

National Biodiversity Research & Evidence Strategy (2015-2025)

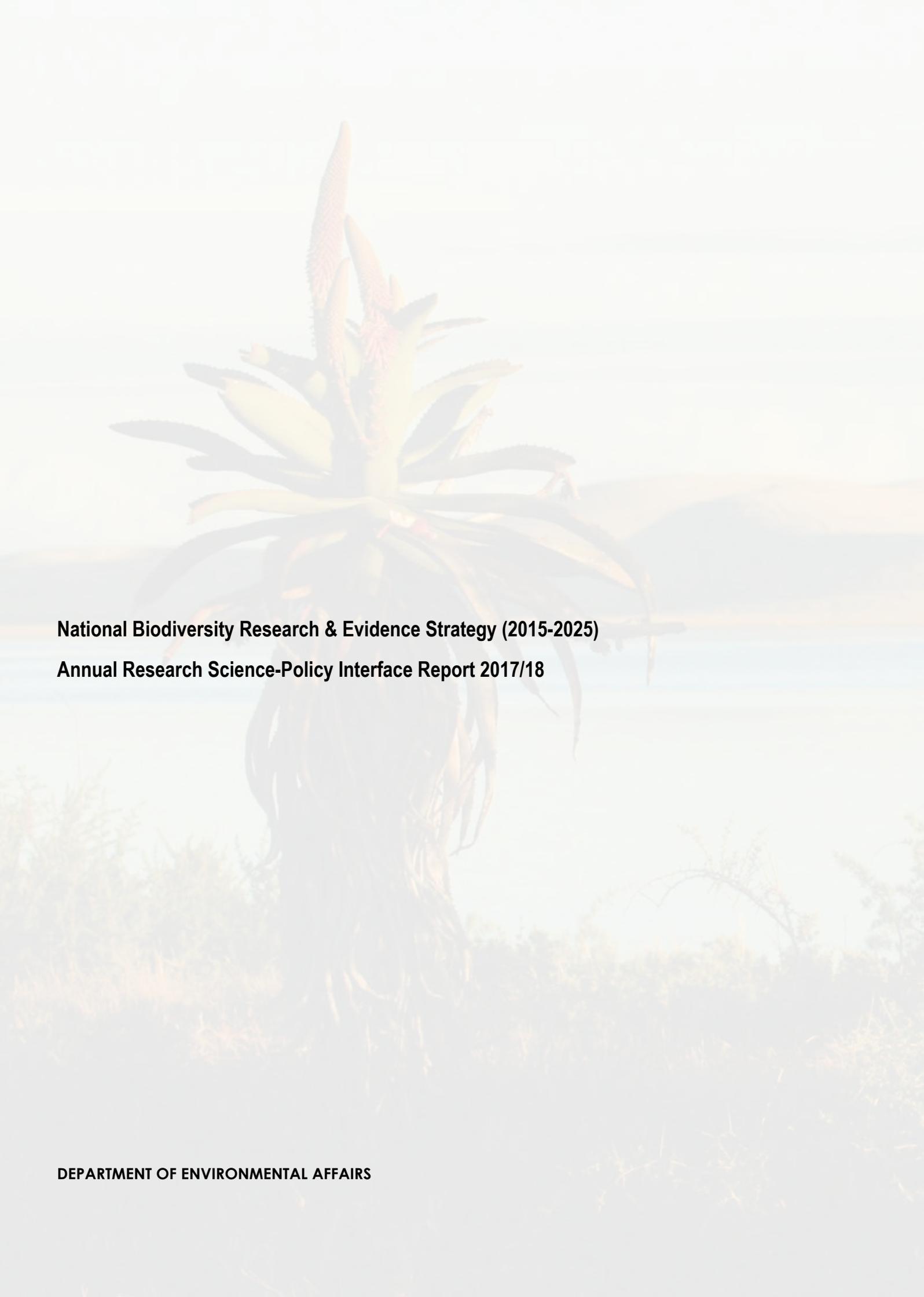
Annual Research Science-Policy Interface Report 2017/18



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA





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Annual Research Science-Policy Interface Report 2017/18

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

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ACRONYMS

ACE	African Centre for Evidence
DST	Department of Science and Technology
EI	Ecological Infrastructure
GMO	Genetically Modified Organisms
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services
MEA	Multilateral Environmental Agreement
NBRES	National Biodiversity Research and Evidence Indaba
NDP	National Development Plan
NPSAP	National Biodiversity Strategy and Action Plan
NRM	National Resource Management
NSRBI	National Status Report on Biological Invasions
SDG	Sustainable Development Goal
SO	Strategic Objective
SPI	Science Policy Interface
TSU	Technical Supporting Unit

1. INTRODUCTION AND BACKGROUND

The Department of Environmental Affairs (DEA) is committed to strengthen the knowledge, science and policy interface for environmental related matters. This commitment is guided by the Environment Sector Research, Development and Evidence framework approved by Minister and Members of Executive Council (MINMEC) in June 2012. This framework provides for the development of sector thematic evidence strategies and plans as identified in the framework which includes: Sustainable Development & the Green Economy; Climate Change & Air Quality; Oceans & Coasts; Chemicals & Waste; Impact Management, Compliance & Enforcement and Biodiversity.

As such, the Minister approved for implementation the first thematic strategy: The National Biodiversity Research and Evidence Strategy (NBRES) in 2015. An inclusive process for developing a progress report for the NBRES was concluded in March 2016 through the support of the VakaYiko project. In this regard, the Directorate: Science Policy Interface (the Directorate) aims to produce a timely progress report communicating the implementation of the NBRES, and monitoring the progress of its Implementation Plan. The evidence implementation plan for the NBRES developed in 2016 synthesises and communicates the sector's broad understanding of what evidence is and/ will be needed in future, so that stakeholders are able to deliver that evidence, either individually or in partnership. The NBRES Implementation Plan requires annual updating to meet the needs of national priorities and interests.

In 2016, the DEA hosted the inaugural Biodiversity Research and Evidence Indaba as a first step to updating the NBRES Implementation Plan. This first Indaba took place between the 10th and the 11th of August 2016, and was attended by approximately 95 delegates from various science and policy institutions.

In 2017, the DEA partnered with the African Centre for Evidence (ACE) to host the 2nd Annual Biodiversity Research and Evidence Indaba (the 2nd Annual Indaba) at the University of Johannesburg (UJ). The 2nd Annual Indaba was also co-hosted by Future Earth as part of the build up from the South Africa-European Union policy dialogue and the Future Earth Sustainable Development Goals (SDGs) Lab on implementing the South African National Development Plan's sustainability transitions through the domestication of the SDGs 12, 15 and 17.

1.1. The 2nd Annual Biodiversity Research and Evidence Indaba



Picture 1: Chief Director of Biodiversity Monitoring and Specialist Services (BMSS) welcoming the delegates

The 2nd Annual Indaba was a two day event that took place on the 17th and 18th August 2017 as a further step towards reviewing and updating the annual NBRES Implementation Plan, through engaging researchers and linking policy makers with the data and research for improved decision making. The 2nd Annual Indaba event attracted over 150 partici-

participants from across various sectors, including government bodies, academia, researchers and private organisations. The 2nd Annual Indaba was therefore used as a mechanism to gather information and report on progress of implementation of the NBRES. The 2nd Annual Indaba provided a platform to report on content details of what was being done, in terms of implementing the NBRES and how this content contributes to specific Strategic Objectives (SO).

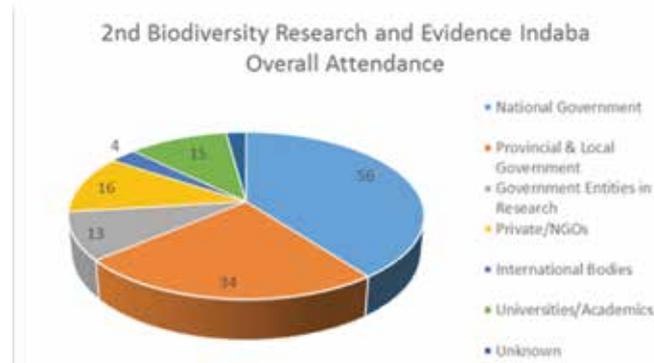


Figure 1: Attendance of the 2nd Annual Biodiversity Research and Evidence Indaba



Picture 2: Group discussions

1.2. Science-Policy Interface (Evidence-based policy making)

The South African government at all three levels, (National, Provincial and Local) in terms of concurrent function as advocated by the Constitution of the Republic of South Africa, 2016 are faced with major challenges of growing complexities in biodiversity and sustainability management which require decisions to be made with the potential of impacting greatly on biodiversity services and social economies. This places the national departments under pressure to gather evidence to support policy development and implementation. This is mainly because society has become more aware of the fact that it is impacted on in many ways by the policies which government makes and implements.

Traditionally, researchers used to push the evidence to the policy makers hoping that policy makers will use the findings for decision making, which caused significant misunderstandings. Currently, the DEA is concerned and has become more responsive to the gaps that typically exists between the scientific and the policy-making community. The DEA supports the uptake of evidence-based decision making and is promoting the dialogue between the research and policy-making communities for the betterment of biodiversity services. It also recognises that evidence is needed by policy-makers continuously in order to support strategies and policy development over the long term. The DEA has shown a keen response to the need for evidence-based decision making through hosting of the Annual Biodiversity Research and Evidence Indabas.

It is important to note that policymaking is a relatively complex process and is shaped by a number of factors including social, political, economic, and in other instances scientific contexts in society. This Report endorses and acknowledges

the critical role played by the researchers to provide the necessary evidence to inform decision making and policy development. During the 2nd Annual Indaba researchers were afforded a platform to share their knowledge and the work done on the ground, and this allowed information to be shared amongst researchers and policy makers. This was done so that the entire value chain of policy development and decision making for the biodiversity sector is transparent and open. In this regard, the DEA is confident that this engagement between the science and policy community will shape DEA's contribution towards monitoring the progress of implementing the NBRES, and subsequently improve decision making and appropriate policy development.

1.3. Purpose of the Report

This Report, including the updated NBRES Implementation Plan, supports the implementation of the NBRES. The purpose of this Report is to outline the detail of what evidence is needed to answer key policy questions across the biodiversity sector in the short-to-medium term, and the foundational knowledge that is required over the medium-to-long term. Short-term is defined here as within the next year, medium-term within the next 2-5 years, and long-term within the next 6-10 years. In addition, the Report tracks the progress on the implementation of the NBRES and how the evidence needs of the sector are prioritised over the short, medium and long term. The biodiversity sector is very diverse with role players and stakeholders from the national, provincial and municipal spheres of government; government entities such as SANBI, SANParks, iSimangaliso Wetlands Park, universities, civil society, private sector, Non-Government Organisations (NGOs), research and international organisations.

All these stakeholders and role players are able to contribute evidence to support policy formulation, decision-making and implementation. This Report presents a summary of the implementation of the evidence aspects of the NBRES gaps identified as well as the findings of the NBRES Implementation Plan which will inform the updating of the annual NBRES Implementation Plan.

Briefly, the 2nd Annual Indaba provided a platform for reporting on the state of biodiversity and presenting qualitative and quantitative data which describes the status of biodiversity and ecosystem services. Key threats to biodiversity were highlighted; actions aimed at protecting and managing biodiversity were recorded; and key gaps in biodiversity research were identified. This Report will be produced on an annual basis and this is the 2nd Research Science-Policy Interface Report.

