, i.e. the

lions invest back into the owner's facility [A]<sup>4</sup>. The “good businessman” attitude, in turn, attributes a passive part to lions. This view emphasises that lions represent a sensible, i.e. profitable land-use option for particular areas of one's property, thereby serving as a way to earn a livelihood. With this position comes an obligation to take good care of the lions [B]. As outlined in (Table 7), a funding attitude focussing on the responsibility of the individual facility to create economic value from which to earn money is predominantly represented in cluster 3 (guest attraction), cluster 4 (live export), cluster 5 (hunting tourism) as well as in multi-cluster facilities.

4. Capital letters in square brackets in the Results section indicate the quote number in (Table 7).



For more than a third of the captive lion owners (10 of 31|32%), a “subsidising a passion/hobby” attitude towards funding informed the way they approached financial necessities related to their facility. This attitude rests on the ability to cross-subsidise all lion-related expenses through income from economic activities unrelated to lions [D]. Interviewees recounted a wide variety of subsidising income sources, including mixed farming (crop, cattle, sheep, game), game hunting or game safaris, but also income from business activities entirely unrelated to wildlife or farming, including examples such as mining, financial services, panel-beating, marketing, welding or canvas-making.

In sharp contrast to all other funding approaches, the “redistribution” attitude of owners/managers (1 of 31 facilities|3%) discounts a perspective where economic value creation is viewed as a responsibility of the individual facility. In this case, the money needed to finance the facility is linked to an existing value of individual lions, i.e. the (largely remote) donors do not receive a specific/individual product or service for the money they spend. Instead, this particular funding attitude regards income sources necessary to finance the facility as existing money pots to be tapped into in support of a good cause like caring for rescued lions [E]. Interestingly, among interviewees with a “subsidising” or “redistributing” attitude, there was a tendency to reject any self-financing approach to facilities as despicable, risky, or even dangerous for the lions, exemplified by the following quote.

“Our businesses give us the money to run the facilities. ... You must not earn, derive your livelihood out of animals. Otherwise, you’ve got a terrible conflict of interest.” [CLF07]

In addition to describing their own funding attitude in relation to their facility, five facilities (16%), as well as two key informants, also described that an “exploitation approach” existed within the sector (see quotes below). Without specific references to individual members of the sector, the interviewees talked about facilities that aim to make a “quick buck” at the expense of the animals and without any long-term commitment to their sector engagement.

“Many people just went in it because they saw the money. ... You know, these are really what I call Fly-By-Nights. They quickly want to make a buck. ... it’s people with no farming background. Most of our problems start with a lot of people who have no farming background allowed to farm with lions. ... They’re not even the landowner.” [CLF22]

“And the high prices in 2012. Then they want to make a quick buck here and there. And that is not sustainable.” [CLF23]

By the same token, based on their individual motive mix combined with their funding attitude, owners argued that their facility does not match the overall picture of the sector painted by the media or portrayed on social media.

“The people that’s got opinions on our industry, their lives are totally different. He gets in his air-conditioned building and gets out in the morning, drives on the blacktop road. He goes to his office somewhere in a high building. He’s probably never seen an animal give birth, probably never seen an animal get killed.” [CLF12]

“You feel that you don’t really want to be part of that {work with captive lions}. You don’t want to be even mentioned in that, you know, social media things these days are so big and, you know, just the wrong thing gets said or filmed or something. And it goes on social media, and you are connected to that.” [VET01]

“I don’t know who’s going to put that in a greenies, in the compassionate conservationist head. It is not that we are not compassionate. We love nature. I live on nature. I like to know everything about nature. So it is my duty to preserve everything.” [CLF23]

I would say 50% conservation and 50% fuck them. It’s because we are so scared of what is on social media. ... And I just decided, you know, screw you guys.” [CLF08]

# 3.3 FUNCTIONAL DIMENSION OF THE FIVE SECTOR CLUSTERS

## SECTION SUMMARY

This subsection gives an account of the magnitude and scale of the captive lion sector and summarises the detailed research insights about macroscopic patterns of its overall functioning. The five sector clusters exhibit both characteristic reproduction/breeding modes and distinct supply chains, which are supplemented by two shared supply chain segments.

**1. Two typical breeding modes have emerged in the captive lion trading clusters. However, not all captive lion facilities breed.** (see subsection 3.3.1 for details)

Captive lion breeding happens in all three trading clusters, i.e., guest attraction, live export and hunting tourism, as an act of deliberately planned and controlled reproduction to achieve intended breeding results in terms of annual lion numbers and quality. However, distinct differences have developed between the clusters. While in clusters 3 and 4 (guest attraction and live export), cubs are typically hand-raised and sold early (as cubs or sub-adults), cluster 5 (hunting tourism) facilities tend to leave their cubs with the mother and sell them as adults. Nevertheless, by far, not all captive lion facilities breed. Almost half of the interviewed facilities either inhibited reproduction altogether as part of their (business) model or followed a natural reproduction approach where reproduction is seen as part of natural behaviour and happens unplanned and irregularly as part of their (business) model.

**2. Each captive lion sector cluster features a distinct and separate supply chain (except the no lion revenue cluster). However, two shared supply chain segments accommodate lion exchanges between clusters.** (see subsection 3.3.2 for details)

Each cluster, except cluster 1, where no lion trade takes place, uses a distinct supply chain of varying complexity to get its lion products and services to the dedicated consumer group. The supply chain for cluster 5 (hunting tourism) is by far the most complex supply chain integrating numerous steps for the lion hunt, the lion trophy and the sales of lion body parts. In fact, selling lion skeletons represents an integrated part of the captive lion hunting supply chain, as the lion bone export permit is linked to a hunting permit.

All cluster-specific supply chains are separate, except for the guest attraction supply chain, which can be combined with the one for live export. Hence, an organised and sustained supply chain to maximise the economic utilisation of any captive lion by channelling the animal from the guest attraction supply chain to hunting and the bone trade does not exist in the dataset. However, two additional shared supply chain segments are responsible for the movement of captive lions between clusters. A South African business-to-business sales tier and the supply chain segment for facility mortalities provide a link between the facilities of clusters 3, 4, and 5, thereby spurring more integration within the sector.

**3. The knowledge of the captive lion sector's dimensions is incomplete and imprecise.** (see Table 8 and Table 9 for details)

There is a lack of transparency about the overall dimensions of the captive lion sector. Concerted efforts by the provincial governments of the Free State, North West Province and Limpopo, where the interviews took place to support this study with quantitative data about captive lion facilities, yielded comparatively little comprehensive and comparable data. Non-existent or inefficient and inconsistent processes to collect, store, consolidate and share data on captive lion facilities and their trading activities led to delays in engagement processes, patchy data and varying variables which could not be compared. Nevertheless, the evaluable data strengthened the suggestion that the Free State and North West are where the sector has expanded. The data also showed that most facilities (63%) in all three provinces house less than 20 lions each, and only 5% of all the facilities in these three provinces breed lions at a large scale, with more than 100 lions in the facility.

The qualitative interview data allowed a comprehensive examination of how captive lion facilities operate and the supply chains they use to channel their products/services to different consumers. The analysis elicited distinct functional patterns for the five sector clusters. As indicated in Figure 2, the five clusters are linked to (1) characteristic reproduction/breeding modes and (2) distinct supply chains, which, as will be shown, are supplemented by two shared supply chain segments.

In other operational aspects, such as the cumulative area for lion camps or the number of lions, the set-up of

facilities differs based on their unique (business) model and depends on the regulations of the respective province. Table 8 provides an overview of the facility dimensions in the interview dataset. The data suggest that the maximum number of lions tends to be higher in facilities associated with cluster 5 (hunting tourism) than in any other cluster. Furthermore, the hunting and the live export cluster featured the facilities with the smallest land area per lion in their camps. These tendencies included the multi-cluster facilities, which also operate in both those clusters.

**Table 8: Overview of scales and dimensions of 31 interviewed captive lion facilities driven by the individual business model and the respective provincial regulations.**

	No. of CLF	Starting year	Property size set aside for CL-camps	%age of CL-camps of total CL-property size	No of cubs (0–1 yrs)	No of sub-adults (1–2.5 yrs)	No of adults (>2.5 yrs)	Camp size	Largest land area/lion	Smallest land area/lion
Cluster 1: No Lion Revenue	5	2002–2014	7.5–30ha <small>(one 19,000ha game reserve)</small>	0.2–2.5% <small>(1,200–5,500 ha)</small>	0 ∅ 0	0–3 ∅ 1.75	0–17 ∅ 9	1–10 ha	1 ha/lion <small>(10 lions in 10 ha)</small>	0.33 ha/lion <small>(6 lions in 2 ha)</small>
Cluster 2: Sanctuary	1	2006	65 ha	5.2% <small>(1,250 ha)</small>	0	0	79	0.25–6 ha	1.5 ha/lion <small>(3 lions on 4.4 ha)</small>	0.125 ha/lion <small>(2 lions on 0.25 ha)</small>
Cluster 2: Guest Attraction	5	1998–2013	3–30 ha	0.1–15% <small>(20–3,000 ha)</small>	0–6 ∅ 2	0–4 ∅ 1.5	2–10 ∅ 6	1–12 ha	4 ha/lion <small>(3 lion on 12 ha)</small>	0.5 ha/lion <small>(5 lions on 2.5 ha)</small>
Cluster 4: Live Export	6	1995–2009	1.5–54 ha	1.5–35% <small>(77–467 ha)</small>	0–5 ∅ 2.5	4–20 ∅ 10	3–25 ∅ 13	0.1–12 ha	1 ha/lion <small>(5 lions on 5 ha)</small>	0.033 ha/lion <small>(3 lions on 0.1 ha)</small>
Data for breeding facilities only – not for the hunting properties										
Cluster 5: Hunting Tourism	9	1997–2016	17–188 ha	0.7–31% <small>(222–12,000 ha)</small>	0–37 ∅ 16	5–111 ∅ 30	9–179 ∅ 60	0.32–25 ha	2.1 ha/lion <small>(7 lions on 15 ha)</small>	0.012 ha/lion <small>(6 lions on 0.06 ha)</small>
Multi-Cluster	3	1996–2014	8–356 ha	0.1–47% <small>(32–10,000 ha)</small>	0–15 ∅ 8	4–23 ∅ 12	8–112 ∅ 45	0.5–32 ha	2 ha/lion <small>(16 lions on 32 ha)</small>	0.25 ha/lion <small>(2 lions on 0.5 ha)</small>
Pre-Cluster (RSA B2B Sales only)	2	2010–2015	4.5–12 ha	0.5–8.5% <small>(140–851 ha)</small>	0–2	2–6	6–7	1.25–6.6 ha	1.1 ha/lion <small>(5 lions on 5.5 ha)</small>	0.3 ha/lion <small>(4 lions on 1.25 ha)</small>

B2B... Business-to-Business  
CL..... Captive Lion  
CLF.....Captive Lion Facilities  
ha.....hectares  
RSA.....South Africa  
yrs.....Years

In addition to the interviews, anonymised data for all facilities in a province was requested from those three provinces where the interviews took place (Free State, Limpopo and North West). Reported data were partly incomplete and varied from province to province, restricting data analysis options. Nevertheless, Table 9 provides an overview of the dimensions of the sector in the three provinces.

The numbers of facilities and the total number of captive lions in the Free State and North West provinces

strengthen the suggestion that those provinces drive the expansion and extent of the sector. The data also show that most facilities in all three provinces house less than 20 lions, and only a small percentage breed lions at a large scale, with more than 100 lions in the facility. Similar to the interview data, the area set aside for the lions varied extensively, hinting at larger spaces for lion enclosures in the Free State and small spaces in North West.

Table 9: Dimensions of the captive lion sector in three South African provinces: the Free State, Limpopo and North West Province

South African Province:	Free State	Limpopo	North West	TOTAL*
Number of captive lion facilities in the province	117	36	84	237
Starting year	100% of data entries unspecified	2002–2019	87% of data entries unspecified	61% of data entries unspecified
% of facilities registered after 2016		28%		
% of facilities registered after 2018		8%		
Number of lions in the province (cubs, subadults, adults)	3,140	1,119	3,178	7,437
Number of lions per facility	2–327 (Ø 28)	1–300 (Ø 35)	1–540 (Ø 38)	1–540 (Ø 32)
% of facilities with more than 20 lions	38%	25%	42%	37%
% of facilities with more than 50 lions	15%	8%	19%	15%
% of facilities with more than 100 lions	3%	8%	7%	5%
Overall property size housing captive lion facility in ha**	100% of data entries unspecified	12–10,500 (Ø 1911)	190–7,500 (Ø 1931)	12–10,500 (Ø 1922)
Property size set aside for lion camps in ha	1.3–2,000 (Ø 90)	0.084–216 (Ø 19)	0.02–18 (Ø 2)	0.02–2,000 (Ø 6)

\* Total summarises the data of the three analysed provinces where the interviews took place

\*\* Data for breeding facilities only – not for hunting properties

ha...hectares

Besides the analysis of the obtained data, the effort and the degree of missing consistency and uniformity to collect and report data on the sector became apparent. Inconsistent reporting did not only represent a challenge between provinces. In Limpopo and North West, the way data were reported differed even from district to district or from EMI to EMI. Only in the case of the Free State could data be extracted from a central database, the so-called

E-Permit system. A more comprehensive data analysis was unattainable due to the inconsistencies in the way data were reported. Data clearly indicating the products and services any particular facility provided were not only inconsistent but also unrefined. Thus, a clear allocation to the five sector clusters and in-depth analysis of these clusters for the three provinces was rendered unworkable.

### 3.3.1 CHARACTERISTIC BREEDING MODES

The analysis elicited two breeding modes. One breeding mode is associated with the hunting tourism cluster, the other with the live export and the guest attraction clusters, respectively. Overall, the interviewees described the following three different approaches toward the reproduction of captive lions applied by facilities in the sector, exemplified by selected quotes from interviewees<sup>5</sup>:

#### 1. No Reproduction (7 of 31; 22.5%): Reproduction of lions in the facility is inhibited at all times

But then we soon realized, you are never 100%, you can never be 100% safe, what happens with that lion, when once it leaves here. ... And then we stop the breeding completely. ... So we've got a male, a female and three daughters, but we've, what's the English word. The male can't breed anymore. We circumcised it. [CLF03]

#### 2. Natural Reproduction (7 of 31; 22.5%): Reproduction of lions is allowed as part of their natural behaviour and happens unplanned and often irregularly.

“ At the moment, we are more of a sanctuary than a zoo because we're not actively trying to get the animals to breed. If I do see females in season, I try to split the males. ... If and when the animals breed, we do raise the offspring, and we sell them back into the industry. ... I mean, we haven't sold for a couple of years now. We haven't sold any lions because there's just no reason to sell them, no reason to breed them. So if they don't breed, it suits me. [CLF10] ”

5. Interviewee-ID referenced in square brackets following the quote

**3. Breeding (17 of 31; 55%): Reproduction is planned and controlled as part of the individual business model trying to achieve intended breeding results in terms of annual lion numbers and quality.**

“ I’ve got breeding groups. And the camps is, it’s like this: the lions that’s ready to sell is in camp number 28 for argument sake. 27 is nearly ready for selling. ... when that lions that’s ready to go out, go out, they move up one camp, one camp, one camp. [CLF19] ”

Overall, the “no reproduction” and the “natural reproduction” approach accounted for 45% of all interviewed facilities, and even though both approaches were represented in all five clusters, they were typically found in cluster 1 (no revenue), cluster 2 (sanctuary) and cluster 3 (guest attraction). All facilities in cluster 1 (no revenue) made use of the “no reproduction” (3 of 5) or the “natural reproduction” (2 of 5) approach. In one case, natural reproduction was part of a free-roaming pride on a 19,000 ha property, whereas in the other case, it was a means to add lions as long as there were empty camps. As expected, the sanctuary (cluster 2) refrained from reproduction altogether. As for the five facilities in cluster 3 (guest attraction), two facilities implemented a “no reproduction” approach and one allowed natural reproduction. Finally, one of the two facilities without a cluster association pursued natural reproduction. As an exception, this approach could also be found in cluster 4 (live export: 2 of 7 facilities) and cluster 5 (hunting tourism: 1 of 9 facilities). One other facility in cluster 5 (hunting tourism) represented an exception where “no breeding” resulted from its approach to buy and raise only male lions, occasionally selling individual males to one selected outfitter.

The remaining 17 facilities (55% of the interviewees) described a “breeding” approach, whereby two characteristic breeding modes emerged. As summarised in Figure 5, one way is typical for clusters 3 and 4 (live export combined with guest attraction) and the other one for cluster 5 (hunting tourism). While cubs born in the same period are usually put together in grow-up groups in both systems, the breeding modes tend to differ in terms of how newborn lions are raised, linked to the differing developmental stage at which lions are sold.

In the case of the early sales breeding mode, newborn lions are hand-raised before they are either sold early or join the grow-up groups with lion cubs from other litters. The lions are sold before they reach sexual maturity, mostly as newborns (8 of 9 facilities) or cubs (5 of 9 facilities) and in a few cases as sub-adults (2 of 9 facilities). Hand-raising as part of this system, prevalent in clusters 3 and 4 (guest attraction and live sales), ensures that the

lions are habituated to humans for their future exposure to day visitors, overnight guests or volunteers at their destination either within or outside of South Africa. One captive lion facility in this cluster explained this approach the following way:

“ I take them {the cubs} away {from the mother} ... after two weeks. You know why? If you are a zoo, you need animals that’s tame. Why? So that you can work with them. If that animal is sick, you don’t need to get the vet to take him out. Have you ever been to a lion that has never been hand-raised? You won’t get near that wire fence. [CLF11] ”

By comparison, facilities operating in the hunting tourism cluster reported a deliberate shift from hand-raising towards leaving the cubs with the mother as a means to avoid human habituation, exemplified by the following quotes.

“ Let’s say I breed a little lion by me on the farm. He will stay with his mom between three and four months. Then I’ll wean him, and they will grow up as a group. Maybe there’s three or four different areas where there’s babies been born. I’ll put them all together from a year to 18 months. And they grow up as a group. They know each other. [CLF06] ”

So we leave them with the mother because that association with cub-petting and all those things. ... They are much more wild in the sense, they growl at you. ... I don’t want to go near them. ... Your hand-raised ones come to you, and they want to cuddle with you because they know you fed them. [CLF23] ”

As part of this breeding mode, lion cubs spend at least three to four months with their mothers, sometimes up to eight to twelve months, before forming mixed grow-up groups. Six of ten facilities worked with this system exclusively except for cases when the mother rejected her cubs, in which case they would hand-rear those animals. Of the remaining four facilities, three allowed for both alternatives (hand-rearing or leaving the cubs with the mother) dependent on a case-by-case judgement or leaving cubs with the mother as a consequence of what they described as a challenging market environment. The split of the mixed grow-up groups into sex-specific sales groups before the lions reach sexual maturity constitutes another difference in this breeding mode. The adult sales groups serve to prevent any offspring from these animals.



Most lion sales in facilities following this type of breeding take effect from the age of three or four years as young adults (9 of 10 facilities), in few cases as mature adults (3 of ten facilities) and only rarely as old adults from seven years onwards (1 of 10 facilities).

Finally, all multi-cluster facilities explained that they were simultaneously following both breeding modes and are thus

included in the numbers for the early sales as well as the adult sales system. As a consequence of the mixed grow-up groups where hand-raised and mother-raised animals are joined, the ability to track hand-raised animals is lost in cases when early sales as newborns or cubs did not happen. These hand-raised animals would further be treated as animals dedicated to the hunting tourism clusters.

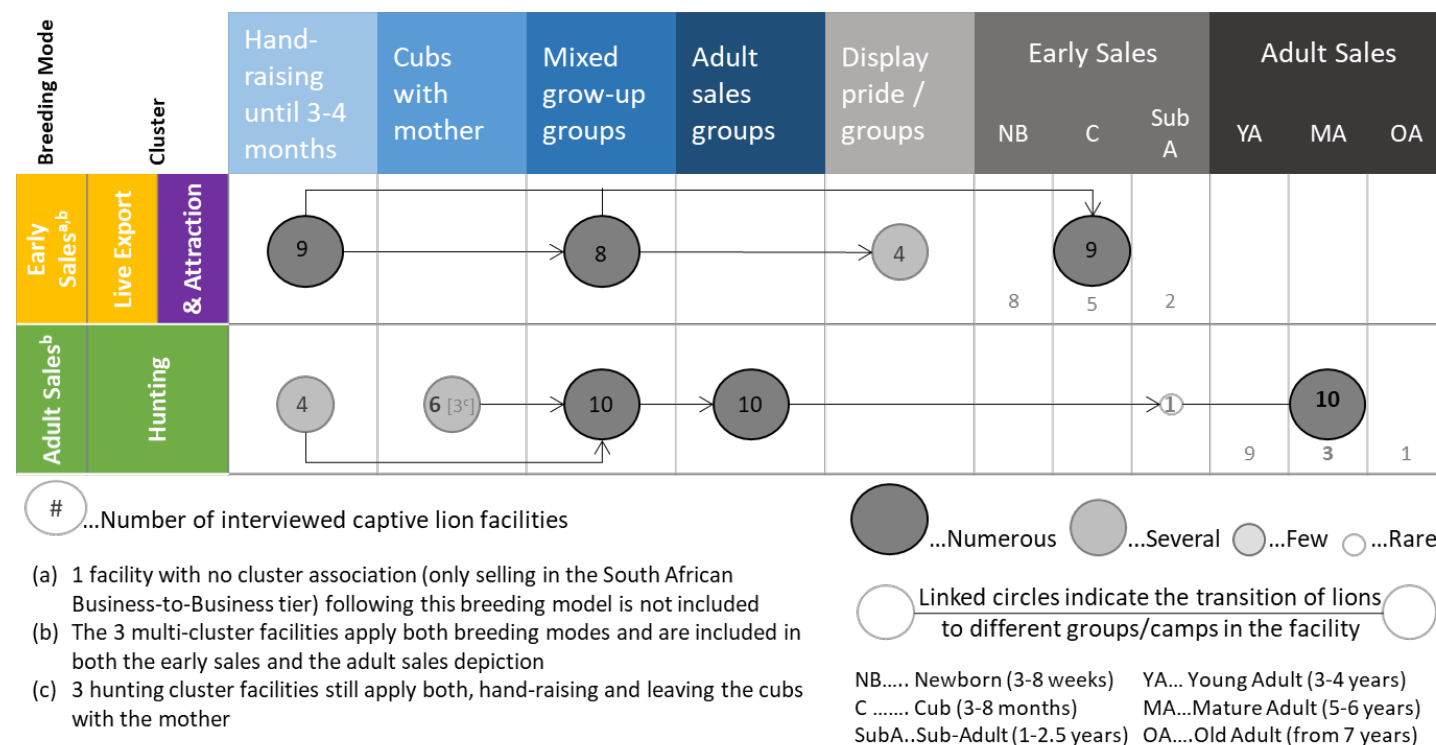
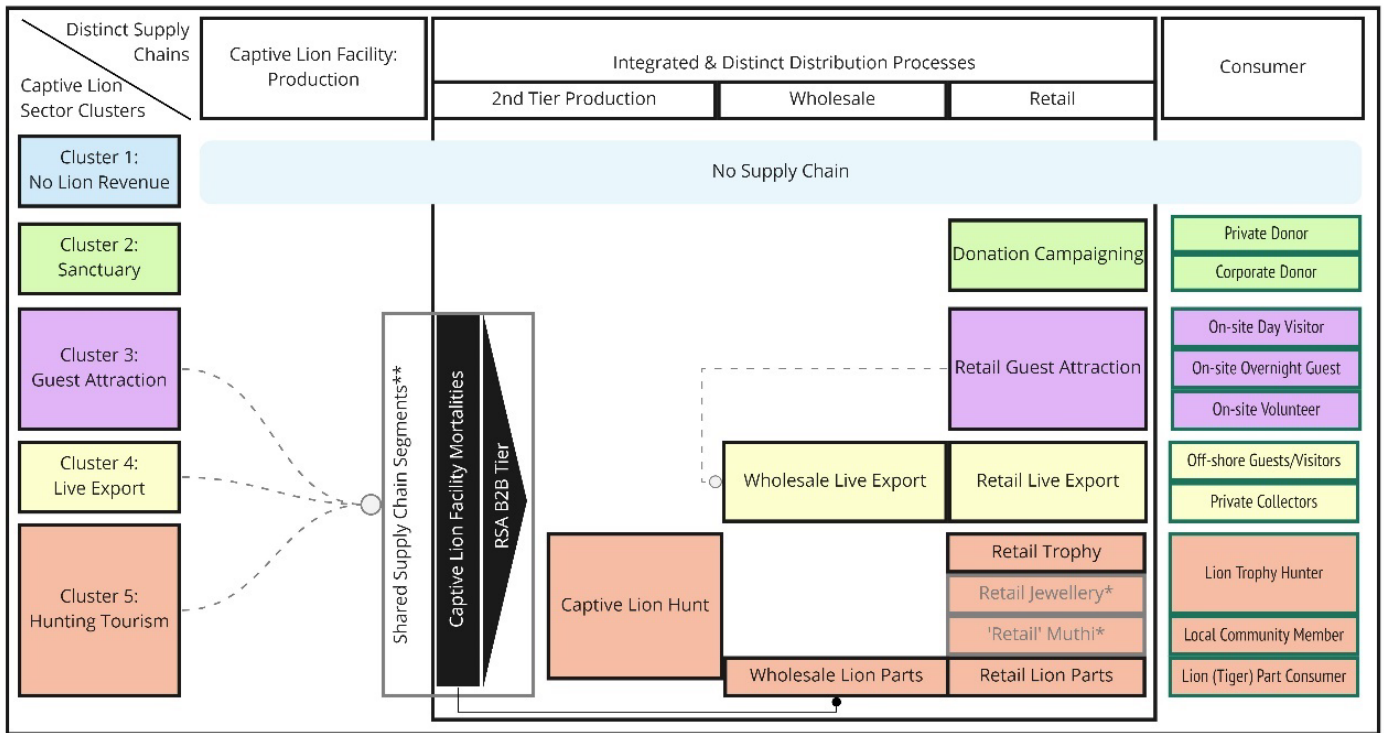


Figure 5: Breeding modes in South Africa's captive lion sector characteristic for facilities in clusters 3 and 4 (guest attraction and live export) and cluster 5 (hunting tourism)

### 3.3.2 DISTINCT AND SHARED SUPPLY CHAINS

Based on the product and service portfolios of their individual business models, all interviewees described the practical functioning of the different supply chains for each cluster they make use of (Figure 6). Each supply chain consists of consecutive steps integrating various service providers or other involved stakeholders like government agencies to get the respective lion product or service to the targeted consumer group. Simultaneously, the interviews elicited two shared supply chain segments, as outlined in the summary depiction of the captive lion supply chains in Figure 6. Cluster 1 (no lion revenue) constitutes an exception as it does not link to any supply chain because these facilities do not sell lion-related products or services. Appendix C illustrates the detailed delineation of all supply chains in each sector cluster, outlining the various steps the interviewees described in terms of how these supply chains work in practice.

