

ECONOMIC SECTOR MASTER

Biodiversity



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department of
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FREE STATE PROVINCE



Free State Economic Sector Master Plan:

Biodiversity Sector



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by

Econogistics (Pty) Ltd



Free State Economic Sector Master Plan: Bio-Diversity

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1 Abbreviations

BFASA	Black Farmers Association of South Africa
DESTEA	Free State Department of Small Business Development, Tourism and Environmental Affairs
NBES	National Biodiversity Economy Strategy
"NEMBA"	National Environmental Management Biodiversity Act 10 of 2004 which encourages the sustainable use of natural and indigenous resources and provides for the management and conservation of South Africa's biodiversity through the protection of species, natural environments and ecosystems, while promoting the sustainable use of indigenous biological resources.
SAHPRA	South African Health Products Regulatory Authority
UFS	University of the Free State
Definitions	
"Biodiversity"	means the variety of plant and animal life in a particular habitat, a high level of which is usually considered to be important and desirable.
"Biodiversity Economy"	means an economic sector that focuses on the sustainable use of natural resources such as high valued plants and wildlife assets and requires the add-on processing of such resources in areas where they geographically occur and the emphasis of localisation of such industries.
"Bioprospecting"	means the search for plant and animal species from which medicinal drugs, biochemicals, and other commercially valuable material can be obtained.
"Contingent valuation"	means where biodiversity has no obvious market price, and no close replacements or substitutes, it frequently has a value to people. Contingent valuation techniques infer the value that people place on biodiversity goods and services by asking them their willingness to pay for them (or willingness to accept compensation for their loss) under the hypothetical scenario that they would be available for purchase. Contingent valuation techniques are one of the few methods that can be used to assess the option and existence values associated with biodiversity.

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“Ecosystem services”	means those benefits from a ecosystem often integral to the provisioning of clean drinking water, the decomposition of wastes, and resilience and productivity of food ecosystems etc. these may not have a direct economic value or profit but if degraded will devastate a economy.
“Operation Phakisa”	means a initiative of the South African government,designed to fast track the implementation of solutions on critical development issues.
“PESTLE Analysis”	means a concept in marketing principles denoting P for political, E for Economic, S for Social, T for Technological, L for Legal, and E for Environmental. It gives a bird's eye view of the whole environment from many different angles that one wants to check and keep a track of while contemplating a certain idea/plan.
“Situational Analysis”	means the process of critically evaluating the internal and external conditions that affect a economic sector, which is done prior to a new initiative or project. It provides the knowledge to identify the current opportunities and challenges to that sectors service or product.
“SWOT Analysis’	means a organisation of top strengths, weaknesses, opportunities and threats. Assists in the development of a strategy to prioritise aspects.

2 Overview and Background Analysis

2.1 Summary of the Situational Analysis

The political, economic, social, technological, legal and environmental (PESTLE) aspects of the Free State are described in the Situational Analysis to provide an overview of the macro-economic environment of the province. The Free State economy is still confronted with the challenge of low economic growth, which is currently being worsened by the COVID-19 pandemic and its ongoing effects. The economy is characterised by a high unemployment rate, which is mostly affecting young people, as well as high levels of poverty and inequality.

These challenges were echoed by the MEC for Finance during the Free State Provincial Budget Speech in March 2021, highlighting the province's economy which recorded three consecutive declines in 2018, 2019 and 2020. According to the MEC, the total value of the Free State's economy was estimated at R160.8 billion in 2019. Long-standing challenges emanating from low consumer and business confidence have contributed to the poor economic performance.

The devastating impacts of COVID-19 were projected to have contracted the Free State economy by 6.8 percent in 2020; decreasing the value of the economy to approximately R149.8 billion.¹ The MEC reiterated the contraction of all sectors of the provincial economy during the hard lockdown, except for agriculture, which benefitted from favourable weather conditions and large sections of the industry remaining open during the national lockdown. The expected growth and recovery is however projected to be 2.8 percent in 2021.

The MEC made reference to the allocated budget providing for the continuation of the land care programme, support and training of farmers, veterinary services, infrastructure investments and the implementation of agricultural projects. The limitation of resources is said to be a major obstacle for the many initiatives housed at the Department of Economic, Small Business Development, Tourism And Environmental Affairs (DESTEA) and that there will be more investment into this department.

The budget speech included a discussion on the province's relationships with and reliance on the private sector and how these interactions should be supported and maintained in order to grow the economy. As such, the new budget makes provision for, amongst others, enterprise support, industrial parks, youth enterprise initiatives, maintenance of resorts and reserves as well as environmental programmes.

The Situational Analysis provides insights into the biodiversity sector's contribution to regional and provincial Gross Domestic Products (GDP), with particular emphasis being placed on the bioprospecting and wildlife subsectors respectively. Although seemingly outdated, the data used to describe these subsectors show their potential in terms of economic value to the province and the country as a whole.

Prior to the global pandemic and its unwanted dwindling effects, both the wildlife and bioprospecting sub-sectors of the biodiversity economy already proved that they had potential for significant future development and growth. According to the National Biodiversity Economy Strategy (NBES) both the wildlife

¹ Hon. Gadija Brown, MEC for Finance: Free State Province. 09 March 2021. *Free State Provincial Budget Speech*.

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and bioprospecting sectors contributed around R3 billion to GDP in 2013.² The growth in these sectors has also shown the ability to have a significant impact on the national economy, while contributing to national imperatives such as job creation, rural development and conservation of natural resources.