2. PROGRESS ON THE IMPLEMENTATION OF THE NBRES (Findings of implementation)



Picture 2: Group discussions

The Implementation Plan of the NBRES 2015-2025 was approved by the Minister in 2015. The NBRES builds on the 2015 National Biodiversity Strategy and Action Plan (NBSAP) that sets out the policy priorities for the sector in the form of six strategic objectives (SOs). The scope of these objectives, and the depth of the evidence that is required to meet them is challenging. The NBRES describes how decision making and policy formulation in the biodiversity sector can most effectively be supported with robust evidence. As well as supporting the NBSAP Strategic Objectives, evidence is

also needed to support a number of other sectorial priorities such as managing environmental risks, adapting to climate change and strengthening links across Africa. This Annual Research Science-Policy Interface Report is part of a pilot process to synthesize those evidence needs and communicate them widely across the sector.

The Director of Science-Policy Interface in the Biodiversity & Conservation Branch at DEA is responsible for monitoring progress against the implementation of the NBRES and updating it to make sure that it responds to the emerging priorities in government. This enables the sector's stakeholders to identify which evidence needs set out in the annual NBRES Implementation Plan have been met and where that evidence is located. This enables a more strategic approach to the evidence base for biodiversity and conservation policy.

Overall, in terms of the implementation of the NBRES the information below reports on the progress of each SO listed in the NBRES, as a best reflection of the research and evidence needs of the sector as reported by the participating stakeholders.

SO1: Management of biodiversity assets and their contribution to the economy, rural development, job creation and social well-being is initiated.

Biodiversity projects are an essential part of economic and rural development, in most instances rural communities benefit from projects related to biodiversity services within their communities. This can positively influence peoples' behaviour. Research conducted by the University of Pretoria through Professor Namrita Lall outlines that South Africa is very rich in biodiversity, and recommends that there is a need to use technology for innovation to ensure biodiversity's contribution to the economy. The findings of this study reveal that South Africa has evidence which shows that there are a lot of traditional medicines in use which has not made its way into the formal economy. The recommendation in this regard is that the government should support and ease the whole process of bioprospecting in order to enable local companies to create jobs for the local communities to sustain the social well-being of local livelihoods.

Under this SO the highlighted gap is a need for developing partners of choice and the involvement of communities in eradicating poverty and unemployment through using South African medicinal plants. Further research should focus on whether Biodiversity Economy (bioprospecting) actually benefits local people.

In rural communities Natural Resource Management (NRM) programs contribute to enhancing social well-being for people. The evidence is that NRM projects in rural communities of Mpumalanga have made investments in terms of job opportunities and improvement in ecosystem services. Ms Nokwanda Ngombane's research (from Mpumalanga province: Department of Economic Development, Environment and Tourism) indicated that the NRM projects in Mpumalanga have improved the lives of those reached by providing food security resulting in a better outlook on life. This evidence reaffirms that biodiversity management contributes to the economy and supports social well-being in rural communities.

SO 2: Investments in ecological infrastructure to enhance resilience and ensure benefits to society and the Biodiversity Economy

Preserving existing Ecological Infrastructure is significantly less expensive and reduces costs, Ecological Infrastructure has become useful for delivering water services to people that are not serviced by built infrastructure. The evidence gathered indicates that investing in Ecological Infrastructure to improve water security enables the government to provide water related services to people and also generates other services beyond water security e.g. job creation. In this SO the evidence gathered reiterates the importance of wetlands in improving regulation, provisioning and cultural benefits, including hydrological benefits such as improved water quality and biodiversity protection. Other gaps identified in this SO include the need to encourage partnerships between communities and industries, and that pre-assessments on suitable locations for plantation forestry should be conducted to aid growth in the industry. More attention should be focused on the issue of information/data ownership (especially with regards to Agri-industries).

SO3: Biodiversity considerations are mainstreamed into policies, strategies and practices of a range of sectors

Promoting sub-national and local assistance to mainstreaming biodiversity into policies can be critical to preserving biodiversity. Consequently there is a need for collaboration between various policy institutions. Under this SO there is a research project conducted by the Water Research Council (WRC) on protecting indigenous fish. Research and evidence from other countries shows that rotenone helps to kill alien fish without killing indigenous fish. The study highlighted that in South Africa there is a need for such a study for protecting South Africa's biodiversity and recognising that indigenous fish are vulnerable.

Furthermore, under this SO Prof Abernethy from the University of Pretoria outlined that there is less work done in terms of understanding the impacts of wildlife on the well-being of nearby communities through effects on livestock, environment and people. In this regard, the outcome of the study indicates a need for intensive collaboration on multidisciplinary

nary research to support multi-disciplinary and multi objective approaches in support of the NBRES.

The study on incorporating the economics of nature into South Africa transition to sustainability also highlighted that the legislation that is currently in place to protect the environment is sufficient in the country. However, South Africa is not performing well in terms of implementing sustainability principles, thus there is still a need for further research to improve stakeholder participation in sustainability efforts. In conclusion, the outcome of a study on the African soil microbiology project highlights that there is no comprehensive survey on the national soil microbiome in South Africa or anywhere in the world. Therefore the South African government should take a lead when investing in such studies.

SO 4: People are mobilised to adopt practices that sustain the long-term benefits of biodiversity and Biological Invasions

The management of biological invasions, and the outcome of a study conducted by SANBI (through Dr Zengeya) found that there is a need to undergo research and monitoring of invasive species in order to establish baselines.

Dr Rahlao representing SANBI, highlighted the outcomes of a research study which found that invasive islands need to be prioritised as there are alien invasive species that occur on land and on islands. Lastly, report-back on job creation, success and lessons learned should be reported to DEA, and there is a need to raise more awareness to bring the community into research and ultimately into decision making and subsequently build good management regimes.

SO 5: Conservation and management of biodiversity is improved through the development of an equitable and suitably skilled workforce

Little is known about the extent to which green skills can benefit households in terms of green jobs. Under this SO the outcomes of certain studies shows that biodiversity concepts are not well defined in the curriculum of basic education and that of higher and tertiary education and it creates problems for progression and foundational learning for biodiversity sector/content. The gap identified is that there is a need for future research to focus on how the curriculum and skills programs influence the management of biodiversity and the creation of green jobs.

Future Earth SDGs, Implementation of NDP sustainability transition through domestication of SDG12 on Sustainable Consumption and Production (SCP), SDG15 on life on land and SDG17 on means of implementation



Picture 3: One of the presenters in a breakaway session

This overall perspective emerged as part of the bigger Future Earth global SDGs Labs, and builds on findings from the VakaYiko project, SA-EU sustainability transition dialogue. The findings were also presented at an International Conference on Sustainability Science on 24-26 August 2017. Establishing linkages between the NDP priorities and the SDGs as they relate to the NBSAP strategic priorities is primarily important. The intention here is to establish alignment and create a common understanding of the SDGs 12, 15, 17 with the National Development Plan (NDP) as a way of enhancing South Africa's approach to the implementation and management of South Africa's sustainability transition actions.

The linkages between the NDP and SDGs, and inclusivity were identified as being key to domestication of the SDGs. The outcome was that partnerships between various sectors (private, research institution and Non-Profit Organisation) is one of the most important means of implementation. The gap identified in this regard is the lack of partnerships and corporation between clusters. There is a need to understand and unpack what “systemic” means. Some of the sector thinking on the concept “systemic”, bearing in mind that SDG17 has a theme focusing on addressing systemic issues include:

- Interaction of various groups and working together to ensure that the sustainability concept is achieved so that it becomes a complete system;
- Different approaches – a systemic approach aligns the approaches, working in a collaborative way, but prioritised together (agreed priorities for delivery and an agreed approach). Priorities come first, then the approach follows;
- Avoiding blue-sky projects, creates balance across all areas;
- Involvement of relevant role players, biodiversity is made up of various complexities with complex interrelationships;
- Taking all sectors into consideration, including local people and communities;
- Interlinkages and processes: implementation is part of the processes, so there is a need for indicators;
- Interconnectedness of different processes and partnerships: putting different systems and links together to achieve a common goal;
- Looking at the local space: to check the monitoring processes. Using ‘systematic’ as a tool to check progress;
- Inclusive approach is required to achieve a desired or set goal;
- Consolidate the efforts to understand how South Africa as a country is moving forward;
- Change systemic issues in terms of how society values and uses resources, so that there is overall societal understanding on what sustainable use means; and
- Systemic is also about the choices that need to be made, the behavioural issues that lock society into unsustainable behavioural practice.

3. OVERALL PERCEPTION ON THE IMPLEMENTATION OF THE NBRES

3.1. Biodiversity Economy



Picture 4: Delegates in a plenary session

The main debate around biodiversity economy is how the biodiversity economy is defined. This is because it is mainly defined based on a person’s background or work sector. There is a need to frame what biodiversity economy is and it should focus on one sector at a time. There are different meanings/definitions of biodiversity economy and this becomes an issue when discussing the biodiversity economy. When defining biodiversity economy there is a need to outline/consider the other activities around biodiversity economy i.e. wildlife transformation, economic and social benefits. In most instances discussions end up focusing on activities of game farming whilst ignoring funding programmes. Emerging

from the SDG lab target, shows that there are no measures on how we will measure progress and how to report on progress.

The questions in the strategic document are divorced/dissociated from the biodiversity NDP. There is a need to revise the questions asked in the NBRES. Long-term future should start looking at the small-scale biodiversity, this is completely diverse from the SDG lab, and there is a need to revisit the questions asked. In biodiversity economy there are other issues to be raised such as, bioprospecting permitting (Bioprospecting of Bio-economy), this requires a lot of money for maintenance and there are certain fees charged. In terms of bioprospecting in South Africa, government needs to coordinate its efforts on this issue to look at the communities and determine the beneficiaries in the community. Due to national biodiversity laws, local people do not have certificates to allow them to benefit economically, and international people benefit from South Africa's biological resources. Another issue is that the government focuses on giving people money and the biodiversity itself needs to support that, this harms our biodiversity.

The gap identified is a need to look at or research on socio-economic activities, and report back on how people and communities benefit from the biodiversity economy. There is a need to address economic issues on whether this benefits local people because most don't benefit people directly. Biodiversity economy should align with the Operation Phakisa Bio LAB. The biodiversity economy should also look at other sectors to increase the value of biodiversity. Other aspects to be revised in the biodiversity economy includes; to quantify the total value of protected areas in South Africa (value of protected areas), education value (biodiversity knowledge economy and long term monitoring through knowledge). In the future, biodiversity economy strategy should be revised so that it relates/links to the Operation Phakisa Bio Lab, this is because issues hindering the biodiversity economy is financial issues and the current legislative framework. The existing legislation governing biodiversity economy should be revised.

Some of the issues around biodiversity economy include the following;

- The national biodiversity laws affect local people. There is a need for evidence on whether the Biodiversity economy benefits local people (bioprospecting);
- The duplication of research being conducted: research is not communicated effectively resulting in duplication by other institutions on what is being studied. This is because there is lack of a research and evidence network to understand what others are doing;
- Sustainable use concept –there is a need to identify if sustainable use is always beneficial and what it really is;
- There are a lot of ideas on what needs to be done but we are not doing it (How do we address this);
- There is a poor understanding of what is the value of South Africa's biodiversity, there is a need to look at the different methods of managing the ecosystem and tools to manage biodiversity;
- Provinces should consider things like economy looking at their spatial development initiatives and how much skills are needed;
- We need to identify where the key species are and we need to have access to these species.