As depicted in Figure 6, the integrated distribution steps of the different supply chains can be allocated to three overarching segments, i.e., second-tier production, wholesale and retail. All steps in the retail segment, the last part of each supply chain related to clusters 2-5, are arranged to get the final product or service to the consumer. Furthermore, the supply chains of clusters 4 (live export) and 5 (hunting tourism) include wholesale segments in their supply chains. Within those wholesale segments, products are bought from the producers, often in bulk, and sold on to retailers instead of directly to the consumer. Finally, the hunting tourism cluster also includes steps associated with a second-tier production segment. Second-tier production is geared towards further preparation and finalisation of the product.



Colour codes mark the distinct supply chain with integrated process steps from a captive lion facility to certain consumers. Dotted lines indicate that not all facilities in a specific cluster make use of the indicated trade link.

\* Greyed font, as no detailed data could be obtained about the process steps involved in the jewellery and the muthi retail segments as part of the hunting tourism cluster

\*\* Two shared supply chain segments with distinct process steps are no fixed and stable part of one of the integrated supply chains. Selected facilities from clusters 3, 4 and 5 make use of these shared supply chain segments.

B2B...Business to Business  
RSA...South Africa

**Figure 6: Overview of distinct supply chains and shared supply chain segments in the captive lion sector attributed to 2nd tier production, wholesale and retail trade**

The donation supply chains used by the sanctuary and the guest attraction clusters are comparatively simple. These supply chains only involve an uncomplicated retail model, i.e. the few integrated steps directly deliver to the respective consumer. The supply chain for the live export cluster features both an extensive wholesale segment as well as various steps belonging to the corresponding retail model.

The supply chain for the hunting tourism cluster turned out to be by far the most intricate of all captive lion supply chains. This chain includes numerous retail steps for the lion trophy and the various steps involved in the wholesale and retail segments for lion body parts, sold as so-called half-sets (i.e., the lion carcasses excluding trophy parts such as the skull, teeth and claws). Thus, selling lion skeletons represents a part of a hunting supply chain, where obtaining an export permit for the bones requires a valid hunting permit. Moreover, the supply chain for the hunting tourism cluster also features an elaborate second-tier production segment in the form of the captive lion hunt itself. Finally, beyond the supply chain segments for the lion hunt, the lion trophy and the lion body parts, the

interviews revealed the existence of retail segments for local muthi<sup>6</sup> purposes and a jewellery segment, typically turning the dewclaw or the floating bones of the hunted lion into a piece of jewellery. However, interviewees had little to no knowledge regarding the steps involved and the functioning of these two hunting-related retail segments.

In addition to the distinct supply chains, certain facilities use two more shared supply chain segments. The “South African Business to Business” (RSA B2B) tier allows facilities to sell to each other, whereby the segment for “CL-Facility Mortalities” enables facilities to sell carcasses from in-facility fatalities into the lion part trade. The data analysis revealed that these supply chain segments are utilised by facilities operating in clusters 3 (guest attraction), 4 (live export), and 5 (hunting tourism), as well as by multi-cluster facilities (Table 10). Both shared supply chain segments were widely used within the hunting tourism cluster (78% selling into the RSA B2B tier and 89% into the segment for facility mortalities) and by multi-cluster facilities (100 % selling into the RSA B2B tier and 67% into

6. The Cambridge Dictionary defines “muthi” as “African traditional medicine, for example magic objects or medicines prepared from plants or animals”

the segment for facility mortalities). In clusters 3 (guest attraction) and 4 (live export), fewer facilities made use of the shared supply chain segments, with 40% and 33%

selling into the RSA B2B tier and 40% and 17% selling into the segment for facility mortalities (see Table 10).

**Table 10: Number of interviewed captive lion facilities from a total of 31 that make use of two shared supply chain segments selling lions to each other in a business-to-business tier and lion carcasses from mortalities in the facility.**

Supply Chains							
Shared	Distinct	No Supply Chain	Donation Campaigning	Guest Attraction	Live Export**	Captive Lion Hunt	Multi-Cluster Facilities***
RSA B2B Tier	*			2 CLF (of 5 40%)	2* CLF (of 6 33%)	7 CLF (of 9 78%)	3 CLF (of 3 100%)
CL-Facility Mortalities				2 CLF (of 5 40%)	1* CLF (of 6 17%)	8 CLF (of 9 89%)	2 CLF (of 3 67%)

\* Account of exception: once-only sale into the shared supply chain segment

\*\* All 6 facilities utilizing the live export supply chain, also sell into the guest attraction supply chain

\*\*\* Facilities selling into a combination of the captive lion hunt supply chain with live export and/or guest attraction

B2B... Business-to-Business  
CL..... Captive Lion  
CLF.....Captive Lion Facilities  
RSA....South Africa

Both shared segments do not represent separate supply chains, as they do not provide goods or services to an end consumer. Instead, these segments represent precursors for distinct supply chains. The shared supply chain segment for facility mortalities feeds into the integrated supply chain of the hunting tourism cluster. By comparison, the final distinct supply chain following the RSA B2B tier, where other South African facilities purchase lions, can be undetermined. Lion facilities selling into the RSA B2B

tier reported that they were selling breeding animals or that they did not know what the buyer would use the lions for, as exemplified by the quotes below. Lions sold into this supply chain segment are potentially bought and sold more than once, especially if the lions serve as breeding animals. Consequently, the traceability of these lions and knowledge about the distinct supply chain they are eventually sold into is lost.

“We sold into the industry already. ... But we prefer not to get involved with anyone hunting them because they’ve been hand-raised. ... If whoever we sell them to eventually sells them to someone else ... I know I’ve done my best to get them to that point and I just trust that the next person takes care of them and does what he says he’s going to do if it is for breeding or whatever.” [CLF10]

“I mean, you do that - the permit and you try ... make sure that who’s buying it {the lion} is telling the truth to you, that they are taking them. ... so I don’t know if you really can say that, you know, that all your {lions} went to the places they went to.” [CLF20]

“I’ve got a stambook of my lions since I bought my first lion. ... I can tell you exactly where did I buy this lion. Where did the females come from, and what happened to the offspring. ... I don’t know what they’ve done to them, but I

can tell you each lion that I bred to whom that I sold it to. ... In the past, when I sold the lions, I never actually worried about them going where they are going because I knew the guys are going to look after them because they paid a lot of money for them.” [CLF22]

“If the buyer is buying them, I don’t ask him if he’s going to breed them or is he going to hunt them.” [CLF23]

“Most of them are other breeders that starts to breed. I don’t ask really, you know, but I assume most of them are starters like I was, you know.” [CLF25]

“But I try really try in my head not to phone him {the buyer} after three months and ask, is the lion still there? Is this, is that? ... I mean it’s sore for me. I don’t want to know. It’s better. There is sometimes things, it’s better not to know.” [CLF29]

The shared supply chain segment for the facility mortalities provides the opportunity to sell full-set lion skeletons, i.e. including the skull, teeth and claws, into the wholesale segment for lion part trade, an integral part of the hunting supply chain. Typically, facilities utilising the supply chain segment for facility mortalities sell individual

carcasses of adult lions that have died in the facility or had to be euthanised due to injuries, disease or old age. As presented in subsection 3.1, outlining the five sector clusters, selling carcasses from in-facility fatalities represents a side-perk rather than the main product line.

However, the significant deterioration of trade conditions in the sector, as described in subsection 3.4, prompted some facilities to use the shared segment for facility mortalities in a new and extended way. Three captive lion facilities operating in the hunting tourism cluster reported that this shared supply chain segment had become the means to manage animal numbers in the facility and finance operating costs in recent years. In these cases, culling permits were obtained from the Free State provincial

“ Bulk euthanasia only came up three years ago when the trophy imports to the U.S. were stopped. ... Lots of down-scaling has happened. Lion facilities exported lions from other provinces to the Free State to down-scale. [CLBTr01]

“2017, before that it {lion part trade} was with the hunting. I would say 95% of the stuff that we exported were hunted, maybe between five and 10% had skulls and nails with. So it was only the with the skulls because the Americans take the skulls. ... So when they stop the hunting, that's when people started euthanising lions to get them out of the camps. ... We also exported a lot of stuff that were euthanised.” [CLBTr02]

“And then the females. There's not a lot of hunters for the females, more for the males. So for two years, like last

government between 2017 and 2019 either to fund operations or to cut down on the total number of lions, especially adult females, that are not used as breeding animals and cannot be sold for hunting. Culling adult lions using euthanasia procedures was then described as a necessity to cope with the difficult conditions. This emerging practice increased the number of full-set skeletons sold into the lion part trade to Asia through the shared supply chain segment for facility mortalities.

year and the year before last year, I applied for euthanising permits. And the females, which we didn't hunt after the three years, when they were three years of age, we euthanise them, and we sell the bones to go to a guy in South Africa, and he sells it to China or whoever, to his export market.” [CLF26]

I was asked to euthanise twice 50 lions at a time. ... The first time I refused, so I took holiday. ... So they got another vet from Limpopo to come and do it. And then I heard the way he euthanised. ... I wasn't happy with that. And then I made a decision, listen: The only thing I can do, is do it better. Then at least I know it's euthanised in a proper way, in the right way. So the next time when they asked, the next batch, I decided I will do it. [VET05]

As a consequence of utilising the two shared supply chain segments, clusters 3, 4 and 5 (guest attraction, live export and hunting tourism) cannot be understood as being separated from each other. These supply chain segments essentially constitute the link of the three clusters resulting in a more integrated, complex system beyond the existence of multi-cluster facilities.

# CONTEXT-DRIVEN COMPLEXITY IN THE CAPTIVE LION SECTOR

As much as the complexity of the captive lion sector emanates from the interactions of its active players, complexity equally arises from contextual influences. This section describes how the overall trade conditions noticeably deteriorated since 2015/2016 due to stakeholder influences in the form of mainstream and social media pressure as well as local and international legislation

and regulation, and how the situation further worsened during the COVID-19 pandemic. Furthermore, we unravel the enormous and partly insurmountable management complexity for captive lion facilities linked to varying perceptions about the meaning of sustainability and sustainable use.

## 3.4 CHALLENGING TRADE ENVIRONMENT FOR THE SOUTH AFRICAN CAPTIVE LION SECTOR

### SECTION SUMMARY

This subsection summarises the effects of the challenging trade conditions experienced by the captive lion sector that developed after 2015/2016.

**1. Falling prices for captive lions and a sharp decline in captive lion sales mark the effects of the challenging trade conditions in the captive lion sector.** (see Figure 7, Table 11 and Table 12 in this subsection for details)

Trade conditions in the captive lion sector markedly deteriorated from 2015/2016 onwards, hitting the hunting tourism cluster particularly hard. The challenging economic developments were ascribed to both bad publicity and growing regulatory restrictions (Figure 7). The downturn became evident in the form of sharp price drops and declining sales numbers for captive lions sold into the supply chains for hunting tourism, live export and into the shared business-to-business supply chain segment (Table 11). Simultaneously, the prices for lion

skeletons increased and sparked an unprecedented spike in lion part sales from in-facility mortalities through culling of captive lions to manage animal numbers and expenses in facilities (Table 12).

**2. The COVID-19 pandemic exacerbated the effects of the challenging trade conditions causing an overall impasse in all clusters of the captive lion sector.** (see Figure 8 in this subsection for details)

The COVID-19 pandemic exacerbated the already strained trade conditions, affecting all sector clusters and resulting in an overall crisis for the sector. Despite the impasse, lion numbers in most facilities remained stable as most of them inhibited reproduction. At the same time, the challenges resulted in short-term losses for most facilities which many compensated through other, non-lion related, income sources in the hope that the situation would normalise beyond the COVID crisis (Figure 8).

When prompted to reflect on the financial health of captive lion facilities over time, most interviewees (43 of 51|84%) gave an account of a significant deterioration of trade conditions in the captive lion sector from 2015/2016, especially within the hunting tourism cluster. The unfavourable economic development was ascribed to both publicity and regulatory factors, while the global pandemic constituted the latest blow to the sector, exemplified by the following quotes.<sup>7</sup>

7. Interviewee ID-codes in square brackets following the quote





“But the systematic attack on our business has been unrelenting. ... And when did that start? With ‘Blood Lions’, so that was 2015. ... And that also financially had an impact, ... a huge financial. ... and a lot of other activists have fed off ‘Blood Lions.” [CLF05]

“Our biggest problem in this whole ... lion industry is, we never understood the power of public opinion, and we never understood how Facebook and Google and Instagram changed our world. And because a lot of these outfitters and PHs and whoever works with this didn’t understand that, the whole... If Cecil didn’t die or let’s say Cecil died and nothing happened with Cecil, nothing of this would have ever happened. You do understand that it’s because of two or three wild lions that was hunted, that the anti-hunting fraternity got a momentum to get to a point to drive this in such a way that the world could take notice of it.” [CLPH01] “Financially they {captive lion breeding facilities} went down ... since 2015 when the lion hunting was banned when U.S. Fish and Wildlife stopped importing lions out of South Africa.” [CLPH01]

On the one hand, people spoke about the pressure wielded by animal activist groups and conservation NGOs widely covered by the mainstream media and social media. On the other hand, interviewees discussed the often concomitant legislative and judicative measures locally as well as on an international level as reasons for the economic downturn, with trading activities more or less coming to a halt under strict COVID-19 lockdown conditions. The years 2015/2016 were most often

“I have to say; it looks like some of them are really struggling because of the ban on the importation. Or put it like that, since Cecil got on the foreground, a lot of those guys’ finances definitely went down.” [CLPH02]

“But in 2016, when America closed the importing, all the camps were full of lions. ... Now you sitting with a situation that 80% of the market is gone. ... Before the US closed, there was quite money in lion farming. When the US closed and the markets shifted, I think the money reduced from maybe to 30% of the income, ... maybe less. So it’s a massive impact that it had. ... Covid now, has made things much worse, really now there is no hunting. So nothing is moving nowhere. It’s extraordinary times.” [CLBTr02]

“... ever since the export of lions to the US has been stopped, we’ve seen a, there was a big market shift ... a massive decline. So mainly all lions {trophies} exported currently is going to Europe. And since last year, it’s also been hampered by regulations in Europe as well. [TAX02]



referred to as the period of pronounced change in market conditions prompted by three distinct events: (i) the media coverage of the hunt of Cecil the Lion (Lindsey et al. 2016), (ii) the suspension of trophy imports to the U.S.A. from captive-bred lions (US Fish and Wildlife Service 2015) and (iii) the release of the movie “Blood Lions” in 2015. As summarised in Figure 7, these events preceded a series of notable anti captive lion activism activities as well as specific legislative and judicial developments.

<ul style="list-style-type: none"> <li>▪ Cecil the Lion shot by trophy hunter from the USA in July</li> <li>▪ “Blood Lions” movie released and Blood Lions campaign launched in July</li> </ul>		2015	<ul style="list-style-type: none"> <li>▪ Lion trophy import bans passed by Australia and France</li> </ul>
		2016	<ul style="list-style-type: none"> <li>▪ <b>Import of lion trophies from captive-bred lions restricted by the USA</b></li> <li>▪ Lion trophy import ban passed by the Netherlands</li> <li>▪ <b>CITES Appendix II annotation</b> for African Lion (CoP17) adopted: RSA to set annual lion bone quota for captive-bred lions from 2017</li> </ul>
<ul style="list-style-type: none"> <li>▪ Report “Cash before Conservation: An Overview of the Breeding of Lions for Hunting and Bone Trade” based on published information released by the Born Free Foundation in March</li> <li>▪ Book “Cuddle me, Kill me: A True Account of South Africa's Captive Lion Breeding and Canned Hunting Industry” by Richard Peirce</li> <li>▪ Report “The extinction business: South Africa’s ‘Lion’ Bone Trade” published by EMS Foundation and BAT in July</li> </ul>		2017	<ul style="list-style-type: none"> <li>▪ RSA lion bone quota set to 800 skeletons in June</li> <li>▪ Court application challenging government’s quota system on lion bone trade lodged by the NSPCA</li> </ul>
<p>Investigation results of Lord Ashcroft into South Africa’s captive-bred lion industry published by Mail on Sunday in April; followed by corresponding book release “Unfair Game”: An exposé of South Africa’s captive-bred lion industry</p>		2018	<ul style="list-style-type: none"> <li>▪ Case by case review and decision for trophy imports from captive-bred lions to the USA effective from March</li> <li>▪ RSA lion bone quota maintained at 800 skeletons in June revoking an initially determined quota of 1,500 skeletons</li> <li>▪ <b>Parliamentarian Colloquium</b> on Captive Lion Breeding for Hunting in South Africa conducted in August and November</li> </ul>
<ul style="list-style-type: none"> <li>▪ Investigative Report “Breaking Point”: Uncovering South Africa’s Shameful Live Wildlife Trade with China published by EMS Foundation &amp; BAT in May</li> <li>▪ Literature Review “African Lions and Zoonotic Diseases: Implications for Commercial Lion Farms in South Africa” by WAP &amp; Blood Lions in August</li> </ul>		2019	<ul style="list-style-type: none"> <li>▪ <b>Court case of the NSPCA against DFFE and SAPA</b> concluded: High court judgement in August declaring 2017/18 lion bone quotas unlawful and unconstitutional by disregarding animal welfare as part of the quota-setting process</li> <li>▪ No lion bone quota set, i.e. no legal export of lion derivatives</li> <li>▪ <b>High-level Panel established</b> in October by the Minister of DFFE to review policies, legislation and practices on matters of lion, elephants, leopard and rhinoceros management, breeding, hunting, trade and handling</li> </ul>
		2020	<ul style="list-style-type: none"> <li>▪ No lion bone quota set, i.e. no legal export of lion derivatives</li> <li>▪ <b>COVID-19 lock-down</b> measures imposed from March</li> <li>▪ High-level Panel concluded in December</li> </ul>
<p>NSPCA Report “NSPCA challenges the Captive Lion Industry” in February</p>		2021	<ul style="list-style-type: none"> <li>▪ No decision on RSA lion bone quota during HLP proceedings</li> <li>▪ Continued COVID-19 lock-down measures</li> <li>▪ <b>High-level Panel report presented</b> in May</li> </ul>

NGO-Campaigning & Media Coverage

COVID-19  
Pan-  
demic

BAT...Ban Animal Trading

NSPCA... National Council of Societies for the Prevention of Cruelty to Animals

WAP...World Animal Protection

B2B...Business to Business

RSA...South Africa

**Figure 7: Notable international regulations and activism reports about the captive lion sector in South Africa in the timeline since 2015**

As an indicator of the more challenging trade conditions experienced within the sector, the interviews revealed eroding prices for captive lions within the hunting tourism cluster and the South African B2B tier since 2016 (Table 11). In particular, interviewees operating in the hunting tourism cluster reported how the demand for captive lion hunts dropped due to a significant reduction in clients

numbers from the U.S.A. As a consequence, captive lion hunts were sold at much lower prices in an attempt to keep sales volumes stable. Alternatively, other outfitters decided to keep their prices stable and to deal with a sharp drop in annual hunts, reportedly by as much as 40–70 % of pre-ban numbers. By comparison, the prices within the live export cluster were not affected in the same way.

**Table 11: Sales prices for captive lions and captive lion products in a timeline before 2015, between 2016 and 2019/20 and currently during the COVID-19 pandemic reported by 17 interviewees.**

	Early 2000s until ~2015	~2016–2019/20		2020/21: COVID-19
Lion cub (mostly 3–6 months) (lower range = females, higher range = males)	ZAR 15,000–25,000	ZAR 2,000–3,000		Unable to sell (even when for free)
Male breeding lion (lower range = ~3-yrs, higher range = 7+ yrs)	ZAR 300,000–600,000	ZAR 80,000–110,000		Unable to sell (@ ZAR 30,000 – ZAR 40,000)
Male for hunting (lower range = ~3-yrs, higher range = 7+ yrs)	ZAR 100,000–300,000	ZAR 50,000–80,000		
Male trophy hunt (prices dependent on age, size and mane; lower range = 3 - 4 yrs, higher range = 7+ yrs)	ZAR 180,000–495,000 (USD 20,000–55,000*)	ZAR 135,000–225,000 (USD 15,000 – 25,000*; to keep sales volume) ZAR 225,000–495,000 (USD 25,000–55,000*; with 30%-60% of previous sales volume)		Few sales to local clients ZAR 60,000–165,000 (less than 30% of sales volumes before 2016)
Female breeding lion	ZAR 60,000–80,000	ZAR 30,000–50,000		Unable to sell (@ ZAR 10,000)
Female for hunting	ZAR 45,000–50,000	ZAR 10,000–30,000		
Female trophy hunt (@ ~3-yrs)	ZAR 54,000–85,500 (USD 6,000–9,500*)	ZAR 45,000–49,500 (USD 5,000–5,500*)		Few sales to local clients ZAR 15,000–40,000
Lion skeleton: full set	ZAR 35,000	ZAR 50,000–70,000	No Sales (Stockpiling)	
Lion skeleton: half set	ZAR 10,000–15,000	ZAR 25,000–30,000		
Lion cub for export (mostly 3-6 months)	ZAR 27,000–31,500 (USD 3,000–3,500*)			ZAR 22,500 (USD 2,500*)
Lion sub-adults for export	ZAR 54,000 (USD 6,000*)			ZAR 45,000 (USD 5,000*)
Adult male for export	ZAR 81,000–225,000 (USD 9,000–25,000*)			ZAR 72,000–135,000 (USD 8,000–15,000*)
Adult female for export	ZAR 63,000–67,500 (USD 7,000–,500*)			ZAR 54,000–58,500 (USD 6,000–6,500*)

\* average X-Rate of 9.0 ZAR/USD 2008-2015 (annual average exchange rates based on figures recorded at 9 am from Reuters)

USD.....US Dollar  
yrs .....Years  
ZAR.....South African Rand

During the same period, prices for lion skeletons markedly increased (Table 11). However, sales stopped in 2019 when the South African government refrained from issuing a lion bone quota in 2019 and 2020, a requirement according to the CITES Appendix II annotation of 2016 at

the 17th Conference of the Parties (CoP17) (CITES 2017). The following quotes exemplify that selling lion carcasses turned into the profit margin to keep captive lion hunts profitable when the US government banned trophy imports from captive lions in 2016.



“And then there’s people now because the industry is bad, business is bad, ... now they open it {captive lion hunting} for local people ... and hunt a lion for so much money, but you have to leave the nails ... and you must leave the skull and everything so that they hope that one day when they sell it, they will sell the whole carcass complete and get more money. They maybe ask the local guy thirty thousand to come and shoot it {the lion}, but they will get maybe fifty thousand for the whole thing. So in the end, he is making 80 or 90 thousand, and then it adds up again.” [CLF06]

“You can probably get very close to breaking even or maybe making a little something if you can have a combination of a local hunter ... and then sell the derivatives to the Asian market. But if that bone trade or the quota is not allocated ... then there’s absolutely no way that you can ... even break even.” [CLF12]

“Now the hunters buy them {captive lions} from me, and he sells that lion at cost to the hunter. So he {the hunter} makes nothing when he makes his money {from the hunt}. The gross profit is from the bones.” [CLF19]

Simultaneously, facilities operating in the hunting tourism cluster described how selling lion carcasses, previously only representing a side-perk, became the means to keep operations running and manage animal numbers in the facilities often to recover some of the initial investments while downscaling by means of culling.

The sales figures provided by facilities and export agents for lion derivatives summarised in Table 12 affirm this pattern that emerged from the interviews. The data also further substantiate that, thus far, the sector does not include a separate cluster for lion body parts where skeletons constitute the main product/service offering of facilities, as it is clearly visible that most exported skeletons represented a by-product of a hunt before the

“So there are outfitters and lion guys {since 2015/2016} that hunt lions for the bones. In other words, the only value they have is the bone. So they’ll sell a lion for five thousand dollars for the client to have the experience, to hunt the lion legally on permit and pose for a picture. And that lion will never be exported out of the country, only to sell the bones because the guy’s got too many lions, and he doesn’t want to euthanise it. So he has it hunted for a small amount of money, and it gets hunted for the bone trade.” [CLPH01]

“Unfortunately, a lot of lions ... are just being killed now for the bones because they {the trophies} can’t be exported. And if they do sell them to a client {for hunting}, doesn’t matter U.S., Europe or whatever, they come in and shoot them at a ridiculously low price because they’re going to kill this animal in any case and sell the bones.” [CLPH02]

“With extra income {from lion bones}, the breeding farms can sell lions to hunting farms at a cheaper price. Hunting farms can also now sell to hunters at a lower price due to the income received from selling bones.” [written response from an Asian importer of captive lion parts to a set of questions: Appendix B]



United States of America stopped the trophy imports from captive lion hunts in 2016. Sales of lion skeletons from facility mortalities were sporadic up until 2017. As early as 2017, the number of exported skeletons from facility mortalities began to rise when some facilities in the hunting tourism cluster obtained the first culling permits. The carcass numbers then show a distinct spike in 2018/2019 as more facilities began to make use of culling to manage their lion numbers and cover their operating costs. The practice then tapered off in 2020 after export quotas remained undetermined by DFFE since 2019, and the provincial government of the Free State stopped issuing culling permits.

