GEF-6 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: FULL SIZE PROJECT
TYPE OF TRUST FUND:GEF TRUST FUND

PART I: PROJECT INFORMATION

Project Title:	**Development of Value Chains for Products derived from Genetic Resources in Compliance with the Nagoya Protocol on Access and Benefit Sharing and the National Biodiversity Economy Strategy**		
Country(ies):	South Africa	GEF Project ID:	9255
GEF Agency(ies):	UNDP	GEF Agency Project ID:	5686
Other Executing Partner(s):	Department of Environmental Affairs University of Pretoria Council for Scientific and Industrial Research	Resubmission Date	August 26, 2015
GEF Focal Area(s):	Biodiversity	Project Duration (Months)	60
Integrated Approach Pilot	IAP-Cities ☐ IAP-Commodities ☐ IAP-Food Security ☐	Corporate Program: SGP ☐	
Name of parent program:	n/a	Agency Fee ($)	589,954

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	**Trust Fund**	**(in $)**	
		GEF Project Financing	**Co-financing**
BD-3 Program 8: Implementing the Nagoya Protocol on Access and Benefit Sharing	GEF TF	6,210,046	22,215,042
Total Project Cost		6,210,046	22,215,042

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective**: To Strengthen Value Chains for Products Derived from Genetic Resources that contribute to the equitable sharing of benefits and the Conservation of Biodiversity**

Project Components	**Financing Type**	**Project Outcomes**	**Project Outputs**	**Trust Fund**	**(in $)**	
					GEF Project Financing	**Co-financing**

<u>Component 1:</u> Research and development of products in line with the definition of utilization of genetic resources of the Nagoya Protocol	TA	Increased number of new local R&D innovations (patents, products etc) and technologies which enter the bioprosecting sector Five products developed and marketed Increased number of research collaborations between government authorities, , private sector parties, holders of traditional knowledge and rural communities to develop and commercialise novel genetic resources Increase in financial flows accruing to the Tradtional Healers Committees and communities in the form of royalties generated from the commercialisation of the genetic resources. (*Baselines and targets to be determined during PPG)*	National Conservation assessment completed with detailed data on resource availability and distribution -with harvest areas identified, mapped on GIS layers. Ethnobotanical report completed and contributes to determining ownership of intellectual property rights of priority species A central information-sharing hub in place with resources with bioprospecting potential, research results, market analysis and current activities in the sector Data collected and analysed including: - pharmacodynamic assessment for potential efficacy which is required before clinical based studies can be performed. • Bioassays (in vitro) to substantiate the claims of safety and efficacy of the plant extracts/actives/products. • Hepatoprotective preclinical studies (in vivo) on one sample/product. • Stability studies, Microbial and Metal analysis, Mutagenicity, etc. Property rights ensured by clinical studies and research, conducted by the Council for Scientific and Industrial Research (CSIR), University of Pretoria and other institutions, that validates and verifies claims and discoveries such *as* • *Anti-Inflammation properties of African ginger,* • *TB healing properties of -Trimmune and liv green;* • *Ability to reduce obesity by Hoordia Gordonii..etc*	GEF TF	1,514,330	6,572,000

Component 2: Value chain development, biodiversity conservation and benefit-sharing for bioprospecting products	TA	Increased number of new benefit-sharing agreements negotiated between industry and communities Bioprospecting: • -Ìncreased number of bioprospecting products in domestic & international markets. • -30-50% of bioprospecting products have community involvement in the supply chain • -Increased number of jobs created in the sector including for disadvantaged communities *(Baselines and targets to be determined during PPG)* Impact on the Ground: • Conservation security of 10[1] [2]threatened priority species improved by putting in place Biodiversity Management Plans that ensure harvesting of genetic resources is based on current resource assessment, carried out under legitimate tenure arrangements and in compliance with relevant laws, regulations and agreements. *Pelagornium Siodides, Hoodia gordonii, Aloe ferox, Lippia javanica, Siphonochilus aethiopicus* (African ginger), *Moringa oleifera, Euclea natalensis, Artemisia afra, Myrothamnus flabellifolius and Siphonochilus aethiopicus*[3] • 500 hectares per annum under cultivation for bioprospecting *(Indicators of species status, baselines and targets to be determined during PPG)*	Value chains for *Pelagonium sidiodes, Lippia Javanica, Gelania africana, Aloe forex, Hoodia gordonii, LivGreen, TrImmune* etc) developed and tested on the market for acceptability. This entails among other things: • Soucing of opportunities for commercialization of the Indigenous biological resource. From traditional Knowledge holders and other informal harvesters and marginalsed communities. • Market research and intelligence obtained for potential products • Biotrade[4] in the domestic market facilitated to test demand • Bioprospecting permits obtained and Benefit Sharing and Material Transfer Agreements facilitated between the buyers and communities • Further product development based on market feedback An online system in place providing information about abundance and availability of resources for bioprospecting activities (linked to the permitting application system) and an online permitting system for efficient access to resource by national, regional and international traders.	GEF TF	3,900,000	10,531,695

[1] This figure is based on number of species identified for Value Chain development and R&D. Other species may be included during the PPG as appropriate

[4] Biotrade according to the regulations refers to buying and selling of indigenous biological resources for the purpose of bioprospecting, product development; or product manufacturing.

			10 Biodiversity Management Plans developed and implementated according to permit conditions and harvesting guidelines produced and endorsed by stakeholders. Harvest and collection processes respect and recognise customary rights of local and indigenous communities to use and manage collection areas.			
Component 3: Capacity building of agencies to add value to genetic/biological resources; develop model contractual clauses; and negotiate, implement and monitor ABS agreements	TA	Increased number of Small and medium enterprises promoted within the bioprospecting sector through training and skills development Improved Level of education, skills and training emanating from the sector *(Baselines and targets to be determined during PPG)*	Integrated training programme developed that encompasses all relevant government departments including the Department of Environmental Affairs, The Department of Science and Technology, the Department of Trade and Industry, and the Department of Agriculture, Forestry and Fisheries Database of relevant training material, interactive and on-line tools and methodologies available to sector Information exchange among all stakeholders on ABS, research and development including best practices	GEF TF	500,000	4,000,597
				Subtotal	GEFTF	5,914,330	21,104,292
				Project Management Cost (PMC)	GEFTF	295,716	1,110,750
				Total Project Cost		6,210,046	22,215,042

C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount ($)
Government	Department of Environmental Affairs	Grant	18,450,102
Academia	University of Pretoria	Grant	620,940
Research Institution	Council for Scientific and Industrial Research	Grant	1,572,000
Private sector	Multiple (*Botanica and others still being discussed)*	Grant	1,572,000
Total Co-financing			22,215,042

D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS [a)]

GEF	Trust	Country/	Focal Area	Programming	(in $)

Agency	Fund	Regional/ Global		of Funds	GEF Project Financing (a)	Agency Fee (b)[b)]	Total (c)=a+b
UNDP	GEF TF	South Africa	Biodiversity	n/a	6,210,046	589,954	6,800,000
Total GEF Resources					**6,210,046**	**589,954**	**6,800,000**

E. PROJECT PREPARATION GRANT (PPG)

Is Project Preparation Grant requested? **Yes x** No ☐ If no, skip item E.

PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

Project Preparation Grant amount requested: $182,650					PPG Agency Fee: $17,350		
GEF Agency	**Trust Fund**	**Country/ Regional/Global**	**Focal Area**	**Programming of Funds**	**(in $)**		
					PPG (a)	**Agency Fee** (b)	**Total** c = a + b
UNDP	GEF TF	South Africa	Biodiversity	(select as applicable)	182,648	17,352	200,000
Total PPG Amount					**182,648**	**17,352**	**200,000**

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS

Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascapes covering 300 million hectares	*50,000 Hectares*[5]
6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream into national and sub-national policy, planning financial and legal frameworks	Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries	*Number of Countries: 1*
	Functional environmental information systems are established to support decision-making in at least 10 countries	*Number of Countries: 1*

PART II: PROJECT JUSTIFICATION

1. *Project Description.*

South Africa is the third most biological diverse country in the world in terms of species richness and endemism. Conservation and Sustainable Utilisation of South Africa's biological diversity is thus of strategic importance in terms of provision of ecosystem services, now and in the future. This species richness provides an important basis for economic growth and development that underpins the well-being of society.

The biodiversity economy of South Africa, encompasses the businesses and economic activities that either directly depend on biodiversity for their core business or that contribute to conservation of biodiversity through their activities. In other words, the ambit of the biodiversity economy is **Bioprospecting** (i.e. *research on, or development or application of, indigenous biological/genetic resources for commercial or industrial exploitation and includes: the systematic search, collection or gathering of such resources or making extractions from such resources; the utilization of information regarding any traditional uses of such resources by indigenous communities; and the research on, or the application, development or modification of such traditional uses for commercial exploitation; the trading in and exporting of indigenous biological/genetic resources in order to develop and produce products, such as medicines, industrial enzymes, food flavours, fragrances, cosmetics, colours, extracts and essential oils***)**, and Wildlife sub-sectors (i.e. live sales of indigenous wildlife; sale of game meat and the hunting industry).

In terms of the bioprospecting value chain, the formal domestic retail market in South Africa in 2012/2013 had 549 products containing indigenous plant and bee products on the shelves. The total revenue produced from value-added bioproducts in the domestic retail market was approximately R1.5 billion in 2013-14. The majority of these products used *Aloe ferox*, Apis spp. (bee products), Aspalathus spp. (Rooibos) or *Pelargonium sidoides* as active indigenous ingredient. These local value-added products fell into five product categories: (i)Personal hygiene products: R620 million or 40% of products (ii) Cosmetics: R590 million or 38% of products (iii) Complimentary medicines: R170 million or 11% of products (iv) Food flavourings: R120 million or 8% of products and (v) Oils: R50 million or 3% of products.

Sustainable use of South Africa's genetic and biological resources has the potential to support many local economies and livelihoods in the country, providing business and job creation opportunities for individuals and communities. Both the bioprospecting and wildlife sub-sectors of the biodiversity economy have already demonstrated the potential for significant future development and growth. The contribution of the biodiversity economy to the national economy can be measured in terms of Gross Domestic Product (GDP), with the biodiversity economy contributing approximately R3 billion ($242 million USD) to GDP in 2013. Growth in the bioprospecting industry can make a significant impact on the national economy, while contributing to national imperatives such as job creation, rural development and conservation of our natural resources. However, for this sector to achieve its full potential, a strategic partnership between the state, private sector and communities is required.

To this end, the Government of South Africa has developed a **Biodiversity Economy Strategy** (BES). The strategy was developed to guide the sustainable growth of the wildlife and bioprospecting industries and to provide a basis for addressing constraints to growth, ensuring sustainability, identifying clear stakeholder's responsibilities and monitoring progress of the Enabling Actions. The Vision of BES is to optimise the total economic benefits of the wildlife and bioprospecting industries

[5] to be confirmed during the PPG

through its sustainable use, in line with the Vision of the Department of Environmental Affairs. The purpose of BES is to provide a 14-year national coordination, leadership and guidance to the development and growth biodiversity economy.

The BES has set an industry growth goal of growing the GDP contribution of the bioprospecting industry by an **average rate of 10% per year** until the fourteenth year. This envisioned growth curve extends into the year 2030 and is aligned to the efforts of the country's National Development Plan, Vision 2030. This growth would be achieved through cooperation between the private sector, government and communities; through realising opportunities in various market segments; through addressing development and growth constraints; and through managing both the wildlife and bioprospecting industries in an environmentally sustainable manner. This growth would not only support returns on investment for existing investors but would also enable new investments in support of South Africa's economic transformation.

The BES seeks to contribute to the transformation of the biodiversity economy in South Africa through inclusive economic opportunities, reflected by a sector which is equitable - equitable access to resources, equitable and fair processes and procedures and equitable in distribution of resources (i.e. business, human, financial, indigenous species, land, water) in the market. Furthermore, this Strategy will not only assist South Africa's transition to Green Economy, but will also play a bigger role for livelihoods in job creation and poverty reduction, especially for rural communities, as most of the indigenous biological resources surrounds these communities. This Strategy will also play a major role in the transformation of the economy by motivating marginalised individuals to start their own biodiversity based enterprises, as well as enhancing the entrepreneurial spirit of current players in the sector, thus, creating an appreciable and sustainable economic presence.

POLICY AND LEGISLATIVE ENVIRONMENT FOR ABS: South Africa is one of the few countries that have put in place national legislation that gives effect to Articles 15 and 8(j) of the Convention on Biological Diversity, which recognise the importance of regulated access to genetic resources as well as their associated traditional knowledge by requiring the users of these resources to obtain prior informed consent and negotiate mutually agreed terms to share the benefits derived from commercial or non-commercial exploitation of such resources in a fair and equitable manner with the provider countries including indigenous and local communities. South Africa has promulgated the *National Environmental Management: Biodiversity Act*, 2004 (Act No. 10 of 2004) (NEMBA) as a framework legislation to regulate ABS issues . This legislation was built on the basis of the White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity, 1997, the Convention on Biological Diversity and the Bonn Guidelines on ABS. The NEMBA objectives are to provide for: (i) the management and conservation of biological diversity within the Republic; (ii) the use of indigenous biological resources in a sustainable manner; (iii) the fair and equitable sharing among stakeholders of benefits arising from bioprospecting involving indigenous biological resources; and to give effect to ratified international agreements relating to biodiversity which are binding on the Republic. The objectives of NEMBA on ABS issues are being implemented through the *Bioprospecting, Access and Benefit Sharing (BABS) Amendment Regulations*, which: (a) prescribe the notification process for the discovery phase of bioprospecting involving any indigenous genetic and biological resources; (b) prescribe the permit system required for bioprospecting and biotrade activities involving any indigenous genetic and biological resources or export from the Republic of any indigenous genetic and biological resources for the purposes of bioprospecting , biotrade or any other kind of research; (c)s et out the form and content of and requirements and criteria for benefit sharing and material transfer agreements; and (d) Set out the administration process of the Bioprospecting Trust Fund.

The NEMBA on ABS issues protects the interests of: the indigenous communities or individuals who are holders of traditional knowledge associated with indigenous genetic and biological resources; and a person, including any organ of states or community, providing or giving access to indigenous biological resources to which the application relates. by making obligatory requirements for any permit applicant to seek prior consent on the basis of full disclosure of the bioprospecting/ biotrade intention and also negotiate and conclude Benefit Sharing Agreements and Material Transfer Agreement. The BABS Amendment Regulation of 15 provides for 4 types of permit that can be applied for, namely: Discovery Phase export permit, Biotrade permit, bioprospecting permit or integrated biotrade and bioprospecting permit. The designated Competent National Authority is the National Department of Environmental Affairs. These permits many only be applied for by: a juristic person registered in terms of South Africa Law; A natural person, who is a South African citizen or permanent resident of South Africa; or A juristic person that is not registered in terms of South African Law or a natural person who is not a South African citizen or permanent resident of South Africa, if that juristic person or foreign national applies jointly with a juristic or natural person.