Questions that still need to be answered include the following;

- Why are we not doing the research? The scale of our resources are much bigger than our capacity (scale: time, money);
- How do we identify these evidence needs and the National Research Fund (NRF) funds, and what needs to be studied/funded in studies?
- Should there be more research on subsistence farming rather than one perception?
- How well does biodiversity economy align with the NDP (in relation to poverty alleviation, health, job creation)?
- How do we frame the biodiversity policy? We should look at whether it is for making money or protecting the biodiversity.
- Are alien species part of the economy?
- Are we asking the right questions in the NBRES document?

3.2. Rehabilitation and Restoration

- Research the impact and outcome of evaluation of the rehabilitation and restoration programmes.
- Socio-ecological outcomes imperatives achieved.

3.3. Species of Special Concern

- Review legislation on invasive to include bush encroachment.
- Monitoring of invasive and interaction.

3.4. Natural Capital

- Investigate the need for a natural capital policy.

3.5. Biosafety

- Research and evidence on activities that (e.g. Agricultural) may impact on biodiversity. These include Genetically Modified Organisms (GMOs), other products derived from synthetic biology and geo engineering tools.
- Future research on regulatory implications of new breeding techniques.

4. OVERALL PROVINCIAL PRIORITIES

The provinces highlighted that their overall priorities are as follows:-

4.1 Limpopo Province

- To establish a number of additional National Botanical Gardens (i.e. Thohoyandou Botanical Garden).
- Expansion and effective management of the conservation estate, 13.2% of land under conservation (15 000ha). Status-quo report on intentions to declare land and declared land.

4.2. Gauteng province

- To establish a number of additional biodiversity stewardship sites, 5 stewardship sites.

4.3. Mpumalanga Province

- Expansion and effective management of the conservation estate, 13.2% of land under conservation (25 000ha). Status-quo report on intentions to declare land and declared land.

4.4. Western Cape

- To establish a number of additional biodiversity stewardship sites, 5 stewardship sites are being proposed.

5. PROGRESS ON EVIDENCE NEEDS

This section highlights progress on research conducted to respond to the evidence needs for bridging the gaps between policy and decision making. This section aims to show the implementation of the NBRES.

Strategic Objective	Priorities to address the objective	In progress (1-2 years)	completed
	<p><i>Note</i></p> <ul style="list-style-type: none"> Financial resources are the major limitation. Skilled researchers in the field of bioinformatics and computational biology are also a scarce resource. Next Generation sequencing; molecular biology techniques. <p>UNIVERSITY OF JOHANNESBURG</p> <ul style="list-style-type: none"> University of Johannesburg ESPA programme: Co-producing demand-led evidence syntheses to inform policy-making - in progress, ending November 2017. UJ-ESPA provides a vast range of resources to conduct evidence syntheses of the impact of policies and management actions. We specialise in systematic reviews, rapid evidence assessments, and evidence maps to assess the overall impact of policies and decision-making in government. Besides conducting policy-relevant evidence synthesis we also offer capacity-building and mentoring to decision-makers on evidence synthesis. ✓ University of Johannesburg ESPA programme: Co-producing demand-led evidence syntheses to inform policy-making - in progress, ending November 2017. Engagement with stakeholders across Africa to determine their evidence synthesis needs on the topic of ecosystem services for poverty alleviation. We are funded to conduct two rapid evidence syntheses on the efficacy of biodiversity interventions: (1) A mixed-methods synthesis addressing the governance structures of ecosystem in protected areas in Southern Africa (SSA). This will produce synthesised evidence of what works, how and why, and for what cost. The final review report will be made public and developed into an open-access journal paper. A database of included, coded, and appraised studies will be made available to the funders. ✓ (2) A mixed-methods synthesis addressing the impact of marine resources management on poverty in SSA. This will produce synthesised evidence of what works, how and why, and for what cost. A database of included, coded, and appraised studies will be made available to the funders. <p><i>Note</i></p> <ul style="list-style-type: none"> We are funded for a year to develop a demand-led decision-making tool to model the effects of eco-system services policy decisions. We will require policy input and support in developing this tool. To continue offering this service to decision-makers, we would require that government partners commission us to co-produce evidence synthesis products. ✓ We required policy input in the development of both rapid evidence syntheses, and will require further support from decision-makers in sharing the syntheses with their colleagues. 		
	<p>EKURHULENI DISTRICT MUNICIPALITY</p> <ul style="list-style-type: none"> Development of a business case study for an Ingenious/Herbal Medicinal Nursery in Ekurhuleni. The study will only be initiated in the next few months. Any information in support of the initiative will be appreciated. ✓ Lakes and dams beautification as well as their utilisation. The study has already started. ✓ Development of alien invasive species management and monitoring plan. The study will be finalised in the next 24 months. <p><i>Note</i></p> <ul style="list-style-type: none"> Information on any case studies that have been done, Information on best practice available, Information on Community involvement, One official and limited budget (± R200 000). 		

Strategic Objective	Priorities to address the objective	In progress (1-2 years)	completed
	<p>SANBI</p> <ul style="list-style-type: none"> Demographic and genetic monitoring of threatened species. Long term trends in populations and genetic diversity. ✓ Mopane worm and ecological infrastructure project. Currently in first year of project. Quantifying the value of biodiversity in delivering natural food resource (mopane worm). Also, evaluate the benefit of active management. ✓ National status Report on Biological invasions. This report fulfils the regulatory requirement for the SANBI to submit a report on the status of biological invasions, and the effectiveness of control measures and regulations. Climate change experiments in Jonaskop in progress. Long term climate data for monitoring impacts of temperature and water availability on selected endemic species in Fynbos and Succulent Karoo vegetation. National Status Report on Biological Invasions (NSRBI). This aspect is looked at in NSRBI as part of effectiveness of control measures. ✓ <p><i>Notes</i></p> <ul style="list-style-type: none"> long-term funding for more advanced genetic monitoring to pick up any trends in diversity loss. The fine scale distribution of the mopane tree in Limpopo (ecological infrastructure that underpins habitat and food for mopane worm) needs to be mapped. R250 000 needed for remote sensing. SARChi funding of MSc project (bursary plus running expenses ~ R 250 000). The fine scale distribution of the mopane tree in Limpopo (ecological infrastructure that underpins habitat and food for mopane worm) needs to be mapped. R 250 000 needed for remote sensing. SARChi funding of MSc project (bursary plus running expenses ~ R 250 000). 		✓
	<ul style="list-style-type: none"> MTEF allocation 3.5 million annually. Sufficient funding to contribute to the existing collaboration with Stellenbosch University +/- R250 000 p.a. to cover equipment, & operations costs. Capacity to conduct research MTEF allocation 3.5 million annually. <p>DEA (BIOPROSPECTICE & BIOECONOMY)</p> <ul style="list-style-type: none"> Transformation of the sector (Biodiversity economy sector). Further research into protected species (sampling methods vs population). Distribution of indigenous biological resources of higher value. Further research on the occurrence and distribution of indigenous biological resources of higher value. Capacity building and skills development programme on sustainable harvesting of indigenous biological resources. Need for more capacity building and skills development programme. Viable method or model of land restitution with protected areas (PAs) and model of high biodiversity value. more research on viable methods on settlement of land claims within Pas. There is a challenge between political decision vs scientific information. There is a need for further research on the impact of Environmental Protection and Infrastructure Programmes (EPIP). <p><i>Note</i></p> <ul style="list-style-type: none"> Some species are at private reserves (need access to the reserves). 	✓	✓

Strategic Objective	Priorities to address the objective	In progress (1-2 years)	completed
	<p>WATER RESEARCH COMMISSION (WRC)</p> <ul style="list-style-type: none"> Control of alien and invasive fish. Piloting research in Rondegat, W/Cape. Monitoring the return of indigenous fish after river treatment with pesticide. Ramsar wetlands tourism value and biodiversity. Project completed, available at WRC. Data used to update Ramsar-IRIS report. Report available from WRC and will be shared with Ramsar anchor point, Edward Netshithothole, Biodiversity Control Officer Grade B at DEA. <p><i>Note</i></p> <ul style="list-style-type: none"> Funds to run a workshop on use of Rotenone and incorporation into policy. CAPE NATURE, SAIAB, FUNDED BY WRC, NRF. Budget to evaluate the eco-tourism potential of all Ramsar sites, with recommendations to enhance tourism. North West University research team. WRC funded. 		<p>✓</p> <p>✓</p>
	<p>Gauteng Department of Agriculture and Rural Development (GDARD)</p> <ul style="list-style-type: none"> Biodiversity Assessments (including veld condition assessments) on potential Biodiversity Stewardship sites - 7 assessments done since Aug 2015. Biodiversity Assessments done on Biodiversity Stewardship sites. Will only be pursued further should the site be declared. Biodiversity Stewardship - mainstreaming of biodiversity into the business processes of the GDARD and other external stakeholders e.g. municipalities. Existing 3 year partnership with the EWT coming to an end in July 2018. Successful implementation of the Biodiversity Stewardship programme Biodiversity Stewardship - Existing 3 year partnership with the Endangered Wildlife Trust (EWT) coming to an end in July 2018. Biodiversity Stewardship can contribute to mitigating for climate change. <p><i>Note</i></p> <ul style="list-style-type: none"> Budget for Biodiversity Stewardship implementation e.g. legal declaration costs and incentive support to existing Biodiversity Stewardship sites. Human resources, telephone and travel allowances. Budget for Biodiversity Stewardship implementation e.g. legal declaration costs and incentive support to existing Biodiversity Stewardship sites. Human resources, telephone and travel allowances. 	<p>✓</p>	
Strategic Objective 2. Investments in ecological infrastructure enhance resilience and ensure benefits to society			
<p>2</p> <p>2.1 Interventions to mitigate biodiversity loss are evaluated</p>	<p>Initiative and progress to date</p> <p>UNIVERSITY OF JOHANNESBURG</p> <ul style="list-style-type: none"> University of Johannesburg ESPA programme: Co-producing demand-led evidence syntheses to inform policy-making - in progress, ending Nov 2017. 	<p>✓</p>	

Strategic Objective	Priorities to address the objective	In progress (1-2 years)	completed
<p>2.2 The economic benefits of biodiversity infrastructure and interventions are understood</p>	<p>Evidence syntheses to determine what works, for who, and at what cost are based on a poll of decision-makers' policy priorities. We are funded to conduct two rapid evidence syntheses on the efficacy of biodiversity interventions: (1) a mixed-methods synthesis addressing the governance structures of ES in protected areas in SSA. This will produce synthesised evidence of what works, how and why, and for what cost. The final review report will be made public and developed into an open-access journal paper. A database of included, coded, and appraised studies will be made available to the funders. (2) A mixed-methods synthesis addressing the impact of marine resources management on poverty in SSA. This will produce synthesised evidence of what works, how and why, and for what cost. A database of included, coded, and appraised studies will be made available to the funders.</p> <p><i>Note</i></p> <ul style="list-style-type: none"> We required policy input in the development of both systematic reviews, and will require further support from decision-makers in sharing the syntheses with their colleagues. 		
	<p>SANBI</p> <ul style="list-style-type: none"> New project planned for 2018. Project plan in progress. ✓ Pollination and ecological infrastructure project: Scoping of project, to start in Jan 2018. The demand of crop pollination on the environment needs to be quantified. Will determine appropriate environmental policy at district or catchment scale. ✓ <p><i>Note</i></p> <ul style="list-style-type: none"> Application for external funding in progress, the project is subject to the approval of funding for it to happen in 2018. Capacity to conduct research. Funding for an economic analysis of alternative policies will enable more effective mainstreaming. Estimated at R250 000. <p>WATER RESEARCH COMMISSION</p> <ul style="list-style-type: none"> The evaluation of services provided by healthy ecological infrastructure. Report completed, available at WRC website. <p><i>Notes</i></p> <ul style="list-style-type: none"> Incorporation of true value of ecological infrastructure into Water Pricing. Need R500 000. Researchers and funding by WRC, COALTECH. <p>GDARD</p> <ul style="list-style-type: none"> Biodiversity Stewardship can contribute to unlocking the benefits of biodiversity infrastructure <p><i>Note</i></p> <ul style="list-style-type: none"> Budget for Biodiversity Stewardship implementation e.g. legal declaration costs and incentive support to existing Biodiversity Stewardship sites. 	<p>✓</p> <p>✓</p>	<p>✓</p>