The industry growth goal which was proposed by the NBES, stated that by 2030, the South African biodiversity economy would achieve an average GDP growth rate of 10% per annum. This projected growth is in line with the goals of South Africa's National Development Plan, Vision 2030. It is also clear that this goal can only be achieved through cooperation between the private sector, government and communities; through creating opportunities in various markets; through addressing challenges associated with development and growth; and through managing both the wildlife and bioprospecting subsectors in a way that is environmentally sustainable.

2.2 Key Challenges

One of the key challenges is the availability of updated information and data relating specifically to the biodiversity sector in the Free State. Statistics for the province tend to be more focused on agriculture as a whole, along with the other main categories such as mining, manufacturing, construction etc. The problem with presenting information in this way is that it does not provide a clear indication of the subcategories which have either been included or excluded from the calculations. The information provided on the government websites is in much need of updating – for example, www.freestateonline.fs.gov.za reflects data from 2010 under the “Economy” tab, while the infographic relating to the Free State economy available on DESTEA’s website is dated from 2017. Obtaining current data relating specifically to the wildlife and bioprospecting subsectors in the Free State is even more difficult, with heavy reliance being placed on private entities to produce such data.

The process of engaging with stakeholders has been somewhat of a challenge. Many stakeholders did not respond either due to time constraints or potentially even lack of interest. We learned that there were many other processes taking place concurrently within the biodiversity sector which may have caused a shift in focus and priority for many stakeholders. For example, the development and stakeholder engagement processes of the National Game Meat Industry Strategy, the Tourism Sector Master Plan as well as the Agricultural and Agribusiness Master Plan, to name a few.

The timelines provided for the development of a comprehensive master plan for the sector are unrealistic. In order to develop a meaningful plan, which considers the biodiversity sector holistically and adds value, one would need considerably more time.

There seems to be a general lack of faith in government, the regulators and the very legislation which is meant to provide a backbone for the sector. Some industries such as those dealing with complementary medicines, feel that they are severely over-regulated and that the current legislation does not provide any support for the industry. During the engagement process it became known that a few of the identified key stakeholders were caught up in various lobbying events involving the legislation and regulation of the cannabis industry. These include the Black Farmers Association of South Africa (BFASA), Fields of Green for All (FGFA), the Traditional Healers Organisation and other industry activists who, according to Cannabiz-Africa, marched to the South African Health Products Regulatory Authority (SAHPRA)'s Arcadia offices and handed over a memorandum of demands. Cannabiz-Africa³ reported that the organisations were protesting

² Department of Environmental Affairs. 2015. *National Biodiversity Economy Strategy (NBES)*

³ <https://www.cannabiz-africa.com/>

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against what they considered “the exclusion of indigenous people from being granted medicinal cannabis licences”. Among their demands were that all existing “illegal” cannabis licenses be revoked.

During the stakeholder engagement process it also became clear that there is a disconnect between government, industry and business within the biodiversity sector, coupled with contrasting perceptions of “what’s best for whom”. According to the NBES, it is crucial for these entities to work together in order to achieve sustainable growth within the biodiversity sector. As such, it would be in the interest of DESTEA and other governing bodies to engage with their stakeholders on a more regular basis and form mutually beneficial relationships with them.

Furthermore, from engagements with the various stakeholders, it was clear that both private and public sector representatives have significant misalignment as to what a biodiversity economic sector would entail, some respondents equating most perceptions to the formal agricultural economy or emerging agricultural in general. There was a limited understanding of how to produce new products that have not existed in the market place and very limited knowledge of how to engage any regulator or multiple regulators to gain approval or support. The eventual consensus that was reached was this sector can be seen as a crosscutter with no existing clear protocols to allow for effient roolout between regulator/s and persons wishing to participate.

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Opinions of stakeholders seem to be largely influenced by their personal interests and career orientations which may affect their objectivity. It is therefore essential to ensure that stakeholders are selected from a variety of industries, as well as the associations which govern them.

The lack of established markets for certain products presents a unique challenge for the sector – this is evident within both the bioprospecting and wildlife subsectors. South Africa is seen as one of the countries with a smaller and less mature bio-economy, and as such relies heavily on state intervention to bolster business activities in the absence of large private sector players and readily available venture capital.⁴ Although government has been active in promoting market success in strategic biosectors, much work remains to be done through its various policy instruments and through engagement with public research institutions.

From a product development aspect, there is a general absence of well-developed, supported and tested value chains for the promotion and public adoption of new biodiversity related products. Empirical information required to formulate plans for market and product value chain was found to be largely anecdotal and inconsistent. There are also significant gaps in the literature concerning development of new biodiversity product. This could be mostly attributed to the lack of focused research and development initiatives and infrastructure for upscaling and marketing such products. This status quo has therefore created challenges in formulating strategies for this report.

2.3 SWOT Analysis

Table 1: SWOT Analysis

⁴ Department of Science and Technology. 2013. *The Bio-economy Strategy*

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STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • South Africa is the 3rd most biodiverse country in the world • South Africa is a global leader in biodiversity conservation and wildlife management • Availability of natural resources in the Free State • A province that is relatively disease free of bovine tb and foot and mouth etc is hugely advantageous. • Existing government incentive schemes provide the ideal platform to provide further support for the sector • Wide variety of industries, value chains and markets to explore within this sector • Ability to align with other sectors, such as agriculture and tourism 	<ul style="list-style-type: none"> • Does not provide a holistic description of the biodiversity economy in Free State • May underestimate the contribution of biodiversity to the province's economy as it only focuses on the trade in plants and animals as a resource, but ignores replacement value • Lack of infrastructure may hamper the development of opportunities within the sector • Lack of training in the various subsectors and industries may limit employment opportunities • Lack of sufficient data for all subsectors
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Inclusion of more stakeholders within the biodiversity subsectors • Greater economic value in the bioprocessing and marketing segments of the value chain instead of in plants and animals as a commodity • Economic growth should focus on investments in value-added processing and marketing segments (including equipment, technology, and training), and not just greater exploitation of resources • Skills development and training of both skilled and unskilled workers throughout the whole value chain • Community upliftment incentives based on conservation and benefit sharing • There are numerous spin-off opportunities that could be developed from both subsectors • Market development opportunities at a local, national and international level • Subsectors have not reached their economic potential in the Free State • Identification & verification of indigenous communities who are the holders of indigenous /traditional knowledge associated with indigenous biological/genetic resources 	<ul style="list-style-type: none"> • May create wrong impression in terms of treating nature as a commodity (i.e. a stock), rather than as renewable flow. This may result in overexploitation and depletion of natural capital. • Time constraints experienced by all parties influence the ability to compile a comprehensive Master Plan • Lack of faith in government could severely limit opportunities for growth • Disconnect between private and public sectors