THREATS TO BIODIVERSITY: Approximately 2062 indigenous plant species (10% of the total flora) have been recorded as being used for traditional medicine in South Africa of which it has been determined that 82 species (0.4% of the total national flora) are threatened with extinction at a national level in the short and medium terms (incl. 14 Critically Endangered species)and a further 100 species are of conservation concern (including two species already extinct in the wild). Thirty-two percent of the taxa have been recorded in traditional medicine markets in the provinces of KwaZulu-Natal, Gauteng, Eastern Cape, Mpumalanga and Limpopo many of which, based on market reports, are extracted at a seemingly unsustainable rate. There is danger that this over-harvesting of medicinal plants could leave millions without health care support. An estimated 30 million

people make regular use of the services of the country's 200 000 traditional health care practitioners, all of whom apply indigenous and exotic plants in their remedies.

Loss of natural habitat, and habitat degradation are also significant threats. Overgrazing, unsustainable agricultural practices followed closely by incorrect fire regimes are the main causes of habitat degradation. 43 plant species are listed as extinct or possibly extinct due to crop cultivation and 26 due to *Urbanisation*. Over the past decade there has been a tendency to low density urban sprawl and coastal ribbon development both of which have caused significant habitat loss to restricted plant species.
Invasive species;- Encroachment by invasive alien species has become more severe in the past decade Research shows that over 8 percent of South Africa has been invaded by invasive plant species, moreover invasive species occupy between 27.2 percent and 32 percent of the country's land. This is an increase in alien plants of approximately 28 percent in the last 18 years.
Climate change - temperature increases, shifts of climate zones, melting of snow and ice, sea level rise, droughts, floods, and other extreme weather events further exacerbate biodiversity loss due to limited adaptive capacity

BASELINE SCENARIO

The baseline for this project is formed by current and future investments on access to and benefit sharing from genetic resources in South Africa by key actors in the sector, which are already planned to occur over the project lifespan. Key elements are as follows:

The Department of Environmental Affairs: DEA's planned investments for the next five years are a combination of regulatory, biodiversity economy, and CEPA interventions. In the regulatory space, the DEA will be amending the National Environmental Management Biodiversity Act, continue ongoing plans for the implementation of the BABS Amendment Regulations and the national implementation of the Nagoya Protocol on ABS. For the biodiversity economy, the DEA will prepare for launching the Biodiversity Economy Strategy as well as conducting a mini Phakisa to develop a comprehensive implementation plan for the strategy, as well commence with the initial stages of implementing the strategy. The DEA also intends to conduct a feasibility study for a national repository of natural product compounds. The DEA will be hosting the 2nd and 3rd Biodiversity Economy Indaba as well as conduct quarterly forum meetings for the ABS sector. On CEPA, the DEA will be conducting planned biodiversity economy and sustainable use workshops in different provinces of the country, as well as develop posters for the Bioprospecting sectors. (Approximate budget: USD 18, 450,000.)

The Council for Scientific and Industrial Research (CSIR): The CSIR established a successful propagation programme for various products to ensure a reliable supply of plant material for commercialisation purposes. Furthermore, the CSIR established and continues to mentor a community-based cultivation site for supply of the genetic resource at Giyani in Limpopo. For the next five years, the CSIR has dedicated USD$ 2,160,000 for further work on (i) Adding value to African ginger through clinical studies to substantiate traditional uses for anti-inflammation properties (ii) Licensing of the CSIR intellectual property on African ginger to the private company (ii) Strengthening of the cultivation sites of African ginger by local community-enterprise in Limpopo and Mpumalanga:infrastructure capacity (iv) Capacity building in the form of training to the local communities cultivating African ginger to ensure sustainable supply.

The University of Pretoria (UP): is currently investing US$ 620,000 in the establishment of a Bioprospecting Centre that will offer an open, collaborative and cross-disciplinary approach to life sciences research. The center will among other things support the on-gpoing Government Bioprospecting initiatives and research programmes promote ABS between industries, owners of traditional knowledge and scientists.; promote commercialization of bioprospecting research; share results, projects across the various disciplines and identification of areas and gaps through which more collaborative research can be promoted; building and maintain networks in the area of Bioprospecting with science councils tertiary institutes and international stakeholders who have interests in natural products and Bioprospecting. This will support the value chain on the Bioprospecting discoveries; and promote. compliance with the regulatory environment with the assistance of the University legal advisors. This with the assistance of the University commercialization office. This will include contracting, technology transfer to industry and communities.

Botanica (Private sector) :- Botanica has been producing Bulbine frutescens leaf extract for the past 3 years. The company currently supplies its products to South African, West African and European clients. Botanica is currently scaling up its production from 8.6 tons to 60 tons by 2019. Botanica is also a distributor for a range of African Oils, including: Argan oil (organically certified);Marula oil (organically certified); Baobab oil (organically certified); Barbary fig oil (organically certified) The company plans on increasing its marketing and distribution activities of these products to become the market leader in both quality and quantity supplied from 350 litres to 1,200 litres by 2019.

Botanica has started producing Moringa oleifera seed oil, which the company markets to cosmetic producers in South Africa and Europe. Currently, the company has a production capacity of less than 25 litres per month. However, Botanica has commissioned the production of a larger extraction press and processing facility, which will be constructed in the first quarter of 2016. Accordingly, production will be scaled up tfrom 250 litres per month. To 6000 liters by 2020.

Finally, Botanica also produces organically certified Moringa oleifera leaf powder. Currently, production capacity is 10kg per month. By increasing its Moringa plantations from 10 hectares to more than 100 hectares over the next 12 months, Botanica will be able to scale its production of organically leaf powder from 25 kg to 480 kg by 2020. (Approximate Budget US$ 1,600,000).

The Status of Priority Species: The table below shows the distribution, level of bioprospecting, status of research and value chain development for the species that have been prioritised for the Biodiversity Economy strategy:

Species	**Distribution and Status**	**Threat**	**Research and Development**	**Value Chain Development**
Pelagornium Siodides	*P. sidoides* is indigenous to Lesotho and South Africa and is harvested from the wild for a bio-active substance found in its ligno-tubers that is processed and used by the local and international pharmaceutical industry. In South Africa, interest in this species has been growing due to its industrial use, its potential as a source of income for rural communities, strong relevance to access and benefit sharing legislation being developed at that time but simultaneously, concern about the sustainability of harvest.	Ongoing studies have shown that intensive harvesting of P. sidoides from the wild has been placing pressure on some wild populations.	Research commissioned by the German Department of Nature Conservation (BfN) identified slow resource recovery from overharvested sites and expressed concern about the long-term survival of *P. sidoides* in the wild due to overharvesting which directly affects the livelihoods of communities and other stakeholders.	Data on current value chain development is not available – This informatiin will be determined during the PPG

Species	Distribution and Status	Threat	Research and Development	Value Chain Development
Hoodia gordonii	*Northern Cape, Western Cape, Free State.*	Species abundance has been declining from 2007. Found in Critical Biodiversity Areas (CBA) in Northern Cape.	The San and Khoi San communities are the Knowledge holders for various plant based products. including *Hoodia gordonii, Rooibos, Buchu, Devil's Claw, Sutherlandia, Honey bush, Sceletium* and a variety of other plants The communities have entered a partnership with the CSIR for research and development on these products as well as scaling up of these species once technology transfer is completed.	Products derived from this species has been developed and commercialized both in South Africa and internationally through the private sector. A feasibility study between the CSIR, University of Pretoria, demonstrated the potential for manufacturing and branding of Hoodia based products that can be sold by established San and Khoi San communities. The communities have established tourist sites for local and international visitors in the Northern Cape, which are ideal sites for trading in the products branded and manufactured by them. Currently there are several private sector partners that are involved in the Hoodia trading such as Afriplex (Pty) Ltd. However, while some industry players in the food supplementary market have commercialized Hoodia products, the San and Khoi San communities have to date received limited benefits from products commercialized from industries as a food supplement. Market for the product is estimated in range of hundreds of millions of dollars however royalties expected to flow back to the communities based on this discovery are yet to come to fruition. Under the San/CSIR Hoodia Benefit Sharing Agreement, 6% of Royalty income will be paid into the San and Khoi San Trusts.