8. One multi-cluster facility and one facility in the hunting tourism cluster were unable to disclose their exact number of carcass sales, whereas one facility operating in the live export cluster had reportedly never sold any carcasses but currently stores two skeletons for potential future sale.

Table 12: Reported numbers of lion skeletons (half-sets or full-sets) (a) exported by two interviewed export agents for lion derivatives; (b) sold to lion part export agents from captive lion facilities conducting hunting; (c) sold to lion part export agents from captive lion facilities not conducting hunting between 2015 and 2020. Other deaths refer to all non-hunting deaths.

Cluster	Code		2015	2016	2017	2018	2019	2020
<b>(a) Skeletons exported by captive lion part traders</b>								
5	CLBTr01	From hunts <sup>3</sup>	NA	38	75	13	0	0
		From other deaths <sup>4</sup>	NA	0	3	163	0	0
<b>TOTAL by export agents</b>		<b>From hunts</b>	<b>NA</b>	<b>38</b>	<b>75</b>	<b>13</b>	<b>0</b>	<b>0</b>
		<b>From other deaths</b>	<b>NA</b>	<b>0</b>	<b>3</b>	<b>163</b>	<b>0</b>	<b>0</b>
<b>(b) Skeletons sold by captive lion facilities with associated hunting operation</b>								
5	CLF06	From hunts	44	36	36	44	37	0
		From other deaths	0	0	0	0	0	0
	CLF12	From hunts	20	20	20	15	7	11
		From other deaths	1	2	3	4	22	22
	CLF26	From hunts	N/A	N/A	N/A	1	36	23
		From other deaths	0	0	0	53	51	0
<b>TOTAL by CLF conducting hunts</b>		<b>From hunts</b>	<b>64</b>	<b>56</b>	<b>56</b>	<b>60</b>	<b>80</b>	<b>34</b>
		<b>From other deaths</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>57</b>	<b>73</b>	<b>22</b>
<b>(c) Skeletons sold captive lion facilities without associated hunting operation</b>								
5	CLF19	From other deaths	2	4	10	10	0	1
	CLF22 <sup>1</sup>	From other deaths	2	5	1	1	0	0
	CLF23	From other deaths	0	0	2	0	0	0
	CLF24	From other deaths	0	0	0	1	0	0
	CLF28	From other deaths	1 attempted carcass sale, but 'wrong' preparation					
4	CLF17	From other deaths	1	0	0	0	0	0
3	CLF29 <sup>2</sup>	From other deaths	0	0	0	0	0	0
	CLF30 <sup>2</sup>	From other deaths	0	0	0	0	0	0
<b>TOTAL by CLF not conducting hunts</b>		<b>From hunts</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
		<b>From other deaths</b>	<b>4</b>	<b>9</b>	<b>13</b>	<b>12</b>	<b>0</b>	<b>1</b>

1...multi-cluster facility

2...only ever sold one lion carcass from a fatality in the captive lion facility prior to 2015

3...export permit for skeleton is linked to the respective hunting permit

4...export permit for skeleton is linked to a corresponding veterinarian certificate

Cluster 3: Guest Attraction

Cluster 4: Live Export

Cluster 5: Hunting Tourism

CLF..... Captive Lion Facility

CLBTr..... Trader of Captive Lion Parts

N/A..... Not Applicable

Based on the price increase of lion skeletons and while DFFE did not determine an annual lion bone export quota in 2019 and 2020 (Figure 10), most facilities in the hunting tourism cluster (6 of 9|67%), and two of the three multi-cluster facilities, reported growing stockpiles in their possession. By comparison, facilities operating in any of the other four clusters or only selling into the RSA B2B tier were unaffected by the rising carcass prices as the sale of lion carcasses does not form part of their distinct supply chain (see subsection 3.3.2 for details on distinct supply chains). Overall, nine facilities stockpiled lion skeletons. Of those facilities occasionally selling into the shared supply chain for facility mortalities (Figure 6), none engaged in stockpiling of lion skeletons.

As outlined in Table 11, the outbreak of the global COVID-19 pandemic exacerbated the effect of the economic downturn bringing lion sales more or less to a halt. This prompted many captive lion owners/managers who allowed reproduction or engaged in lion breeding (see subsection 3.3.1 for details) to talk about measures they implemented to prevent offspring (16 of 24|67%), exemplified by the following quotes. Twelve of these facilities separated males from females as the measure of choice to prevent reproduction, two neutered some of their lions, and two reported that their lions had not been breeding for years without any effort on their part.



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“At the moment, I’ve only got one male with a female. OK. The rest I’ve split because, so that they can’t breed to see what the market is doing.” [CLF08]

“So I’m not putting them together to breed now.” [CLF11]

“But now I’m in such a position I had to stop breeding so my whole sequence is up. It’s a mess. ... My lionesses that I breed with is in their own camps ..., I separate them from the males.” [CLF19]

“I left the cubs also because there’s not a market where I can take my lions that I will be satisfied with anymore. Yeah, so I’d rather not breed. Yeah. So I keep the females and the males apart.” [CLF20]

“Where I’m now is where you must ... separate the males and the females.” [CLF24]

“I have to stop. Well, we have really stopped with the males. We took them out from the females. ... This year, we stopped everything like the males are out. And we’re going to put them back to the females as soon as this Corona thing is over and when the hunters come in.” [CLF26]

“A lot of people don’t want to breed anymore. And I’ve got quite a couple of facilities that went and split their males and females just because they don’t want to breed anymore because they know it’s going to be their problem.” [PGOV02]



Overall, the interview data suggested that COVID-19 during the first year of lockdown measures had little impact on overall captive lion numbers in South Africa. Most facilities (25 of 31|80%) reported stable lion numbers, often in conjunction with the aforementioned separation measures to avoid new offspring during times of much-reduced trade activities. Two rare cases (2 of 31|6%) reported a pronounced decline based on a deliberate intent to reduce lion numbers in the facility, while in four of 31 cases (13%), lion numbers increased. The increase was either ascribed to the intention of reaching a specific target number of lions and then keeping it stable or to circumstances where reproduction was perceived as not preventable while, at the same time, lions could not be sold.

The interviews also revealed the widely negative effect of COVID-19 on the financial health of facilities (Figure 8). The challenging trade conditions, particularly in the hunting tourism cluster, were already apparent in the years before the global pandemic outbreak (4 of 9|44% of facilities operating in the hunting tourism cluster reported experiencing short-term losses before COVID-19 lockdowns). However, based on the COVID-19 impact, 22 of all 26 income-producing facilities (85%) assessed their financial health as loss-making. However, only 2 (8%) of these interviewees reportedly faced the need to consider filing for bankruptcy at the point in time when the interview was conducted.

Captive Lion Sector Cluster	Profitability of Captive Lion Facility: Before → After COVID-19					
	Exclusive Income	Impending Bankruptcy	Short-Term Losses	Break-Even	Profitable	Total
No Lion Revenue	NA	NA	NA	NA	NA	5
Sanctuary	0		① → ①			1
Guest Attraction	1		0 → ③	③ → ②	② → 0	5
Live Export	3	0 → ①	0 → ④	③ → ①	③ → 0	6
Hunting Tourism	1	0 → ①	④ → ⑦	③ → ①	② → 0	9
Multi-Cluster	0		0 → ③	① → 0	② → 0	3
Pre-Cluster (RSA B2B only)	0		0 → ②	① → 0	① → 0	2
<b>Total</b>	<b>5</b>	<b>0 → ②</b>	<b>5 → ②0</b>	<b>11 → ④</b>	<b>10 → ①0</b>	<b>31</b>

# ...Number of interviewed captive lion facilities      ● ...Numerous      ● ...Several      ● ...Few      ○ ...Rare      B2B... Business-to-Business      RSA... South Africa

**Figure 8: Reported impact of COVID-19 on the profitability of 31 interviewed captive lion facilities in South Africa**

Often, interviewees described their ability to cover the short-term losses with revenue from other, unrelated business activities. The sole source of income was revenue from captive lions for only 6 of 31 (19%) facilities. Other related income sources included mixed farming

(crop, cattle, sheep, game), game hunting and game safaris. Additionally, income sources entirely unrelated to the captive lion sector were mentioned to cross-subsidise the facility, such as mining, financial services, panel-beating, marketing, welding or canvas-making.

# 3.5 MANAGEMENT COMPLEXITY FOR CAPTIVE LION FACILITIES

## SECTION SUMMARY

This subsection gives an account of the management complexity faced by captive lion facilities grounded in various stakeholder expectations which can be linked to perceptions about sustainability and sustainable use. The interviews elicited five management areas relevant to the sector and highlighted predominant practical patterns as well as associated concerns. The insights from this research suggest that, in particular, two uncompromising claims about animal rights and social justice thwart any prospect of managing a captive lion facility acceptably.

### **1. Sector players view the meaning of sustainable use and their corresponding management responsibilities more narrowly than the five relevant management areas that emerged from the interviews.** (see subsection 3.5.1 for details)

South Africa follows a sustainable use approach to biodiversity conservation. However, perceptions about the meaning of sustainability and sustainable use differ. As a result, stakeholders arrive at divergent judgements about reasonable practices to manage facilities sustainably. Active role-players in the sector mostly describe sustainable use as utilising wildlife resources, including lions, in a way that secures stable or growing numbers of this resource. They associate this understanding with a need for private ownership and a monetary value for wildlife paired with an obligation for long-term thinking (Table 13). Compared with a widely accepted framework for sustainable use (Elkington 1998), the sector's understanding of sustainable use is short of the social considerations about contributing to more equitable outcomes in society and aligning practices with what is deemed bearable. Along those lines, the interviews surfaced five areas relevant for the management of captive lion facilities that include these social aspects in addition to economic and ecological outcomes typical for the sector's prevailing understanding of sustainable use.

### **2. Managing from a financial health perspective** (see subsection 3.5.2 for details)

Financial considerations in the form of cost coverage constitute a central topic for any captive lion facility, even if no lion-related revenue is generated. The top-five cost drivers, i.e., factors responsible for the highest lion-related operational expenses, are universal across the sector. They include food transport (to fetch diseased farm animals), salaries, electricity (for meat keeping), supplements and

veterinarian services. Revenue-wise, market development activities are common in all three main trading sectors (guest attraction, live export and hunting tourism), except for lion derivatives, where South African actors refrain from any activities to drive demand. Differing provincial legislation, low levels of transparency and a lack of traceability of captive lions from birth constitute major trade-related concerns in the sector.

### **3. Managing from a legality perspective (i.e., avoiding illegal activities)** (see subsection 3.5.3 for details)

Worries about the risk of rising illegal wildlife trade levels associated with the captive lion sector are pervasive but undetermined (Coals et al. 2020; Williams et al. 2021). This study revealed the shallow association level among captive lion facilities, i.e., each facility tends to stick to its own business and does not engage with or know other facilities in-depth. Hence, the knowledge about illegal behaviour in the sector turned out to be limited. At the same time, the data suggested an ambivalent interplay between the need to act legally and a susceptibility to evade or bypass certain regulations. On the one hand, interviewees regarded an unblemished reputation as a respectable sector member as a prerequisite for long-term existence. On the other hand, areas of existing illegal behaviour emerged, which interviewees regularly linked to concerns about inadequate law enforcement capacities. The most common illicit activities included self-administering procedures exclusive to veterinarians (e.g. use of scheduled drugs) and transporting lions without a valid permit.

### **4. Managing from a conservation perspective** (see subsection 3.5.4 for details)

High levels of ambiguity are characteristic of the management of a captive lion facility from a conservation perspective. Any efforts and arguments of facilities about their contributions to conservation also elicited counter-arguments whereby captive lions and captive lion facilities were ecologically worthless and incapable of achieving conservation outcomes. Consequently, facilities revert to individualistic and disjointed approaches when attempting to manage for conservation purposes, including any financial contributions to fund conservation. As the only common pattern, facilities engaged in widespread but individualised efforts to avoid inbreeding, although the practices hardly involved DNA testing or a conservation-related breeding strategy. Overall, managing captive lion

facilities for conservation purposes remains ambiguous, and further research is required.

## **5. Managing from an animal welfare perspective**

(see subsection 3.5.5 for details)

Interviewees linked animal welfare to societal considerations about what is deemed bearable but did not consider animal welfare a concern from a sustainable-use perspective. Managing captive lion facilities from an animal welfare perspective was highly contentious based on ascribed cost-saving intentions of captive lion owners, while facilities viewed lion welfare as part of their responsibilities to take care of their animals, affording them a good life in captivity. Managing a captive lion facility turned out to be utterly incompatible with views extending the scope of animal welfare to matters of animals rights due to the lions' loss of freedom.

Regarding practices and concerns, welfare considerations included living conditions, veterinarian involvement, feeding regimes, reproduction and trade-related practices such as hunting, animal interaction, and emergent practices to cull captive lions. Overall, welfare practices were largely individualistic beyond legal requirements, mostly pertaining to enclosure requirements. Common patterns were a needs-driven involvement of veterinarians and a practice of fetching diseased animals from farms

Besides challenging trade conditions, contextual influences also increase the management complexity in the captive lion sector. This section gives an account of this phenomenon in relation to sustainability and sustainable use. South Africa's sustainable use approach to conservation, included in Section 24 of its Constitution (The Republic of South Africa 1996), frames the governing paradigm to conserve the country's biodiversity by considering ecological, economic and social resource use. As such, it serves as a guide to managing the country's wildlife economy and is also regarded as one of the reference points for adequate management of captive lion facilities. However, no unequivocal definitions and understanding of the terms "sustainability" and "sustainable use" exist (Alhaddi 2015).

The research results are presented in the following structure. The section initially outlines the perceived meaning of sustainability/sustainable use from the interviews in comparison to a widely recognised framework for sustainability, known as the triple bottom line (Rogers & Hudson 2011; Elkington 2018). In the main part of the

in the vicinity as a primary meat source for the lions. Reproductive approaches differed according to the cluster (see subsection 3.3.1 for details), with a marked trend that facilities in the hunting tourism cluster move towards leaving cubs with their mothers and a noticeable cutback of lion interaction practices in the guest attraction cluster.

## **6. Managing from a social perspective**

(see subsection 3.5.6 for details)

While facilities emphasised the importance of good and stable relationships with staff as a core ingredient for long-term success, a deep-seated detachment from B-BBEE policies and transformation emerged in the sector.

Generally, overall staff numbers were highest in facilities with guest attraction offerings linked mainly to the tourism side of the business. The numbers of generally unskilled farmworkers trained 'on the job' tended to vary with the size of the facility. For these workers, lion-related tasks frequently formed part of their more general farm responsibilities. Full-time employment, often above minimum wage and with benefits such as annual increases, bonuses or accommodation, were common, and staff turnover was typically low. The safe handling of captive lions is not standardised, resulting in individualised measures to prevent incidents.

subsection, we summarise the practical experiences shared by all interviewees of how different societal expectations linked to sustainability/sustainable use influence the management complexity in the sector. The research surfaced the following five different management perspectives regarded as relevant for captive lion facilities:

- A. Financial health
- B. Legality (i.e., avoiding/refraining from illegal activities)
- C. Positive outcomes for biodiversity conservation
- D. Animal welfare conditions partly extended to safeguarding animal rights
- E. Working conditions extended to securing social justice

This main section part unveils how the ambiguous understanding of sustainability/sustainable use corresponds with varying viewpoints of stakeholders when judging the management of captive lion facilities. Driven by these contextual influences, we detail prevalent management-related patterns and areas of concern raised during the interviews.

### 3.5.1 PERCEIVED UNDERSTANDING OF SUSTAINABILITY AND SUSTAINABLE USE IN THE CAPTIVE LION SECTOR

The interviews captured the perceived meaning of sustainability and sustainable use among stakeholders within the South African captive lion sector. All interviewees were prompted to share their definition of the sustainable use approach to conservation as South Africa’s designated conservation model. As the substantiating quotes in Table 13 illustrate, the meaning of sustainability/sustainable use revolved around two core concepts: (i) long-term thinking and (ii) the secured existence of wildlife through economically-driven resource use. Although 10 of 51 interviewees (19%) failed to specify their understanding of sustainability or sustainable use, most interviewees (25 of 51|49%) explicitly referred to one of these two core characteristics. Fifteen interviewees (29%) even referred to both factors. One interviewee gave an entirely different explanation. Additionally, the qualitative data analysis surfaced two specific sub-themes, each one linked to one of the two core concepts (see Table 13): (i) the necessity to focus on conserving wild populations and (ii) the specific role of hunting as a reliable self-funding model for sustainable use.

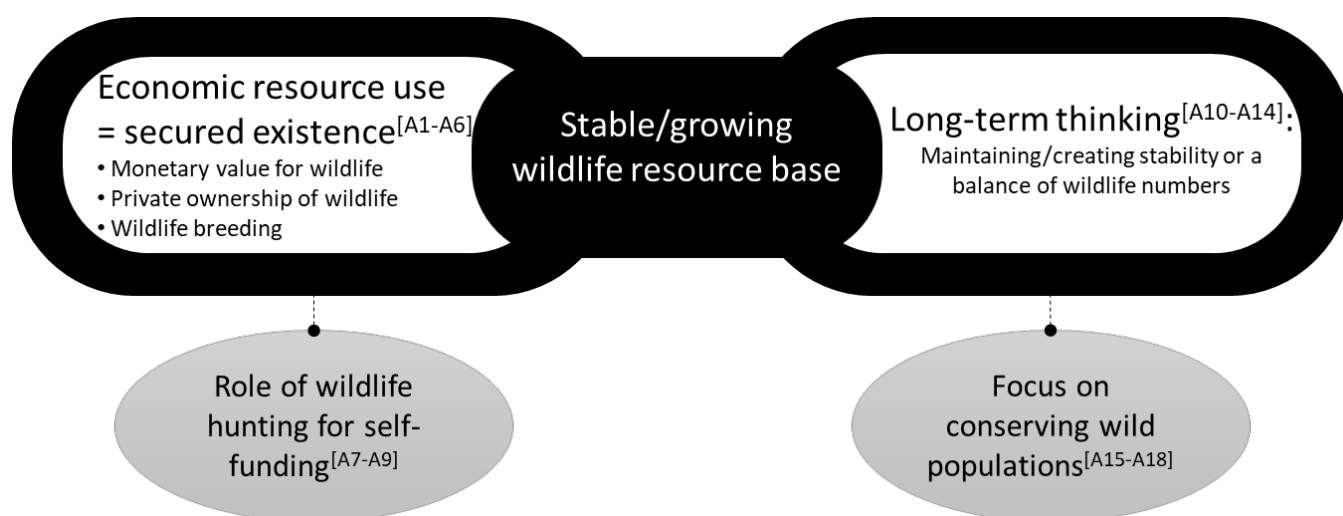
Utilising wildlife resources for financial gain to secure the continued existence of wildlife species was particularly prominent to describe the concept of sustainable use. Out of 51 interviewees, 28 (55%) included this line of reasoning in their definition [A1-A6]<sup>9</sup>. As the quotes in Table 13 indicate, interviewees emphasised the importance of private ownership of wildlife or highlighted that placing a

monetary value on wildlife based on consumer demand constitutes a prerequisite to ensure that wild animals are looked after or bred and continue to exist. The qualitative data also surfaced a marked link between sustainability/sustainable use and hunting [A7-A9]. Thirteen of the 51 interviewees (25%) made specific reference to their experience that hunting constitutes a distinctly potent means to achieve sustainability. Based on the experience that hunters place a sufficiently high monetary value on individual animals, offering hunting experiences allows for self-funding business entities independent of donations or public funding, thereby creating the incentive to keep and care for various wildlife species.

Adopting a long-term perspective emerged as the second core theme to define sustainability/sustainable use. Seventeen of 51 interviewees (33%) incorporated an element of long-term thinking in their definition, referring to the need for securing a stable or even growing resource base into the distant future [A10-A14]. A notable difference in perceptions emerged related to biodiversity conservation. Of the seventeen interviewees referring to the long-term perspective, nine made no point of distinguishing animal populations according to their wildness. By comparison, eight interviewees deemed the long-term view to be exclusive to wild populations subject to natural selection principles, hence excluding animals bred in captivity from counting towards this long-term perspective [A15-A18].

**Table 13: Main themes and their interrelations elucidating the perceived meaning and understanding of sustainability and sustainable use as the designated model for biodiversity conservation in South Africa from 51 interviewees.**

Note: The quotes are based on the interview analysis. Suitable quotes have been selected to represent the various themes and do not necessarily represent the author’s views or those of the EWT.



9. Letter 'A'-number combinations in square brackets in the Results section indicate the quote number in Table 13



Emergent Theme	Quote Code	Quotation with interview-ID in square brackets
<b>CORE THEME 1</b>		
<b>Secured existence of wildlife through economic resource use</b>	A1	“It can only be sustainable if there’s an end-user, an end market for it.”[CLF03]
	A2	“If you allow someone to have ownership of anything, he takes care of it because he invests in it.” [CLF06]
	A3	“Conservation principles are based on the simple fact that for that animal to survive, it needs to be utilised ... for financial gain and for their population gain in the long term. ... I believe in the IUCN’s conservation principles that by utilisation of the animals, whichever way you want to utilise it, as long as there’s value to them, they will be looked after.” [CLF10]
	A4	“If you breed something in South Africa, they leave the wild thing alone. ... If you don’t get money from something, then you won’t support something.” [CLF15]
	A5	“And the only way how you can keep it sustainable is to breed them. Give it a price, and then the farmers will be there and supply, and they can reintroduce these animals again. So the farmer is very, very important. ... It’s a sustainable thing then.” [CLF26]
	A6	“They need to make it acceptable for them {humans} to allow the wildlife to roam freely. How do you do that? You put a monetary value on that animal ... the monetary value of wildlife is the only way to conserve wildlife in Africa.” [CLSci01]
<b>Related Theme</b>		
<b>Hunting as a reliable self-funding model for sustainability</b>	A7	“Believe me, if there is a program out tomorrow telling me that I can make more money with my game ranch instead of hunting, I promise you I’ll stop tomorrow.” [CLF06]
	A8	“So that is the concept that 98% of the world don’t comprehend because they don’t live with the animals, and they don’t live in Africa. ... The fact that we have private ownership of land leads to a model that we can, in our own little way, ... have a way to do a portion of conservation by having the little bit of habitat that we have ... funding it ourselves ... without having a donate button on any of our websites. ... Fortunately for us, there is a way to fund it. ... why haven’t I converted {to photographic tourism}? For one, we don’t have enough habitat ... you have to have all of the big five, and for that, you need a lot of land. ... secondly, ... I haven’t seen one business model that is the equivalent of what I have {with hunting}. ... so we don’t need donations. We have found a way that is self-sustainable.” [CLF12]
	A9	“So I think there’s definitely a scope for hunting ...I think a lot of millions of people will disagree with that because they ... don’t want to see hunting at all. ... but I think realistically speaking, and if you look at other species and what happened in South Africa, a lot of those species increase because of hunting. ... definitely, hunting plays a role in conservation. Although a lot of people think it doesn’t make sense, but it is. [VET01]

Emergent Theme	Quote Code	Quotation with interview-ID in square brackets
<b>CORE THEME 2</b>		
<b>Long-term thinking to maintain stable wildlife numbers</b>	A10	“To keep going. To breed for today, to breed for tomorrow and the day after that.” [CLF14]
	A11	“It means to conserve something not on the short term, but on the long term.” [CLF23]
	A12	“Sustainable use for me simply means that we can keep on doing what we’re doing for our lifetime without having long term detrimental effects on any population. ... So there shouldn’t be a real shift in balance ... and the shifting balance can be sustained by increasing ... the amount of animals or lions we are breeding.” [VET03]
	A13	“In the end sustainability means, what you have today. It must be there in 10 years’ time and even at an improved level.” [VET06]
	A14	“I do believe in sustainable use of resources, as long, of course, ... there’s no long term effect on the biodiversity.” [PGOV02]
<b>Related Theme</b>		
<b>Focus on conserving wild populations</b>	A15	“If you stop that thing completely, the guys won’t breed them anymore, and then all lions will disappear.” [CLF03]
	A16	“But why do humans still poach? They go and poach. They go and kill. Why? And that’s why I say we’ve got to breed them. If we don’t breed them, they’ll be extinct.” [CLF21]
	A17	“It’s part of nature. What you put in, you can take out. ... If you just take out, take out, take out, it disappears.” [CLF26]
	A18	“So South Africa currently is, I think, it’s the only country in the world with a stable and growing wildlife population lately.” [CLSci01]

Noticeably, failure to describe sustainability/sustainable use came in two distinctly different forms. On the one side, the term was foreign to seven facility owners/managers.