3 Strategic Objectives

3.1 Development Opportunities and Targets

Development opportunities within this sector are aligned with the National Biodiversity Economy Strategy and the National Development Plan, Vision 2030, which are largely focused on economic growth, transformation, skills development, employment and sustainability.

The following opportunities exist within this sector in the Free State:

- Reviewing economic tools available to the Free state Government that will enable the development of emerging biodiversity products, eg the Green Fund.
- As the Biodiversity is a crosscutting sector between Environmental, Agricultural, Medicinal and others it is advisable to review how each independently regulators aims can be streamlined and dovetailed to enable a one-stop shop for emerging users.
- Activate a relationship with the university of the Free state to start conducting province specific research on the biodiversity economy and potential endemic products.
- Activate a forum using as a basis our current stakeholder list to develop common understanding of what a biodiversity economy is and how issues such as over or under regulation and investment could be resolved.
- Learn from successful and unsuccessful biodiversity related products in other provinces such as Rooibos in the Western Cape and hoodia in the Northern Cape. Interact with those regulators and product developers.

3.1.1 Biodiversity Subsector: Plants to Market

Cannabis

The legalisation and commercialisation of *Cannabis Sativa* (Cannabis) has been gaining momentum as a matter of public debate and high priority for policymakers globally. The National Cannabis Master Plan released recently to the industry by the Department of Agriculture, Land Reform & Rural Development (DALRRD) proposes legislative measures to lift the restrictions on the commercialisation of cannabis and hemp. This will provide a mechanism for the development and growth of the cannabis industry in South Africa to contribute to economic development, job creation, rural development and poverty alleviation.

With other provinces, such as the Eastern Cape and Gauteng, recognising the economic potential of this industry, the Free State should also consider further engagement with relevant stakeholders to identify opportunities for development.

In the Gauteng State of the Province (SOPA) address in February 2021, Premier David Makhura made it known that the province intends to become the country's leading processor of cannabis, which would assist in stimulating the economy and aid development within the country. The use of existing industrial infrastructure for processing would be key in supporting this vision.

The Cannabis Development Council of South Africa (CDCSA) maintains that the industry has the potential to produce food, fuel, fibre and medicine, thus providing numerous employment opportunities within various sectors. Many parts of the plant can be used for a variety of different applications, thus making this versatile crop hugely beneficial to many markets.

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According to a recent policy discussion document, cannabis is said to have several economic advantages, namely:⁵

- Reduced transport costs due to high value to weight and volume ratios;
- Unlike fruit and nuts, it is an annual crop that produces in the first year;
- A big advantage over other crops such as fruit, is that it remains undamaged during transportation;
- Lack of competition from large-scale commercial farming;
- Low barriers to entry for smallholders as specialised water systems or fertilizer are not required;
- Unlike other cop sectors, no elaborate and expensive government support is required; and
- There is scope for value added products such as oils and rosins.