Species	Distribution and Status	Threat	Research and Development	Value Chain Development
Aloe ferox	Eastern Cape, Free State, KZN *Aloe Forex* grows naturally and abundantly within the Tyefu Community and.. is widely acknowledged for its medicinal properties. The leaves and gel are also commonly used for cosmetic products.	Localised extinctions have occurred in some areas around the country due to over harvesting. White River (Mpumalanga) does not fall under a CBA. Intense harvesting occurs in the Eastern Cape (Peddie, Butterworth, Idutywa and Qunu) which are surrounding areas to Tyefu (location for the project	Aloe ferox has been harvested for its sap (known as bitters) for almost 250 years. The harvesting is a task mainly performed by woman and youth but at present no formal structure exists. Leaves are cut from the plant using a sickle (or any tool available), cutting relatively close to the base of the leaf. Leaves are stacked (commonly called a "nest" by local harvesters) around a hollow ground (cut edges facing inward) lined with a plastic sheet. The yellow bitter exudate (sap) released from the edges is collected in the centre and sold for half of the market value. Harvested and drained leaves are left in the field and have no further use. R&D can be further undertaken to find potential use for harvested and drained leaves that currently are not used The resource assessment of *Aloe ferox* within the *Tyefu* community indicates an abundance of the resource which occurs in a wide range of habitats and shows high adaptability. However it is being harvested inefficiently and only restricted by slope of the terrain, distance from the village and presence of thicket surrounding the resource.	*Aloe forex* has a year round demand, and harvesting (tapping) is an important economic activity in the *Tyefu* community where it is considered a key contributor rural poverty alleviation or mitigation. This high potential has prompted interest from Funding Agents seeking opportunities for local level enterprise development in rural areas. The Tyefu community has shown interest in the sustainable harvesting of the natural resource of Aloe ferox, as well as the manufacturing of value-adding products from this resource. The need has thus been identified to implement a formal and sustainable harvesting plan for this area, together with setting up the infrastructure for the manufacturing and trade of value adding products from this resource, such as gel, crystals, powders, and cosmetic products.

Species	Distribution and Status	Threat	Research and Development	Value Chain Development
Lippia javanica	Eastern Cape, KZN, Mpumalanga, Limpopo, North West, Gauteng. *L. javanica* is a source of high value essential oils comprised of volatile, fragrant constituents generally extracted from the leaves, stems and flowers of a plant by a process of steam distillation. The essential oils are mainly used internationally in the fragrance industry for the manufacture of high value perfumery, toiletry, cosmetic and aroma therapeutic products. Furthermore,	Distribution within the Eastern Cape, KZN and Limpopo falls under critical biodiversity areas. Distribution within Gauteng coincides with Critical Biodiversity Areass, and in the North West, distribution overlaps with a vulnerable vegetation type. Mpumalanga exhibits a scattered distribution which in some areas, fall under vulnerable ecosytems.	The *Traditional Healers Committee* holds the traditional knowledge associated with *L. javanica* as a mosquito repellent and other medicinal uses. The Committee approached the Council for Scientific and Industrial Research (CSIR)[6] in 1992 to assist in adding value to the plant genetic resources associated with their traditional knowledge through research and development; and to assist with providing knowledge and relevant skills in business development in order to start their own agro-processing businesses; and protecting their traditional knowledge from misappropriation. At the time, South Africa lacked a national legislation on access and benefit sharing. Nonetheless, the CSIR entered into several legal agreements with the Committee to protect the confidentiality nature of the parties concerned, and ensuring benefits are shared from the utilisation of their traditional knowledge in research and commercialisation. The CSIR research and development led to the development of the intellectual property, which was licensed to the South African private company and the technology was transferred to the South African local communities for commercial cultivation purposes in order to create jobs and alleviate poverty.	*L. javanica* is currently being commercialised in the form of a mosquito repellent candles and essential oils on the South African market and cultivated by local communities, namely Temothuo Co-operative and Hi-Hanyile Enterprise in Limpopo. As *L. javanica* is commercially cultivated by these local communities, compliance with the South African Biodiversity Act (2004) is a prerequisite by submitting bioprospecting permits. This will, however, require benefit sharing agreements to be entered into with the Traditional Healers Committee, as well as the Material Transfer Agreements as required by the Bioprospecting Access and Benefit Sharing Regulations of 2008.
Siphonochilus aethiopicus (African ginger)	*Limpopo, Mpumalanga* The current use of African ginger is based on anecdotal evidence to treat mild allergic asthma, colds, influenza and sinus problems	*Critically Endangered* This species has become extinct in KZN. Occurs in critical biodiversity areas within Limpopo and Mpumalanga (falls under protected area	The *Traditional Healers Committee* (THC) as knowledge holders of the African ginger entered into several agreements with the CSIR which	The CSIR was granted a PCT patent for use of the extract and compound (PCT/IB2007/050649). The CSIR also established a

[6] The CSIR has the experience in negotiating benefits sharing with the local communities based on technologies developed from plant species associated with traditional knowledge, as well as with the private sector.

Species	Distribution and Status	Threat	Research and Development	Value Chain Development
	without scientific data to substantiate these traditional claims, and the indigenous plant species is over-harvested in South Africa and considered to be endangered and almost regionally extinct..	zones)	conducted extensive research and development activities on African ginger. This led to the identification of the biochemical metabolites, expressed in this indigenous plant species responsible for the anti-asthmatic and anti-inflammatory properties. Genetic fingerprinting of the species was undertaken through research and development to aid quality assurance and to prevent possible confusion with related species. Scientific research conducted demonstrated the beneficial properties of the plant extract in the improvement of the symptomatology associated with allergic and inflammatory diseases and provided scientific evidence substantiating its traditional use and potential inclusion in complementary medicine products. The intellectual property was produced through the research and development and later protected through a patent system as a potential agent for the treatment of inflammatory and allergic diseases such as asthma. Further R&D needs to be undertaken in order to find sustainable harvesting mechanisms and to find sustainable supply of this species	successful propagation programme for African ginger from tissue-cultured material to ensure a reliable supply of plant material for commercialisation purposes. Furthermore, the CSIR established and continues to mentor a community-based cultivation site for supply of the genetic resource at Giyani in Limpopo