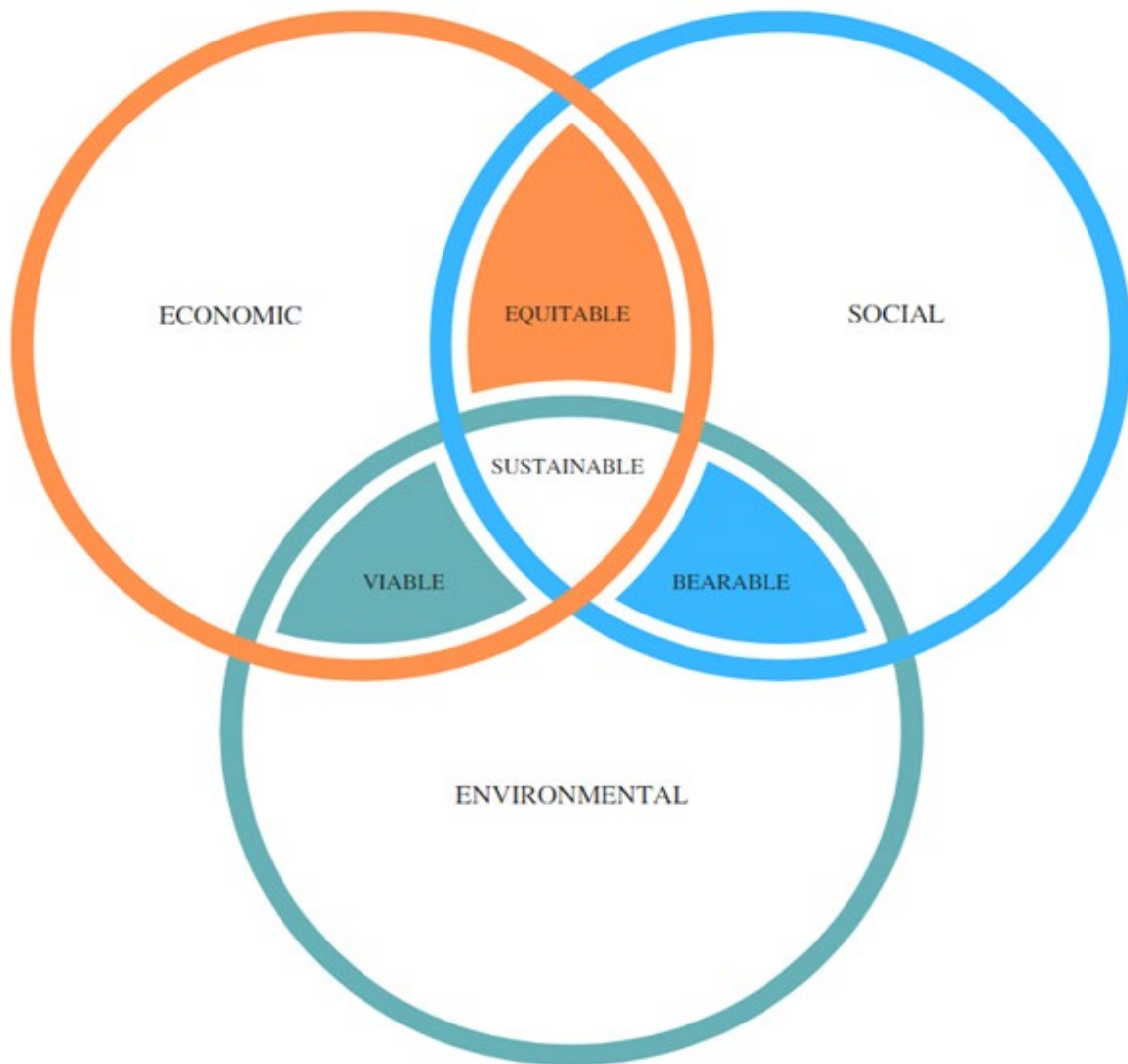
“No, I’m not sure if I understand the question correctly, but ... for us, it’s very important to look after our lions. That’s for us, that is a very important thing.” [CLF02]

On the other hand, three interviewees refrained from specifying their understanding based on their conviction that utilising lions for financial gain is generally unacceptable

“The sustainable use approach is mismanaged in this country. ... So, in my opinion, the sustainability of everything can be increased tenfold in this country. And I feel that lion breeding in this country or anywhere else in the world has no place in our sustainable use approach.” [VET02]

Finally, during all interviews, only one interviewee explained sustainability/sustainable use according to the triple bottom line approach, a widely applied framework for sustainability depicted in Figure 9 (Elkington 1998):

“Sustainability is something that you can sustain in the long term. ... there has to be a balance between the environment, between people, between economics and all those different spheres. They have to be in balance. That’s sustainability.” [NGO02]



**Figure 9: Widely used sustainability framework known as the triple bottom line (Elkington 1998)**

Even though the term “sustainability” is used inconsistently in the literature (Alhaddi 2015), the triple bottom line, as coined by Elkington (1998), still represents one of the most widely used models for assessing business performance and success, referring to the integration of three lines: environmental, economic and social (Fauzi et al. 2010). Despite ongoing discussions about the meaning of sustainability, various other frameworks also refer to the three lines (Republic of South Africa - Department: Environment and Tourism 2008; Cooney et al. 2015; UN Environment Programme 2020). However, for an enhanced understanding of sustainability in the context of South Africa’s captive lion sector, the intersections between the three lines in Elkington’s model, as depicted in Figure 9, play a crucial role and have often been omitted by other more recent frameworks. For this reason, we will henceforth discuss our findings in reference to Figure 9.

Comparing the triple bottom line model and the perceived understanding of sustainable use in the captive lion sector highlights both overlapping areas and discrepancies. The core themes in Table 13 correspond with the intersection of the economic and the environmental spheres in Figure 9, known as viability. However, the two models diverge significantly due to the lack of social factors in the emergent definitions of sustainable use by sector stakeholders. Consequently, the sector description summarised in Table 13 excludes any considerations for managing captive lion facilities equitably or bearably.

By comparison, the five perspectives that emerged as relevant domains for managing facilities (find detailed results for each management perspective in the following subsections: 3.5.2-3.5.6) complement all intersections of Elkington’s framework in Figure 9. The economic sphere

aligns with the management domain for financial health, the environmental sphere with the management domain for positive conservation outcomes, and the social sphere with the management domain for working conditions. The management domains for animal welfare and for securing legality and social justice can be linked to the intersections for bearability and equitability, respectively. Acknowledging this broader understanding of sustainable use, management complexity for individual facilities builds up, as illustrated in Figure 10.

The analysis presented for each of the five emerging management themes in the following subsections provides insights into this management complexity. We present both prevalent management practices and raised concerns from the interviewees, highlighting each management domain's inherent challenges. In addition, Figure 10 summarizes how a comparison of the management approaches commonly adopted by facilities and prevailing criticism of how the management of the sector is perceived suggests that it is impossible to manage a captive lion facility satisfactorily according to all management domains.

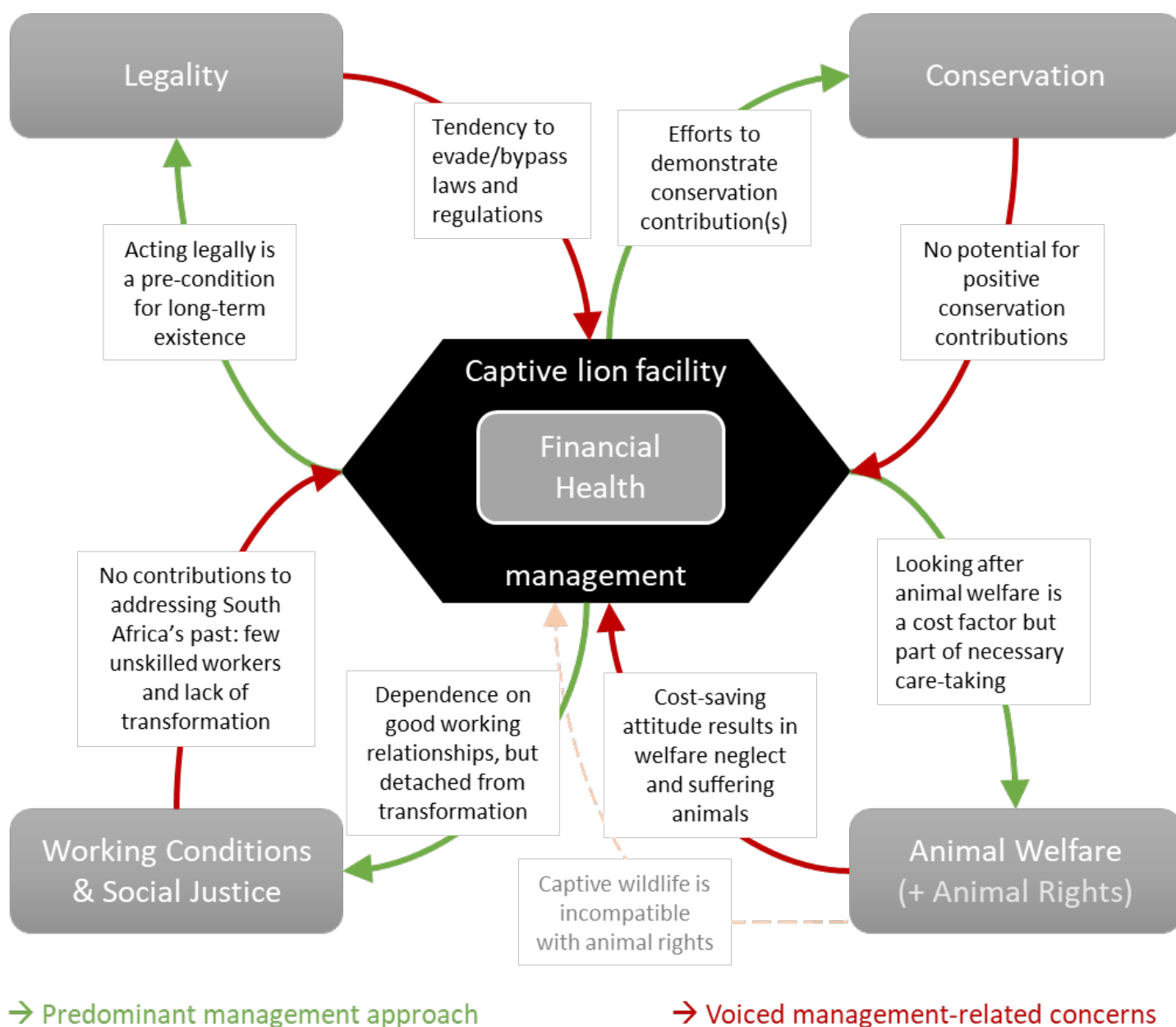


Figure 10: Interplay between the predominant management approach of captive lion facilities and existing management-related concerns voiced during the interviews and the focus group discussions illustrating the challenges of managing a captive lion facility satisfactorily

## 3.5.2 MANAGING FROM A FINANCIAL HEALTH PERSPECTIVE

From a management point of view, ensuring long-term financial health represented a central topic for every interviewed facility (Figure 10). This focus is often referred to as managing the financial bottom line and covers both cost coverage and revenue creation. Even if no trade-related activities are pursued as in cluster 1, the need to cover necessary capital expenditure and day-to-day operating costs turned financial aspects into a key consideration for any facility independent of the five sector clusters.

This subsection summarizes the emerging management patterns and voiced areas of concern from both a cost and revenue perspective linked to matters of legal trade in captive lions and their derivatives. All emergent patterns and concerns are indicative of the central role financial considerations play when managing a facility.

### 3.5.2.1 PREDOMINANT COST AND MARKET DEVELOPMENT PATTERNS

#### UNIVERSAL COST DRIVERS ACROSS THE CAPTIVE LION SECTOR

Data analysis suggested that the main cost drivers are universal within the sector, where a cost driver is defined as a cost type contributing significantly to the overall operating costs to run the facility. Table 14 provides an overview of all cost factors owners/managers spoke about

during the interview and those they listed as their top five cost drivers. The data revealed that the input factors and the related costs to run a facility are independent of the individual (business) model and thus of a particular cluster in which a facility operates.

**Table 14: Types of operating costs incurred by 31 interviewed captive lion facilities, distinguishing generally occurring costs factors from those cost types representing main cost drivers (i.e., named among the top-five highest costs for a facility).**

Cost type	Cost factor for no. of captive lion facilities	Cost driver for no. of captive lion facilities
Food transport (fuel and vehicle maintenance)	30 (97%)	26 (84%)
Staff salaries	30 (97%)	25 (81%)
Electricity (especially for fridges, freezers, cool rooms)	27 (87%)	21 (68%)
Food/health supplements	25 (81%)	20 (65%)
Veterinarian services	27 (87%)	18 (58%)
Facility/fence maintenance (materials and contractors)	14 (45%)	11 (35%)
(Discounted) food/meat unfit for human consumption (abattoirs, feedlots, chicken farms, etc.)	9 (29%)	9 (29%)
Other Costs		
- Security systems (alarm, floodlights, etc.)	3 (10%)	3 (10%)
- Herbicides (fence-clearing)	2 (6%)	1 (3%)
- Property tax	1 (3%)	1 (3%)
- Bond interest	1 (3%)	1 (3%)
- Security systems (alarm, floodlights, etc.)	1 (3%)	1 (3%)
- Advertising	1 (3%)	0 (0%)



The main cost driver for most facilities turned out to be expenditure to fetch dead carcasses from neighbouring farms (mainly farm animals like cows, sheep, horses or donkeys) as a food source for captive lions, followed by salaries, electricity, food supplements and using the services of a veterinarian. Interviewees pointed out that electricity costs are driven by the need to cool or freeze meat rather than the electrical fences, which were even

solar-powered in several cases. Furthermore, four of those 20 facilities, where supplements were among the top-five cost drivers, specifically pointed out that the special milk they were buying for lion cubs was particularly costly. Over and above the operating costs, the (initial) capital expenditure to erect the enclosures represented by far the most significant cost factor in comparison to the ongoing operational costs:

“The initial investment {is the biggest expense} and then ... per year, it's only, it's not as big expense for us. So I think just to keep everything in place, ... the maintenance to make sure the fence is in good condition and the solar panels ..., and then if you have to get a vet.” [CLF02]

“And any lion farmer doesn't matter if he got ten lions or 100 lions: camps, your space is your biggest problem, and

that's your biggest investment.” [CLF06]

“The main cost, of course, is your fence. Fencing is very expensive because it's got to be on a certain state or certain regulation.” [CLF21]

“The biggest thing is the facility. It costs you a lot of money to put up the facility, the fences and the electricity.” [CLF25]

## PREDOMINANT PRACTICES RELATED TO MARKET DEVELOPMENT

While cost-related considerations were part of the financial management of every facility, notable patterns related to market development and revenue generation merely manifested as part of the comprehensive supply chain of the hunting tourism cluster, exemplified by the following

quotes. On the one side, it became apparent how the South African representatives of the hunting tourism cluster, mostly outfitters and professional hunters, proactively seek to develop hunting markets for captive lions:

“We built the market {for captive lion hunts} in America, and we pushed the breeding industry in a certain direction. Most of the market development happened on sports or hunting shows and associated home visits.” [CLPH01]

A lot of effort is invested by South Africans to develop the hunting markets. After the US closed trophy imports, lots of

efforts now go into Eastern Europe like Russia, Bulgaria, Hungary, etc. and China as hunting markets. [CLBTr01]

“But in the meanwhile, the guys have done a lot of marketing in Europe and other countries, which wasn't there ... But the demand is not that high.” [CLF26]

On the other side, the interviews also revealed that sector representatives do not pro-actively pursue activities to develop markets for lion skeletons and other derivatives. This lack of engagement surfaced during the interviews in two ways. Firstly, a disassociation with lion derivative products and general reluctance to invest efforts to grow market presence or market shares became noticeable. The detached relationship of South African stakeholders with lion skeleton products is presented in subsection 3.1, introducing

the five clusters of the South African captive lion sector. Secondly, interviewees had limited to no knowledge about the steps involved in the supply chain segments in Asian or local muthi markets to get the end products to targeted consumers. The following quotes provide insight into South African sector players' lack of knowledge about these supply chain segments, whereby the last quote hints at import agents of lion skeletons likely being involved in driving market development activities in Asia:

“Tiger and lion bone parts are very similar. I don't know what they sell it for in Asia. ... I do not know too much about that {market in Asia}. I've never been worried about that because I only deal with the business on this side. ... We clean the

stuff {carcasses} completely before export. That is how my clients work. They want it clean. Different clients want it with a little bit of meat on, and then they put it in the alcohol.” [CLBTr02]



“Currently, everything goes to Vietnam from South Africa and from there, I reckon some goes on to China. Vietnam is the springboard to everywhere else. Previously, the imports went to Laos, but with their up-and-down relationship with CITES that is currently not allowed. The importing agent sells to different people, but this is where it goes very grey. ... South Africans do not do anything to grow the market. They are not interested in that. They cannot identify with it, and it does not make them proud. Lion parts are just a by-product from hunts.” [CLBTr01]

“Lion bone parts for carving and jewellery purposes are advertised and sold as new products, independent of tiger part products. ... In 2008, lion bones had no value in hunting farms and breeding facilities. I could get them for free. I imported my lion bones to Vietnam and advertised it there. People got to know my products, and the demand for them increased. In 2020, the prices for lion bones and lion parts had skyrocketed.” [written response from an Asian importer of captive lion parts to a set of questions: Appendix B]



### 3.5.2.2 EMERGENT TRADE-RELATED CONCERNS

In addition to predominant management patterns, interviewees also raised concerns about ways to manage facilities from a legal trade perspective. The two main concerns interviewees spoke about were:

- (a) the different captive lion specific legislation in every South African province and
- (b) the lack of transparency and traceability within the sector.

#### DIFFERING PROVINCIAL LEGISLATION

The following quotes illustrate how interviewees perceived the different legislation in each South African province combined with regular changes of detailed regulations as

a significant obstacle to transparent and controlled trade in captive lions.



“And the biggest problem is because there’s so many different provinces where people farm lions, and every province got its own set of rules. That doesn’t work.” [CLF06]

“That’s why every province has their own laws ... some have got good laws, and some have just got absolutely ridiculous laws.. ... But also what we want is one law for the whole country.” [CLF08]

“The big problem still up to now is there is no control, and the government doesn’t want to come to the party. Every province has got their own regulation.” [CLF19]

“And I really think that they need ... to have one permit office for all kinds of animals for the game and for the lions and for everything.” [CLF20]

“Our problem at the moment is all the different provinces. And everyone makes their own legislation.” [CLF22]

“I think that what the state is doing or the government stuff is not right. ... They must make the rules all ... the same and the camp sizes the same, and then ... start numbering the lions and go and check on that stuff.” [CLF28]

“But what I don’t understand ... is why there’s not the same regulations?” [VET06]



**While management decisions are first and foremost embedded in the country’s tax, commercial and labour law supplemented by the South African Broad-Based Black Economic Empowerment Act (B-BBEE), they are also guided by a lion-specific body of legislation. Specific laws and regulations applicable to captive lions exist under both national and provincial jurisdiction. Table 15 provides an overview of the lion-pertinent national legislation under the responsibility of two different government departments.**

Table 16, in turn, illustrates that local lion-specific rules and regulations vary from province to province, as pointed out by many interviewees and confirmed by government agents of the Free State, North West and Limpopo. Overall, both

summaries show how existing legislation and regulations govern various management-related matters. Nevertheless, regulations organizing legal trade activities and regulations pertaining to animal welfare concerns represent the most extensive body of legislation.

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Table 15: Overview of national legislation and regulations pertaining to captive lions deemed relevant by interviewees

Area of Application	Regulation
<b>Threatened or Protected Species Regulations (TOPS), 2007</b> (administered by the Department of Forestry, Fisheries and the Environment)	
<b>General Requirements / Prerequisites</b>	<ul style="list-style-type: none"> <li>• Compulsory registration and application requirements for captive breeding operations, commercial exhibition facilities, sanctuaries and wildlife traders, as well as game farm hunting permits</li> <li>• Need for an approved management plan</li> <li>• Mandatory inspection of the facility before making a decision on the keeping application</li> <li>• Need to renew keeping permit every 36 months (game farm hunting permits every 12 months)</li> </ul>
<b>Trade Activities</b>	<ul style="list-style-type: none"> <li>• Prohibition of hunting threatened and protected species (including lions) without a valid permit<sup>10</sup></li> <li>• Requirement for a valid keeping permit for selling and buying lions<sup>10</sup></li> <li>• Prohibited hunting practices, including hunting tranquillized lions, hunting from motorised vehicles or lions trapped against a fence or in a small enclosure without a fair chance of evading the hunter</li> <li>• Need of hunting clients to be accompanied by a registered professional hunter</li> <li>• Need to submit hunting register 21 days after the hunt</li> <li>• Need to microchip each lion</li> <li>• Requirement to report lion numbers annually (within three months after the end of each calendar year)</li> <li>• Prohibition of breeding in sanctuaries</li> </ul>
<b>Conservation</b>	<ul style="list-style-type: none"> <li>• Applications for keeping permits must include a description of the strategies and activities used by a breeding operation that contribute to improving the conservation status of wild populations of the species</li> <li>• Need to prevent hybridisation and inbreeding</li> </ul>
<b>Animal Welfare</b>	<ul style="list-style-type: none"> <li>• Applications for keeping permits must include food production or supply, removal of waste and availability of veterinary services.</li> <li>• Chemical immobilisation only to be carried out by veterinarians</li> </ul>
<b>Social: Security and Safety</b>	<ul style="list-style-type: none"> <li>• Applications for keeping permits must include security measures to prevent escapes and/ or thefts.</li> </ul>

10. A compliance procedure has been devised by DFFE for the legal lion part export from South Africa in 2017 and 2018 (Williams et al. 2021)

**Table 16: Notable differences of captive lion-specific legislation and regulations on a provincial level as described by interviewees exemplified for three provinces: Free State, North West and Limpopo**

Free State	Limpopo	North West Province
<b>Applicable Legislation/Regulations</b>		
<ul style="list-style-type: none"> <li>Nature Conservation Ordinance 8 of 1969 (Chapter II: Wild Animals)</li> <li>Nature Conservation Regulations published under Administrator’s Notice 184 12 August 1983</li> </ul>	National rules only	<ul style="list-style-type: none"> <li>Nature and Environmental Conservation Ordinance No. 19 of 1974</li> <li>Notice 297 of 2008: North West Wildlife Fencing Policy</li> <li>The North West Fencing Specification Amendment Policy</li> <li>Norms and standards for the development of management plans for keeping predators in the North West Province</li> </ul>
<b>Notable differences: General Requirements/Prerequisites</b>		
National rules only	National rules only	<p>General requirements for a permit to keep dangerous game (including lions):</p> <ul style="list-style-type: none"> <li>No objection letters from immediate neighbours and local forums</li> <li>Emergency plan with contact persons and telephone numbers</li> <li>Comprehensive management plan</li> </ul>
<b>Notable differences: Trade Activities</b>		
<ul style="list-style-type: none"> <li>Three months release period for captive lion in a 1,000 ha area before a hunt</li> <li>Need and specific information required for trade-related permits for hunting, possession, transport, import to and export from the province, disposal of wild animals and required sales/donation documents</li> </ul>	National rules only	<ul style="list-style-type: none"> <li>96-hour release period for captive lions in a 1,000 ha area before a hunt</li> <li>Need for trade-related permits: import, export, transport between provinces and outside of South Africa, keeping permit, hunting permit and sales/donation statement, hunting and carcass trading licenses</li> </ul>

Free State	Limpopo	North West Province
<b>Notable differences: Animal Welfare</b>		
<ul style="list-style-type: none"> <li>• 0.5 ha per lion with an overall minimum camp size of 1 hectare</li> <li>• Darting restricted to being done by veterinarians</li> <li>• Crate and general conditions for the transport of wild animals</li> </ul>	National rules only	<ul style="list-style-type: none"> <li>• Maximum number of 10 animals (excl. suckling cubs) per camp</li> <li>• Minimum camp size = 1,500m<sup>2</sup>/150m<sup>2</sup> per lion (for each additional lion, a further area of 150m<sup>2</sup> is required)</li> <li>• Adequate cover against weather patterns in each camp</li> <li>• Feeding/cleaning compartments and efficient water system in each camp</li> <li>• Overnight quarters not to be used as keeping facility</li> </ul>
<b>Notable differences: Security &amp; Safety</b>		
National rules only	National rules only	<ul style="list-style-type: none"> <li>• Specification of warning signs (location, minimum size, wording, colouring, additional rules for facilities with tourism approval)</li> <li>• Requirements for a good fence for keeping dangerous wild game, including lions (fencing dimensions and material specifications for inside and outside fence; electrification, foundation and gate requirements)</li> </ul>

ha...hectares

## LACK OF TRANSPARENCY/TRACEABILITY

Interview data also elicited concerns about the lack of transparency in the sector and the inability to trace individual lions in captivity from their birth. Interviewees described the missing traceability systems as obstacles to effective legal trade, illustrated by the quotes below. The opaqueness was perceived as a challenge to managing the sector in a controlled way

by hampering facilities' ability to consciously decide to buy and sell any particular lion based on its history. Some interviewees expressed their perplexity about this situation in the light of existing prerequisites such as the requirement to register lion numbers annually and available technology to establish traceability of individual lions.



“I think, one of the things like traceability, if you look at it in Europe and a lot of countries with the meat products and you know, there you want traceability. And I think that's also important in these predators. But in South Africa, we're not even at this stage where we have traceability in our production animals in our meat animals.” [VET01]

“In my opinion, lions, leopards, everything indigenous in

this country should be DNA'd, and a national database should be done.” [VET02]

“If you want to keep lions, that's it: DNA profile all these lions, get a database. And if there's a suspicion, you can take a DNA sample and say right, this lion moved there. ... Where is the permit for that? What vet was involved here?” [VET06]







“We were looking for a platform where we could register the lions like a studbook. ... That was a system called GMP by a veterinarian ... It’s a traceability system. ... And you can fill in information. Bloodlines, parentage, DNA information, medical information, every veterinary treatment, medication, everything can be put on the system. ... I used it, but then I found a lot of resistance from the people that buy the animals as they actually got to pay, and it’s a couple of thousand Rands to join.” [CLF05]

“Because the traceability of the hunting breeding business ... the technology is there, that it could be more than 100% traceable because of the fact that you can take DNA. ... Every single lion we have, you have to be accounted for. It’s on a

register that every year when we renew our permits, you send in your microchip list.” [CLF12]

“You expect there to be a list, a central list that the government knows who is breeding and keeping and hunting captive big cats. And it just shows that this industry has not been fully audited.” [NGO02]

“We need to be able to track where the lions come from, that’s also very important. So there needs to be a DNA profile on a ranched lion so that we can check for inbreeding and all that stuff. But more importantly, that’s one way of checking that this lion didn’t come from a petting zoo or something like that.” [CLPH02]



### 3.5.3 MANAGING FROM A LEGAL PERSPECTIVE (AVOIDING ILLEGAL ACTIVITIES)

Illegal wildlife trade represents a global concern and affects a wide variety of plant and animal species (Lawson & Vines 2014; Pires & Moreto 2016; Merem et al. 2018; Esmail et al. 2020). Prevention, detection, enforcement of wildlife crime, and achieving justice for wild animals are on the agenda of individual countries, international institutions such as CITES, and private NGOs. The risks posed to biodiversity from illicit wildlife trade make avoiding illegal activities or any transgressions of existing laws and regulations a relevant management perspective for anyone involved in the legal trade of wildlife species, including captive lion facilities. This subsection outlines emergent predominant management

patterns and areas of concern related to illegal trade activities in the sector present in our data.