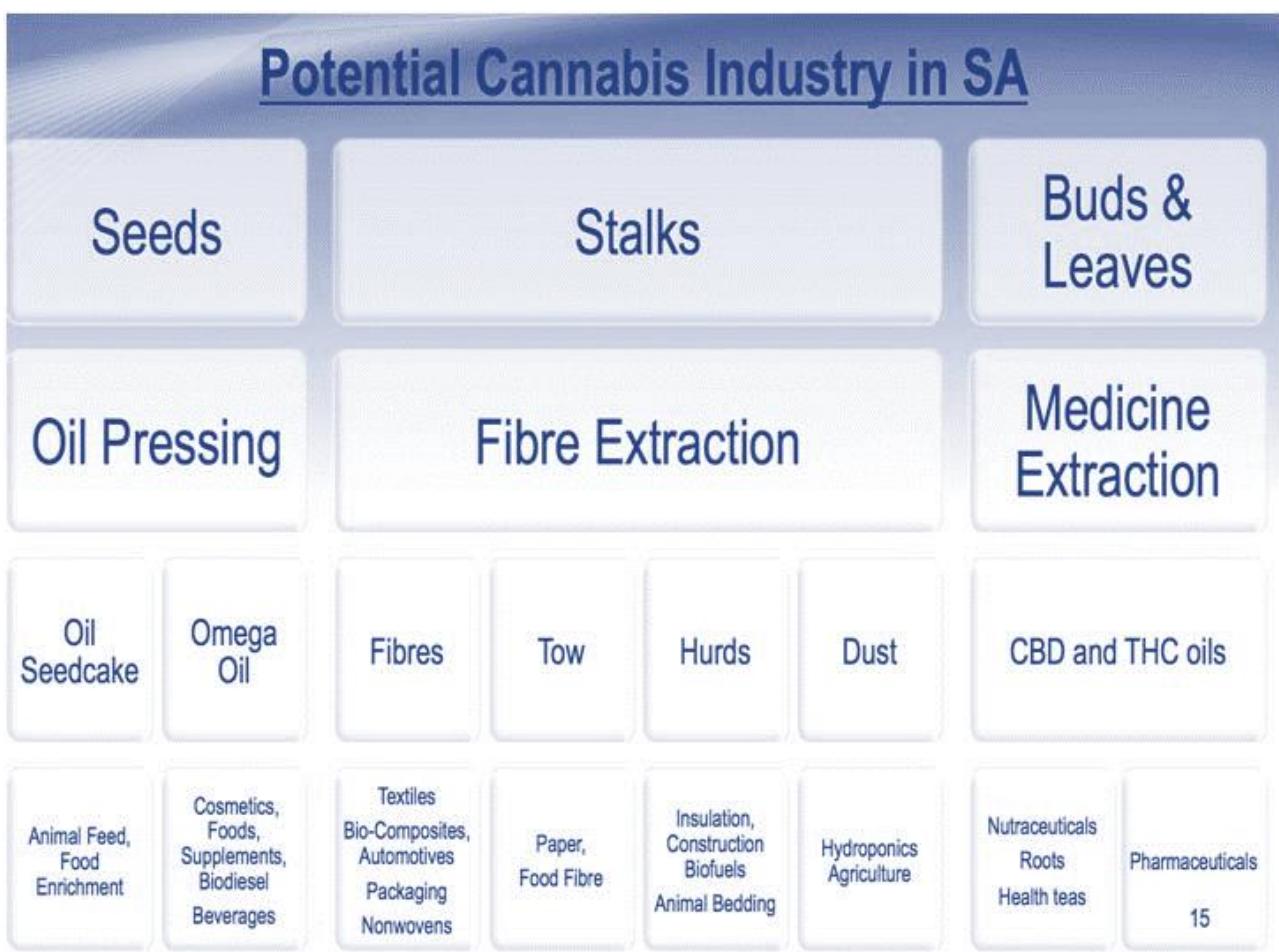


Figure 1: Potential Cannabis Industry in South Africa

Source: <https://cdcsa.co.za/>

3.1.2 Biodiversity Subsector: Animal Products to Market

⁵ Lewis,M. 2020. Cannabis in the Eastern Cape, a policy discussion document. Eastern Cape Socio Economic Consultative Council

Beekeeping Industry

With only 1 commercial beekeeper in the Free State (i.e. those which have more than 300 colonies) and 7 beekeepers operating on a semi-commercial level with 100-300 beehives, beekeeping in the Free State certainly has not reached its full potential.

It is understood that the sunflower, apple and cherry farmers in the province rely mainly on beekeepers from KwaZulu-Natal or Gauteng to provide pollination services for their crops. This certainly presents an array of opportunities within this sector at a provincial level.

An under-rated agricultural sector in the Free State includes crops which belong to the cucurbit family such as pumpkins, butternuts and watermelons which require pollination by means of honeybees. It is a well known fact that pollination which takes place with the help of honeybees increases fruit set and results in better quality fruits being produced.

The beekeeping industry plays a marginal role within the sector at a commercial level, but is an important catalyst at a rural development level. There are new developmental beekeeping programmes which are currently being run in rural areas to promote beekeeping and provide much needed income. Apart from the South African Bee Industry Organisation (SABIO)'s own initiatives and programmes, there are others which are being driven by institutions such as the Agricultural Research Council and The Institute for Natural Resources of the University of KwaZulu-Natal. Due to its many benefits as a home industry, beekeeping has an almost unlimited potential in rural communities. Home industry beekeeping initiatives have several advantages including the provision of a well-balanced diet as well as excess honey which can be sold or exchanged for other commodities. According to SABIO, two of the most important and yet neglected advantages of rural beekeeping, are the value in self-treatment for various illnesses and the provision of a natural resource of breeder populations which in turn strengthen the viability of wild populations.

Game Meat

According to the Master Agri-Park Business Plan for the Xhariep District Municipality,⁶ numerous traditional farmers in the southern Free State have moved away from livestock and crop farming in order to farm with game meat. The challenging climatic conditions of the area as well as the opportunities that exist within the game meat industry have been the driving forces behind this shift. Meat production is said to be the least developed aspect of this industry in the province, thus creating opportunities within the developing game meat processing value chain.

The Xhariep Master Agri-Park Business Plan provided insights into the use of venison as creating employment opportunities, thus reducing the high unemployment rate experienced in the province. The development of skills within this sector is also important as a mechanism to create better jobs and achieve higher productivity. The use of venison as a commodity is said to develop skills throughout the whole value chain including the farming practices, culling and slaughtering of venison, packaging, etc. The spin-off opportunities from using venison as a commodity include the processing of hides for making shoes (there is already an initiative in Trompsburg that produces shoes), handbags, etc. as well as upskilling and training of tour guides, the development of game farms, hunting, fitting of equipment, etc.

A recent study investigated the potential benefits of implementing the NBES in the Eastern Cape, with particular focus on its socio-economic and conservation benefits. Mokotjomela, T.M & Nombewua, N. (2019)

⁶ Urban-Econ Development Economists. 2016. Master Agri-Park Business Plan: Xhariep District Municipality

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showed that the critical factors influencing the success of the NBES include poverty, limited land ownership and previously disadvantaged individuals (PDIs)’ game farming skill sets which could be partly overcome through appropriate implementation funding.⁷ The study suggested additional campaigns directed to PDIs to expand on the benefits of the wildlife economy and thus potentially increase their interest and participation.