Species	Distribution and Status	Threat	Research and Development	Value Chain Development
Moringa oleifera	Naturalised in north eastern, sub-tropical South Africa – KZN, Mpumalanga, Limpopo. Produced in Limpopo, Free State, KZN and Gauteng . The *Moringa oleifera* tree was naturalised in Africa over 500 years ago. *Moringa oleifera* is grown mainly in semi-arid, tropical and sub-tropical areas. It tolerates a wide range of soil conditions and is a sun and heat loving plant, particularly suitable for dry regions, as it can be grown using rainwater without expensive irrigation techniques. This makes it ideal for growing in the arid northwest Limpopo Province. In recognition of the value of the plant, the United Nations Food and Agriculture Organisation featured *Moringa oleifera* as the Traditional Crop of the Month in September 2014. *Moringa oliefera*, known as "The Miracle Tree" has a number of unique properties – many parts of the moringa are edible and have high nutritional content, including: the immature seed pods; leaves; mature seeds; oil pressed from mature seeds; and the roots. The nutritional value of the *Moringa oleifera* tree's leaves is unparalleled, containing over 90 nutrients. Moringa has the potential to substantially reduce levels of malnutrition in Limpopo Province and more broadly in rural locations in South Africa, particularly amongst children. Moringa oil extracted from the mature seeds is highly valued in cosmetic and industrial applications. It is useful in naturally treating skin conditions such as eczema and psoriasis. The oil is also used in the manufacture of traditional perfumes, hair and skin care products and as a food supplement. The oil has great potential for the sustainable cultivation and production of biodiesel as it can yield both food and fuel. Moringa oil as bio-diesel provides opportunities for agricultural development because it flourishes in arid areas. Furthermore, it reduces life-cycle emissions because of its high oil content (40%), relatively high crop yield and the fact that it does not compete with food crops.	Overharvesting is a concern due to the growing demand for naturalisation by the construction industry .	*Botanica* has commissioned the production of a moringa oil processing and treatment facility to enable the production of greater volumes of moringa oil and moringa leaf powder. The facility will be cooled and will use state-of-the-art ozone generators to sanitise the air and water used during production *Botanica* has started GIS mapping of useful indigenous trees in the local community and on private land. The objective is to gather information about the distribution of useful indigenous trees (including Marula, Baobab and Sausage tree) and to research the effect that environmental factors (drought, erosion etc.) and alien invasive species (Rubber vine) have on these indigenous plant populations. Once the distribution and abundance have been established, Botanica will engage local communities to start sustainably harvesting the seeds from these trees so that the company can produce cosmetic raw ingredients. At the same time, an indigenous tree will be planted for each alien invasive tree that is removed, ensuring that the natural flora of the region is sustainably replenished and biodiversity of indigenous plants is maintained.	From leaves and shoots- Three different prototypes have been produced as possible products. These include capsules containing the dried extract, capsules containing the dried plant material and a re-dissolved tincture, containing dried extract re-dissolved in 20% ethanol. In partnership with The Moringa Cooperative, *Botanica* plans to produce organically certified honey and beeswax from its Moringa, Bulbine and Spekboom plantations. These products will be marketed to cosmetic companies in South Africa and Europe. Although these markets are potentially lucrative, a lot of research and development will have to be done on these products as well as their benefits before the marketing objectives will be successful.

Species	Distribution and Status	Threat	Research and Development	Value Chain Development
Liv Green (Euclea natalensis) and TrImmune (Artemisia afra Myrothamnus flabellifolius and Siphonochilus aethiopicus)	*LivGree*n has been used to treat the symptoms of TB and other chest complaints. *TrImmune* contains a combination of three different plant extracts, based on a traditional remedy used for the treatment of TB symptoms. This combination has shown good antimycobacterial and hepatoprotective activities as well as immaculate immune stimulatory activity. Due to the high rate of TB in South Africa a complementary medicine which can be taken together with conventional treatments and regiment, is of crucial importance. The conventional treatment/regiment currently in place of tuberculosis patients, includes a combination of three to four drugs for a minimum of 6 months. Due to the long periods required, the patient may develop liver toxicity. Some plants have been proven to aid in the protection of the liver by these toxins. By producing an adjuvant product to help the patients, the liver toxicity can be reduced. Three communities[7] will be involved in the development process of these products. Training in farming of medicinal plants, development of infrastructure at the community sites (nursery, watering systems) and technology enhancement via laptops, printers, cameras will also be provided. The overall aim of the community involvement is to equip community members with the knowledge and infrastructure to establish a community based business. Medicinal plants can be grown and sold to manufacturing companies.	*Myrothamnus flabellifolius* is listed on the Red List of South African plants 2009 as Data Deficient - Taxonomically Problematic (DDT) . A species is DDT when taxonomic problems hinder the distribution range and habitat from being well defined, so that an assessment of risk of extinction is not possible. *Siphonochilus aethiopicus* is highly prized for its medicinal value and as a result has been over harvested from the wild to a point just short of total extinction. The cone shaped rhizomes and fleshy roots are dug up and sold on the muthi markets around the country. Micropropagation by tissue culture has brought this species back from the brink of extinction although the wild populations are reportedly almost totally depleted. This plant is currently listed in the Red Data book of South African plants. *Euclea natalensis* was not selected in any one of four screening processes for highlighting potential taxa of conservation concern for detailed assessment and was hence given an automated status of Least Concern. *Artemisia afra* also has Least Concern status.	Current research has demonstrated very good results against Mycobacterium tuberculosis. (MtB) The minimum inhibitory concentration was reported to be 8.0 ug/ml for En (root extract). The shoots of En also showed inhibitory activity against M.TB). Hepatoprotective effects as well as immune stimulatory activity have been observed when this plant was tested in vitro and in vivo. Both LivGreen and TrImmune have gone through many different in vitro pharmacodynamic and in vivo preclinical screenings. These plant extract were tested for its antimycobacterial, antioxidant, immune stimulatory effect and hepato-protective activities. The PCT patent[8] was filed in Oct 2014, a review of the patent is underway and a motivation of novelty and inventiveness has been added to strengthen the final application. The research and development to date has provided an indication of what is needed to reach the manufacturing step of active ingredients, however, for the final product to be made available for sale there is still a need to investigate the best formulations, scale-up processes, and marketing strategies and that will allow for successful entry into the market. Future plans:Observation studies will be conducted to evaluate the effects of	The bioprospecting permit for the commercialization of *LivGreen* was submitted to the department of environmental affairs in Nov 2014. The application included four benefit sharing agreements and four material transfer agreements. The application for *TrImmune* is underway and will be submitted for review by August 2015.

[7] The communities include: Mothong Trust, Mamelodi (Gauteng) – Dr. Mabena, Edakeni (Kwazulu Natal) – Dr Lulama Kopela community, Tswaing (North West Province) – Mrs. Christina Moheta

[8] Filled/granted: SA patent: "Shoot extract and composition of En for immune modulation and hepato-protection". South African Patent No: 2013/07324. Inventors: C. Oosthuizen and N. Lall.

Species	Distribution and Status	Threat	Research and Development	Value Chain Development
			the LivGreen. Clinical trials (I, II and III) will allow the registration of LivGreen as a complementary medicine for TB patients. TrImmune will undergo preclinical screening to determine the safety and efficacy on animal models. Two toxicity studies will be conducted to investigate the acute and sub-acute toxicity. Efficacy trials will include hepatoprotection from drug-induced toxicity, immune stimulation after treatment with TrImmune, and antibacterial effect in infected mice. Pharmacokinetics - Absorption/Metabolism study Cytochrome P450 metabolism studies will be done in vitro and an in vivo study to determine the metabolism and possible drug interactions.	

THE PROPOSED ALTERNATIVE SCENARIO

The baseline above shows that there has been some effort towards value chain development of genetic species, however it is not adequate and has largely been focussed on livelihoods and less so on reversing the significant threats to biodiversity. Secondly, it has not been in line with the Nagoya Protocol on Access and Benefot sharing.

The biodiversity economy in South Africa has not reached its full potential, as it remains largely unrecognised, underdeveloped and untransformed. Based on resource permit application data, the potential market size of the bioprospecting industry is at least R2,150 million (US$ 175 million) per year, yet it has reached only about 20 % of its potential. There is, therefore, room for strategic interventions and innovative collaborations to elevate the profile of this sector.