The prevailing patterns and concerns suggest an ambivalent interplay between managing a facility from a legal management perspective. As depicted in Figure 10, the results show the expressed importance of acting legally as a pre-condition for long-term existence dependent on an unblemished reputation. On the other hand, certain practices and concerns hint at a susceptibility of facilities to evade or bypass certain regulations when called for from their point of view.

#### 3.5.3.1 PREDOMINANT PATTERNS IN CONNECTION WITH ILLEGAL TRADE ACTIVITIES

At the end of the comprehensive interviews, when good rapport was established, owners/managers were asked to share their knowledge about any illicit behaviour of other facilities in an anonymous way. A sequence of questions was asked following the general principles of the nominative questioning technique (Nuno & St. John 2015). Respondents were invited to report on irregular behaviour of other facilities they know very well without divulging identifying details of those places. The responses to the questions were qualitatively analysed as the sample size of 31 interviewed facilities was insufficient for a robust statistical analysis. The initial question revealed the following four types of responses:

- Most facilities (17 of 31; 55%) reported knowing between 1 and 10 other facilities well.
- Few facilities (7 of 31; 23%) claimed to know more than 20 facilities in-depth, and in one case, even 270.
- Few facilities (5 of 31; 16%) stated that they had no knowledge at all of any other facility.
- In rare cases (2 of 31; 6%), the interviewees did not want to engage with the question and did not provide any numbers.

The series of follow-up questions (see Appendix A for details) established the following insights about the knowledge of illegal transgressions committed in the sector:

## SKETCHY KNOWLEDGE ABOUT ILLEGAL ACTIVITIES IN THE CAPTIVE LION SECTOR

The qualitative analysis inferred that the level of knowledge about other facilities does not go deep enough to have hands-on, practical knowledge of actual sensitive behaviour. As the following quotes exemplify, many of those facilities stating to know others well could not refer to their own experience and sometimes referred to hearsay, rumours or the media as sources of how they learned about illegal behaviour (19 of 24|79%).

“I know only what is on videos. That’s all hearsay.” [CLF11]

“The one {illegal incident} was selling of bones {without a permit}. And the other one is basically canned lion hunting where they actually semi-darted the animals. We stay in a small community. Everybody knows about everybody’s business here. ... there’s a couple, a small handful, but that makes it a problem for everybody.” [CLF16]

“{About a dispute with another lion farmer who allegedly hunted tranquillized lions.} I haven’t got proof. It’s hearsay.” [CLF19]

“There is one or two that I have heard of what they’re doing is not right.” [CLF22]

“I say I don’t know if it was without permit, but there was a big court case about that thing going on, so I don’t know what happened in it. ... It was in the papers all over.” [CLF28]

“I just heard, I have no evidence; I am not interested in it at all; my main thing is the security achieved by keeping these predators.” [CLF30]

“You hear rumours; the ones I know are doing things well and legally. ... other people, you don’t know them well, but you might have heard stories about them in the past.” [CLF30]

“We’ve got information that some of those guys started to sell illegally to people ... I don’t have any evidence, but ... what we are hearing currently, is that some of the guys are starting selling of the stuff, but we’re not issuing any transport or any permits currently for lion bones.” [PGOV01]

Only 3 of 24 (13%) of the facilities referred to their individual experience with other facilities they know well when reporting on illegal behaviour.

“I would say the biggest illegal thing on these properties are permits ... the second biggest thing is the hunting of the lions in just that little camp. ... I know of, for sure, three places where it happened last year because I was there. I was on the farm hunting other animals or loading animals, or I know the owner.” [CLF08]

{Report of two legal digressions after visiting more than 20 facilities}: “The one was in the news. The famous XYZ farmer. The lions there were sick. It was a welfare issue on the condition of the lions. ... The other one, ... the lions came out of the enclosure because of some problems with the fencing.” [CLF19]

“But only two of them {facilities that I know} are accredited members of SAPA. The other four not. ... And their fences except one maybe two is on standard. Those other two places, I would not go with my kids or anyone near that place because I feel unsafe.” [CLF23]

At the same time, there was a tendency to sincerely vouch for the honesty of facilities with whom the interviewed facility traded.

“I’m just familiar with that three. ... That’s why I mentioned those names with my whole heart. They’re doing things well.” [CLF04]

“No, I don’t know, any {facilities} here {that have done something illegal}. ... I know about the guys who I sell my lions to, and all of them are fit and respectable ... about five, six.” [CLF20]

In summary, the results suggest that the relationships between facilities and thus the respondents’ knowledge of other facilities’ behaviour are too weak to reveal much about the prevalence of illicit behaviours in the sector (Nuno & St. John 2015).

## IMPRUDENCE OF ILLEGAL BEHAVIOUR FOR CAPTIVE LION FACILITIES

Another pattern emerged suggesting a need for widespread legal compliance by facilities to maintain long-term prospects for one's business, as even just rumours about any illicit behaviour could destroy the facility's reputation.

“But I mean nothing serious which can harm the industry or harm our image or something like that would be illegal trading or something like that. Nothing. Not one of that guys will do it because they got too much to lose.... If you're one of the big breeders and you do things like that, it comes out. Of course, people talk.” [CLF06]

“Nobody is going to take that chance. It's such a controversial business that, in the end, it's so punishable. And everybody's got their eyes on this industry that I can tell you there's very, very few rogue elements in the industry.” [CLF12]

“We have nothing to hide. We can't do any other business in town if we are like, what do you call it, crooks. ... We have 200 people working for us. So, we can't be crooks. ... It doesn't work like this. We've got a name to support.” [CLF15]

“I don't know of any really illegal. ... I'm not interested because I'm not prepared to lose my permits and everything to do anything like it's just not worthwhile.” [CLF29]

“But the ones I know, I would say are people that's pretty honest. They follow the right way. ... They don't want to get their fingers burnt. And then, I mean, they get a bad reputation and at the end of the day it just makes things just more complicated.” [CLF31]

Consequently, and despite the shallow knowledge of the detailed operations of other facilities, a general notion emerged from the interviews that illegal activities are not a widespread phenomenon as long as sanctioned legal trade prevails in the sector. As exemplified by the following quotes, interviewees referred to both the possibility to trade legally without the need to violate laws, and the above-described scrutiny facilities find themselves under to assert their reasoning for the proclaimed low levels of illegality.

“Here's a lot of farmers out there that are really not in for the illegal side of it. ... And there's a couple, a small handful, but that makes it a problem for everybody.” [CLF16]

“If we're just talking about the lion breeders, if I know 80, there is one or two that I have heard of, what they're doing is not right. ... I would say ... the majority, everybody is trying to keep with their permits, doing everything legally.” [CLF22]

“I don't think most of the people are doing the illegal way of it, because then if you see the illegal, you will hear from it.” [CLF24]

“{And of those 21 that you're responsible for, how many would you say are really these problem facilities?} I've got maybe two. ... they're not really a problem facility. It's just a difficult owner. ... So most people are trying to ... have a good relationship and stay in line with the legislation. ... I'll say 98% are trying to stay in line.” [PGOV02]

### 3.5.3.2 RAISED CONCERNS IN CONNECTION WITH ILLEGAL TRADE ACTIVITIES

Although areas of concern about illicit behaviour within the sector surfaced from the interviews, summarized in Table 17, the main grievance related to illegal trade was insufficient or unfit resources to secure enforcement of existing laws and regulations.

#### INADEQUATE LAW ENFORCEMENT

All interviewees were asked to share their knowledge of illegal activities based on their experience. As mentioned above, while the experience with any actual misdemeanour was limited, 21 of 51 interviewees (41%) alluded to problems related to the enforcement of existing rules and regulations for facilities. In detail, the interviewees spoke about both insufficient human and other resources and competency issues. The following quotes give an account of experienced predicaments:

#### (a) a lack of human resources and/or organisational inefficiencies, and



“The big problem still up to now is there is no control, and the government doesn’t want to come to the party. ... there is no inspection.” [CLF19]

“They {provincial inspectors} don’t have money for vehicles, and they don’t have vehicles, and they don’t have petrol or fuel to come in and inspect places anymore.” [CLF20]

“It has always been difficult with Nature Conservation to make sure that the permits are on time. We have to phone them and remind them. Usually, there is one inspection from Nature Conservation each year, sometimes two per year. However, the responsible person changes often, which makes things difficult, and we have to find out again who is in charge. [CLF30]

“...unless the NSPCA goes and inspects, who need to get their money from donations, then you can get away with absolute murder because nobody’s checking. ... I think part of that is a lack of resources, a lack of accountability, poor management of funds and poor management ... So there’s so many issues associated with that poor implementation and enforcement that I don’t know whether strict norms and standards would sort it out.” [NGO02]

“It’s a general problem in our country, that we’ve got a lot of laws and regulations, but they’re not always enforced. ... I think the

big thing is that you have to have more proper control or check-ups from nature conservation’s side. ... It’s no use to have all these regulations, but it’s not enforced.” [VET01]

“So currently, we’re only two biodiversity officers doing the whole area. ... But the big problem is we’ve got limited kilo’s {kilometres} a month. So, that’s also a problem for us to really enforce all the legislation that we have. We’re doing our best to do spot checks on the hunts and go at least every third month and inspect the facility ... but it doesn’t always work that way. And sometimes it goes to maybe once every six months doing inspections. ... but limited time and staff availability is currently the biggest rollback on putting more spot checks for hunts.” [PGOV01]

“That’s now one of our problems that we’re facing. We’ve got huge districts, and of course, we are not enough enforcers to do as many inspections as we would have preferred to really do proper enforcement. So if we were more people, your area could have been smaller. And then, of course, you can focus more and visiting facilities more, especially if it’s a problem facility. ... if you’re lucky, you can get to a facility twice {per year}. Otherwise, it’s only once when they did the renewal of their possession permits.” [PGOV02]



#### (b) competence-based deficiencies



“And then every time you sell something, it needs to be taken off, but they don’t take it off. They lost the infos at least three times. ... And

then I said, OK, you ask me, how many lions do I have. I said, OK, can I give you these five males’ microchips? No, we don’t need that. Then you don’t need anything. I can tell you I have ten lions, but the microchip is there to register that animal.” [CLF20]

“But the whole wildlife industry, there’s lots of irregularities going on. So the control is not there, and the enforcement is not what it should be. ... Initially, I think it wasn’t bad. But it became bad, because ... before you could get a lion farm you must have certain minimum standards ... But it seems to be very slack nowadays. ... I’ve just seen an inspection. The lady comes from Nature Conservation, asks the guy, okay, well, bla bla bla, sign the book. Not even going and look at the ... facility.” [VET06]



## NOTABLE AREAS OF ILLEGAL BEHAVIOUR EXIST

As part of the question series focussing on illegal behaviour in the sector, the interviews unveiled different types of prevailing legal contraventions. Table 17 provides a summary of notable areas of concern substantiated by descriptive quotes. The qualitative data analysis only captured personally experienced or self-disclosed transgressions and excluded other allegations about illegal behaviour raised by interviewees lacking a description of any personal experience.

The most commonly reported infringement undertaken by facilities referred to practices that are restricted to the provision by veterinarians (10 of 51 interviewees [20%; [B1-B10]). Those transgressions specifically included facility owners/managers tranquillising lions themselves without the services of a vet of lions, illegal supply of medicinal drugs to facilities, including sedatives for darting, and injection of microchips for lion registration purposes. The microchipping

practice of lion owners/managers raised subsequent doubts about the legitimacy of the information provided by facilities about the number of registered lions and is linked to the issue of traceability described in the previous subsection on legal trade concerns. By comparison, only 7 of 51 interviewees (14%) shared a personal experience where facilities exceeded the maximum number of lions per enclosure [B11-B12].

Experiences with trade-related transgressions included transporting lions without valid permits, illegal hunting practices and selling lion parts without permits. While the transport issue came up in 9 of 51 interviews (18%) [B13-B15], personal experiences with illegal hunting incidents or black-market sales of lion derivatives were only shared by four interviewees (8%) for unlawful hunting behaviour [B16] and three interviewees (6%) for selling bones without a permit [B17].

**Table 17: Concerns related to illegal activities of captive lion facilities emerging from 51 interviews.**

Note: The quotes are based on the interview analysis. Suitable quotes have been selected to represent the various themes and do not necessarily represent the author's views or those of the EWT.

Raised concerns	Quote Code	Quotation with interview-ID in square brackets (CLF...captive lion facility owner/manager)
<b>Illegality concerns related to in-facility management practices</b>		
<b>Administration of activities exclusive to veterinarians</b>	B1	<p><b>Lion tranquillising by facility owners/managers (without a vet)</b>                      "Most of us do our own darting, that we're not allowed to do so, it must be fixed. I should be able to go and do an exam, where I can get my, maybe like a veterinary permit or darting permit to do my own darting, because I know the medicine. ... both the vets that stayed in {in the town} learnt from me how to dart lions. So we should be able to get a licence to dart our own animals." [CLF22]</p>
	B2	"I dart my animals. The vet prepares the darts but does not come to the facility. I have to go in and dart very quickly to have all the animals go down. You must not corner the animals. Otherwise, they would jump over the fence." [CLF24]
	B3	"Many of these lion farmers do get the drug to immobilise or to sedate them or to move them {the lions}. They do it all themselves. [VET05]
	B4	<p><b>Illegal drug supply to captive lion facilities</b>                      "But some of these veterinarians even supply these game farmers with the drug to dart the lions themselves." [VET02]</p>
	B5	"As they gain experience, they work with the vet. They ask questions, they get clever, they get a friend of a friend or a friend of a cousin of a friend. They get access to the drugs." [VET06]
	B6	<p><b>Misreporting on individual lions due to self-administration of micro-chips</b>                      "I microchip them myself ... when they start eating meat." [CLF17]</p>
	B7	"I do that myself {micro-chipping}. But I mean, I got them from the vet. So, I buy them from there. ... You know it's just a small needle, and the chip is inside. You just prick them with the needle on their skin and push it in. It's nothing much about it." [CLF25]
	B8	"I know you're not supposed to do it yourself, but it's for the vet to come out and do it free. It's expensive. So we do it ourselves. Buy the chips and then put it in." [CLF28]



<b>Raised concerns</b>	<b>Quote Code</b>	<b>Quotation with interview-ID in square brackets</b> (CLF...captive lion facility owner/manager)
<b>Illegality concerns related to in-facility management practices</b>		
<b>Administration of activities exclusive to veterinarians</b>	B9	<b>Misreporting on individual lions due to self-administration of micro-chips</b> “... and then again, not all {lions} are micro-chipped. ... but the client can do that themselves. It’s not something I do.” [VET03]
	B10	“The law said all the lions must have microchips. But they only chip it when they sell it or transport it to the lion hunting farm.” [VET05]
<b>Exceeding maximum lion numbers</b>	B11	“Sometimes, like for now, I know there’s a lot of people that their keeping permit is saying they’ve got 50 lions, but they know they’ve got 60 lions. But they’re only allowed to keep 50 according to their hectares. ... But you see, what must they do? ... they can’t sell their lions.” [CLF22]
	B12	“That’s why I’ve got issues with these rearing camps ... because many times, they do overstock those rearing camps. ... Many times, I get eight, nine months old {lions}, and they’re still in the rearing camp. ... So that’s normally where the people transgress. [PGOV02]
<b>Illegality concerns related to supply chains and trade in captive lions</b>		
<b>Lions transported without a valid permit</b>	B13	“I have to have a schedule ... to load the lion to go in the Kalahari. And it went quite well. And then all of a sudden, they just changed it to permits must be in on Monday for Tuesday or whatever. So I put mine {application} in and don’t get it. ... So what I’ve done is, I go to the police in {town}. I make a statement. I say I’m going to load that lion. Here’s my application. It was meant to be in on that and that day, it’s in. I have to get it approved by that day. It’s not approved. I have a hunter coming in in 21 days. I have to deliver that lion, and I just drive with that letter.” [CLF14]
	B14	“Every time when one of my cubs are ill, or something’s not right, I need to apply for a permit and have a transport permit. At that time, my lion cub will be dead. I do take that chance. I go to the vet, I show my cub, and I bring it back.” [CLF20]
	B15	“I think that {transport without a valid permit} starts of where people are getting frustrated with the officials saying, you know what, I approached you, I need a permit. ... The thing is, it must be sorted out from the authorities. Either it’s allowed, or it’s not allowed.” [VET06]
<b>Illegal hunting practices</b>	B16	“The second biggest thing is the hunting of the lions in just that little camp. ... I know of for sure, three places where it happened last year because I was there. I was on the farm hunting other animals or loading animals, or I know the ... owner.” [CLF08]
<b>Selling lion parts without permits &amp; rumours about smuggling of lion parts to Vietnam</b>	B17	“I can say smuggling is happening because when I see some photos of skeletons that my agent sends me that arrive in Vietnam, I recognise the way they are tied together with wires, and some have tags that are made or typically used in South Africa.” [CLBTr01]

## 3.5.4 MANAGING FROM A CONSERVATION PERSPECTIVE

The interview data suggest that a notable vacuum characterizes managing facilities from a conservation perspective (Figure 10). The void showed up between a voiced eagerness and belief of owners/managers to contribute to conservation and a widely professed notion that captive lions categorically possess no positive value for conservation, thus playing no role in conservation. A shortage of conservation-related regulations, including a framework to assess the conservation value of captive lions (Hiller & MacMillan 2021), is indicative of this status quo.

Captive lions feature in South Africa's biodiversity conservation legislation only insofar as to ensure minimal impact on the wild and wild managed lion population. The South African National Biodiversity Management Plan for African Lion asserts that captive-bred lions are exclusively bred to generate money (Funston & Levendal 2015). In terms of conservation, the stated objective is to ensure a well-managed captive population with minimal negative conservation impacts. Any potential for conservation contributions is excluded, even though the Threatened or Protected Species Regulations (South African Department of Forestry Fisheries and the Environment 2014) require holders of permits to keep lions to describe strategies and activities used by the breeding operation that contribute to improving the conservation status of wild populations of the species (Table 15).

Based on the lack of a shared vision and applicable legislation from a conservation management perspective, the research data elicited a disjointed, individualistic approach applied by facilities to manage for conservation purposes. As summarised in subsection 3.2.1, 10 of 31 (31%) facilities included conservation-related motives as intrinsic drivers to set up and run their facility. In line with a previous study by Hiller & MacMillan 2021, these results also showed their varied understanding of how facilities manage to contribute to conservation. Propositions included habitat protection (on hunting farms), conserving genetic potential, maintaining a safety-net population (both short- and long-term), providing research opportunities and buffering the wild lion population from trade-related activities.

The interviews were not geared towards assessing any actual conservation contributions, and further research is required. Knowledge gaps revolved explicitly around the potential for reintroducing captive lions into wild and wild-managed populations, despite the claims by three facilities about introductions of lions from their facilities into game reserves in southern and East African countries. Furthermore, any potential buffer effect of captive lions for wild populations is insufficiently understood. However, conspicuous comments from interviewees have been

included to assist in further research. For one part, the following quote suggests that individual lion parts such as teeth, nails or claws from poached lions are not destined for the Asian market:

“If you try and sell to Asian import agents what poachers typically take the paws and face, the importers will laugh at you if you wanted to sell them teeth or claws separately. They count every single bone.” [CLBTr01]

On the other hand, described differences in the approaches to hunting captive and wild lions have been earmarked as potential to redirect wild lion hunters partly towards hunting experiences for captive lions.

“I can guarantee you, 80/90% of my clients, if they don't hunt a ranched lion, will never be able to afford a lion that five or 10% cream of the crop that can afford to pay 70 000 or 100 000 dollars to go hunt a lion. Where in South Africa, they can hunt a decent male lion for between 10 and 20 thousand dollars. ... But you can definitely take that middle group and swing them over to ranched lions because, at the end of the day, it's going to be about money. ... And to me, it's much, much, much more exciting to track a ranched lion. You know, get on his tracks and walk it until you find the lion or don't find it. ... That's how we hunt ranched lions. Tanzania, we can't do it. We bait them. So the PH and the trackers, whoever is involved in the baiting, they're doing all the work. What does a hunter do? He goes into a blind and sits and waits for the lion to come through the bait. And then he shoots it. Where, if you track it, he works with you from day one and walks his ass off. At the end of the day, with hope to succeed and get his lion.” [CLPH02]

Nevertheless, the interviews elicited the following notable practices in the sector related to biodiversity conservation efforts. Based on the above-mentioned notion that captive lions have no conservation value, these efforts are rejected or diffused as inept, inaccurate or insufficient for conservation purposes, as depicted in Figure 10 and exemplified by corresponding quotes in the following two subsections.

## EFFORTS TO AVOID INBREEDING WITHOUT A CONSERVATION-RELATED BREEDING STRATEGY AND DNA-TESTING

All interviewed facilities gave an account of their management methods to avoid inbreeding. The following quotes exemplify various strategies described to achieve this aim.

“To start with, I don't breed with males and females more than three years, then I change them all.” [CLF06]

“I don't give my lions names, but the {lions} that I breed got names. I know like Lali's child is Lily. So that's my L lane. So Lily can't go to Louis.” [CLF17]

“I've got a studbook of my lions since I bought my first lion. ... I can tell you exactly where did I buy this {[lion]}? Where did the females come from, and what happened to their offspring.” [CLF22]

“...as I said, we put notches in. And every time when we select the new male, breeding male, we make sure with the notches that he doesn't get to his brothers or sisters.” [CLF26]

“No, I don't think any farmer would take the risk of inbreeding. ... I mean, I think we all grow up with that principle. And inbreeding is a bad plan. ... I haven't observed inbreeding is a big issue.” [VET06]

However, any measures taken to avoid inbreeding represented a prime example of the perceived inadequacy of how facilities are managed for conservation. Critics of the notion that captive lions could constitute a means to preserve genetic potential emphasised the need for DNA-testing and an exclusive purpose and strategy to manage captive lions for the sake of strained or extirpated populations across Africa:

“At this stage, they're just keeping track of which males has been with which females and cubs. So they've got their own little system of writing down things. But there's no massive like, again, genetic stuff to make sure there's no inbreeding.” [VET02]

“There's enough captive facilities with enough of a diversity in genetics in brackets to be able to repopulate a semi-healthy population or potentially healthier than what it is now. But you're going to need the Department of Conservation to buy into the idea first. Then you're going to have to get the scientific community behind it to ensure that it is viable, which I believe it is. But you need them to do their job without being influenced from the emotional aspect.” [CLF10]

Only 4 of 31 (13%) facilities used DNA test results regularly as a means to manage the coupling of breeding animals. Among all 31 interviewed facilities, 12 (39%) had sent samples for DNA testing at some point. Others indicated that they had engaged in DNA testing in cases when overseas clients had requested such results or as part of a temporary initiative by SAPA. Consequently, both the extent of inbreeding and the genotypical profiles within South Africa's captive lion population proved to be unclear. In addition, the classification of lion subspecies continues to be debated. While the most recent classifications distinguish an eastern and southern African lion subspecies (*Panthera leo melanochaita*) from a lion subspecies in West and Central Africa (*Panthera leo leo*) (Bertola et al. 2016), the IUCN SSC Cat Specialist Group refers to two subspecies, namely the Asian subpopulations (*Panthera leo persica*) and African subpopulations (*Panthera leo leo*) (Bauer et al. 2016). Hence, it is currently impossible to determine any conserved evolutionary potential within the captive lion population in South Africa.

As far as the management aims for lion reproduction in captivity are concerned, most interviewees (31 of 51|61%) linked good genetics in a lion with phenotypically expressed traits or characteristics. As the following quotes illustrate, these features are associated with ideas about a general ideal type of lion.

“I look at different things. I look at motherly instincts. I look at if the female can actually look after the cubs. How many of her cubs she can actually raise, and the percentage of male females in a litter. And then also certain characteristics from the male. You know, I measure the skull, look at the skull length and look at the body.” [CLF12]

“But from the years of experience, you can see a good lion. ... The dark hair. The hairs will be longer past the shoulder, the size of the paws. The size of his legs here.” [CLF18]

“The size, the mane, the colour of the mane. ... Just a majestically lion built.” [CLF23]

Combined with the lack of DNA testing, this pattern was indicative of inadequate reproductive strategies within the sector to maintain the evolutionary potential of African lions according to historic range areas. Our results, thus,



“The only way you can define good genetics on a lion is genotypically. ... No other way. ... Phenotypic characteristics mean nothing in a lion.” [VET02]

“But the big thing is for me if you want to make nature conservation, if you want to preserve lions, you must see if there is, I mean, test the subspecies first.” [VET04]

highlighted the need to understand the whole genome of African lions as a prerequisite for any form of genotypically oriented conservation aims to potentially aid small or extirpated populations, as mentioned by seven respondents.