Aquaculture

Aquaculture processing provides many socio-economic benefits. The Xhariep Master Agri-Park Business Plan indicated that both direct and indirect employment opportunities exist within this industry – from labourers working within the processing value chain to those associated with transportation of goods to construction workers who are needed to plan and build the required infrastructure.

Successful aquaculture projects, such as the Camdeboo Satellite Aquaculture Project (CSAP) in Graaff-Reniet have proven to create work opportunities for the residents of the area, which is plagued by high levels of unemployment.

3.1.3 Biodiversity Subsector: Big Nature Attractions/Tourism

Game Reserves/National Parks

Declining visitor numbers in the game reserves and parks in the Province are a cause for concern and need to be investigated. While COVID-19 may be directly linked to the decline, it is also understood that some reserves are in a severe state of disrepair which may confound the problem.

Efforts need to be made to restore the reserves and their associated infrastructure in the Free State. This will not only boost income from tourism, but will also present numerous employment and community upliftment opportunities.

Recreational Fishing

Although seemingly outdated, the estimated value of the yellowfish fly fishing industry at the Vaal River was said to be nearly R33 million per annum.⁸ The angling practices in this river, which are yellowfish dependant, continue to grow as a popular sport in South Africa and present a number of social and economic benefits, not only to the yellowfish angling community, but to society as a whole.

Events such as the annual fishing bonanzas at Bloemhof Dam and Vaal Dam have a significant economic impact for the local economy as well as the angling industry. These events attract anglers in their numbers and attract a significant amount of media attention. Much needed financial support for these events would ensure their continuity in terms of economic value.

Successful conservation of the water resources in the Province can only be achieved through partnerships between civil society and public institutions.

⁷ Mokotjomela, T.M & Nombewua, N. 2019. Potential benefits associated with implementation of the National Biodiversity Economy Strategy in the Eastern Cape Province, South Africa. *South African Geographical Journal*. <https://doi.org/10.1080/03736245.2019.1670233>

⁸ Brand, M., Maina, J., Mander, M. and O'Brien, G. 2009. *Characterisation of the social and economic value of the use and associated conservation of the yellowfishes in the Vaal River*. WRC Report No. KV 226/09. Water Research Commission, Pretoria.

Avitourism

The southern and south-western Free State, characterised by semi-arid Karoo vegetation, dramatic topography with sparsely vegetated grassy plains and rocky hills are considered as 'big-sky' country, offering bright night skies to keen star-gazers.

According to Birdlife SA, the birding potential of many parts of the Free State still remains to be discovered. Certain rural areas such as those surrounding Memel near the north-eastern escarpment have already established a reputation as excellent birding and tourism venues. Other towns such as Smithfield in the south are also working towards being recognised as excellent birding, eco- and heritage tourism destinations.

3.1.4 Other: "Working For / On" Programmes / EPWP / NRM

The Department of Forestry, Fisheries and the Environment have continued to make a notable contribution in creating employment and skill development opportunities through implementation of the environment sector employment programmes broadly.

Job creation is a priority output for government and as such is the core focus within the programmes. The mandate given to the department overseeing these projects is to ensure benefit from environmental assets which, presents an opportunity to contribute significantly to job creation, social inclusion and the low carbon green economy.

Province specific initiatives could be aligned with the following existing programmes and expanded in the Free State:

- Working for Ecosystems - aims to reverse environmental degradation through ecological restoration and maintenance programmes. It aims to regain natural habitat composition, structure and function thereby enhancing ecosystem services, such as: carbon sequestration, water regulation and purification, reducing the risk of natural disasters by improving landscape/catchment stability and resilience.
- Working for Water (WfW) - considers the development of people as an essential element of environmental conservation. Short-term contract jobs created through the clearing activities are undertaken, with the emphasis on endeavouring to recruit women (the target is 60%), youth (20%) and disabled (5%). Creating an enabling environment for skills training, it is investing in the development of communities wherever it works. Implementing HIV and Aids projects and other socio- development initiatives are important objectives.
- Working for Land - is an essential programme of the Natural Resource Management Programmes (NRMP). The key objective of the programme is to ensure that degraded ecosystems are restored to their formal or original state wherein they are able to maintain or support the natural species of that system.
- Working for Wetlands - is a joint initiative of the Departments of Forestry, Fisheries and the Environment (DFFE) and Water and Sanitation (DWS). This illustration of cooperative governance and partnerships comes to life through projects that focus on the rehabilitation, wise use and protection of wetlands in a manner that maximises employment creation, supports small businesses and transfers relevant and marketable skills to beneficiaries.
- Working on Fire (WoF) - was launched in September 2003 as part of the South African Government's initiative to create jobs and to alleviate poverty. Today WoF employs more than 5000 young men and women who have been fully trained as veld and forest fire fighters and are stationed in more than 200 teams throughout South Africa. WoF addresses the prevention and control of Wildland

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fires to enhance the sustainability and protection of life, poverty and the environment through the implementation of Integrated Fire Management (IFM) practices

- Working on Waste - is one of the initiatives by the Department of Environmental Affairs implemented under the auspices of the Expanded Public Works Programme (EPWP). The initiative is a proactive preventative measure that recognises that inadequate waste services may lead to litter which is not only visual pollution but may lead to health hazards and environmental degradation.
- Youth Environmental Services (YES) Programme was structured to benefit 2700 young people over a period of three years. Upon exiting the programme these young people are set to be placed in either permanent employment or further training institutions.
- The Youth Jobs in Waste Programme was expected to create 330 job opportunities in waste in the Free State and 326 in the North West provinces. The project intended to provide 3 577 young people with job opportunities in waste management and related entrepreneurship.
- Groen Sebenza Jobs Fund partnership project was designed to build human capital in the biodiversity sector. Working with SANBI, the department partnered with 33 organisations to empower 800 confident and competent people to work at all levels of government and in the private sector.