Given the growing demand to achieve optimum benefits from commercialization of genetic resources in line with the BES, this project is designed to support the Government of South Africa to achieve its BES vision of optimising the total economic benefits of the bioprospecting industries by ensuring the BES is implemented in accordance with the Nagoya Protocol on Access and Benefit Sharing**.** The project will ensure that communities and companies working with genetic resources, not only increase their understanding of the Nagoya Protocol, but also apply relevant ABS requirements in development of value chains for genetic materials. The project will support development of value chains for genetic resources already identified in the 18 biodiversity economy transformation (BET) nodes already identified by the BES in 15 rural and 4 urban districts across the nine provinces of the South Africa. The project target communities have been prioritised for development of small and medium size enterprises and community-based initiatives which sustainably use of indigenous biological and/or genetic resources, with a view to redistribute the benefits in an equitable manner, across various income categories and settlement areas of the country.

Biodiversity Management Plans (BMPs) will be put place to ensure that: collection and harvesting is carried out in a manner that maintains survival of the species in the wild; collection and harvesting does not affect other species or neighbouring eco-systems; collection and management activities are carried out under legitimate tenure arrangements and comply with relevant

laws, regulations and agreements, based upon adaptive, practical, participatory and transparent management practices; customary rights of local and indigenous communities to use and manage collection areas are recognised and respected.; and trade is conducted in an equitable manner resulting in the fair allocation of benefits to all resource stakeholders in accordance with Bioprospecting, Access and Benefit Sharing regulations and the Nagoya Protocol on ABS.

BMP's for genetic resources are a new concept in South Africa, as such, the government is using the implementation of the BMP for these products as a pilot project that will set the scene for all future BMP's in terms of methodologies and funding. The net effect upon completion of this project will be that species are well managed, and the lessons learned will be used in future to develop and implement other similar BMP's developed for the wise use of natural resources in both countries and beyond

Last but not least, the project will contribute to building the capacity in terms of " market intelligence" to analyse maket trends and niches and the necessary compliance related measures associated with accsssing international and regioanal markets. This will also involve the identification of appropirate and suitable intellectual property instruments that could be envisaged further to product development (Patents, licensing ect) so as to better position SA products. Building "market intellgence" would thus be useful in indentifying attracitive sectors and markets where specific products derived from these resources could be developped and the kind of trends that have to be taken into account for promoting the establishement of effective ABS agreements along ABS compliant value chains.

Link to the GEF Focal area strategy: The proposed project alternative is in line with Program 8 of the Biodiversity Focal area strategy*: Implementing the Nagoya Protocol on Access and Benefit Sharing.* The project activities will support national implementation of the Nagoya Protocol and, targeted capacity building to facilitate ratification and entry into force of the Protocol. The project specifically supports (i) Development and implementation of a strategy and action plan for the implementation of ABS measures. (e.g. monitoring of use of genetic resources, compliance with legislation and cooperation on trans-boundary issues); and (b)Building capacity among stakeholders (including indigenous and local communities, especially women) to negotiate between providers and users of genetic resources. The project will also build institutional capacity to carry out research and development to add value to South Africa's genetic resources and traditional knowledge associated with genetic resources. The project will also promote intra-regional cooperation building capacity and sharing knowledge with SADC countries.

BARRIERS TO ACHIEVING THE PROPOSED ALTERNATIVE SCENARIO

BARRIER	ELABORATION
The Value chain for the Bioprosecting sector is under developed	As the project baseline shows, most of the genetic resources identified are at various stages of the value chain development but none have reached their full potential. There is very limited investment in the sector due to lack of knowledge about its potential, low levels of entrepreneurship amongst communities that own the knowledge and insufficient support (i.e. mentorship, financial) There is very limited knowledge of resources with bioprospecting potential , No central information-sharing hub of resources with bioprospecting potential. Furthermore many bioprospecting resources are found on communal land – which limits entrepreneurial access to funding. The bulk of genetic resources are exported as raw products – with limited value addition. The above issues need to be rectified to avoid the risk of losing early-mover advantage in the International Market -and risk of other countries exploiting SA biodiversity benefits. Secondly, the model of milestone and royalty payment to holders of traditional knowledge is highly risky and often does not come to fruition of the products when these are not successfully commercialized. There is therefore a risk of under-recovery of resource rents and the socio-political risk of not achieving economic transformation Last but not least, poor access to resources such as (capital, land, necessary marketing infrastructures etc) affects the way in which new entrants or communities can benefit from opportunities in the broader value chain , especially in terms of the volume of products (quantity) traded and the quality. Supporting infrastructures, resources including knowledge and capabilities are conditional for value chains to be successful.
Inadequate Research and Development in the Bioprospecting Sector	There are very few few institutions carrying our research on genetic resurces and even those focuses on specific segments of the market. Academics are also protective of their research knowledge and this further limits the access to this research to the only few selected institutions. One major challenge associated with the collection of applied scientific data in research and development is the transition from a collection of information to the commercialization of a final product which can be made available to the consumer. Another barrier is lack of participation of communities in the clinical studies, which leaves them out of the value chain. Holders of the traditional knowledge have not participated in the commercialization of the products derived from the species and only relied on financial benefits through royalty and milestone payments which has been limited

Weak Capacity to add value to genetic resources and to develop, negotiate and monitor benefit-sharing agreements	Current education system in South Africa at both primary and secondary has limited recognition of the bioprospecting business and market. This has led to few entrants at tertiary level; a limited bioprospecting professional capacity in the country with a focused, limited skills sets. There is also lack of coordination between the relevant stakeholders within the bioprospecting sector and limited capacity to monitor and enforce regulations Negative socio-cultural perceptions about bioprospecting sector have in some cases acted as significant barriers to business creation and can undermined the impact of intervention in support of these businesses. The impact of bioprospecting sector will be less than optimal if large sections of the population do not consider this sector as a viable and rewarding business option.

PROJECT COMPONENTS AND OUTCOMES: The project will address the aforementioned barriers with three components below:

COMPONENT 1: RESEARCH AND DEVELOPMENT: The bioprospecting sector requires research and development of resources which are currently being utilised in the market to ensure they deliver on what they promise, but also to expand this market through opportunities offered by new genetic and biological resource utilisation and product development. Support under research and development will include baseline analysis, valuation and feasibility of new business ventures, market analysis of new products, a database of value added natural ingredients; strengthening facilities for testing of raw materials, processed items and products; ensuring testing is aligned to international standards; and establshment of standards for quality, toxicity and allergens. Research and clinical studies supported by this component will be carried out by the *University of Pretoria*, and the *CSIR*. Both organisations have already applied for access to genetic resources in accordance with the *Bioprospecting Access and Benefit Sharing regulations*. The studies will focus on the following

- ***LivGreen (****Euclea natalensis****)*** **and** ***TrImmune (****Artemisia afra/Myrothamnus flabellifolius/ Siphonochilus aethiopicus****):*** Research and development by the University of Pretoria (Plant Health Department) towards production of herbal products that have antimycobacterial activity, immune stimulatory effect and hepatoprotective activity specific for TB patients.The will ihclude preclinical screening of TrImmune to determine the safety and efficacy on animal models. Two toxicity studies will be conducted to investigate the acute and sub-acute toxicity. Efficacy trials will include hepatoprotection from drug-induced toxicity, immune stimulation after treatment with TrImmune, and antibacterial effect in infected mice. Clinical trials and Observation studies to evaluate the effects of the LivGreen. Clinical trials (I, II and III) will be conducted. This will allow the registration of LivGreen as a complementary medicine for TB patients. Pharmacokinetics Absorption/Metabolism study: Cytochrome P450 metabolism studies will be done in vitro and an in vivo study to determine the metabolism and possible drug interactions. Last but not least, both LivGreen and TrImmune will be registered as nutritional supplements for TB patients.