Strategic Objective	Priorities to address the objective	In progress (1-2 years)	completed
Strategic Objective 3. Biodiversity considerations are mainstreamed into policies, strategies and practices of a range of sectors			
<p>3.</p> <p>3.1 Research into land use for long-term sustainability (in other sectors) is conducted</p> <p>3.2 Opportunities for main-streaming biodiversity considerations into other sectors are identified and understood</p> <p>3.3 The extent and nature of cross-sectoral impacts on habitat loss and habitat fragmentation is understood</p> <p>3.4 Pollinators and pollination associated with food production</p> <p>3.5 Communication of information for everyone concerned; public and scientists.</p>	<p>Initiative and progress to date</p> <p>CHUMA BANJI (INDIVIDUAL)</p> <ul style="list-style-type: none"> • Bridging science and action: learning from the 13 years of conservation planning in South Africa. One third of the work is done. Enabling interactions, collaborations and sharing of information between scientists and practitioners. <p><i>Note</i></p> <ul style="list-style-type: none"> • Need funding to continue with the project. <p>UNIVERSITY OF PRETORIA</p> <ul style="list-style-type: none"> • Investigating the changes in soil microbial diversity resulting from land use change (arable agriculture). Virtually nothing is known about the impacts of land use on soil microbiology. • Understanding South African microbial diversity, and the uniqueness (or otherwise) of the national microbial genetic resource. Virtually nothing is known about the true diversity of South African microbiological resources. 	<p>✓</p> <p>✓</p>	
	<p><i>Note</i></p> <ul style="list-style-type: none"> • Financial resources are the major limitation. Skilled researchers in the field of bioinformatics and computational biology are also a scarce resource. Next Generation sequencing; molecular biology techniques. <p>SANBI</p> <ul style="list-style-type: none"> • Interaction between selected biodiversity pressures (alien plant invasive, land degradation and climate change variability) at Masebe Nature Reserve in Waterberg Biosphere Reserve, in Limpopo. MSc project in progress. <p><i>Note</i></p> <ul style="list-style-type: none"> • A full bursary of R105 000 p.a. is required for a student to produce results within a two MSc prescribed period. Partial funding for MSc student covering only tuition fees. <p>WATER RESEARCH COMMISSION</p> <ul style="list-style-type: none"> • Buffer zone determination guidelines for wetlands, estuaries and rivers. Project completed, available from WRC. The guidelines are incorporated into environmental impact assessment (EIA) and license applications by the Department of Water and Sanitation (DWS). DEA needs to consider utilizing the buffer zones in EIA relevant processes. <p><i>Note</i></p> <ul style="list-style-type: none"> • The buffer zone that incorporates groundwater. R500 000, needed. Researchers, fully funded by WRC. <p>GDARD</p> <ul style="list-style-type: none"> • Biodiversity Stewardship contributes to securing appropriate land uses for long-term sustainability. • Biodiversity Stewardship demonstrates to what extent other sectors are contributing to biodiversity loss e.g. agriculture. • Biodiversity Stewardship has the potential of securing ecosystems across boundaries. <p><i>Note</i></p> <ul style="list-style-type: none"> • Budget for Biodiversity Stewardship implementation e.g. legal declaration costs and incentive support to existing Biodiversity Stewardship sites. Human resources, telephone and travel allowances. 	<p>✓</p>	<p>✓</p>

Strategic Objective	Priorities to address the objective	In progress (1-2 years)	completed
Strategic Objective 4. People are mobilised to adopt practices that sustain the long-term benefits of biodiversity			
<p>4.</p> <p>4.1 Evidence on the impact of specific regulations used to inform policy and management decisions</p> <p>4.2 Effective management strategies for selected invasive alien species are developed, implemented and assessed</p>	<p>Initiative and progress to date</p> <p>UNIVERSITY OF PRETORIA</p> <ul style="list-style-type: none"> University of Johannesburg ESPA programme: Co-producing demand-led evidence syntheses to inform policy-making - in progress, ending November 2017. Protected areas synthesis was identified as one of three priority questions in a poll available to African decision-makers. UJ-ESPA is externally funded. We have access to evidence synthesis tools including systematic review resources (e.g. coding tools; critical appraisal tools), systematic review software, and extensive training materials on systematic reviews and evidence synthesis. We also have four full time staff that specialise in evidence synthesis in the environmental sector. In addition, we have extensive resources on evidence-informed decision-making. This includes an online database on evidence-informed decision making EIDM capacity-building tools; training courses on EIDM in the public sector; and EIDM tools such as M&E guidance and evidence use protocols and toolkits. UJ-ESPA also provides mentoring (individual and team) on EIDM either through our own staff or through linking up mentee with mentors of their choice or from our own database of EIDM mentors. Lastly, UJ-ESPA works closely with the Africa Evidence Network, a network of over 1000 decision-makers and researchers interested in EIDM on the continent. <p><i>Note</i></p> <ul style="list-style-type: none"> We would require willing and able decision-maker colleagues to visit our workplace and participate in some steps for a review, should this learning opportunity be useful for colleagues. <p>SANBI</p> <ul style="list-style-type: none"> National Status Report on Biological Invasions (NSRBI). This aspect is looked at in NSRBI as part of pathway regulations. ✓ National Status Report on Biological Invasions (NSRBI). This aspect is looked at in NSRBI as part of status of alien species ✓ National Status Report on Biological Invasions (NSRBI). This aspect is looked at in NSRBI as part of the effectiveness of control measures and regulations ✓ National Status Report on Biological Invasions (NSRBI). This aspect is looked at in NSRBI as part of the effectiveness of control measures ✓ Generating evidence to inform the management of invasive wasp species. To determine appropriateness of current listing of two species and resulting management strategies required. ✓ <p><i>Note</i></p> <ul style="list-style-type: none"> MTEF allocation 3.5 million annually. Economic analysis of the cost of invasion and estimated savings of different management strategies. Estimated R 300 000 needed. Potential funding for 1 MSc study (~ R 400 000 over 2 years). <p>WATER RESEARCH COMMISSION</p> <ul style="list-style-type: none"> Control of alien and invasive fish. Piloting research in Rondegat, W/Cape. Monitoring the return of indigenous fish after river treatment with pesticide. ✓ <p><i>Note</i></p> <ul style="list-style-type: none"> Funds to run a workshop on use of Rotenone and incorporation into policy. CAPE NATURE, SAIAB, FUNDED BY WRC, NRF. 		

Strategic Objective	Priorities to address the objective	In progress (1-2 years)	completed
Strategic Objective 5. Conservation and management of biodiversity is improved through the development of an equitable and suitably skilled workforce			
5. 5.1. A national assessment is conducted of the staff capacity and availability of resources to contribute adequately to sound, realistic and scientific decision making.	Initiative and progress to date WORLD WILDLIFE FUND <ul style="list-style-type: none"> Green skills assessment, to understand the nature and scope of skills for improved environmental and conservation management. Assessment of conservation skills completed to date, contexts of water, agriculture, marine, energy and food, still to be explored. Analysing the potential for new, emerging and latent jobs in the transition to a Green Economy. 	 ✓ ✓	 ✓
	<i>Note</i> <ul style="list-style-type: none"> An initial donor funded project for 1 year, funding a Green Skills Researcher position, and operational budget - Total: R450, 000. Two year project funding of Green Skills Researcher and operational budget, Totalling R991, 000. Initial catalyst funding of R1, 7m. Four year project funding to expand the scope of research - R3, 5m. 		

6. MEDIUM-LONG TERM EVIDENCE NEEDS

This section identifies the existing gaps in research to inform decision making, these are set out in the table below, and expanded on in the rest of this section. Table 2 below sets out the long foundational needs for evidence in the sector, and indicates what needs to be done, these needs must be addressed as part of the NBRES In many cases these will need to be built and maintained over time, as long-term datasets or evidence that needs to be regularly updated.

Table 2: Medium-to-long-term priorities for evidence - effective knowledge foundations, including indigenous knowledge and citizen science, support management, conservation, monitoring and sustainable use of biodiversity

Strategic Objective	Urgency of the evidence needs		Priorities to address the objectives
	2-5 years	6-10 years	
Objective 1. Foundational information on South Africa's biodiversity, including information from indigenous knowledge, is available to enable planning and management of biodiversity and ecosystem services and to facilitate monitoring and evaluation of targets.	✓ ✓		UNIVERSITY OF JOHANNESBURG <ul style="list-style-type: none"> University of Johannesburg ESPA programme: Co-producing demand-led evidence syntheses to inform policy-making - in progress, ending Nov 2017 includes indigenous knowledge systems filter. DEA (DIRECTORATE: BIOPROSPECTIVE & BIOECONOMY) <ul style="list-style-type: none"> Fragmented compound library in South African institutions e.g. CSIR, SANBI. There is a need for a National Nature bank.
Objective 2. Knowledge and evidence are available, and tools and models are developed, to support planning and management to reduce the rate of loss of biodiversity and maintain the ecological infrastructure required to deliver goods and services	✓ ✓		UNIVERSITY OF JOHANNESBURG <ul style="list-style-type: none"> University of Johannesburg ESPA programme: Co-producing demand-led evidence syntheses to inform policy-making - in progress, ending November 2017. Interactive evidence interface modelled on Department of Performance Management and Evaluation's (DPME) evidence mapping approach. SANBI <ul style="list-style-type: none"> A study mapping ecological infrastructure and its associated ecosystem services in Duiwenhoks catchment in progress. Peer review paper in preparation. Part-time PhD. 1 fully funded MSc student at R105 000 p.a. and operation budget to conduct field work up to R100 000.

Strategic Objective	Urgency of the evidence needs		Priorities to address the objectives
	2-5 years	6-10 years	
<p>Objective 3. Knowledge of the contribution of biodiversity to economic development and human wellbeing provides specific and quantified evidence to make the case for biodiversity at a policy level, guide decision making, and promote the mainstreaming of biodiversity in key economic sectors with a high impact on biodiversity.</p>	✓		<p>UNIVERSITY OF JOHANNESBURG</p> <ul style="list-style-type: none"> University of Johannesburg ESPA programme: Co-producing demand-led evidence syntheses to inform policy-making - in progress, ending Nov 2017 (see above)
<p>Objective 4. Mechanisms are in place that provide a bridge between knowledge generation, policy formulation and decision making resulting in a relevant and accessible evidence base for environmental decision making.</p>	✓		<p>UNIVERSITY OF JOHANNESBURG</p> <ul style="list-style-type: none"> The framework, evidence map, and rapid evidence assessments development have all been shaped by decision-maker input: the whole purpose of this project is to provide an accessible evidence base that is relevant because it is shaped around the needs of decision makers. <p>DEA (DIRECTORATE: BIOPROSPECTIVE & BIOECONOMY)</p> <ul style="list-style-type: none"> There is a need to have a national nature bank, to ensure collective biodiversity management. Wholly.