The WfW programme currently being run in the Free State ensures that the region/province addresses its responsibilities relating to water resource management, biological diversity and the functioning of natural systems whilst ensuring meaningful livelihood opportunities are supported for those employed on these programme and the community at larger.

The WfW programmes contribute to the sustainable management and control of invasive species, and add value to clearing operations.

The value added industries (VAI) programme has three primary objectives:

- maximising the positive economic benefits of the WfW programme, by creating additional employment opportunities through the harvesting and processing of plant material;
- reducing the net cost of clearing which in turn contributes to the sustainability of the WfW programme
- minimising potential adverse environmental impacts, such as fire damage, by leaving less biomass behind after clearing

The utilisation of biomass creates an additional benefit stream for WfW, and concurrently creates the opportunity for economic empowerment of historically disadvantaged individuals (HDIs). Focus is on development of down-stream industries, which operate either independently, or as partnerships between the public and private sectors.

The removal of cleared biomass contributes towards biological diversity being conserved, improvements in water security through the enhancement of streamflow and ground water sources, improvements in ecosystem processes to deal with the impacts of fires and floods and promotion of the productive potential of land.

The WfW programme has shown to be largely successful in providing training, skills development and employment, as indicated in the tables below:

Table 2: WfW Training and Skills Development: Recent Figures

Source: Department of Forestry, Fisheries and the Environment (2021)

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Course	No of Days	No of People
2020/2021 FY		
Chainsaw Operator	30	32
Chainsaw Operator Refresher	10	5
First Aid Level 1	8	21
First Aid Level 1 Refresher	4	30
Health and Safety Awareness	5	34
Herbicide Applicator	6	19
Herbicide Applicator Refresher	3	20
HIV / AIDS	3	55
Induction	1	93
Other (COVID 19 Awareness)	1	8
Other (COVID 19 AWARENESS)		
Samuel Mpasi and Booyens conducted the training)	1	14
Other (COVID 19 Awareness)	21	530
Other (COVID 19)	3	38
Other (COVID AWARENESS)	6	132

Table 3: WfW Key performance indicators for the 2020/2021 Financial year

Source: Department of Forestry, Fisheries and the Environment (2021)

KPI	Deliverables Achieved
Total number of people employed	1485
Females	776
Youth	960
Persons with disability	64
Cleared Hectares	5878
Full time Equivalent	319

3.2 Projects for Development

Cannabis

A wide range of products can be made from the production of commercial cannabis/hemp, namely: medicine, fuel, paper, food, rope, maps, clothes, nets, lace, soap, sails, shoes, plastics, explosives, caulking,

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fiberboard, paint, sealant, methanol, gasoline, fibre for fuel, bricks, charcoal, auto bodies, packing mass, lubricants, oil for lighting, oil for fuel, oil for lights, animal food, furniture, mats, varnish, lotions, ointments, lacquer etc.

With this industry gaining momentum in South Africa, it would be in the Province's best interest to explore this sector further and the many economic benefits it presents. This would require cooperation with industry experts, farmers and regulators. There is an opportunity for alignment with the National Cannabis Master Plan, once finalized. This industry also has great potential for training and skills development as it is a relatively new industry.

Beekeeping

Beekeepers create almost 10 000 job opportunities directly while many other jobs are created by the input suppliers (manufacturers of equipment and protective clothing, transporters, etc) and the output suppliers (processing equipment, packaging and retailing). In the commercial context, pollination services have become one of the most essential services provided by beekeepers. Many commercial crops, such as deciduous fruit, subtropical fruit and seeds from sunflowers are dependent on pollination. More than 20 000 colonies are currently used for the pollination of hybrid seed sunflower in the summer rainfall region. In the Cape, beekeepers supply up to 40 000 colonies to apple and pear producers for the pollination of their crops. The honeybee industry contributed R18 billion annually to South Africa's GDP, of which the major portion can be ascribed to the value of bee-dependant agricultural crops. Honey, beeswax and other hive products contribute R4 billion only.

Opportunities exist to create opportunities for local or upcoming beekeepers to provide pollination services for farmers who grow cherries, apples, sunflowers and vegetables of the cucurbit family.

Game Meat

Although game farming is associated more with revenue from tourism, hunting and breeding, the meat market is still relatively underdeveloped. Opportunities exist for emerging farmers to move away from livestock and rather focus on game farming. If managed properly, it is a better farming option on marginalised vegetation areas with more financial yields than traditional livestock animals. Another advantage to local emerging famers is the competitiveness of the South African industry within international markets which may provide additional opportunities.

There is a need for skills development and training within this industry and its value chain. One example is that it is imperative that government appointed inspectors are trained in game meat safety inspections in order to meet export requirements.

Avitourism

The last avitourism study was done in 2010, and as such does not show a true reflection of the economic potential this sector may hold. Considering the numerous avitourism opportunities that exist in the Free State, it is recommended that further studies are done to obtain updated statistics which can then be used to formulate a plan. This process would require collaboration with the various nature reserves and specialists within the avifaunal sphere, such as BirdLife SA.

Recreational Fishing

Recommendations are made to establish the social and economic value of the use and conservation of various fish species in the dams and rivers in the Province.

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Upgrading and maintaining the dams and their associated infrastructure will not only boost tourism for the province and assist in the ongoing conserving its resources, but will also create a number of employment and skills development opportunities.

Aquaculture

The Free State certainly has the potential for aquaculture production and processing, and as such further opportunities and activities should be explored to capitalise on the different market segments. Opportunities exist in simple fish processing, packaging and branding of locally produced fish, the smoking of fish, the salting of fish for preservation, and the drying of fish.