- ***Siphonochilus aethiopicus (African Ginger):*** A clinical study by the CSIR on African ginger as well as the establishment of sustainable supply of plant material. This will enable it to be registered as a fully validated complementary medicine based on an African Traditional Medicine (ATM), researched and developed by the CSIR scientists.. The most significant output will be the creation of community based agro-processing businesses that develops small holder schemes with comprehensive support around infrastructure, marketing, finance and extension services. Jobs will be created in communities cultivating and harvesting the fresh rhizomes of African ginger in Mpumalanga and Limpopo provinces. These businesses will be part of the supply chain for both the local and international markets leading to the socio-economic upliftment of rural communities. The work will demonstrate how the value addition to biodiversity and indigenous knowledge can lead to the creation of new job opportunities thereby contributing to the reduction of poverty and building of the Bio-economy. In the longer term, the THC will obtain financial benefits through a royalty payment based on product sales, subject to clinical studies being successful, as per the signed Benefit Sharing Agreement with the CSIR.The local community farmers will be trained in the technical and business aspects of managing a horticulture enterprise based on cultivating African ginger to provide a steady supply of high-quality cultivated material to the private sector companies[9]. The private sector partners will provide quality specifications for product consisting of cultivated, harvested and minimally processed plant material produced by local communities under the guidance from the CSIR.

Component 2 – VALUE CHAIN DEVELOPMENT: This component will support the full range of activities that are required to commercialise the genetic resources from conception, prospecting, different phases of production and finally to the commercial market. This will include obtaining the necessary "market intelligence" to advance the positioning of products, product niches, including facilitation of Intellectual Property (IP), licensing, etc. Project activities under this component will also

[9] Currently three private sector partners are involved in the project. Afriplex (Pty) Ltd. undertakes commercial scale processing and extraction of African ginger; Amka Products (Pty) Ltd. and Dr Nigel Gericke develop formulations and undertake clinical trials for different uses of the active ingredient contained in extracts of the species.

be geared towards long-term survival of genetic resources whilst ensuring that the livelihoods of stakeholders are respected, that all stakeholders retain appropriate control over the wild collection processes and minimise the degree of impact from harvesting. Activities will also ensure that those areas harvested receive adequate restoration and long-term loss of biodiversity is avoided. specific activities will be undertaken to protect the species and ensure systems are in place to monitor the impacts of use.

It should be noted that the value chain development proposed by this project is in line with the scope of the current legislative and regulatory framework in SA. In February 2014, proposed amendments to the BABS regulations were published. The proposed regulations would explicitly include "biotrade," defined as buying and selling of indigenous biological resources for the purpose of bioprospecting, product development, or product manufacturing. Biotrade permits would be required for such activities, with the possibility of seeking and obtaining integrated biotrade and bioprospecting permits. Therefore, biotrade value chains provide a good starting point as there are already partnerships established in these value chains. The project will support the upgrade of these biotrade value chains ABS compliant value chains if the resources are utilized in the future - thus potentially leading to the conclusion of viable ABS agreements.

As the project baseline shows, each of the priority genetic resource below is at a different stages of the value chain development, therefore this component will support different activities as indicated below:

- ***Pellagornium Siodides:-***.. Due to the threats Management plans need to be put in place to ensure species protection along the trade supply chain, including the protection of customary rights and laws relating to access and benefit sharing from the resource.. Collection of the species for commercial purposes in the pharmaceutical industry needs to be more closely monitored and regulated in terms of a biodiversity species management plan (BMP) as specified in Chapter 3 of South Africa's National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), or NEMBA. It has been proposed in the BMP that sustainable management practices be developed and endorsed through a Pelargonium Working Group (PWG) and ultimately formalised through the BMP (in terms of the NEMBA) as legally-binding conditionalities on stakeholders for continued harvesting and trade. Through continuous research and monitoring, sustainability and enhancement of the BMP will be verified as an iterative process. This project will support putting in place A Biodiversity Management plan with three over-arching activities: (a) Regular monitoring of both local and international trade, to identify any threats to the sustainable utilisation of the species; **(b)** Continuous scientific research and analysis, to ensure that the survival of the plant in the wild is not affected by the trade; and **(c)** Review and revision, where necessary, of relevant legislation, regulations and agreements to ensure that collection, management and trade procedures are in compliance.

- ***Hoodia Gordonii*:** Support will include obtaining regulatory approval from the Department of Environmental Affairs to commercialise the use of Hoodia gordonii through the San and Khoi San communities who have traditionally used the plant as a source of food and water, and strengthening the capacity of the communities to comply with ABS legislation both at national, and international levels. Furthermore, support will go towards clinical studies provide legitimacy of the traditional use of Hoodia for commercial pharmaceutical or high-end food industry markets. A further benefit that will accrue to the communities is access to the cultivated material of the Hoodia for traditional use. The community farmers will be trained in the technical and business aspects of managing a business enterprise, branding based on their traditional knowledge and marketing to provide a steady supply of high-quality cultivated material. This process will ensure that the interests of the holders of the traditional knowledge associated with the Hoodia are protected.

- ***Lippia Javanica:*** Support will entail training workshops to provide the stakeholders involved with relevant knowledge and skills in order to comply with provisions/articles of the Nagoya Protocol.The training workshops will provide the stakeholders with tools to negotiate the benefits arising from the utilisation of L. javanica in commercial activities. Training workshops will cover agroprocessing and scientific research and product development based on practical experience.Benefit sharing agreements will be concluded between the Traditional Healer Committee with the Temothuo Co-operative and Hi-Hanyile Enterprise and between the Traditional Healers Committee and the private companies commercialising products developed from L. javanica; Safe, high quality and standardised product technologies will be developed (through research and development by the CSIR) together with communities to be tested and sold on the local market.

- ***Aloe Ferox:*** Support will go towards sustainable harvest, manufacturing and trading of Aloe sap by the Tyefu communities. The sap will be produced and delivered to the Tyefu Aloe (Pty) Ltd company, who will in return sell this to other clients. It is envisaged that tappers from each village will be contracted to assist in harvesting practices. Tyefu Aloe (Pty) Ltd company has already granted 110 ha of land for this purpose. Each village will have an allocated land. Mature plants will be transplanted soon after being cut from their original location. A designated nursery will ensure that Aloe ferox is propagated and grown to usable size. A field office at each of the field plots will manage the procedures of cultivation and harvesting. The field plot has the potential to sustain

approximately 20,000 specimens an it is estimated that this will result in creation of 130 jobs. Marketing of the product will entail, among other things, attending local & international trade shows (market research), road shows, branding website development, development of standards and certification of harvest product.

- ***Moringa Olifera–***Support will go towards sustainable harvest, manufacturing and trading of Moringa oil. *Botanica* will partner with The Moringa Cooperative (TMC) who will donate Moringa trees to local Eco-Schools (two schools are currently pilot phase implementation partners) in the remote, rural north of Limpopo Province. TMC intends to expand the project to 56 schools in the Blouberg Village area over the next two years. Once the trees are mature, young school leavers will harvest the leaves and the seeds. They will produce powder from the leaves, which can be sold in the local community, as well as used in school feeding programmes. Botanica has undertaken to purchase the mature Moringa seeds to produce oil, which will be sold to its existing network of cosmetic producers. The project will create approximately 50 local jobs to young school leavers over the next 12 months. Additionally, 5 workers will be employed per school to manage the project creating 280 new jobs. Furthermore, the production, processing and supply of Moringa leaf powder will significantly reduce malnutrition in the local schools as the harvested leaves will be used in the schools' learner feeding programmes, which ensure that school pupils receive one hot, nutritious meal per day. The cultivation and harvesting of *Moringa oleifera* will bring about an important economic boost to the local community. Benefit sharing with traditional knowledge holders will be ensured. Botanica has already applied for an integrated Bioprospecting permit from the Department of Environmental Affairs. Botanica has also signed an Access and Benefit Sharing Agreement with a local community foundation that is focused on social development.