7. BRIDGING INTO POLICY AND DECISION MAKING

An evidence based approach to policy and decision making is still in its infancy resulting in challenges to achieving the objectives in the context of NBRES. This is an age old issue where scientists feel that they are not recognised despite their contributions to the decision making and policy development process. On the other hand policy and decision makers are still of the view that scientist do not speak their language and often far from the reality and coal face of the challenges on the ground. However the interface between science and policy provides an interesting and beneficial platform for scientists and policy makers to interact and improve this burgeoning relationship. However, this relationship needs nurturing in order to sustain the current momentum.

The DEA, guided by the Department of Performance Management and Evaluation (DPME) and supported by the Department of Science and Technology (DST) is committed to strengthening the science policy interface such that the DEA has internalised an objective in its I strategy map of the organisation. This commitment is further extended to a process of amending the legislation in order to create a more enabling environment to bridge into policy and decision making.

In this regard, the Minister of Environmental Affairs introduced the National Environmental Management Laws Amendment Bill, 2017 (the Bill) in Parliament during April 2017. The purpose of the Bill is to amend certain provisions under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPAA); the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA); the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEMAQA); the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) (ICM Act); the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA), and the National Environmental Management Amendment Act, 2008 (Act No. 62 of 2008) (NEMAA).

The main purpose of the Bill is to provide for clarity on certain matters and textual amendments. The proposed amendments also provide clarity that the MECs responsible for environmental affairs must follow the consultation process set out in sections 99 and 100 of the NEMBA before exercising a power in terms of a provision under the NEMBA. This whole process of amending the environmental management laws enables the government to synergise and align legislation such that it becomes more enabling and less prohibitive.

The DPME's imperative on national Departments to set up research sections to enhance the evidence policy agenda is a further indication that South Africa is moving in a direction where the governance structures are underpinned by a strong resource and evidence based governance in the public sector. The DEA's legislative framework for the establishment and functioning of entities such as the South African National Biodiversity Institute, SanPARKs, Isimangaliso Wetlands Park and now the South African Waste Bureau places the DEA in the forefront for the science evidence governance agenda. Such institutional arrangements are moving South Africa progressively towards a strengthened science policy regime.

The DEA's Biodiversity and Conservation Branch has set up the Directorate: Science Policy Interface (the Directorate) in response to international obligations. The Directorate is in existence since 2013 and has the mandate through the NBRES to coordinate research and align this research to the evidence needs of the biodiversity sector.

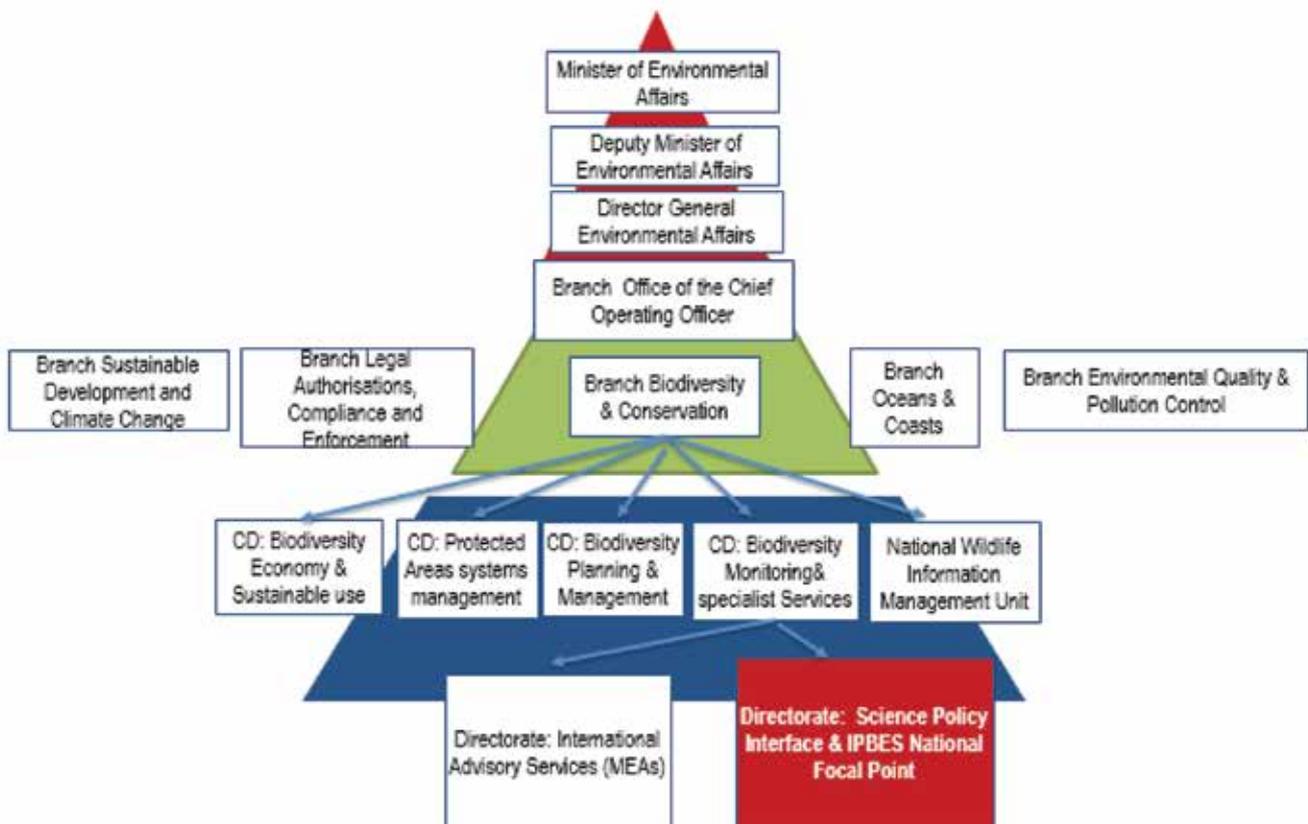


Figure 2: Organogram of the DEA situating the Science Policy Interface

The Directorate is further mandated to convene the Annual Biodiversity Research and Evidence Indaba (the Annual Indaba) which is a platform that brings together scientists and policy and decision makers from within and across the sector to dialogue and deliberate the barriers and opportunities of the science fraternity and the policy environment. The Annual Indaba is further utilised as a key mechanism to monitor and report on the implementation of the National Biodiversity Research and Evidence Strategy for the period 2015 to 2025. Key stakeholders and lead agents identified in the NBRES are expected to participate in the Annual Indaba and report on their research and evidence initiatives. In addition key agents from both the policy and scientific sectors are required to communicate their priority research and evidence needs in the short, medium and long term, thereby updating the Implementation Plan of the NBRES on an annual basis. The Directorate also convenes science policy round tables on priority areas that bring together experts, regulators and other key interested and affected stakeholders.

Human Capital is always a challenge and hence the DEA has established formal collaborative partnerships with academia and other research entities to serve as the research arms of government. Memorandums of Understandings (MoUs) are used as mechanisms for the collaboration on areas of mutual interest. To date, the DEA has existing MoUs with the Nelson Mandela University, the University of Johannesburg and the University of Pretoria. The DEA is in the process of signing an MoU with the University of Witwatersrand. The DEA is expected to finalise the historic first science policy scientific assessment on predation management in South Africa developed by the University of Nelson Mandela under the auspices of the MoU. The DEA is also very pro-active when it comes to expediting the transformation agenda and is in the process of establishing formal agreements with previously disadvantaged Universities in South Africa.

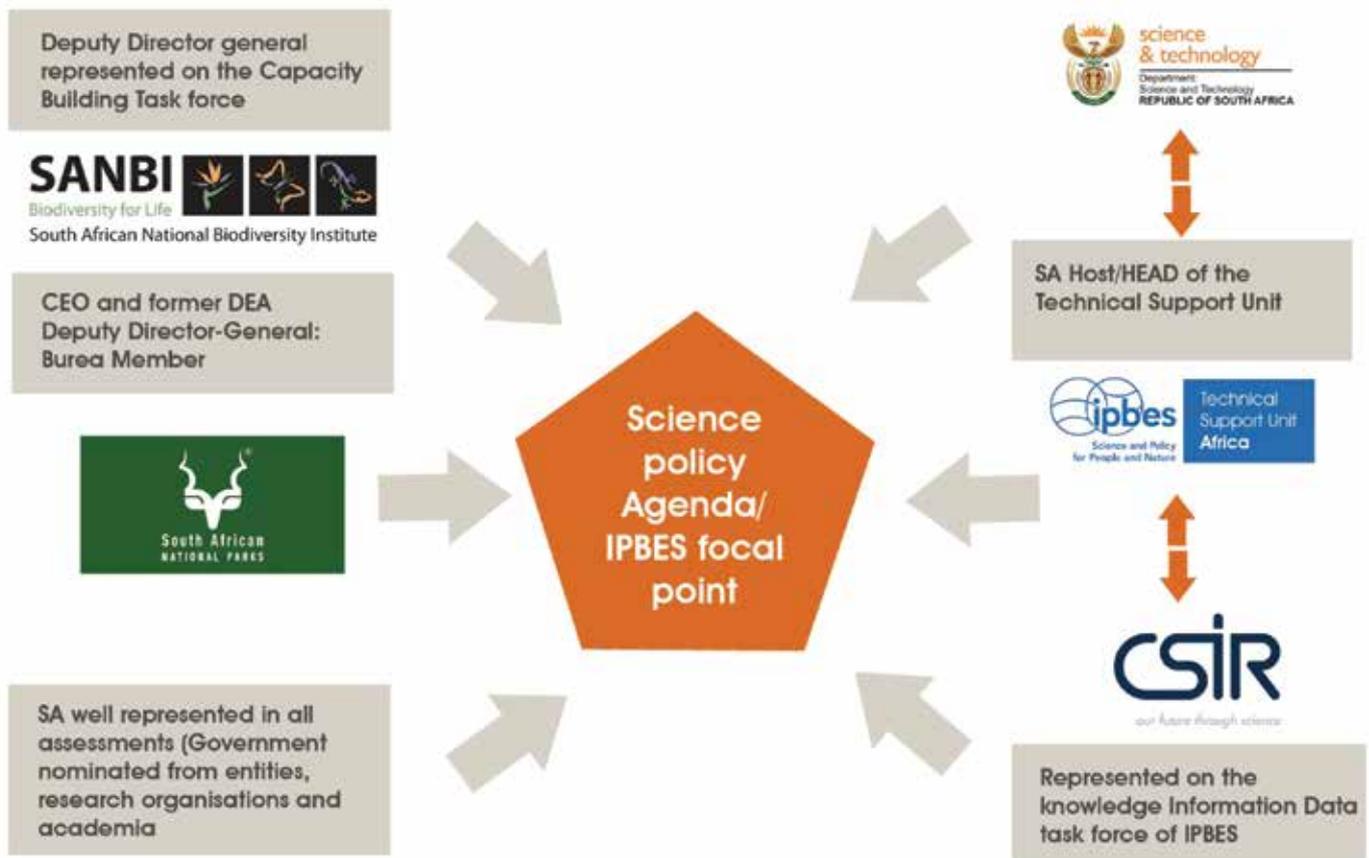


Figure 3: Supporting national structures and champions for the Science Policy Interface.