“The philosophy is that you must retain the diversity of the gene pool in the event that something happens to be one of the groups, you don't lose the whole population.” [CLSci02]

“...to have the satisfactory feeling that I know it's a biodiverse lion, that if this lion was released in the wild, that it will contribute to the gene pool of the lion.” [CLPH01]



## SPORADIC, INDIVIDUALISED CONTRIBUTIONS TO CONSERVATION FUNDING

Funding conservation efforts can be seen as an indirect means of achieving a positive net effect from a biodiversity conservation perspective (Hiller & MacMillan 2021). According to the research data, funds for conservation efforts are an individual affair rather than a concerted, institutionalised effort within the sector or any of the five distinct clusters. While 13 out of the 31 interviewed facilities (42%) declared that they never donated funds to conservation, the individual financial contributions of the remaining 18 facilities (58%) were sporadic and varied widely. Eight interviewees referred to donations

and membership fees of SAPA and PHASA (Professional Hunter's Association of South Africa) to fund conservation projects. Other funding initiatives were entirely at the individual discretion of the respective facility. They covered not only payments towards organisations such as the WWF, Save the Rhino, the NSPCA, local environmental trusts or anti-poaching initiatives, but donations towards social causes or the study fees for nature conservation students. Nevertheless, the dataset did not include a clear, traceable pattern for institutionalised funding for a clear conservation agenda from the sector.

## 3.5.5 MANAGEMENT FROM AN ANIMAL WELFARE PERSPECTIVE

This subsection summarises the predominant welfare-related practices, trends and concerns within the sector. Managing captive lion facilities from an animal welfare perspective turned out to be a management domain characterized by high levels of concern and a void of agreed standards. This management perspective turned out to be utterly incompatible with managing facilities when extending the scope of animal welfare to matters of animal rights, as depicted in Figure 10. As illustrated, welfare

concerns revolved around a perpetuated cost-benefit trade-off between management decisions favouring the facility's financial health to the detriment of animal welfare. Simultaneously, facilities mostly viewed the provision of appropriate animal welfare conditions as a matter of responsible caretaking for their lions. A need for discussing both animal welfare and animal rights as separate issues became apparent.

### 3.5.5.1 PREDOMINANT PATTERNS IN CONNECTION WITH ANIMAL WELFARE MANAGEMENT

Interviewees discussed various practices and concerns relating to animal welfare when managing a facility summarised in this subsection. Common practices linked to lion welfare and welfare-associated concerns included (i) living conditions, (ii) veterinarian involvement, (iii) feeding regimes and (iv) reproduction.

#### SPORADIC, INDIVIDUALISED CONTRIBUTIONS TO CONSERVATION FUNDING

Facility practices were most similar in areas with existing specifications for welfare-related aspects. Such

**specifications mainly refer to the living conditions of lions in captivity and are part of both the national and provincial legislative framework summarized in Table 15 and**

Table 16. The regulations mainly specify the setup of lion camps, covering requirements such as the minimum camp size, the number of animals per camp, fencing conditions, shelter, and food and water provision. Table 15 shows that those specifications differ between the interviewed provinces.





**Figure 11: Exemplified impressions of raised concerns about living conditions compared to favourable conditions in interviewed captive lion facilities.**

When prompted to reflect on appropriate welfare requirements for lions, the living conditions pertaining to the lion camps constituted an important consideration. However, the interviews elicited different, additional features for enclosures beyond the regulatory specifications with relevance from a management point of view. Those aspects included the type of vegetation in the camps, the social structure and enrichment for the lions, cleaning regimes, and mobility systems such as feeding or night camps, movement corridors, or loading funnels. For those features, no comprehensive guidelines exist,

and facilities tended to differ in the way they manage these conditions. Figure 11 provides impressions of observed camp conditions in facilities exemplifying both raised concerns and favourable cases in terms of vegetation, cleanliness and social structure. Poor vegetation, missing (natural) shade in the enclosures, unclean or even smelling camp conditions and untypical social structures with numerous lions of the same age group in one camp were part of the observations as much as examples of favourable cases for the same concerns.



## VETERINARIAN INVOLVEMENT

Predominant practical patterns also emerged for the involvement of veterinarians. The following quotes indicate that veterinary services were mostly used on a need-driven basis. Typically, veterinarians were engaged in emergency cases or when required due to trade-specific regulations such as transport-related immobilisation, sales-related health inspections for export certificates of live lions or death certificates to sell lion skeletons.

“Well, the vet was here yesterday. I would only call him when it's an emergency.” [CLF08]

“The only time when I need them {the vet} is when I want to move a lion to the Kalahari for a hunt. ... And then, before we export a little baby, we have to get through all the injections. ... But lions, they don't have a lot of diseases or something. They are tough, tough animals.” [CLF14]

## FEEDING REGIMES

Feeding regimes constituted another welfare-related management area for which predominant practical patterns emerged. The following quote has been selected to illustrate the most pronounced emerging practice about sourcing meat for captive lions.

“The meat luckily we get by the farmers in the area. ... So if they have a cattle or a sheep or anything that died or a horse, they'll phone us. ... Then we will go there. ...we do drive like 90 kilometres per day every time when we go there to get some meat.” [CLF03]

All but one facility (97%) reported that other farms in their vicinity served as a primary meat source. Twenty-two of all 31 facilities (71%) indicated that they were able to meet their needs through this supply of diseased farm animals, typically cattle, but also including other animals such as various game species, sheep, donkeys or horses. This practice entailed long-distance, often daily, vehicle tours as dead animals must be fetched immediately after being asked to pick up a carcass. In 9 of 31 cases (29%), facilities had additional agreements with feedlots, chicken farms, or abattoirs to obtain meat that does not meet human consumption standards at discounted rates. In one case, the lions formed an integral part of an abattoir for effective waste removal.

“You don't need a vet ... much. Only when you do the darting. ... Otherwise, we don't use the vets quite often. They don't get sick quite often. ... So we luckily don't have problems so far with diseases and stuff like that.” [CLF26]

“I've got them, what's it now, eighteen years; eighteen, nineteen years, and I think there was twice a vet here.” [CLF29]

Twenty of 31 (65%) facilities followed this needs-driven pattern. In fewer cases (10 of 31|32%), interviewees referred to veterinarian visits at regular intervals, ranging from long-term (e.g. once a year) to short-term (every month) and in one case (3%) with an employed full-time veterinarian on-site.

Where possible, own farm animals would also be hunted when other supplies were running short. In one rare case, the facility owner would even buy old, living farm animals and afford them to live out their lives on his farm to ensure a backup of meat supplies for the lions.

Feeding intervals differed between facilities ranging from daily food provision to once per week. Lions in the wild feed irregularly, dependent on hunting or scavenging success. A study by (Altman et al. 2005) suggests that simulating a more natural schedule characterised by feeding larger amounts less frequently and predictably was beneficial for captive lions. This regime decreased body weight to a healthier level and reduced pacing on fasting days without resulting in more aggressive behaviour. Another difference in terms of feeding patterns in facilities was whether a whole animal carcass would be fed to the lions or if portions were prepared for each animal in an enclosure. Independent of meat portions, however, most facilities (25 of 31|81%) added food supplements as part of their feeding regimes. Bottle-feeding cubs with a special, imported product or a 'homemade formula' constituted a final difference in feeding practices. Five people spoke about buying a special, imported lion milk product from the 13 interviewed facilities that reportedly hand-raise lion cubs (see Figure 5). In turn, two made use of a homemade recipe, and six facilities did not describe their lion cub food in detail.

## REPRODUCTIVE PRACTICES, INCLUDING CUB-REARING

Predominant reproductive practices have already been detailed in subsection 3.3.1 and are briefly consolidated as follows. Seven of 31 (23%) facilities completely inhibited any reproduction. Others (7 of 31|23%) allowed reproduction as part of natural lion behaviour. More than half of the interviewed facilities (17 of 31|55%) followed a planned and controlled breeding approach as part of the individual business model. Beyond the initial grow-up phase, breeding facilities formed mixed grow-up groups for cubs and sub-adults. These grow-up groups combined cubs of different litters born in a particular time frame, usually born three to eight months apart. The lions live in these rearing groups until they are either sold as cubs or subadults or reach sexual maturity, at which point males are split from females.

In addition to these overall patterns, three pronounced trends emerged from the interviews related to breeding and cub-rearing. On the basis of trade-related considerations, a growing number of facilities reported keeping the cubs with their mothers instead of hand-raising them. As described in subsection 3.3.1, this trend was particularly noticeable in cluster 5 (hunting tourism) to avoid habituating lions to humans that are destined to be sold into the hunting tourism supply chain.

“They are trying to get away from the human imprinting for the past four or five years. Many people try to keep the cubs with their mother.” [CLBTr02]

The second pronounced trend was ascribed to the unfavourable trade conditions presented in subsection 3.4. Due to the experienced financial strain, many facilities had interrupted lion reproduction, most commonly by separating males from females.

Finally, the qualitative data also suggested a noticeable cutback in human-lion interactions such as cub-petting or walking with lions, being offered as part of the product range of facilities operating in the guest attraction cluster. Of the 14 interviewed facilities active in this cluster, 9 (64%) reported that lion interactions were formerly part of their offering but have been discontinued. In contrast, one facility offered guest interactions with their Cheetahs (*Acinonyx jubatus*) but not with their lions. Four of these nine facilities (44%) emphasised during the interview that they had ceased any lion interaction, mostly due to the welfare concerns being prominently raised through (social) media:

“And it is in this area then that we allowed guests to have a measure of controlled, supervised contact with the animals. ... But you know that we've stopped now. ... same as the walk {with lions}. We have a lion observation tour now. [CLF05]

“For the last five years, I'm not doing it anymore {cub interaction}. ... I've seen people that were very upset, and I saw their love for the animals, and I respect that.” [CLF20]

Nevertheless, as the following quote illustrates, five of the nine facilities keeping lions for guest attraction reasons (56%) continued to allow visitors to interact with their lions.

“The adults sleep most of the day. So, we can take 100 guests in there. ... They're not going to be affected at all. But the cubs will limit them. ... It's not like we carry them and move them around ... we don't force them to do anything. ... We do what the lion tells us to do. We're not going to tell the lion what to do.” [CLF18]

Adding to those differences, it became apparent that interviewees held differing opinions about the legality of lion interaction activities. On the one side, the Performing Animals Protection Act of 1935 (Table 15 was referenced as the legal basis for allowing guests to interact with captive lions. On the other side, any interaction activities were claimed to be outlawed, particularly in the North West province.

“So petting, as far as I know, in {this province} is not allowed. Although ... we've got some evidence that it is happening. But according to my understanding, one of the conditions is that they are not allowed to have interaction with the animals. [PGOV01]

### 3.5.5.2 RAISED CONCERNS IN CONNECTION WITH LION WELFARE

Animal welfare proved to be an area for a wide range of concerns. The quotes in Table 18 exemplify welfare concerns substantiated by the interviewee’s experience. Challenges were raised about living conditions, veterinarian involvement, feeding regimes and

reproduction, and certain trade-related risks. The quotes, furthermore, illustrate how animal welfare problems are ascribed to the cost-saving intentions of the owners, as illustrated in Figure 10.

“Personally, I cannot see a responsible way to do it {managing a captive lion facility}, because ... they would not find it economically viable anymore. And that’s the problem. ... If we would actually get very strict norms and standards for the welfare of captive-bred predators, that could really kill the industry because then suddenly they have to look after these animals, they need to get vets involved, they need to get the right feeds, the right, et cetera, et cetera, et cetera. That will be so expensive that it could kill the industry.

However, it depends how those norms and standards will be implemented in practice and enforced.” [NGO02]

“So they feed these things {lions} whatever they can get; animals that died, they don’t know why they died. Just, there is meat and free meat, which is not safe and sound. ... It’s a huge welfare issue because ... the biggest problem is people are just not responsible, and they want to save money all the way.” [VET06]

For in-facility management, the incident-driven veterinarian involvement pattern was deemed problematic and undesirable from an animal welfare perspective [E1-E2]<sup>13</sup>. Simultaneously, welfare concerns linked to the predominant feeding practices were raised [E3-E5]. Criticism also included missing lion-appropriate social structures, especially too large grow-up groups of cubs and subadults [E6-E10], and demand-driven breeding cycles for females [E11-E12]. Trade-related concerns in association with the existing supply chains were mainly associated with the lack of traceability already discussed in 3.5.3. These

concerns stressed the sometimes unclear fate of especially hand-raised lions considered habituated to humans [E13-E14]. Furthermore, the emergent practice of lion culling by applying euthanasia procedures as a means to manage lion numbers in facilities, elicited welfare-related apprehension [E15], as did prevailing lion interaction activities [E16], including the exposure of previously maltreated rescue animals to continued human display [E17]. It ought to be mentioned that four independent sources confirmed that since 2020 the Free State government no longer issued permits for the culling of lions.

**Table 18: Animal welfare-related concerns emerging from 51 interviews related to practices in the captive lion sector**

Note: The quotes are based on the interview analysis. Suitable quotes have been selected to represent the various themes and do not necessarily represent the author’s views or those of the EWT.

<b>Raised concerns</b>	<b>Quote Code</b>	<b>Quotation with interview-ID in square brackets (CLF...captive lion facility owner/manager)</b>
<b>Illegality concerns related to in-facility management practices</b>		
<b>Crisis-driven veterinarian involvement</b>	E1	“So a lot of times we’re only used for emergencies. And in cases like that sometimes or a lot of times telephonically, or if you are on the farm for something, you may be looking at a couple of issues and address that as well. So it’s difficult to keep track of the animals.” [VET01]
	E2	“They {lions} have to be vaccinated at the correct time ... your management has got to be perfect. ... you have to vaccinate eight weeks, four weeks later, four weeks later, and annual and that kind of stuff. They don’t want to pay that.” [VET02].”
<b>Feeding-related issues</b>	E3	“I think more with more with the animals not being fed properly when they’re small. You know, that’s more a problem.” [VET01]
	E4	“So they take the lion cub away, and they hand raise the cub with sub-standard milk replacer. They go for the cheapest option. So 60 to 70 % of the cubs either get sick, metabolic bone disease, they get meningitis, encephalitis, they get all that.” [VET02]

13. Letter ‘E’-number combinations in square brackets in the Results section indicate the quote number in Table 18.

<b>Raised concerns</b>	<b>Quote Code</b>	<b>Quotation with interview-ID in square brackets (CLF...captive lion facility owner/manager)</b>
<b>Illegality concerns related to in-facility management practices</b>		
<b>Feeding-related issues</b>	E5	“What we did a lot is perform caesareans because some of the females are just too fat. They can’t get the little lions out. That’s also a big problem. Just too fat.” [VET04]
<b>Lack of social structures</b>	E6	“And if you look at how they keep these animals, they take a whole lot of like five, six litters, and they bomb them together in one camp.” [VET02]
	E7	“they put them again all together when they’re older ... They put in like in some pens like twenty, thirty animals. [VET05]
	E8	“I think the size and the lack of pride establishment that is the biggest problem.” [CLSci02]
	E9	“I’ve got a bit of an issue with those camps because many times they do stock those rearing camps.” [PGOV02]
	E10	“So when you go to these facilities, you always see enclosures with same age groups of animals. So they are missing out on that whole social structure. They do not learn from adults. They don’t have interaction with other adults.” [NGO02]
<b>Demand-driven breeding cycles</b>	E11	{In times of high demand for lions}: “You can push for three times a year times six cubs.” [CLF08]
	E12	“We know that the cubs are taken away from their mothers very early ... and they get into a rapid breeding cycle. ... So if you look at it in a two year period, a female in the wild would normally have about one litter, and a female in captivity could have four, sometimes even five litters, which puts a lot of pressure physically on her body to have that many pregnancies.” [NGO02]
<b>Welfare concerns related to supply chains and trade in captive lions</b>		
<b>Unclear fate of (especially hand-raised) lions</b>	E13	“A lot of times, those cubs are taken of the mothers when they’re very young. I think ... they found the survival is better then. ... obviously, that animal, it’s much more tame and, unfortunately ... human imprinted. ... from there on, what happens to that animal is actually a bit of an enigma, because ... if you’re not on the facility on a regular basis and ... we’re not required to keep track of the numbers.” [VET01]
	E14	“We need to be able to track where the lion come from, that’s also very important. So there needs to be a DNA profile on a ranched lion ... But it’s minimal human imprinting, no bottle-feeding or hand-raising or stuff like that. And that’s why you can’t do the lion cub-petting or all that stuff because then that lion gets used to humans, and we don’t want that at all. ... Take the cubs away from the female from the lioness and raise that already is human imprinting. Those lions cannot be released {for hunting}.” [CLPH02]
<b>Emergent lion culling</b>	E15	“So, but I couldn’t euthanise those healthy lions. So I told them I’m on holiday. So they get another vet from another {province} to come and do it. And then I heard the way he euthanised. So and the farm managers told me what they did and how they killed the lions. So I wasn’t happy with that. And then I made a decision, listen. The only thing I can do is do it better.” [VET05]
<b>Continued human-animal interaction</b>	E16	“A lot of the other people ... we’ve all got the same permits, they still do it {lion interaction}, ... you see it on their Facebook. You see the people posting ‘magnificent lion cubs’, ‘Tiger cubs’, ‘walk with this’, ‘touch that’, ‘play with that’. ... it’s still happening.” [CLF10]
<b>Exposure of mal-treated lions to visitors</b>	E17	“It’s the people that walking around and reminding them you can be a very good human, but that doesn’t fix the scar. ... It’s good, where they are. At least they are not there anymore. But let them be.” [CLF20]



On top of the described animal welfare practices and concerns, animal rights matters also played a role when contemplating the management of captive lion facilities. As the following quotes indicate, looking at facilities from an animal rights perspective entailed their complete renunciation for any other purpose than caring for rescued

“What we need in this country is we need an act specifically for animal rights. ... We've got Animal Welfare Act in our Constitution. We don't have an animal right like Austria and Germany, and Switzerland. They have an animal rights Act.” [VET02]

“It's specific words they {NSPCA} use... 'an animal should never be barred for a life of confinement.' And if you read those words, it means any confinement is wrong.” [VET03]

“So I don't know if a lion is living in discomfort in the camp of five or six hectares, I'm not sure. ... But I don't want to get too involved in: 'Is it fair or is it not fair?' ... Maybe it's not fair, but who knows if they are experiencing discomfort? ... we don't know what they're thinking. We are interpreting what we're seeing in the behaviour. ... We make the assumption on, first of all, our own emotions.” [CLSci01]

animals. This point of view was mainly driven by the notion of wild animals' right to freedom and different levels of inferred suffering imposed on them in captivity. As the quotes indicate, these moral considerations were not exclusive to lions and could extend beyond wild animal species to domesticated farm animals.

“These people maybe don't believe that animals are sentient beings with the level of suffering they can have ... when they are not having the opportunity to grow up like they usually would. And I mean, that doesn't only count in our case and our beliefs for obviously wildlife. We are also advocating vegetarian and vegan lifestyle. So we are also campaigning against the mass production of meat and so on. So obviously, it comes from ... that core of how you should treat other beings and how you should respect other beings, and if we are already imposing ourselves on them because we did that as a humankind, then at least try to give them as much freedom.” [CLF27]

### 3.5.6 MANAGING FROM A SOCIAL PERSPECTIVE

During the interviews, we explored considerations of social aspects when managing a captive lion facility from two sides. On the one hand, this subsection describes patterns and concerns related to working conditions, many of which turned out to be independent of the cluster in which a facility operates. On the other hand, probing

#### WORKING CONDITIONS IN CAPTIVE LION FACILITIES

Interview questions about the staff complement at each interviewed facility revealed the following patterns summarized in Table 19. In clusters 3 (guest attraction) and 4 (live export), the overall number of staff members significantly exceeded the number of farm labourers. For both clusters, this result was not surprising, as the overall staff numbers reflected the tourism side of the business, requiring various guest-related roles such as reception, housekeeping, guiding, catering, etc. Since all six facilities operating in the live export cluster also offered guest-related activities, a similar pattern for staff complement could be observed in both clusters.

By comparison, the differences in staff complement of farm labourers across all sector clusters reflected the size of the respective operation. For farm labourers, it became apparent that their duties typically went beyond lion-related tasks, as only five facilities (16%) ran their facility as a lion-exclusive operation (Figure 8). This pattern represents a crucial challenge to infer the number of jobs that depend on the

about social justice considerations surfaced widespread doubt about the effectiveness and a refusal to implement South African B-BBEE policies across the entire sector. As depicted in Figure 10, this lack of transformation constituted a major concern.

sector due to the lack of a linear relationship between keeping captive lions and worker numbers.

In terms of work contracts, the interviewed facilities proved to prioritize full-time employment contracts widely. As outlined in Table 19, only two of all 31 facilities (6%) did not employ their staff full-time. In one of those cases, the facility did not engage any workers at all. All other facilities (29 of 31|94%) employed their workers on a full-time basis. In 7 of 31 cases (23%), facilities awarded casual contracts in addition to the full-time employment contracts for (a) building-related activities or (b) during periods of higher workload, e.g. related to transport of lions or seasonal staff during peak tourist season or for functions. Only one facility mentioned placing 6-month fixed-term contracts in addition to full-time employment. Exemplified by the following quotes, owners/managers often emphasised their dependence on a good, long-term relationship with their full-time employees as a pre-requisite for a successful facility:





“We’ve got good relationships with our staff. That’s your biggest thing because they know what’s going on here. ... I need them more than what they need me. ... Because the first thing is they will turn on you. ... Poaching and farm murders.” [CLF08]

“I think it’s the environment. We all get along well. ... My newest staff member being just over nine years.” [CLF10]

“My foreman works for me for 22 years already. ... We’ve only got three and ... they’re well-trained, they are loyal, and they get a large amount of money in their pocket. ... you look after them because I need their loyalty.” [CLF21]



A tendency for long-term work relationships can also be derived from the staff turnover numbers summarised in Table 19. Most facilities (22 of 31|71%) reported a stable staff force across all sector clusters during the past five years. The reasons for turnover varied among the nine facilities (29%) that experienced staff fluctuations. Shrinking staff was either attributed to the need for downsizing due to challenging trade conditions (see subsection 3.4) or due to personal life changes (e.g., preparing for retirement). By comparison, other facilities expanded their workforce due to an increase in rescue animals or a growing tourism business.

**Table 19: Workforce patterns from interviews with 31 captive lion facilities in South Africa summarising staff numbers, types of contractual relationships and workforce fluctuation. Total staff numbers include workforce members in addition to farm labourers (e.g., kitchen staff, receptionists, guides, etc.). Farm labourers are the staff members working with the lions (feeding, cleaning, etc.).**

	Total # Facilities	# Total Staff	# Farm Labourers	# Facilities with full-time contracts	# Facilities with casual contracts	# Facilities with Staff Training:		# Facilities: Staff Stability (in the past 5 years)	
						On the job	Formal	Stable	Fluctuating
Cluster 1: No Revenue	5	1–16 Ø 7.0	1–13 Ø 5.3	5	3	4	2	5	0
Cluster 2: Sanctuary	1	50	N/A	1	0	1	0	0	1 <sup>c</sup>
Cluster 3: Guest Attraction	5	1–56 Ø 17.8	1–14 Ø 8.0	5	1 <sup>3</sup>	5	3	4	1 <sup>d</sup>
Cluster 4: Live Export	6	2–66 Ø 17.3	2–6 Ø 4.2	5	1 <sup>2</sup>	5	2	4	2 <sup>a</sup>
Data for breeding facilities only – not for the hunting properties									
Cluster 5: Hunting	9	1–30 Ø 9.8	0–30 Ø 8.7	8 <sup>1</sup>	2	8	2	8	1 <sup>a</sup>
Multi-Cluster	3	4–25 Ø 12.0	4–15 Ø 8.0	3	0	3	1	1	2 <sup>b</sup>
Pre-Cluster (RSA B2B Sales only)	2	3–4 Ø 3.5	3–4 Ø 3.5	2	0	2	0	0	2 <sup>b,d</sup>
<b>TOTAL</b>	<b>31</b>	<b>412</b>	<b>201</b>	<b>29</b>	<b>7</b>	<b>28</b>	<b>10</b>	<b>22</b>	<b>9</b>

B2B... Business-to-Business  
N/A... Not Applicable  
RSA... South Africa  
Ø..... Mean

1...One facility with no workers at all  
2...After staff reduction due to difficult market  
3...During tourist season and for events

a...staff reduction due to lack of income, market/other business pressures  
b...staff reduction due to personal down-sizing (retirement)  
c...staff expansion with growing numbers of animals  
d...staff expansion due to growing business

While long-term employment relationships turned out to be the most common scenario, the data analysis also found that facilities afforded work opportunities to unskilled farmworkers. Twenty-eight of 31 facilities (90%) inducted their workers into their duties ‘on the job’ as seen fit (Table 19). By comparison, 10 of 31 facilities (32%) also provided more formal training to some staff members. Such training included education for trackers or skinners, first aid, firefighting, building and maintenance, driver’s licenses, field guiding, snake handling, or hospitality skills training for roles such as receptionists, housekeepers, and chefs. The

practice of employing few unskilled labourers represented a concern for the management of facilities, as illustrated by the following quote:



“ The farms I deal with ... they have amazing trust levels between each other, but I don’t know what the guys get paid, and there are no efforts to uplift them.” [CLBTr01]



Beyond the general size of the workforce, the study also explored employment and working conditions at the facilities (Table 20). No clear cluster-related patterns emerged. Instead, the data suggested that there are widespread practices found across the entire sector. Those common practices included annual salary increases (26 of 31|84%), providing transport (22 of 31|71%), accommodation for workers frequently with families (19 of 31|61%), and monthly salaries above the minimum wage for all staff members (18 of 31|58%). Only two facilities (6%) stated that they do not pay any of their staff members over minimum wage at all. The remaining interviewees described how salary levels differed according to acquired skills levels and work experience. Annual bonus payments represented the most commonly afforded additional benefit across all sectors (19 of 31|61%). By comparison, payments for medical aid or pension schemes, funeral

plans, and transport money turned out to play a much lesser role (Table 20).

Most interviewees mentioned other additional benefits they granted their workers, which varied widely. Other perks included monthly food supplies and the coverage of medical expenses or access to medical treatment (both 8 of 31|26%), followed by contributions to funeral payments (4 of 31|13%) and provision of clothing (3 of 31|10%). In individual cases, interviewees mentioned other work-related benefits, including free electricity and water, different types of bonuses such as sales commissions, rewards for long-term employment or extra honorariums on birthdays, staff functions, provision of cell phones, tobacco or vitamins as well as regular vaccinations, payment for car insurance or access to vehicles for personal use.