The Vaal Dam and River, as well as many other water bodies in the Province, have ample water for the production of inland fish. As such, it is recommended that current projects are investigated and that opportunities be built around them with the potential of establishing new projects.

Upgrading and Maintaining of Facilities

The maintenance of resorts and reserves as well as environmental programmes were mentioned in the 2021 provincial budget, although specific details were not mentioned.

It is recommended that further investigation is done into the state of the various resorts and nature reserves and that plans for upgrading them are developed and actioned accordingly.

EPWP: Working for Water (WfW)

The WfW programmes contribute to the sustainable management and control of invasive species, and add value to clearing operations. Based on the success of the current programmes, opportunities should be explored to expand on these.

EPWP: Working on Fire (WOF)

The Working on Fire (WOF) Expanded Public Works Programme is a government-funded, job-creation programme, that recruits youth from marginalised communities, trains them in fire awareness and education, prevention and fire suppression skills and employs them as WOF participants. Nationally, the programme currently employs nearly 5000 young men and women, stationed at 200 bases across the country.

In 2020, the Free State was ravaged by veld fires largely influenced by the persistent drought conditions in the province, resulting in the loss of thousands of hectares of farm land and millions of rands in livestock and property. The Free State's highest fire concentration is said to be situated along the Lesotho border, and northern Drakensberg range. Studies have shown that mountain grasslands in the northeastern regions of the country are known to experience fires often, followed by mountainous fynbos regions.⁹ According to WOF, climate change is expected to cause an increase in temperatures over parts of the interior of South Africa by as much as 3 to 5 C by the end of the century, and longer dry spells may also occur more frequently during all seasons. The combination of increasing temperatures and increased drought frequencies exacerbate the incidence of fire risk.

⁹ Strydom, Sheldon, & Savage, Michael J.. (2016). A spatio-temporal analysis of fires in South Africa. *South African Journal of Science*, 112(11-12), 1-8. <https://dx.doi.org/10.17159/sajs.2016/20150489>

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Based on the success if the programme at a national level, and the fact the Free State is generally considered to be a an area with a high fire danger index, it would be ideal for the Province to create more opportunities under this national programme.

Knowledge Gaps

The Situational Analysis process revealed gaps in current knowledge (specifically for the Free State) and as such the following recommendations are made:

- Research priorities need to be identified to improve foundational information for species and ecosystems, further work on pressures on biodiversity and ecological condition, and research for further improving the indicators used in the NBA are needed.
- Investment in existing and future strategic biodiversity monitoring programmes should be explored to strengthen the ability to detect trends, plan accordingly and manage effectively.
- Effective collaboration and data sharing between biodiversity data facilities, and between these facilities and the data users, provide a crucial foundation for ongoing research and monitoring as well as informing policymakers.

3.3 Summary of Public Sector Requirements for Implementation

Specific Goals

- Propose projects or programs which are specific to the sector in the Province
- Engage with stakeholders to develop plans

Relationships

- Strengthen cross-sectoral and cross-realm planning
- Establish mutually beneficial partnerships with stakeholders
- Develop local incentive programmes and initiatives in order to stimulate SMMEs and spin-off additional opportunities
- Partner with private sector to build a database of quality data which informs planning, policy changes or even development of new policies

Regulatory Framework

- Enabling legislation which does not limit industries in terms of economic growth and development
- Provision of support to private sector

Existing Platforms

- Identify existing infrastructure which may be needed for the projects, and determine if there is a need for upgrading or maintaining
- Align with existing initiatives
- Integration and collaboration with other sectors
- Focus on marketing programmes and local projects which align with existing programmes

3.4 Summary of Private Sector Requirements for Implementation

Specific Goals

- Assist in identifying potential projects specific to the sector in the Province
- Engage with public sector to develop plans

Relationships

- Explore partnerships between sectors
- Explore mutually beneficial partnerships with other stakeholders
- Partner with public sector to create training and employment opportunities
- Partner with public sector to provide credible and accurate data in order to build a meaningful database within the sector

4 Implementation of the Master Plan

4.1 Institutional Structure for Implementation

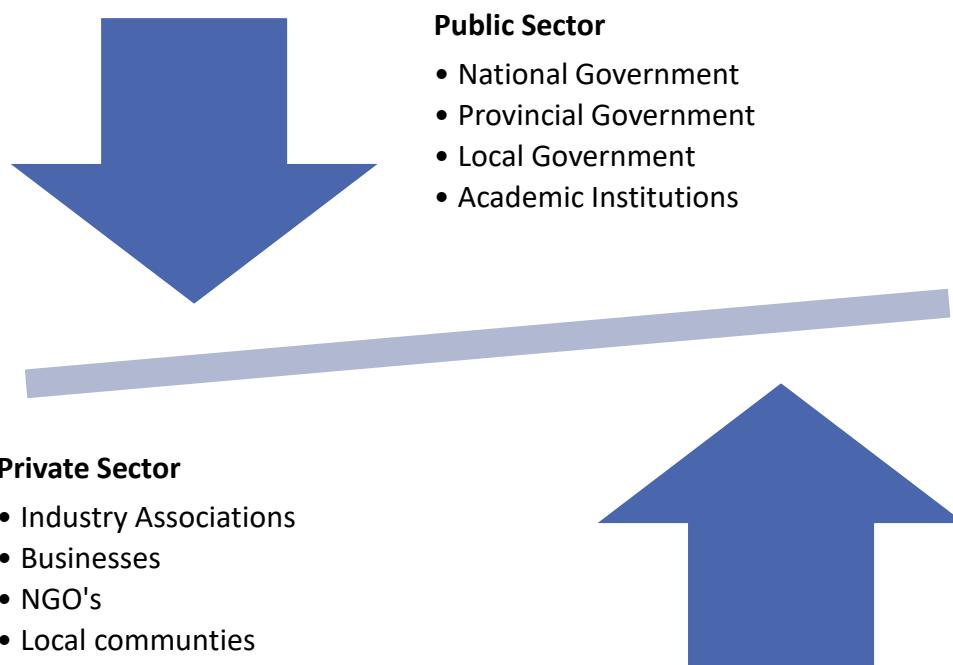


Figure 2: Bottom-up and top-down relationship between the private and public sector