The Directorate Science Policy Interface is also the focal point for the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). Globally, the science policy agenda has gained momentum with the establishment of IPBES in 2012, followed by further discussions at the United Nations Environment assembly and other multilateral environmental platforms. In April 2012, the Parties adopted a Resolution to establish the IPBES, as an independent intergovernmental body open to all member countries of the United Nations, at a plenary session held in Panama. The members committed to building IPBES as the leading intergovernmental body for assessing the state of the planet's biodiversity, its ecosystems and the essential services they provide to society.

IPBES provides a mechanism recognized by both the scientific and policy communities to synthesize, review, assess and critically evaluate relevant information and knowledge generated worldwide by governments, academia, scientific organizations, non-governmental organizations and indigenous communities. This involves a credible group of experts in conducting assessments of such information and knowledge in a transparent way. IPBES is unique in that it aims to strengthen capacity for the effective use of science in decision-making at all levels, it also aims to address the needs of Multilateral Environmental Agreements that are related to biodiversity and ecosystem services, and build on existing processes ensuring interaction and complementarities with the respective work programs. South Africa has a long and proud history of scientific and policy advances in the area of biodiversity and ecosystems.

More recently the work done by IPBES has begun to show how important biodiversity and ecosystems are in supporting social development, service delivery and economic prosperity, and preparing for climate change; forming an essential component of long term sustainability, security and equity for the country. South Africa has supported the establishment of the IPBES and is an active pioneer member and a host country of the IPBES Technical Support Unit (TSU) for the African regional assessment, administered by the Council for Scientific and Industrial Research (CSIR). The DEA believes that it is this contribution both nationally and globally that led to Mr Fundisile Mketeni, former Deputy-Director General for Biodiversity and Conservation and now CEO of SANParks, to be initially appointed to the Bureau of IPBES.

South Africa contributed significantly to the development of the IPBES work programme and its implementation through the support of 14 experts to the various task forces, working groups and science committees convened to date. South Africa continuously contributes to the IPBES plenary sessions where important decisions are taken, through its competent delegation, coordinated through the Directorate: Science Policy Interface.

The IPBES is nearing its completion of its first work program which ran from 2014 to 2018. Numerous science policy tools have been produced and are accessible via the IPBES website (www.IPBES.net). One important outcome for South Africa having played an instrumental role in its development is the African Regional Assessment and its accompanying summary for policymakers. The overall scope of the Regional Assessments is to assess the status and trends regarding biodiversity, ecosystem functions and ecosystem services and their inter-linkages, the impact of biodiversity, ecosystem functions and ecosystem services and threats to them on the quality of life. The assessments intended to address terrestrial, freshwater, coastal and marine biodiversity, ecosystem functions and ecosystem services. The overall objective of the regional assessments is to strengthen the science-policy interface on biodiversity, ecosystem functions and ecosystem services at the regional and sub-regional level.

'Hot Topics' in the IPBES Assessment Report for Africa include:

- Trade-offs in the water-energy-food nexus;
- How and why biodiversity and nature's contributions to people are changing in Africa;
- Future scenarios and their implications for achieving Africa's targets; and
- Options for effective governance.

The accompanying Summary for policy makers is a key document as an outcome of the African Regional Assessment. It is one of the few science policy tools that are available to assist and guide decision and policy makers to formulate and make decisions on biodiversity and ecosystem services. The IPBES' motto is that it aims to provide policy relevant and not policy prescriptive tools and mechanisms. In addition, co-determination amongst policy makers and scientists is a fundamental requirement to ensure adequate uptake and use of the assessment and summary for policy makers.

IPBES has reached its 6th plenary session where the review of the platform will inform the science policy agenda going forward.

8. CONCLUSION

The science policy agenda which aims to bridge the gap between scientists and policymakers is not an easy task. Globally through experiences of the Intergovernmental Panel on Climate Change (IPCC) and now the IPBES for biodiversity shows that despite our challenges, the global champions of this agenda have made great strides in strengthening the relationship between scientists and policymakers.

Likewise South Africa has taken the lead to position itself both globally and regionally to further strengthen the science policy agenda. Nationally, we have also made significant progress. Having convened the 2nd Annual Biodiversity Research and Evidence Indaba, which increased from 99 participants in 2016 to 150 delegates in 2017, it is evident that there is growing interest in this very important agenda. Indeed there are challenges with delegates representing the various organisations, having difficulty to report and prioritise their research and evidence needs. However, with time organisations and the key lead agents of the NBRES, would be able to communicate their top three evidence needs in the short, medium and long term. It is therefore envisaged with each passing year of the period 2015 to 2025, that more stakeholders adequately representative of the science policy agenda will participate in the Annual Indaba to inform the implementation of the NBRES effectively.

ANNEXURE A: ATTENDANCE REGISTER

ATTENDANCE LIST ANNUAL BIODIVERSITY RESEARCH & EVIDENCE INDABA 2017		
NO	NAME	ORGANISATION/INSTITUTION
1	Adolf Rochelle	Gauteng Provincial Government (GPHEALTH)
2	Angwenyi Fhumulani	Department of Environmental Affairs
3	Anna Mampye	Department of Environmental Affairs
4	Asivhanzhi Makhale	Department of Environmental Affairs
5	B Mzamo	Department of Economic Development, Environmental Affairs and Tourism
6	Barney Kgope	Department of Environmental Affairs
7	Betty Maimela	Department of Environmental Affairs
8	Bob Scholes	WITS University

ATTENDANCE LIST ANNUAL BIODIVERSITY RESEARCH & EVIDENCE INDABA 2017

NO	NAME	ORGANISATION/INSTITUTION
9	Bonani Madikizela	Water Research Council
10	Bono Nemukula	Ekurhuleni District
11	Boyern Maleka	Department of Environmental Affairs
12	Carina Van Rooyen	Africa Centre for Evidence, UJ
13	Cecilia Njenga	United Nations Environment Programme
14	Chuma Banji Chinzila	University of Kwazulu-Natal
15	Clement Nchabeleng	Department of Environmental Affairs
16	Constance Madibana	Department of Environmental Affairs
17	Darrell Abernethy	University of Pretoria
18	David Pulse	Department of Environment and Nature Conservation: NC
19	David Sadd	The Guild
20	Dirk Kotze	Grounded Partners
21	Don Cowan	University of Pretoria
22	Dudu Ngidi	Indalo Environmental
23	Duigan Patrick	Gauteng Department of Agriculture and Rural Development
24	Dumalisile Lihle	Gauteng Department of Agriculture and Rural Development
25	Dumisani Buthelezi	Department of Environmental Affairs
26	Dumisani Mthembu	Department of Science and Technology
27	Eddy Tshabalala	Sedibeng District Municipality
28	Eleanor Van Den Berg-Mcgregor	Gauteng Department of Agriculture and Rural Development
29	Elize Lourens	DoL HQ
30	Elsabeth Van Der Merwe	Ekurhuleni Metropolitan Municipality (Edenvale)
31	Eskteem Lameez	WWF
32	Estelle du Toit	West Rand District Municipality
33	Eureta Rosenberg	Rhodes University
34	Fahiema Daniels	SANBI
35	Farai Tererai	Department of Environmental Affairs
36	Fhumulani Malume	Department of Environmental Affairs
37	Fulufhelo Mukhadi	SANBI
38	Gary Newman	The Guild (TGC)
39	Gcinani Ndaba	Department of Environmental Affairs
40	Gertrude Matsebe	Department of Environmental Affairs
41	Gladys Mahlangu	Rand West City Local Municipality
42	Gladys Serwaa Adusah	ECA SARD
43	Glenda Raven	WWF
44	Grace Matseba	South African Local Government Association
45	Harriet Davies-Mostert	Endangered Wildlife Trust
46	Harry Swart	Grounded Partners
47	Harsha Dayal	Department of PME
48	Ian Rushworth	KZNWILDLIFE
49	Is'haaq Akon	City of Ekurhuleni
50	Islay-Jane Linde	Kumba Anglo

ATTENDANCE LIST ANNUAL BIODIVERSITY RESEARCH & EVIDENCE INDABA 2017

NO	NAME	ORGANISATION/INSTITUTION
51	Jafta Nolusindiso	IWRMS
52	Janavi Da Silva	GreenMatter
53	Janeet Penokoane	Sedibeng District Municipality
54	Janice Golding	United Nations Development Programme (UNDP)
55	Joe Molete	Mazoza Entertainment
56	Johan Bester	Department of Agriculture, Forestry and Fisheries
57	John Donaldson	SANBI
58	John Eksteen	Mpumalanga Tourism and Parks Agency
59	John Power	North West Provincial Government
60	Jonathan Booth	Bird Life South Africa
61	Joy Kgolane	Ekurhuleni District
62	Karabo Malakala	Department of Environmental Affairs
63	Keetso Malapane	Ekurhuleni District
64	Kgoale Mphahlele	Department of Science and Technology
65	Khorommbi Matibe	Department of Environmental Affairs
66	Khuthadzo Mahamba	Department of Environmental Affairs
67	Kiruben Naicker	Department of Environmental Affairs
68	Kiviet Khosi	Department of Environmental Affairs
69	Kogilam Govender	Department of Science and Technology
70	Kristal Maze	SANBI
71	Laurence Langer	African Centre for Evidence, UJ
72	Lebshang	Department of Environmental Affairs
73	Liewellyn Foxcraft	SANParks
74	Lihle Dumalisile	Gauteng Department of Agriculture and Rural Development
75	Lindiwe Motsweni	Department of Environmental Affairs
76	Lorren Haywood	CSIR
77	Louise Shaxon	Overseas Development Institute
78	Lucky Mamanyuha	Limpopo Agriculture
79	Lufuno Ndlovu	Department of Environmental Affairs
80	Luzuko Dali	Department of Economic Development, Environmental Affairs and Tourism
81	Lwanda Matiso	Department of Environmental Affairs
82	Magamase Mange	Department of Environmental Affairs
83	Mahuma Ramashala	Department of Environmental Affairs
84	Makganthe Maleka	Department of Environmental Affairs
85	Malefane Siyabonga Dlulisa	Department of Environmental Affairs
86	Mandy Driver	SANBI
87	Mapula Tshangela	Department of Environmental Affairs
88	Maria Paul	Department of Environmental Affairs
89	Martie Milne	KZN Government
90	Matshidiso Mokhatla	Department of Environmental Affairs
91	Mbulelo Dopolo	Department of Environmental Affairs
92	Michael Braack	Department of Environmental Affairs