**Table 20: Frequency of typical work-related benefits on 31 interviewed captive lion facilities**

	Total # facilities	Over min wage for all workers	Annual Increases	Pension Fund	Medical Aid	Funeral Plan	Transport		On-site Housing	
							Lifts	Money	with family	w/o family
Cluster 1: No Revenue	5	3	3	1	0	0	4	0	3	4
Cluster 2: Sanctuary	1	1	1	1	1	1	1	0	0	0
Cluster 3: Guest Attraction	5	2	4	1	2	1	3	1	2	2
Cluster 4: Live Export	6	4	6	3	1	2	3	1	4	4
Cluster 5: Hunting	Data for breeding facilities only – not for the hunting properties									
	9	5	8	1	0	2	7	1	5	5
Multi-Cluster	3	2	2	0	0	1	3	0	3	2
No Cluster (RSA B2B Sales only)	2	1	2	1	0	0	1	1	0	2
<b>TOTAL</b>	<b>31</b>	<b>18</b>	<b>26</b>	<b>8</b>	<b>4</b>	<b>7</b>	<b>22</b>	<b>4</b>	<b>17</b>	<b>19</b>

No. of interviewed captive lion facilities

...Numerous    ...Several    .....Few    .....Rare

The interviews also allowed exploring the security measures implemented by facilities to ensure the safety of their staff, especially those directly involved in lion-related duties such as feeding or camp cleaning. Most interviewees described a mix of several safety measures. While some provinces specify fencing requirements as the basis for the safe handling of captive lions (Table 16), facilities implemented additional individual measures to ensure staff safety at their own discretion. Only facilities with guest attraction offerings (7 of 31|23%) reported having built better fences than required. Beyond this pattern, no cluster-specific variations in terms of safety measures emerged.

As the most common safety practice, some managers/owners (14 of 31|45%) required that lion-related work was always done in pairs, with one worker assuming the role of the observer and safety guard. Feeding or night camps

turned out to be another safety component. Twelve of 31 facilities (39%) described that these separate camps were used to ensure that workers would never enter an enclosure with a lion in it. At facilities without such feeding camps, interviewees explained the importance of going into the camps only in a vehicle (6 of 31 facilities|19%). Carrying weapons was mentioned in six cases (19%), ranging from firearms to pepper spray, tasers or even stones. Even fewer interviewees (5 of 31|16%) included documented standard operating procedures (SOPs) or safety protocols, including access control to enclosure keys, in the description of their safety measures. In rare cases, interviewees mentioned that only one dedicated and trained person was allowed to feed the lions (3 of 31|10%) or that specific safety training was carried out around the respectful handling of lions (2 of 31|6%).

## SOCIAL JUSTICE CONSIDERATIONS IN THE CAPTIVE LION SECTOR

A lack of social justice considerations and economic transformation elicited further criticism about the sector, independent of its clusters (Figure 10). Most owners/managers (26 of 31|84%) indicated that South Africa's Broad-Based Black Economic Empowerment (B-BBEE) played no role in their management-related decision making. In those cases, B-BBEE was regarded as synonymous with the obligation to award the majority of one's facility ownership to a B-BBEE candidate, potentially indicating a lack of engagement and understanding of the overall purpose of the policy. The lack of engagement with B-BBEE policies was partly based on impressions that the transformation agenda was irrelevant or of no concern for the facility, illustrated by the following quotes in response to the question if B-BBEE was of any concern to the facility:

“Not in this business. In my other businesses, yes.” [CLF07]

“Not really ... because it doesn't really matter in our industry. I think the BEE comes in more in the big companies.” [CLF18]

Alternatively, the policy was perceived as an unfair scheme defying general business principles only to reap the rewards for performance or achievements.

“BEE, it means nothing to me. The reason for that is why must you give ... somebody something for free just to get a status?” [CLF11]

“Well, I don't have a BEE status, and most definitely, it is a concern. But if that is something, it is a simple question. It's something that I could ask you too: Would you give me 50% of your pay for not doing anything? So it's not a business principle that can work in our line of business.” [CLF12]

“No, we don't do that. We still believe in your property is your property, and we do business on the business way, not on charity.” [CLF14]

Only in one case did the interviewee indicate an openness to the approach if this meant that trade would be allowed as a consequence.

“No, I haven't used to the BEE status in the lions. ... Why? Are they interested in farming with lions? ... But isn't that the main problem why our government is struggling to open this thing {the trade}, that they are getting down on us because it looks like the wildlife industry is only white people making money out of it? Isn't this why all this stuff is also happening? ... Because they are starting to farm, but you never see some of them that went into wildlife farming... Because if you need that to open the market, I will also do that. [CLF28]

Overall, the management-related patterns and concerns that this research elicited reflected the contextual complexity faced by owners/managers of captive lion facilities. This complexity manifested in five different management perspectives about suitable and tolerable practices in facilities that can be linked to divergent perceptions about the meaning of sustainability/sustainable use. Sector organisations, such as SAPA and PHASA, have made attempts to develop norms and standards to address the loudly voiced concerns associated with facilities. Their aim was to make the sector more acceptable – thus far, without avail (South African Predator Association 2017a, 2017b; Professional Hunter's Association of South Africa 2020). Even though many of the raised concerns could be rectified, any attempts to do so would require extensive sector reform. Such reform would, in turn, entail a comprehensive endeavour of considerable scope without the certainty to make all clusters tolerable for all stakeholders. In particular, the insights from this research reveal how facilities are confronted with two uncompromising claims about animal rights and social justice that thwart any prospect of managing a facility acceptably (Figure 10).

# PART 4

## CONCLUSIONS

The nuanced characterisation of the captive lion sector in this report captures a snapshot of its internal complex structures and functioning as well as the context-induced complexity at the time of the interviews. Notwithstanding some limitations related to data collection, discussed in subsection 2.6, a clear and cohesive picture of the sector and its inherent diversity emerged. Despite existing national and provincial legislation to regulate how to enter and partake in the sector, its growth went largely unabated, and the evolving diversity was regulated in a patchy and reactive way. A wide variety of motives and funding approaches prompted more and more people to become captive lion owners. The country-wide regulatory differences and shortcomings in terms of data recording and consolidation about facilities and other relevant key players cultivated the ground for the accelerated but undetected overall extension and the development of differences between various parts of the sector.

Due to mounting ethical and practical concerns, fast-growing criticism, vehemently voiced through (social) media, went alongside the indeterminate and opaque expansion of the sector and its growing complexity. Regulatory restrictions, especially targeting trade activities in the hunting tourism cluster, accompanied the criticism on a local and international level. As a result, key players and government agencies resorted to reactive responses to the growing pressure and constraints. Since wildlife trade constitutes a controversial topic in general (Lawson & Vines 2014; Merem et al. 2018; Esmail et al. 2020), not engaging closely with the individual players and maintaining transparent oversight of the sector has proven risky and ill-advised. The ensuing challenging trade conditions described in the results section have led to an impasse and precipitated what can be deemed a crisis, especially from the viewpoint of the sector. Following this insight, it can reasonably be inferred that keeping the status quo is undesirable for all involved stakeholders but also impossible to maintain over an extended period as individual sector members are currently trying to prevail past the crisis. Hence, leaving the status quo unattended means ceding responsibility to deal with the crisis to each individual sector member. Such an approach would intensify the unpredictability of future developments and how to prepare for them.

However, the alternative, a more strategic and coordinated approach to intervening in the sector, is no guarantee of a quick and lasting solution either. It is uncertain whether proactive interventions to change the sector will stand a reasonable chance to appease the controversy and diffuse the existing polarisation, as the debate is predominantly driven by normative values of stakeholders that are as far-reaching as the global public (Coals et al. 2019; Hiller & MacMillan 2021). Furthermore, proactively managing changes to the sector will necessitate deliberating the reactions of this complex social-ecological system to imposed changes (Teisman et al. 2009; Game et al. 2014). On the one hand, the inherently complex structures described in this report pose a challenge to effectively regulating and managing the various parts and nuances of the sector. At the same time, the report details the grave predicaments the sector has been facing due to contextual impacts resulting in challenging trade conditions and almost insurmountable management complexities for captive lion facilities, albeit to different degrees in the five sector clusters. Our research suggests that successfully reshaping the captive lion sector necessitates an overall vision considering the existing variations within its structures and functioning. This strategic view involves questions of purpose, scope and the aspired extent of central control and oversight for any remaining parts of a transformed sector.

The strategy for the captive lion sector outlined in the draft policy position disseminated by the DFFE in June 2021 for the conservation and ecologically sustainable use of elephant, lion, leopard and rhinoceros states the following policy objective for captive lions: “immediately halt domestication and exploitation of lion, and close captive lion facilities” (Department of Forestry Fisheries and the Environment 2021 p. 34). This policy objective follows the Minister’s decision to close the captive lion sector announced during the HLP report presentation in December 2020 (High-level Panel 2020). This policy position institutes a strict level of central control in contrast to other strategic options on the other side of the regulatory spectrum, such as a devolved community-based regime (Child & Child 2015). With the promulgated policy

objective, DFFE aims to counteract any discerned political, socio-economic and ecological risks posed by the captive lion sector (Department of Forestry Fisheries and the Environment 2021 p. 19).

The insights from this study suggest that a close-down of the captive lion sector cannot be equated with a certain and automatic return to a pre lion trade situation. Since the planned policy interventions target the supply of five different clusters meeting different demands, it is unclear how the various consumer segments will react. Hence, favourable outcomes of the sector shutdown might be coupled with economic, social and ecological risks, undesirable developments and potential losses, as it is unclear what will emerge in the initiated vacuum. Furthermore, continued efforts to police and enforce

compliance with the decision are to be expected to counter possible illicit trade activities despite the closure of the sector with unclear effects on free-roaming lion populations.

As a consequence, managing the changes in the sector will require concerted efforts (Eayrs et al. 2015). Change management measures will most certainly have to address regulatory and structural aspects. In addition, it will be critical to incorporate ways to acknowledge and deal with risks of undesirable impacts from an economic, legal, conservation, animal welfare/wellbeing and social welfare/justice perspective for winners and especially losers of the policy decision.



# PART 5

## RECOMMENDATIONS

The recommendations in this report are divided into three parts. First, we substantiate our overall recommendation to engage in a deliberate change process for the captive lion sector. Second, we consider measures central to mitigating the risk of undesirable consequences due to the current impasse and what is required to prepare for deliberate change interventions. Third, we consider implementing a more strategic, coordinated approach for desired changes to the sector.

All recommendations incorporate knowledge about the management of complex adaptive systems to adequately address the inherent and externally driven complex dynamics of the South African captive lion sector. In particular, we deal with the key characteristic of complex socio-economic systems: self-organising, non-linear dynamics with associated emergence of unpredictable outcomes (Peter & Swilling 2014). In other words, complex systems are not equal to complicated systems. Instead,

complexity describes the phenomenon that the behaviours from the system might not match the predictions, which are understood to be rooted in the following three system properties (Rammel et al. 2007; Teisman et al. 2009; Game et al. 2014; Peter & Swilling 2014). First, complex systems give rise to innumerable nonlinear interactions within fuzzy system boundaries, which are not working according to cause-effect principles and can thus lead to surprising outcomes. Second, the system dynamics are driven by self-organisation attributed to individual system actors' adaptations that might result in surprising behaviour. Lastly, the nonlinear and self-organising dynamics co-evolve in an interplay with the system's context. In other words, a complex system adapts its behaviours, dependent on contextual influences, and creates unpredictable outcomes. Any recommendations related to the South African captive lion sector ought to be cognizant of these attributes to overcome the current deadlock situation.

## 5.1 OVERARCHING RECOMMENDATIONS

### ADOPT A PRO-ACTIVE, NUANCED CHANGE MANAGEMENT APPROACH TO SHAPING THE FUTURE OF THE CAPTIVE LION SECTOR

As this research shows, the sector cannot be regarded as one homogeneous, integrated industry. Individual facilities differ according to their motives, funding attitudes, approaches to reproduction, or their use of supply chains to meet the needs of separate consumer groups. At the same time, the sector is in a crisis, and prolonging the status quo would mean leaving the responsibility to get past the current impasse to its individual actors. Continuing with the status quo would make it difficult or even impossible for any associated stakeholder group, including DFFE, to recognise and respond swiftly to undesirable developments. Hence, we recommend adopting a proactive change management approach to shape the

future of the captive lion sector. As part of this approach, any intended changes to the sector should be deliberated from the viewpoint of the five sector clusters, mindful of their diverse structures and various affected client groups. It would be beneficial to separate questions about keeping lions in captivity from matters of captive lion reproduction. Furthermore, each supply chain should be considered on its own to establish if diverging change measures are required for the range of existing captive lion facilities. Lion trade in the business-to-business tier, one of the shared supply chain segments, warrants special attention in this discussion to deliberate and agree on appropriate change interventions for the various types of facilities.

### PREPARE CHANGE READINESS: ASSEMBLE AN EFFECTIVE TEAM FOR STRATEGY ROLLOUT AND CHANGE MANAGEMENT APPROACH

As suggested above, the sector represents a complex adaptive system. Interventions to effect purposeful changes will set the established social and ecological interaction patterns in dynamic motion, potentially leading to surprising outcomes. This circumstance necessitates convening an effective team to plan, guide and manage

the change process with the intent to move the sector from its current impasse towards a preferred future scenario, which could range from a complete exit scenario and the ban of all lions in captivity to a transformation scenario where the sector is shaped by decentralised industry organisations responsible for norms and standards. It is

recommended that each member of this team contributes a combination of more than one area of expertise. Expedient knowledge and experience include conservation biology, evolutionary genetics, anthropology, criminology, economics, management, and psychology, as well as legal, communication, IT, and engineering expertise. A multi-disciplinary approach to the selection of team members allows for a small team to optimise efficiency.

Multi-disciplinarity will be vital for two reasons. Firstly, a diverse team will help to reflect and accommodate relevant aspects of the sector's inherent complexity. Secondly, a multi-disciplinary core team has the potential

to become an influential means for moving the mostly ideologically-driven, moral debate about the sector (Coals et al. 2019; Hiller & MacMillan 2021) toward a pragmatic implementation approach, aware of and managing the trade-offs that come with any instigated changes. Based on the knowledge about managing complex systems, providing and facilitating opportunities for trust-building between stakeholders involved in the polarised conflict would have to be a core focus of the multi-disciplinary team (Young et al. 2016), despite the likely practical obstacles and challenges (such as time and resource constraints) that might be encountered.

## 5.2 RECOMMENDATIONS FOR SHORT-TERM MANAGEMENT MEASURES

This subsection provides recommendations for short-term measures to mitigate risks associated with the status quo and prepare for any deliberate changes to the captive lion sector.

### **REGAIN OVERSIGHT: COMPILE A COMPLETE REPOSITORY OF CAPTIVE LION FACILITIES AND LION PART STOCKPILES**

A comprehensive national database of the sector should be compiled to inform and support strategic decisions on the sector's future. This database should include specific details about facilities (including locations, numbers of lions held, primary activities, number of staff employed, etc.), as

well as details of all stockpiled lion parts. Although no such inventory currently exists, this information is a prerequisite not only for planning and controlling the rollout of any strategic decisions about the sector but also to mitigate imminent risks while the sector's fate remains uncertain.

### **IMPLEMENT INTERIM-MANAGEMENT MEASURES TO MITIGATE UNDESIRE LOSS OR HARM UNTIL DELIBERATE CHANGES TO THE SECTOR HAVE BEEN IMPLEMENTED AND ARE EFFECTIVE**

The challenging trade conditions described in this study reveal that since 2015/2016, the sector, especially the hunting tourism cluster, has been subjected to forces gradually curtailing its operation and functioning exacerbated by the effects of the COVID-19 pandemic. The following recommendations deal with preventing or mitigating different risks emanating from the results of this study pertaining to harmful consequences or irretrievable losses while the future of the sector members remains uncertain.

#### **(a) Identification of and engagement with 'high-risk' facilities:**

For facilities with an income-related purpose in their business model, continued cross-subsidisation of their lion operation from other income streams is problematic without the prospect of being able to recuperate these costs during prolonged times of economic stagnation. Facilities in such circumstances should be identified and engaged with as a matter of priority to recognise imminent risks to animals and staff as well as to owners, managers, trading partners and other affected stakeholders. Open communication channels with these high-risk facilities are critical to allow the opportunity to counteract any possible drastic actions. This engagement should be coordinated by the change management team described above.

#### **(b) Engagement with all captive lion facilities for zero-reproduction support:**

Even though this study reports a widespread pattern that suggests that many facilities have already halted lion reproduction primarily by separating males from females, some expressed that they have not implemented any measures to prevent more offspring, mostly due to insufficient numbers of enclosures to separate males from females and a lack of knowledge about alternative ways to prevent breeding activities. Given all the uncertainties surrounding the sector, we propose that until deliberate changes to the captive lion sector are being implemented, all reproduction of lions in captivity should be unconditionally inhibited. We do not presume to propose how to achieve this and realise this outcome will require that every facility be contacted to clarify the breeding status of their lions. In cases where reproduction has not been halted, guidance and support to implement zero-reproduction measures will be required. The change management team described above should coordinate these contacts.

### **(c) Inspection, tagging, and DNA-testing of lion bone stockpiles:**

Based on a complete repository of lion part stockpiles recommended earlier, we recommend that inspections are conducted at the locations of lion part stockpiles to tag and sample each individually packed full-sets and half-sets (subsection 3.3.2) for DNA testing. The procedures and protocols devised by DFFE for the legal lion bone export quota in 2017/2018 for tagging and genetic sampling at the source site would be suitable for this purpose (Williams et al. 2021 p. 4). However, the testing process should be reviewed and refined to include testing procedures to mitigate any risks associated with zoonotic diseases.

### **(d) Allow exit options for captive lion facilities:**

The extended period of challenging trade conditions and uncertainty could be taken as an opportunity to support a controlled downsizing of the sector. Based on current trade

inertia, the openness and willingness to consider changes to a land-use model from captive lions to an alternative can currently be expected to be comparatively high for facilities with an income-related business model. Exit strategies that allow facilities to minimise their losses from their initial investment in lions and their enclosures will likely expedite a process of noticeably reducing the number of captive lion facilities. Loss-minimising options to exit the sector should be actively explored and devised with each captive lion facility, including a focus on exploring alternatives to the culling of the lions in the facility. Specific needs and scenarios to exit the sector must be explored based on the sector cluster(s) in which each facility is operating and an understanding of the facility's individual contextual circumstances. The insights gained from engaging with each captive lion facility should be used to consider options for how voluntary exits can be assisted through policy changes or customised forms of financial relief.

## **CAPACITY TO MONITOR AND ENABLE FUTURE RESEARCH**

Data gathering for this research focused largely on qualitative data to develop an overall understanding of the sector and its functioning. Simultaneously, strengthening the findings of the qualitative insights with quantitative data analyses proved to be difficult. The underlying causes for those challenges (subsection 2.3) should be addressed by establishing clear, comprehensive, and consistent data reporting processes and structures across all South African provinces. Existing research gaps would greatly benefit from consistent data records, as would the management of the overall sector. Research gaps encompass both natural and social science questions. Along with unanswered questions about the existing captive lion population, such as evolutionary genetic potential, questions on reintroductions or habitat protection remain contested and unanswered. More importantly, however, both ecological and socio-economic developments and trends based on the sector's fate need to be monitored and analysed, locally as well as abroad, to determine the effectiveness of any changes made to the sector. Such research includes trends and drivers of lion poaching, analyses of legal and

illegal trade and supply chain data, and cultural values and norms informing the acceptability of trade-related activities and the impact on the perception of the meaning of sustainable use.

In addition to the data capturing structures and processes, the hesitancy of provincial and national government agencies to engage and collaborate with researchers should simultaneously be addressed. As outlined in subsection 2.3, such research-related engagements are currently characterised by lengthy and often non-transparent processes to obtain research permits, establish contact with the correct people, and provide timely data. Furthermore, managing intended changes to the sector and a potentially transformed captive lion sector will have to be based on comprehensive and compatible data about the sector from all provinces to allow for evidence-based decision making. Based on the insights from this study, we recommend referring to the following Tables to help define and build data structures to enable future research: Tables 1, 5, 8, 9, 10, 11, 12, 14, 19 and 20.

## 5.3 RECOMMENDATIONS FOR CHANGES TO THE CAPTIVE LION SECTOR

Appropriate actions for change in the captive lion sector will have to vary according to the intended level of central control and oversight of the sector and according to the extent to which the sector is shut down. A complete shutdown of all captive lion facilities would require different actions to a change scenario that aims to transform the sector to be managed more transparently and strictly by

### LEGISLATION AMENDMENTS AND HARMONISATION

Initiating changes to the sector will require a revision of existing legislation pertaining to lions in captivity. Overall, we recommend harmonising all captive lion related policies and regulations on a national level and avoiding provincial differences. The review and harmonisation should take cognizance of issues described in this report (subsections 3.5.2.2 and 3.5.3.2), such as the illegal administration of drugs, and will have to be guided by the envisioned scenario for the future of the captive lion sector, such as the extent to which it is transformed or shutdown.

Currently, the most explicit indications of a future scenario for South Africa's captive-lion sector are outlined in the recommendations of the majority of the high-level panel (High-level Panel 2020 pp. 328–330), adopted by the Minister of the DFFE and taken up and further described

### STRENGTHENED ENFORCEMENT CAPABILITIES

Over and above the recommendation to harmonise captive-lion related legislation in the light of the intended future scenario, in subsection 3.5.3.2 this report also highlights existing shortcomings in terms of enforcing rules and regulations. Hence, a regulatory review and harmonisation should be accompanied by a well-planned

### ASSESSMENT FRAMEWORKS FOR IMPLEMENTATION MEASURES AND ROLLOUT MONITORING

This study gives an account of the variety of individual operating models of different facilities. Therefore, we emphasise that any changes to the sector should consider these existing variations, including the five sector clusters, the different motives, reproduction modes and supply chains. For that purpose, we recommend the development of an assessment framework reflecting this range of differences between captive lion facilities and the evaluation of individual facilities accordingly. The successful pursuit of any future scenario relies on the

recognised sector organisations. Actions for change will also have to consider the nuances of the five clusters in the sector with their differing structures and various consumers. The multi-disciplinary change team described previously should be responsible for planning the various adequate actions to facilitate the intended transformation of the sector.

in the draft policy position on the conservation and ecologically sustainable use of elephant, lion, leopard and rhinoceros (Department of Forestry Fisheries and the Environment 2021 p. 34). Both reports leave room for interpretation as to which types of facilities are to be closed and their lions to be culled. It needs to be emphasised that the option to close every single captive lion facility in South Africa unconditionally would mean comprehensively outlawing the keeping, reproduction, and trade of captive lions. We caution against an undifferentiated closure of every single facility due to the wide variety of individually unique operating models and instead recommend the development of an assessment framework to deal with the existing differences in a well-considered and systematic way, as described further below.

roadmap to ensure adequate enforcement of the modified rules and regulations. Amendments to the legislation for captive lions should be used to assess the required skills and capacities to achieve the intended level of control and oversight.

ability to assess facilities against a clear and well thought out set of criteria to determine individually prescribed adjustments ranging from the shutdown of the facility under a controlled exit to an attestation of compliance without further alteration. Furthermore, developing a specific assessment framework provides the basis to establish a monitoring tool for the progress of the rollout of the intended changes to the captive lion sector. The insights in this report could serve as an appropriate starting point to set up such an assessment framework.



## LITIGATION CONSIDERATIONS

Making a deliberate decision to venture into a particular business sector means taking individual financial risks, with a probability of failing. While captive lion owners entered the sector exposed to this personal risk of failure, they started their operations based on existing legislation, thus in good faith in their decision's legal legitimacy. Therefore, significant changes in legislation forcing facilities to close might result in legal actions against government agencies (as some interviewees hinted at).

The more restrictive the future scenario for the sector, the higher are the litigation risks. The complete closure of the sector and ban of captive lions, thus, bears the highest risk for legal action. Reversing the development and growth of the sector could likely be perceived as a way to

## FINANCIAL AND TRADE-RELATED CONSIDERATIONS

Financial and trade-related considerations include two different aspects for change measures.

### **a) Addressing reduced or capped supplies: Handling illegal trade versus traceability**

As outlined in our results pertaining to the complexity of managing a facility (subsections 3.5.2 – 3.5.6), many concerns about the sector are linked to trade-related activities. Stricter trade regulation and control for captive lions and their derivatives, which could include a complete trade ban in its most extreme form, are likely to result from any interventions to change the sector.

Very restrictive trade regulations, including a complete trade ban in its strictest form, mean to choke off supplies without addressing demand. While it is unclear what will happen to demand under scenarios capping the supply, it is sensible to plan for a future with continued demand going underground. Therefore, changes to the sector should be accompanied by considerations of preparing South Africa and other lion range states for different levels of illicit trade and organised crime activities should the demand for various products or services not subside. These deliberations should include measures – including resourcing plans – for adequate monitoring, detection, and enforcement capabilities. More specifically, we recommend establishing an expert-led think tank tasked to examine different illegal trade and lion poaching scenarios. These scenarios could work as a basis to devise and implement corresponding countermeasures, including anti-poaching forces, forensic protocols for

punish a particular group of otherwise mostly reputable citizens for alleged wrongdoing. The legal dispute could be aggravated should the government leave the implementation of the shutdown to the individual actors without engagement or support. Consequently, the extent to which captive lion facilities should be closed strongly influences the need for change management measures to mitigate this litigation risk by engaging with individual facilities about viable exit strategies and alternative land-use options. At the same time, we want to reiterate the necessity to identify and engage with high-risk facilities independent of the future scenario as a matter of urgency until a change process is underway.

poaching incidents, enhanced detection and intelligence capabilities on a national and international level, well-trained and sufficiently capacitated enforcement units, and increased prosecutorial capacity.