Partnerships between government, civil society, academia, the private sector, local communities and their grassroots organizations are essential to the successful implementation of projects within the sector. The array of stakeholders and role players that needs to interact meaningfully within any dynamic and complex system, such as the biodiversity economy, demands structural coordination. To this end, the government's capacity to provide leadership for economic development should also be increased.

DESTEA needs to ensure effective coordination and responsiveness (on behalf of the government) to the private sector, and the academic institutions which contribute valuable information. Such coordination will guide the development of strategic capabilities and programmes within the sector, while helping to identify and address gaps and system failures.

It is only once specific projects have been identified by DESTEA that further institutional structures can be discussed.

4.2 Policy and Regulation Recommendations

Complementary Medicines

The current legislation governing traditional & natural health products stems from controversial Complementary Medicine regulations first gazetted in November 2013, and broader regulations to regulate 'health supplements' gazetted in August 2017. In August 2017, these regulations and further restrictions

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were written into the general regulations for medicines in support of the Medicines and Related Substances Amendment Bill, gazetted in January 2015.

Stakeholders within the complementary medicines field, find it to be irrational that thousands of low risk traditional & natural health products are governed under the Medicines Act, especially considering that these products have been sold for decades without any verifiable reports of harm and which are not clearly defined in the Act.

The Traditional and Natural Health Alliance (TNHA) maintains that there is a need for promulgating new legislation which clearly separates complementary medicines from pharmaceutical drugs, a view which is shared by other entities within this industry. The TNHA envisions this proposed Traditional & Natural Health Products Act to clearly define these products and subject them to an appropriate regulatory framework administered by the appropriate experts.

National Cannabis Master Plan

On 18 September 2018, the Constitutional Court of South Africa ruled that South Africans can now smoke cannabis in the privacy of their own homes - this provides the impetus to recognise the commercialisation of cannabis. Furthermore, the commercialisation of cannabis is said to have a net-positive impact on the economy by potentially creating new jobs.

In July 2019, Cabinet took the decision that the country needs a national strategy to commercialise cannabis in order to increase economic growth, create jobs and alleviate poverty. The National Cannabis Master Plan which was recently released to the industry by the Department of Agriculture, Land Reform & Rural Development (DALRRD), proposes legislative measures to lift the restrictions on the commercialisation of cannabis and hemp.

The purpose of the master plan is to provide a broad framework for the development and growth of the South African cannabis industry in order to contribute to economic development, job creation, inclusive participation, rural development and poverty alleviation.

According to the Cannabis Development Council of South Africa (CDCSA), cannabis needs to be reclassified as an agricultural crop and much research is needed to establish where it can be grown most successfully in South Africa.

Game Meat Industry Regulations

South Africa's Meat Safety Act no 40 of 2000 and its associated Game Meat Regulations No1371 of Nov 2016 provides regulations for the safe handling of meat between producer and consumer for game derived meat. According to our stakeholders, these regulations were intended to guide the industry's activities but have proved to be difficult to understand and implement and as such has hindered business growth.

The Meat Safety Act currently only prohibits the commercial sale of meat not processed at an approved facility and does not focus on the harvesting process. This emphasises the need for promulgating the Game Meat Industry Regulations.

4.3 Monitoring and Evaluation Framework

Planning, monitoring and evaluation has a strategic role to play in planning, decision-making, conducting credible evaluation and policymaking processes. It is therefore crucial that government decisions and policies are informed by quality and credible evidence rather than "opinion-based information".

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A monitoring and evaluation framework provides the mechanism for delivery and achievement of the Master Plan's objectives and should incorporate the following steps:

1. Initiation:

- Development of project-specific plans
- Development of task teams
- Involvement of key stakeholders
- Establishment of timelines for delivery
- Provision and allocation of resources

2. Oversight:

- A team needs to be identified for monitoring and evaluation of activities against the approved programmes
- Reporting on progress made in project and programme delivery

3. Close-out:

- The Monitoring and Evaluation Team provide a final assessment of whether the objectives have been met
- Findings are submitted to the project leadership

4. Post Close-out monitoring:

- Relevant task teams must continue observing progress made towards achieving objectives in order to ensure continuity.

5 Concluding Remarks

While it is recognized that government is aiming to achieve sustainable growth within the biodiversity sector, there is a certain amount of concern around the poor track record of government to successfully implement sustainable economic projects and programs. Initiation of any project or program should essentially be preceded by an investigation to identify and resolve previous unsuccessful self-sustaining projects.

It should be noted that the proposed interventions are micro-operations aimed at operating within the macro economy of the province and South Africa. The interventions proposed have been developed through engagement with stakeholders and may only provide temporary financial benefits to a few. As such, it is recommended the department should assist and advise on a more holistic solution to the economic woes of the province and its people.

The development of programs and projects within the biodiversity sector should consider the potential risk of providing a platform for exploiting resources. It is usually economic drivers that take precedence over most other considerations, such as legal obligations and conservation. It is recommended that future implementation plans should not only highlight the feasibility and potential economic benefits to be gained from the projects, but should also address the risks, specifically those relating to the biodiversity resource itself.

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