ATTENDANCE LIST ANNUAL BIODIVERSITY RESEARCH & EVIDENCE INDABA 2017

NO	NAME	ORGANISATION/INSTITUTION
93	Michele Walters	CSIR
94	Michelle Greve	University of Pretoria
95	Millicent Makoala	Department of Environmental Affairs
96	Mosima Mashala	Limpopo Department of Economic Development, Environment and Tourism
97	Mukundi Masithi	Department of Planning, Monitoring and Evaluation
98	N Musetsho	Limpopo Department of Economic Development, Environment and Tourism
99	Naledi Hlatshwayo	Department of Environmental Affairs
100	Naledi Sobantu	Grounded Partners
101	Namrital Lall	University of Pretoria
102	Natalie Hausman	University of Pretoria
103	Natalie Tannous	African Centre for Evidence, UJ
104	Ndivhudza Nengovhela	GDARD
105	Ndivhudza Nenngwekhulu	The Innovation Hub
106	Neggie Bakwunye	Gauteng Department of Agriculture and Rural Development
107	Nhlanhla Sithole	Department of Environmental Affairs
108	Nigel Barker	University of Pretoria
109	Nikki Funke	CSIR
110	Nkoana Mashadi	Department of Environmental Affairs
111	Nokwanda Ngobane	DEA – NRMP
112	Nonhlanhla Mkhize	Department of Science and Technology
113	Nonkanyiso Ntabeni	Department of Environmental Affairs
114	Nontutuzelo Gola	SANBI
115	Nosiseko Mtati	Rhodes University
116	Ntakadzeni Tshidada	Department of Environmental Affairs
117	Ntando Mkhize	Department of Environmental Affairs
118	Nthupula Rapetsoa	RANDWEST CITY
119	Onesimo Notobela	Department of Environmental Affairs
120	OZ Bantu	Grounded Partners
121	Pamela Nxumalo	Department of Environmental Affairs
122	Paxie Chirwa	University of Pretoria
123	PC Zietsman	Botany Department National Museum
124	Peter Taylor	University of Venda
125	Phumudzo Thivhafuni	Limpopo Department of Economic Development, Environment and Tourism
126	Portia Khumalo	Department of Agriculture, Forestry and Fisheries
127	Ray Schaller	North West Provincial Government
128	Robyn Phillips	GIBB
129	Sabastian Adams	Department of Environmental Affairs
130	Saria Gladys Mahlangu	Rand West City Local Municipality
131	Sebataolo Rahlao	SANBI
132	Shafeeqah Goslam Hoosen	Department of Environmental Affairs
133	Shakespear Mudombi	Trade & Industrial Policy Strategies
134	Shanu Misser	Fundisa for Change

ATTENDANCE LIST ANNUAL BIODIVERSITY RESEARCH & EVIDENCE INDABA 2017

NO	NAME	ORGANISATION/INSTITUTION
135	Sibongisile Ndaba	Ekurhuleni District
136	Simone Smit	WITS University
137	Siphamandla Sikhosana	Department of Environmental Affairs
138	Sipho Mabuza	Department of Environmental Affairs
139	Sisanda Nkwentsha	Department of Environmental Affairs
140	Slisa Stoffernberg	West Rand District Municipality
141	Sonwabile Nkondeshe	Department of Environmental Affairs
142	Struan Robertson	Trade & Industrial Policy Strategies
143	Thato Mogapi	Department of Environmental Affairs
144	Thulani Peter Makhalanyane	University of Pretoria
145	Tinyiko Malungani	Limpopo Department of Economic Development, Environment and Tourism
146	Tlou Masehela	SANBI
147	Trevor Mphahlele	Limpopo Department of Economic Development, Environment and Tourism
148	Tsungai Zenganya	SANBI
149	Vukosi Baloyi	Department of Agriculture, Forestry and Fisheries
150	Wadzi Mandivenyi	Department of Environmental Affairs
151	Yemi Sanni	United Nations Environment Programme
152	Yvonne Erasmus	Africa Centre for Institute, UJ
153	Zamaswazi Nkuna	Department of Environmental Affairs

ANNEXURE B: AGENDA FOR THE INDABA

BIODIVERSITY RESEARCH AND EVIDENCE INDABA AGENDA

TIME AND DATE	08:30 – 16:30, Thursday and Friday, 17 – 18 August 2017
VENUE:	Birchwood Hotel Conference Centre.
PURPOSE:	<p>Polymakers, researchers, practitioners and civil society representatives to dialogue and report on progress on research and evidence needs and priorities of the National Biodiversity Research and Evidence Strategy, whilst identifying and strengthening interventions of scientific evidence to influence decision and policy making. The 2017 Indaba is hosted as part of the build up from the South Africa-European Union policy dialogue and Future Earth Sustainable Development Goals (SDGs) Lab on implementing the South African National Development Plan's sustainability transitions through the domestication of the SDGs 12, 15 and 17</p>
BACKGROUND:	<p>The Department of Environmental Affairs is committed to strengthen the knowledge, science and policy interface. This commitment is guided by the Environment Sector Research, Development and Evidence framework approved by Minister and Members of Executive Council (MINMEC) in June 2012. This framework provides for the development of sector thematic evidence strategies and plans as identified in the framework which includes: Sustainable Development & the Green Economy; Biodiversity, Climate Change; Air Quality; Oceans & Coasts; Chemicals & Waste; Impact Management and Compliance & Enforcement. As such, in line with the National Biodiversity Strategy and Action Plan (NBSAP), the Minister approved the National Biodiversity Research and Evidence Strategy (NBRES) and its Implementation Plan in 2015. An inclusive process for annual updating of the Implementation Plan for the Strategy was facilitated in 2016 as part of the VakaYiko evidence-policy interface project. To this effect, the Department of Environmental Affairs hosted the inaugural National Biodiversity Research and Evidence Indaba on the 10th to the 11th of August 2016. The 2017 Indaba is hosted in partnerships including with the Departments of Science and Technology, Planning Monitoring and Evaluation, the Africa Centre for Evidence (ACE) at the University of Johannesburg, and the University of Pretoria.</p>



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Environmental Affairs
REPUBLIC OF SOUTH AFRICA



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Day 1

Item	Time	Topic	Speaker
	08:30 – 09:00	Registration	All
Overview engagement on the science evidence- policy agenda This session aims to introduce the sectors commitments to the science and evidence informed policy	09:00 – 09:20	Welcome and outline of the Indaba	DEA: Biodiversity and Conservation Ms Wadzi Mandivenyi
	09:20 - 11:15	Department of Planning, Monitoring and Evaluation Department of Science and Technology SANBI SANPARKS	Ms Harsha Dayal Ms Nohlanhla Mkhize Prof John Donaldson Mr Fundisile Mketeni
Policy agenda as well as the progress made in sector institutions in implementing the NBSAP and NBRES. Opportunities for partnership between the different stakeholders to facilitate research and evidence needs will be highlighted.	11:15 – 11:40	Launch of Biodiversity and Ecosystem Services for Poverty Alleviation Evidence Map, ACE, University of Johannesburg	Dr Yvonne Erasmus, ACE, University of Johannesburg
	11:40 – 11:50	B&C keynote address on the science evidence- policy agenda and the National Biodiversity Research and Evidence Strategy	DEA: Biodiversity and Conservation Deputy Director General Mr Shonisani Munzhedzi

11:15 – 11:30 MORNING TEA

Item	Time				
Parallel sessions Theme	11:30 – 12:45				

Item	Time				
		<p>SO 1 (Management of biodiversity assets and their contribution to the economy, rural, development, job creation and social wellbeing is enhanced)</p> <p>Facilitator: Kogilam Govender (DST)</p> <p>1. The Limpopo Socio-Economic and Environmental Development Initiative: Gary Newman (The Guild (TGC))</p> <p>2. Using technology for Innovation and contribution to the economy from South African medicinal plants: Prof Namrita Lall (UP)</p> <p>3. Kolomela mine: Addressing Biodiversity Issues: Dr PC Zietsman (NASMUS)</p> <p>4. Natural Resource Management, Nokwanda Ngombane (DEA)</p> <p>5. Natural Capital Accounting and its links to SDG indicators, Mandy Driver (SANBI)</p>	<p>SO 3 (Biodiversity considerations are mainstreamed into policies, strategies and practices of a range of sectors)</p> <p>Facilitator: Wilma Lutsch (DEA)</p> <p>1. Protecting indigenous fish biodiversity through the eradication of alien fish using rotenone: evidence based policy support: Mr Bonani Madikizela (WRC)</p> <p>2. The use of biodiversity science to inform development planning in support of national Strategic Environmental Assessments: Fahiema Daniels et al., (SANBI)</p> <p>3. Multidisciplinary and Multi-Objective Approaches in Support of the National Biodiversity Research and Evidence Strategy: One Health and the Mnsi Community Programme – A Case Study: Prof Abernethy, D.A., et al (UP)</p> <p>4. Incorporating the Economics of Nature into South Africa's Transition to Sustainability: A critical review: Dr Shakespear Mudombi (TIPS)</p>	<p>SO 4 (People are mobilised to adopt practices that sustain the long-term benefits of biodiversity) and Biological Invasions</p> <p>Facilitator: Wadzi Mandivenyi (DEA)</p> <p>1. Evidence-based decision making – case study: Biological Invasions: Dr Tsungai Zengeya (SANBI)</p> <p>2. Dr Sebataolo Rahlo (SANBI)</p> <p>3. Panel session members (TBC)</p>	<p>SO 5 (Conservation and management of biodiversity is improved through the development of an equitable and suitably skilled workforce)</p> <p>Facilitator: Khorommbi Matibe (DEA)</p> <p>1. Evaluation – Optimising Evidence for Accountability and Learning in Natural Resource Management Programmes: Prof Eureta Rosenberg (RU)</p> <p>2. The WWF Graduate Internship Programme: A model of work integrated learning to develop green skills in high demand: Dr Glenda Raven (WWF)</p> <p>3. Exploring the Role of the Fundisa for Change programme in Biodiversity Education for teacher educators in Life Sciences at the Further Education and Training Level (FET): Shanu Misser (FUNDISA)</p>

12:45 – 13:30 LUNCH

Item	Time				
Parallel Sessions Cont.	13:30 – 14:45	<p>Future Earth SDGs Lab and SA-EU dialogue (Implementing the NDP through domestication of SDG 12, SDG15 and SDG17)</p> <p>Facilitator: Ms Louise Shaxson ODI</p> <ol style="list-style-type: none"> Inclusive social innovation and SDGs, Ms Nonhlanhla Mkhize (DST) Biodiversity and the 2030 Agenda for sustainable development, Ms Cecilia (UNEP) Meeting biodiversity challenges lie within addressing SDG 17 (Natural Resources and the Environment): Nikki Funke and Dr Lorren Haywood (CSIR) Innovations in support of the green economic development: Ms Ndidzulafhi Nennngwekhulu (The Innovation Hub) 	<p>SO 2 (Investments in ecological infrastructure to enhance resilience and ensure benefits to society) and Biodiversity Economy</p> <p>Facilitator: Mr Bonani Madikizela (WRC)</p> <ol style="list-style-type: none"> Investing in ecological infrastructure to improve water security: The integrated catchment management perspective, Nontutuzelo Gola (SANBI) Wetland restoration: maximizing the return of investments in ecological infrastructure management, Dr Farai Tererai and Dr Piet-Louis Grundling (DEA) The plantation forestry industry as an opportunity area for sustainable growth in South Africa: Struan Robertson (TIPS) Monitoring Framework for Genetically Modified (GM) crops released into the environment of South Africa, Dr Tlou Masehela (SANBI) 	<p>SO 3 (Biodiversity considerations are mainstreamed into policies, strategies and practices of a range of sectors)</p> <p>Facilitator: Kiruben Naicker (DEA)</p> <ol style="list-style-type: none"> The role of different types of evidence synthesis in providing users in the science-policy interface with the information they need: Natalie Tannous et al., (ACE, UJ) What is the evidence on the links between ecosystem services and poverty alleviation in Africa? A demand-led evidence map. Dr Yvonne Erasmus, et al, (ACE, UJ) The African Soil Microbiology Project: Policy implications of the first nationwide survey of the South African soil microbiome. Prof Don Cowan (UP) 	<p>SO 5 (Conservation and management of biodiversity is improved through the development of an equitable and suitably skilled workforce) and Biodiversity Economy</p> <p>Facilitator: Khorommbi Matibe (DEA)</p> <ol style="list-style-type: none"> Green Skills Research for Conservation: A baseline study of the nature and scope of green skills for conserving South Africa's ecological assets. Dr Glenda Raven & Ms Lameez Eksteen (WWF) We want a green economy and society – but are we still 'green' about skills? What research tells us about producing green skills: Prof Eureta Rosenberg (RU) An initial assessment of biodiversity-related employment in South Africa: Fulufhelo Mukhadi (SANBI)