By comparison, should any trade-related activities remain legal, this will require greater transparency. Traceability of each individual lion from birth to death is key for all transparency considerations and should include mandatory DNA and health tests and identity verification processes for captive lions.

### **b) Cost coverage for required changes**

In line with the legal considerations outlined above, the ability and willingness of facilities and other active key players in the sector to finance changes can be expected to vary depending on whether there are opportunities to keep the facility in some form. For a forced end to all or most facilities, bringing about a radical shrinking or complete removal of the sector in a short timeframe, it is advisable to explore alternative funding options for halting and phasing out captive lions, including but not limited to compensation payments to owners.

In addition, the assessment to ensure adequate enforcement of harmonised and amended rules and regulations in line with the intended future of the captive lion sector might result in additional funding requirements for sufficient and capable government resources. It is acknowledged that the government may lack these funds to finance corresponding costs.



## FINANCIAL AND TRADE-RELATED CONSIDERATIONS

Overall, it should be emphasised that conservation-related efforts should tend towards increased monitoring efforts for wild lion populations. Such monitoring efforts need to serve as an early warning system to signal a rise in poaching incidents and give clear indications on links to trade-related activities for such increases.

As for the conservation contribution of captive lions, it is important to note that the potential conservation value of captive lions is highly contested. A study by Hiller & MacMillan (2021) showed how, in the absence of shared conservation objectives and a corresponding assessment framework, eight different criteria are referenced to argue for or against such conservation value. As mentioned in the overall recommendations, more research needs to be done to close the existing knowledge gaps, especially around the genetic characteristics present in the captive lion population, habitat protection, reintroductions, and the drivers for lion hunting as well as lion poaching and trade. With regards to reintroductions, expert consensus suggests that these are currently unnecessary in South Africa. The research results should be used to engage stakeholders in developing the conservation value assessment framework to allow for a factual evaluation of the conservation value of captive-bred lions.

Until such time that it is possible to appraise the conservation value of captive lions based on an assessment framework, we recommend caution when implementing changes to the captive lion sector to safeguard any debated but unconfirmed conservation potential. The following points emphasise ways to exert such a cautious approach to leverage any verified conservation contributions in the future.

### a) Conserving evolutionary potential

Despite the claim that many captive lions are inbred, no comprehensive study about the evolutionary potential within South Africa's captive lions exists. Comprehensive DNA analyses would serve to understand the genetic characteristics within the captive lion population as a necessary step to gauge any evolutionary potential. It is important to note that in addition to the need for genetic testing of captive lions, the actual potential within the captive lion population to positively contribute to the gene pool of the species needs to be grounded in the most recent understanding of the classification of lion subspecies. For that purpose, the categorisation publicised by the Cat Classification Task Force of the IUCN SSC Cat Specialist Group should be considered in combination with the most recent deliberations in peer-reviewed literature, such as (de Manuel et al. 2020). The results of DNA

analyses from captive lions can then serve to decide if there is any merit in retaining and storing reproductive samples such as stem cells from selected captive lions. Moreover, mandatory genetic testing might also carry the potential to guide and govern conservation-targeted reproduction for any remaining parts of the sector, taking the genetic profiles within the population as a starting point.

### b) Maintaining and protecting existing lion populations

In a similar way, conservation efforts should be supported by adequately addressing the limited knowledge about motivational drivers and behaviour patterns of hunters, poachers, and consumers of lion part products locally and abroad. Independent of the future of the captive lion sector, a significant change to the hunting tourism cluster can be expected, even if the sector is not shut down. Based on complex demand and supply interactions and the overall functioning of the hunting tourism cluster described in this report, the ways in which those changes could impact wild lions should not be neglected. Trade-related practices such as trophy-hunting and the sale of bones from captive lions have been recognised as risk factors for lions (Bauer et al. 2018). Severe and abrupt disruption to the existing complex system could potentially turn illegal trade into an imminent and significant threat to wild and wild-managed lions, especially in range states where enforcement and regulation are weak. It will, thus, be essential to complement quantitative analyses of poaching, hunting and trade data with a better understanding of social and psychological factors associated with those practices to adequately prepare custodians of wild lion populations to deal with unmet demands.

### c) Understanding the potential impact on land-use changes

Currently, no overview exists of the total size of properties (bigger than 1,000 ha) serving as hunting farms for captive lions and the quality of their habitat. The degree to which these hunting operations depend on lion hunts for their continued profitability is also unclear. Knowledge about the potential habitat loss on hunting farms serves as the prerequisite to deciding on the need and the possibilities for counteractions to retain intact ecosystems in areas with little appeal for photographic tourism.

### d) Conservation funding

This study also revealed the sporadic, individualised approach of the sector to contribute to conservation financing. Considerations about collecting and managing conservation funds from the remaining sector should come with any changes initiated for the sector.

## WELFARE AND WELLBEING RELATED CONSIDERATIONS

This report highlights how matters of lion welfare and wellbeing are central to continuous calls for its shutdown. Based on our insights, especially those in subsection 3.5.5, we advocate for a two-pronged approach within the overall change strategy to adequately address lion welfare and wellbeing, comprising a communications strategy as well as actual changes to the welfare conditions for captive lions.

For any deliberate process to change the captive lion sector, there is a need for a comprehensive communication and media engagement strategy. The compassion towards individual specimens of an iconic species like the lion warrants special attention within the overall communication strategy towards welfare and wellbeing matters. Thus, the strategy should not only ensure that a more balanced and factual picture of the conditions in different captive lion facilities is reported but also cover the improvements of welfare and wellbeing conditions achieved through the change process.

Simultaneously, considerations of the change management team ought to include matters of lion welfare and wellbeing, mindful of both the more immediate future as well as long-term aspects.

Short-term welfare considerations are particularly relevant for any scenarios that require a significant reduction in the number of captive lions, including a complete shutdown of

the sector. Welfare issues relate to the ways this reduction is affected. As compassion for individual animals plays a significant role in the polarised conflict about captive lions, culling many healthy lions (even if captive-bred) might elicit more moral concerns and could result in a social media backlash. Therefore, as mentioned, socially acceptable alternatives for phasing out captive lions should be explored and enabled.

Long-term deliberations about welfare and wellbeing standards for lions in captivity should constitute a centrepiece for any remaining parts of the sector, supported by a comprehensive communication strategy. The concerns about lion welfare highlighted in this report (subsections 3.5.2–3.5.6) could serve as a starting point to determine necessary adjustments. These considerations include lions' living conditions and social structures, veterinary involvement, food sources and feeding regimes, reproductive practices, including cub-rearing, movement/transport implications, and human contact. In the absence of a widely accepted understanding of how to determine lion wellbeing, adequately addressing and implementing animal rights considerations into this change process represents a critical challenge and should involve a broad deliberation of what constitutes lion wellbeing as a prerequisite for any decisions on specific measures.

## WELFARE AND WELLBEING RELATED CONSIDERATIONS

Based on this study, socio-economic matters constitute the final area for consideration when deciding on measures for shaping the sector's future. There are two focus areas: 1) job creation and working conditions; and 2) socio-economic transformation and matters of social justice.

### a) Professionalise captive wildlife jobs

In the case of a shutdown of the sector, our research suggests that workers are unlikely to lose their employment contracts. Since many employers do not exclusively operate the captive lion facility, the lion-related duties of farmworkers only tend to cover a portion of their responsibilities. Therefore, these rare work opportunities for unskilled people in rural areas might continue to exist on the farms once the captive lions are phased out. Nevertheless, potentially redundant workers should be identified, and a plan devised to find and prepare them for alternative employment.

A different set of considerations should guide the change measures devised for any facilities that might be allowed to exist despite the reform of the sector. Steps should be taken to professionalise the role of wildlife keeper as an accredited vocation, constituting a prerequisite for facilities to train their staff members working with lions in that way.

There are two advantages to this. Firstly, the animals are likely to be better cared for. Second, it would lead to upskilling of labour. Similarly, an accreditation/licensing process for owners and managers could help to ensure compliance with existing rules and markedly increase the threshold to set up a facility. Finally, health and safety protocols ought to be deliberated and harmonised.

### b) Thoughts on social justice

The results of this study surfaced deeply entrenched patterns of reluctance inhibiting transformation aimed to counterbalance societal disadvantages rooted in the problematic past of South Africa. More than 25 years into democracy, this phenomenon is still a stark reality in the country's economy (The World Bank 2018) and thus not exclusive to the captive lion sector or even the wildlife sector at large. Hence, while a complete shutdown of the sector may end the criticism about its lack of transformation, this strategy will most likely shift the debate about ownership, job opportunities, working conditions, contractual agreements or education and development options to other areas of the economy. Consequently, the lack of transformation ought to be seen in a broader context of the wildlife economy and deliberated in forums adequate for taking on this challenge.

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# APPENDICES

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# APPENDIX A: INTERVIEW GUIDE FOR SEMI-STRUCTURED INTERVIEWS (CAPTIVE LION FACILITY EXAMPLE)

## CAPTIVE LION FACILITIES

Intro & Framing: Setting explanation incl. purpose of interview & study, anonymity, confidential data storage, permission to record, note taking, question flow

### BUSINESS MODEL: ICEBREAKER: (1) What is the history to your captive lion facility? (Tell me a bit of your life story)

#### Purpose and Rationale:

2. Why are you (still) in this business? / What motivates you?
3. What made you decide that this is how you want to spend your professional life?
4. What are the main goals of your facility (economic, environmental, social?)

#### Customer Segment(s):

5. Who are your most important clients (only types)? (For whom are you creating value? – Who are the end customers?)
6. How do you find your clients and what do you do to maintain good relationships with them?
7. How do you engage/communicate with your clients?

#### Ownership & Profit-Sharing Mechanisms:

15. How is the ownership of your facility structured?

#### Value Proposition(s) & Product(s):

8. Which products and services are you offering to your clients?
9. What value do you deliver to your customers? (Which needs are you satisfying? Which problems are you helping to solve?)
10. In what ways do you innovate? (come up with new products and services to grow your business and your market share?). Please, share examples

#### Distribution Channel(s):

11. Where and how do you sell your products and services?
12. Who do you buy from?
13. What are steps from your customers to the end consumers? (how many more segments until the end consumer is reached?)

#### Key Partnerships:

14. Who are your most important partners (suppliers and other trade partners) and why?

### ORGANISATION & STRUCTURE:

#### Value-added chain / operational practices:

16. Can you please describe how a 'lion's journey' through your facility looks like? (e.g. at what stage and how do they get here?, are they all born here?, how do they leave the facility (incl. poaching?)
17. What are the differences between the way you keep males and females?
18. What are the differences between the way you keep lions suitable for the core purpose of your facility and others?
19. What are the key resources/infrastructure you need to make your facility work well?
20. What do you feed your lions and where does this food come from?
21. How do you dispose of lion carcasses in your facility (how often and how many)?

#### Lion Wellbeing & Keeping/Breeding Practices:

22. What are all the measures you take to ensure you are keeping your lions in as close as natural conditions as possible?
23. If I asked your vet about the way you are keeping your lions which strengths or weaknesses will he point out to me?

#### FOR BREEDERS ONLY: Genetics & Population Management:

24. How would you define good genetics in the case of lions?
25. What are all the measures you take to avoid inbreeding?
26. How do you contribute to responsibly manage the collective captive lion population in South Africa?

### SUCCESS: PERFORMANCE & SUSTAINABILITY:

#### Financial/Business Success:

27. Can you describe to me how the business success of your facility developed over the years? (What, if any, were events that changed the business performance of your facility?)
28. What were your plans before the COVID19-crisis?
29. What has happened to your plans due to the COVID19-crisis?

#### Social Success:

30. Can you please describe the working conditions of the people who work for you and the benefits they receive? (e.g. working hours, breaks, leave, overtime arrangements, medical aid, UIF, annual increases, safety measures, meals, transport, etc.)

#### Environmental Success:

31. How, does your facility contribute to conservation?

#### Sustainability:

32. How do you define sustainability and the sustainable use approach of SA?
33. How does your facility relate to that definition?

#### Acceptability:

34. How do you rate/judge the future of the captive lion sector and its social acceptability?

### STRUCTURED SURVEY QUESTIONS for CAPTIVE LION FACILITIES

Closure: Thank you, reminder of anonymity, switch off recording → what will happen with the recording?  
Next steps; report sharing

# STRUCTURED INTERVIEW QUESTIONS FOR CAPTIVE LION FACILITIES

1. In which year did your facility start to operate? \_\_\_\_\_ (year)
2. What is the total size of all areas for lions on your facility combined in hectares? \_\_\_\_\_ ha
3. How many lions do you currently keep on the facility?

Cubs (under 1 year): \_\_\_\_\_

Subadults (1-3 years): \_\_\_\_\_

Adults (> 3 years): \_\_\_\_\_

4. How stable has this number of lions been since you started the facility (excluding cubs <1 year of age) ?

|1| \_\_\_\_\_ |2| \_\_\_\_\_ |3| \_\_\_\_\_ |4| \_\_\_\_\_ |5| \_\_\_\_\_

Sharp Decline (minus 30% or more)    Decline (minus 11%-30%)    Stable (+/- 10%)    Growth Sharp (plus 11%-30%)    Growth (plus 30% or more)

5. How stable has this number of lions been after Covid19 (excluding cubs <1 year of age)?

|1| \_\_\_\_\_ |2| \_\_\_\_\_ |3| \_\_\_\_\_ |4| \_\_\_\_\_ |5| \_\_\_\_\_

Sharp Decline (minus 30% or more)    Decline (minus 11%-30%)    Stable (+/- 10%)    Growth Sharp (plus 11%-30%)    Growth (plus 30% or more)

6. How many enclosures for lions do you have? \_\_\_\_\_ number of enclosures

7. How many lions do you keep in which size of enclosure/camp?

Camp size (in ha)	No of Camps	Max. no of lions per size

8. Do/did any of lions ever get hunted? |YES| \_\_\_\_\_ |NO| \_\_\_\_\_  
(If NO, got to question 12)

9. If yes, how long is the period between release and hunting? \_\_\_\_\_

10. If yes, how big is the area they are released in for the hunt in hectares? \_\_\_\_\_ ha

11. Can you share with me, where roughly the hunting area is located (in what part of which province) and the type of habitat in the hunting area?

\_\_\_\_\_ part of which province

HABITAT TYPE	Select: X
Desert	
Forest	
Thicket	
Grassland	
Savanna	
Fynbos	
Nama Karoo	
Succulent Karoo	
Other: Specify	

12. What are you doing with lion carcasses? (If "Sell" go to question 13; otherwise go to question 16)

Select (multiple possible)	
Sell to traders (stockpilers)	
Bury	
Burn/cremate	
Sell to others: Specify	
Other: Specify	

13. If you sell lion body parts, which body parts have you sold?

BODY PARTS	
Skeletons	
Bones	
Teeth	
Claws	
Paws	
Other: Specify	

14. If you sell lion body parts, do you stockpile lion skeletons or other body parts while no quotas are being issued?      |YES| \_\_\_\_\_ |NO| \_\_\_\_\_

(If YES, go to question 15. If NO, go to question 16)

15. If yes, how many items are in your current stockpile?

BODY PARTS	Approximate #
Skeletons	
Bones	
Teeth	
Claws	
Paws	
Other: Specify	

16. Do you breed lions in your facility?    |YES| \_\_\_\_\_ |NO| \_\_\_\_\_

(If YES, go to question 17. If NO, end here and go to question 21)

17. If yes, do you keep a studbook?      |YES| \_\_\_\_\_ |NO| \_\_\_\_\_

18. If yes, do you engage in any genetic testing for your lions?    |YES| \_\_\_\_\_ |NO| \_\_\_\_\_

19. If yes, how many of your lions have you had tested? \_\_\_\_\_ number of tested lions

20. How do you decide which lions are tested?

Please specify: \_\_\_\_\_

21. How do you rate the financial health of your facility (before/after COVID19)?

Before COVID-19	1  _____	2  _____	3  _____	4  _____	5  _____
	Looming Bankruptcy	Short term Losses	Breaking Even	Profitable	Very Profitable
After COVID-19	1  _____	2  _____	3  _____	4  _____	5  _____
	Looming Bankruptcy	Short term Losses	Breaking Even	Profitable	Very Profitable



22. What were your top-5 products/services (in % of overall sales) in the last five years (since 2015)?

Sales of Product/ Service	Decreasing	Stable	Increasing

23. In the last five years, prices have been (for each of the top-5 product/service sold):

Sales of Product/ Service	Decreasing	Stable	Increasing

24. What were your 5 highest types of expenses (in % of total expenses) in the last five years (since 2015)?

Rank	Expense Type (e.g., et, food, etc.)

25. How many people work for you to run the facility?

Rank	#
TYPE of WORK	
Farm labourers	
Other labourers (specify)	
Admin staff	
Casual/seasonal helpers	

26. How stable has this number of the people who work for your facility been in the past 5 years (since 2015)?

	By 'Design'	By 'Accident'	Specify Reason
Stable (+/- 10%)			
Fluctuations (+/- 11-30%)			
Strong Fluctuations (+/- >30%)			

27. What is the most common contract type for the people who work for you?

CONTRACT TYPE	Select: X
Permanent full-time employment	
Permanent part-time employment	
Fixed-term employment	
Seasonal/temporary contract (< 3 months)	
Independent contract	
Casual engagement (no contract)	
Other: Specify	

28. How much do you pay the majority of people who work for you (more than 50%)?

	Select: X
Significantly over minimum wage (130% and more)	
Over minimum wage (up to a third more)	
Minimum wage	
Other: Specify	

29. Please tick all the benefits the vast majority of the people who work for you receive (i.e., more than 75%)?

WORK-RELATED BENEFIT	Select: X		Select: X
Annual increases		Medical aid	
Pension fund		Child support facilities	
Funeral cost coverage		Accident Insurance	
Housing on the facility: with family		Housing on the facility: without family	
Transport provided by the facility		Transport money	
Meal breaks and rest periods		Meals during work	
Training & development: Specify			
Other safety measures: Specify			
Other: Specify			

30. What is the BBBEE status of your facility? \_\_\_\_\_ BBBEE level

31. How do you rate the impact of your facility in terms of its overall environmental, social, economic contributions?

Impact of facilities contribution	1 Neglectable	2 Weak	3 Solid	4 Strong	5 Massive
Economic					
Social					
Environmental					

32. Has your business ever paid into a conservation fund? |YES| \_\_\_\_\_ |NO| \_\_\_\_\_ (If NO, end this section)

33. If yes, into which one(s)? Please specify: \_\_\_\_\_

34. If yes, what triggers these payments? Please specify: \_\_\_\_\_

35. If yes, how much have you contributed in total since your first payment (in R 1,000)?

R \_\_\_\_\_

## ILLICIT BEHAVIOUR

36. Most lion facility owners/managers know other facilities. But usually only a few, if any, of these one knows very well. How many other facilities do you know in very much depth? (If the answer is 0, end questions here.)”

37. This question is about those you now have in mind. Keep their names to yourself. I want to know about them, but I don't want to know who they are. How many of those facilities can you say for certain have “bent the rules” when selling their products or services?

(If the answer is 0, end questions here. If only 1 facility is reported go directly to question 78. If more than 1 facility is mentioned, ask interviewee to write down the initials of the facility owners and number them starting with 1. Based on a randomized system, select the corresponding number on the list the interviewee should use to answer the last question.)

38. Please answer the following question with respect to this specific facility that you are thinking of. As far as you know did the facility engage in illegal activities?

39. Now I would like you to think about other close acquaintances with captive lion. As far as you know, how many of these facilities' other close connections, besides yourself, know for sure that this facility has broken rules and?

# APPENDIX B: INTERVIEW QUESTIONS FOR ASIAN LION PART IMPORTER

## QUESTIONS TO BETTER UNDERSTAND THE SUPPLY CHAIN AND THE DEMAND FOR LION PART PRODUCTS

1. Which lion parts (in which combinations) are you buying in South Africa (multiple selection possible)?

- Complete/full skeletons (“full set”)
- Skeletons without trophy parts (“half set”)

Single parts:

- Bones
- Teeth
- Claws/Nails
- Paws
- Other (please specify): \_\_\_\_\_

2. How many different lion part suppliers are you working with?

- 1
- 2-5
- 6-10
- 11-25
- 26-50
- More (please specify): \_\_\_\_\_

3. Where do your suppliers source their lion parts from (multiple selection possible)?

- Captive Lion Facilities
- Professional Hunters
- Hunting Outfitters
- Intermediate Trade Agents
- Other (please specify): \_\_\_\_\_

4. From which countries are you receiving lion parts (multiple selection possible)?

- South Africa
- Mozambique
- Zimbabwe
- Zambia
- Lesotho
- Eswatini
- Namibia
- Angola

- Malawi
- Tanzania
- Other African countries(please specify): \_\_\_\_\_
- Other countries globally (please specify): \_\_\_\_\_

5. Do you import lion parts directly from SA or via another country? If via another country which ones (multiple selection possible)?

- Imports directly from South Africa
- Imports via other countries (please specify): \_\_\_\_\_

6. Could you please describe the steps to get the lion parts from your supplier in South Africa to be successfully imported? (who is involved to get the lion parts from your supplier to a completed import)?

7. Which products are made of the lion parts you are buying in South Africa?

*Products for human consumption*

- Products for human consumption (please specify): \_\_\_\_\_
- Products for Traditional Chinese Medicine (please specify): \_\_\_\_\_
- Decorative Items / Carvings (please specify): \_\_\_\_\_
- Spiritual Items (please specify): \_\_\_\_\_
- Jewellery (please specify): \_\_\_\_\_
- Other (please specify): \_\_\_\_ \_\_\_\_\_

8. How are lion part products advertised and sold (multiple selection possible):

- As a substitute/replacement for tiger part products?
- As new products independent of tiger part products?
- As tiger part products?
- As something else – please specify: \_\_\_\_\_

9. Once your lion parts are successfully imported, what are the steps to the end consumer (who is involved to prepare the end products and get these end products to the end consumer)?

Where/in which countries are the end products of your lion part imports sold (please list)?

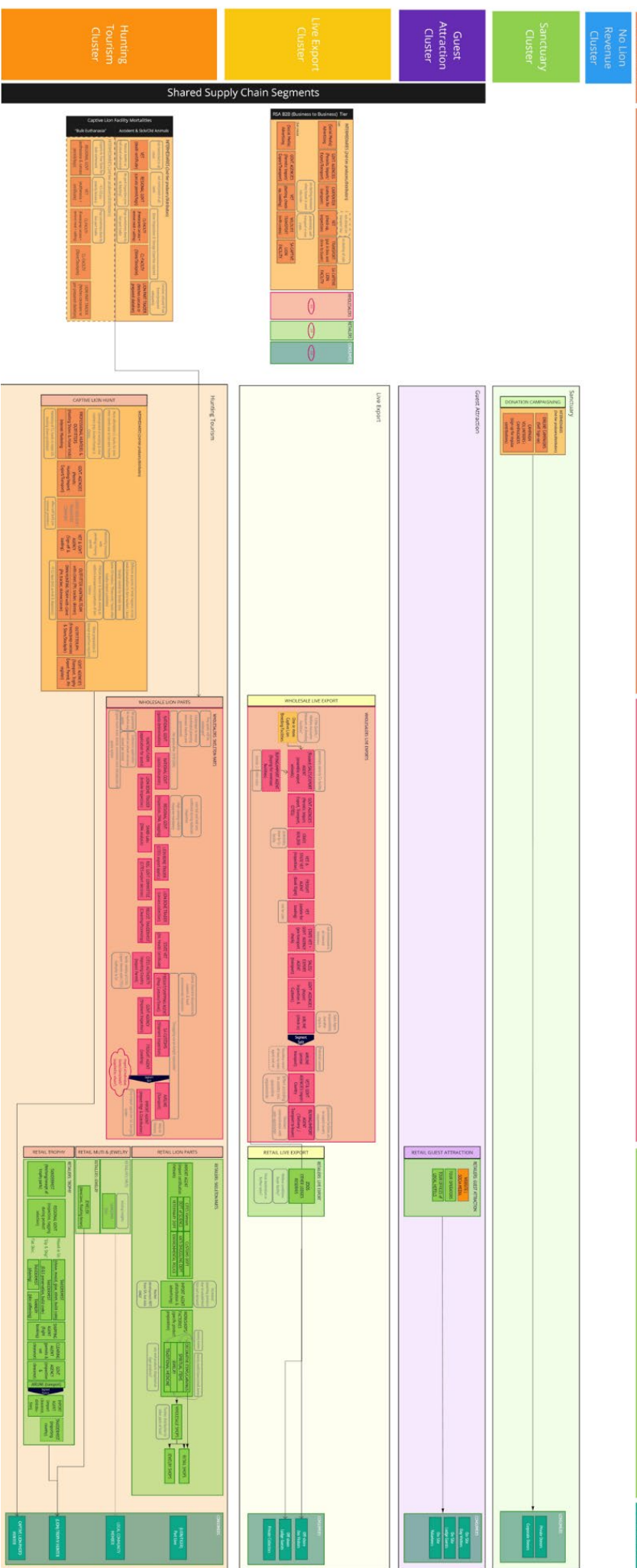
10. Could you please describe/give examples of what is done to grow the market for lion part products?

11. What else would you like to mention as it is important to understand the supply chain and the demand for lion part products?



# APPENDIX C: DETAILED SUPPLY CHAINS OF THE SOUTH AFRICAN CAPTIVE LION SECTOR

Producers: C-Facilities: Intermediaries: 2nd tier producers | distributors Wholesale Retail Consumer End User



Colour codes mark the distinct supply chain with integrated process steps from a captive lion facility to certain consumer retail segments as part of the hunting tourism cluster

\* Greyed out, as no detailed data could be obtained about the process steps involved in the jewellery and the multi-supply chains. Selected facilities from clusters 3, 4 and 5 make use of these shared supply chain segments.