14:45 – 15:00 AFTERNOON TEA

14:45 – 15:00 AFTERNOON TEA			
Plenary	15:00 – 16:30	Overview of the Plenary	Group Representatives
Closing Remarks	16:00 – 16:30	Closing remarks	DEA: Ms Wadzi Mandivenyi

Day 2

Programme Director: Dr Joe Molete

Item	Time	Topic	Speaker
PRIORITIES FOR THE BIODIVERSITY RESEARCH & EVIDENCE AGENDA (Plenary)	08:30 – 09:00	Implementing the NDP's sustainability transition and SDGs 12,15 and 17	
	09:00-09:30	National Biodiversity Research & Evidence Strategy Progress & challenges: Feedback from the inaugural session	

Item	Time	Topic	Speaker
<p>Group sessions</p> <ul style="list-style-type: none"> • Which topics are you involved in, and which strategic evidence objective and priority does it contribute to? ◊ (see pages 8-12 and 20-23 of the Annual Implementation Plan) • What are the key progress and developments related to that topic is relevant for promoting the science-policy interface • Which of the evidence priorities in the current implementation plan can be removed because either they have been met or they are no longer relevant? • Which of the remaining evidence priorities should be rescheduled as being more urgent (for example moved from 'medium-term' to 'short-term')? 	09:30 – 11:00	<p>Unpacking Annual Implementation plan five strategic evidence objectives, survey, abstracts and SDGs with in-depth discussions of the key stakeholders and to update the plan Annual Implementation Plan</p> <p>The session will also trigger group discussions on the following emerging topics as they contribute to the NBRES priorities:</p> <ul style="list-style-type: none"> • Biodiversity economy • Rehabilitation and restoration • Species of special concern • Global change • Natural capital • Biosafety 	Dr Joe Molete

11:45 – 12:00 TEA BREAK

Item	Time	Topic	Speaker
Provincial Research and Evidence Needs	11:15 – 13:00	Feedback on research and evidence work being undertaken at Provincial level	WG1 and Provincial Representatives

13:00 – 13:30 LUNCH

Item	Time	Topic	Speaker
<p>Updating the National Biodiversity Research and Evidence Annual Implementation Plan: (specifically within pages 8-12 and 20-23 of the Annual Implementation Plan)</p> <p>(Plenary session feedback)</p> <ul style="list-style-type: none"> • Which topics are you involved in, and which strategic evidence objective and priority does it contribute to? ◊ (see pages 8-12 and 20-23 of the Annual Implementation Plan) • What are the key progress and developments in that topic? • Which of the evidence priorities in the current implementation plan can be removed because either they have been met or they are no longer relevant? • Which of the remaining evidence priorities should be rescheduled as being more urgent (for example moved from 'medium-term' to 'short-term')? 	13:30 – 14:45	Unpacking Annual Implementation plan five strategic objectives, survey, abstracts and SDGs with in-depth discussions of the key stakeholders and to update plan	Dr Joe Molete

14:45 – 15:00 AFTERNOON TEA

Item	Time	Topic	Speaker
	15:00 -15:30	Working Group session report back	Dr Joe Molete
Closing Remarks	15:30 – 15:45	Closing Remarks with a brief discussion on Challenges and good practices	DEA: Mr Kiruben Naicker

ANNEXURE C: SURVEY QUESTIONNAIRE

As a key stakeholder in the environment sector, your role is important in promoting an evidence-policy interface approach. The Minister of Environmental Affairs has approved for Implementation, the National Biodiversity Research, Development and Evidence Strategy in 2015. An inclusive process for developing an Implementation Plan for this strategy was concluded in March 2016. This Implementation Plan has to be updated on an annual basis. As such, an annual research indaba will be undertaken on the 17-18 August 2017. As part of this process, we are keen to survey the research sector (both policy officials, scientists and academia) on the progress they have made in conducting relevant research and or evidence in the process of developing, implementing, monitoring and evaluating biodiversity and conservation policy. Putting all of this together will enable us to plan and budget effectively across the whole evidence base and develop our ideas for how it can be better used in policymaking.

We would be grateful if you could fill in the spreadsheet below, working with your colleagues to produce a consolidated view that represents your team. The priorities initially identified in the stakeholder workshop in February 2016 are populated for ease of use. You and your team are expected to score the thematic areas according to work you are undertaking, and specify the initiative being undertaken as well as resource needs.

In addition, if you can identify some specific questions you think are important to answer, please provide those as well. Rather than sending in individual responses, if you are able to co-ordinate a consolidated response from your immediate team, that would be very helpful. If you have any questions about the survey, please contact KNaicker@environment.gov.za or LuNdlovu@environment.gov.za.

Note that column E has a drop-down menu in each cell. As you click the cell, an arrow will appear -- please click the arrow and select the appropriate option.

Your name		Please work with your colleagues to produce a consolidated view that represents your team. Please email the completed form to LuNdlovu@environment.gov.za by 28 July 2017.			
Your team					
Your organisation					
Contact details					
Please complete table by rating the following thematic areas under each objective, according to YOUR work scope. Where possible, please specify the initiative you are undertaking under the specific objective.					
Table A. SHORT- TO MEDIUM-TERM PRIORITIES FOR EVIDENCE					
Thematic Area	Specify initiative and progress to date	Reporting on existing evidence needs	Is the initiative wholly, mostly or only partially focused on the topic?	What resources are currently available to you?	What further resources might be needed and why?
Strategic Objective 1: Management of biodiversity assets and their contribution to the economy, rural development, job creation and social wellbeing is enhanced					
1.1 Greater understanding of how to unlock the benefits of biodiversity assets is developed					
a. Further research into threatened or protected species					
b. Determination of the current & future value of the indigenous biological resource					
c. Increasing productivity in the biodiversity economy (also addresses 'biodiversity is mainstreamed')					
1.2 Sustainability of biodiversity assets is understood					
a. Balancing economic consumption of biodiversity assets with management of the biological resource					

b. Subsistence harvesting of natural resources (also addresses 'biodiversity is mainstreamed' and 'people are mobilised')					
c. Economic analysis of the use of environmental goods					
d. NEMPAA and land restitution (also addresses 'investments in ecological infrastructure')					
1.3 The impact of policies and management actions is assessed					
a. The impact of high level management interventions					
b. The impact of climate change mitigation and adaptation strategies					
c. Incorporate new evidence into existing management plans					
1.4 Evidence is used to review specific biodiversity management plans					
a. Evidence requirements for Biodiversity Management Plans					
Strategic Objective 2. Investments in ecological infrastructure enhance resilience and ensure benefits to society					
2.1 Interventions to mitigate biodiversity loss are evaluated					
a. Assessment / evaluation of most effective interventions to mitigate biodiversity loss to					
2.2 The economic benefits of biodiversity infrastructure and interventions are understood					
a. Unlocking the benefits of biodiversity infrastructure					
b. Cost-benefit analysis of environmental regulations and other policies					

<p>Strategic Objective 3. Biodiversity considerations are mainstreamed into policies, strategies and practices of a range of sectors</p>					
<p>3.1 Research into land use for long-term sustainability (in other sectors) is conducted</p>					
<p>a. Determining the most appropriate land uses for long-term sustainability (also addresses 'management of biodiversity assets')</p>					
<p>3.2 Opportunities for main-streaming biodiversity considerations into other sectors are identified and understood</p>					
<p>a. Identification of the extent to which other sectors are contributing to biodiversity loss and degradation</p>					
<p>b. Identification of critical biodiversity areas including areas earmarked for National Protected Areas Expansion Strategy (NPAES) within the following sectors, particularly addressing the following issues</p>					
<p>c. Ecosystems that transcend boundaries</p>					
<p>3.3 The extent and nature of cross-sectoral impacts on habitat loss and habitat fragmentation is understood</p>					
<p>a. Where cross-sectoral impacts are likely, to what extent</p>					
<p>3.4 Pollinators and pollination associated with food production</p>					
<p>a. Increase understanding of pollination in subsistence agriculture landscapes as well as large, commercial farming</p>					
<p>Strategic Objective 4. People are mobilised to adopt practices that sustain the long-term benefits of biodiversity</p>					

4.1 Evidence on the impact of specific regulations used to inform policy and management decisions					
a. The impact of management decisions on the social behaviour of species					
b. Evidence for genetic-level management					
c. Evidence for population management					
d. Evidence on international trade issues					
e. Risks related to the release of captive bred animals and alien species into extensive systems					
f. Citizen and stakeholder engagement around regulatory mechanisms					
4.2 Effective management strategies for selected invasive alien species are developed, implemented and assessed					
a. Assessment of the economic value of managing and using invasive alien plants (IAPs) through various value chains (also addresses 'investments in ecological infrastructure' and 'management of biodiversity assets')					
b. Evidence for non-plant invasives					
Strategic Objective 5. Conservation and management of biodiversity is improved through the development of an equitable and suitably skilled workforce					
5.1. A national assessment is conducted of the staff capacity and availability of resources to contribute adequately to sound, realistic and scientific decision making.					

Table B: MEDIUM- TO LONG-TERM PRIORITIES FOR EVIDENCE - Effective knowledge foundations, including indigenous knowledge and citizen science, support management, conservation, monitoring and sustainable use of biodiversity

Thematic Area	Specify initiative and progress to date	Reporting of existing evidence needs	Is the initiative wholly, mostly or only partially focused on this area? (Please use the drop-down menu)	What resources are currently available to you?	What further resources might be needed and why?
<p>Objective 1. Foundational information on South Africa's biodiversity, including information from indigenous knowledge, is available to enable planning and management of biodiversity and ecosystem services and to facilitate monitoring and evaluation of targets.</p>					
<p>Objective 2. Knowledge and evidence are available, and tools and models are developed, to support planning and management to reduce the rate of loss of biodiversity and maintain the ecological infrastructure required to deliver goods and services</p>					
<p>Objective 3. Knowledge of the contribution of biodiversity to economic development and human wellbeing provides specific and quantified evidence to make the case for biodiversity at a policy level, guide decision making, and promote the mainstreaming of biodiversity in key economic sectors with a high impact on biodiversity.</p>					
<p>Objective 4. Mechanisms are in place that provide a bridge between knowledge generation, policy formulation and decision making resulting in a relevant and accessible evidence base for environmental decision making.</p>					

ANNEXURE D: GROUP DISCUSSIONS DURING THE 2ND ANNUAL INDABA

List the topic(s) you discussed, and which strategic evidence objective and priority does it contribute to?	
<p>What are the key research progress and developments in that topic? Including:</p> <ul style="list-style-type: none"> • Key alignment with the National Development Plan (NDP) & Sustainable Development Goals (SDGs), • Reflection on rationale, problem statement and research questions? • Stage of the research (initiation, completion, publication)? • What are the findings, key challenges, lessons learned and future activities? • What are the key policy messages and recommendations relevant for promoting science-policy interface? 	
Which of the evidence priorities in the current implementation plan can be removed because either they have been met or they are no longer relevant?	
Which of the remaining evidence priorities should be rescheduled as being more urgent (for example moved from 'medium-term' to 'short-term')?	

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