COMPONENT 3 - CAPACITY BUILDING: This component will support the development of a comprehensive training programe for key stakeholders involved in the project. Local communities will get practical experience in research and product development processes. Training will be provided to the Traditional Healers Committee (traditional knowledge associated with L. javanica). Assistance will be provided to traditional Healers Committee, Temothuo Co-operative and Hi-Hanyile Enterprise to develop a range of marketable products derived from L. javanica. This will include batch agro-processing (essential oils-perfumery, toiletry, cosmetic and aroma therapeutic products), chemical extraction, separation and final product formulations to test on the market for acceptability. Other activites include: strengthening the capacity of the Department of Environmental Affairs in the implementation of its national legislation and the Nagoya Protocol on ABS, training staff and communties in the develoment and implementation of biodiversity managemrent plans; business skills and financial planning for communities; training workshops on benefit sharing negotiations, fair and equitable sharing of benefits; prior informed consent, and material Transfer Agreements.

INCREMENTAL COST REASONING AND EXPECTED CONTRIBUTIONS FROM THE BASELINE, THE GEF TF AND CO-FINANCING*:*

The bioprospecting sub-sector of the biodiversity economy which is largely under-developed and has demonstrated potential for growth in future. The biotrade market in South Africa is currently estimated to be growing at 6 % per annum, but international markets have shown this sector has the potential to grow by 20 % per annum. The successful implementation of the BES will see the growth in cultivation of bioprospecting ingredients by at least 500 hectare per annum, at least triple the number of RSA products in domestic & international markets, interms of job creation 30-50% of RSA bioprospecting products must have community participation in the supply chain while in equity: R250 mil product development and sales from SMME and R250 mil on fixed assets and infrastructure resulting in improved income, skills development, institutional capacity building, entrepreneurship and food and environmental security. To enhance the sustainable use and to provide product development leads to key bioprospecting industries, a National Repository of natural product compounds, Biodiversity Market Bank will be established. The "hidden harvest" of medicinal plants receives relatively little attention from the public, governments or conservation NGOs. The few development agencies that pay attention are focused often on strengthening rural livelihood opportunities. This project ensures that attention is also paid to the sustainable use of the biodiversity resource base on which the biodiversit econmy depends.

The importance of indigenous plant resources and bee products as an ingredient in these value-added bioprospecting products is revealed by the comparative values of retail sales of products with and without indigenous resources. Products containing indigenous plant resources and bee products sell between 50% -100% more by retail value. This is evidence of a strong consumer demand for products containing an indigenous resource as an ingredient. This demand enables bioprospectors to adopt a variety of marketing strategies to differentiate their products. In some instances bioprospectors can increase revenue through asking premium prices, and in other instances they may increase revenue by keeping prices constant and relying on increased stock turn.

The innovation lies in the development of new medicinal products from South African plants with a vast amount of scientific backing focussed on the commercialisation of these products. Exploring this potential will not only lead to the advancement of science and medicines, but will also lead to the knowledge capturing and equal benefit sharing with all the communities and stakeholders involved.

GLOBAL ENVIRONMENTAL BENEFITS

The table below summarises the global environmental benefits that will be delivered by the project. More details about the GEBS will be determined during the PPG Phase.

Without project	**With project**
Unsustainable use of the species continues (species population).	Threats to species are reversed through the development of biodiversity management plans for *Pelagornium Siodides, Hoodia gordonii, Aloe ferox, Lippia javanica, Siphonochilus aethiopicus* (African ginger), *Moringa oleifera, Euclea natalensis, Artemisia afra, Myrothamnus flabellifolius and Siphonochilus aethiopicus.*
Unsustainable harvesting of the species continues	Threats to species are reversed through sustainable use – harvesting guidelines.
Loss of genetic variation due to ongoing genetic manipulation	Threats to genetic integrity reversed through research and development strategy.
Loss of ecosystem symbiosis due to cultivation	Threats to ecosystem symbiosis reversed through research and development strategy

INNOVATIVENESS, SUSTAINABILITY AND POTENTIAL FOR SCALING UP

The sustainability of the specific project activities will be ensured by the continued availability of training materials and case-studies. These materials will be open access, available in electronic version, and disseminated widely. They will provide comprehensive guidance for stakeholders, and will be used in future projects, as well as other countries of the region and beyond. The emphasis on developing a comprehensive capacity-building strategy for bioprospecting sector will ensure the continued delivery of the materials, e.g. through strategic partnerships, continued engagement of government agencies and private sector. This will include plans for cost-recovery for financial sustainability. Lessons learnt on the implementation of projects incorporated in this proposal will be imparted to a braoder stakeholder base in the planned biennial biodiversity economy indaba

2. Stakeholders.

The South African bioprospecting sector encompasses organisations (businesses, national and provincial government departments, public entities, research organisations, academic organisations), and people (communities, individuals, investors) that are searching for, collecting, harvesting and extracting living or dead indigenous species11, or derivatives12 and genetic material thereof for commercial or industrial purposes. The table below lists the stakeholders and their expected role in the Project.

Stakeholder[10]	**Name of Organisation**	**Expected Role in Project**
Government	Department of Environment Affairs	Oversight and implementation, enforecement of the ABS laws and agreements
Research Institutions	Centre for Science and Industrial Research (CSIR) University of Pretoria	Research and other technical research aspects of the project,
Local and Indigenous Community Groups, including Women's groups	Community Property Associations (CPA's) Traditional Healers Commitee Local harvesters, collectors and buyers	These groups and local communities, will be consulted and directly engaged in dialogue and training activities at all stages of the implementation and roll out of the project's activities
Private Sector	Botanica	Value chain development, marketing, etc

[10] Other stakeholders and their roles will be further refined duing the PPG

(including from source and consumer countries)	Afriplex Moringa Cooperative	

3. Gender Considerations.

The National Development Plan (NDP) defines a desired destination and identifies the role different sectors of society need to play in reaching that goal, The NDP aims to eliminate poverty and reduce inequality by 2030. According to the plan, the structure of the economy will be transformed through industrialisation, broad-based black economic empowerment and through strengthening and expanding the role of the State in the economy. inclusive economy which created jobs and provided opportunities for all, especially the youth.The NDP further emphasises the importance of addressing gender along with race and geographic location and advances a number of measures to address women's equality. The Biodiversity Economy Strategy was developed in line with NDP's objectives and goals.One of the target of the strategy is that 30-50% of RSA bioprospecting products must comprise of community involvement in the supply chain , Most importantly the BES gives priority to the 18 nodes where 13 are in rural areas where most of inhabitants are women -since men seek normally go to look for work in the cities. The empowerment of rural women is an important consideration in the development of rural areas. To this end, the aim of the BES is to improve the rural economy through encouraging the sustainable use of IBR to communities residing in the BES transformation Nodes. *(A further analysis of the gender dimentsions will be carried out during the PPG)*

4 Risks.

The table below shows the possible risks to the project and proposed mitigstion measures. These will be further refined during the PPG.

Possible Risks	**Proposed Risk Management Measures**
Research and Development :- • Results of clinical trials are negative • Insufficient biological material to satisfy a high demand	The project will support re-testing or research into other parts of the plants and look into sustainable means of obtaining more biological material through increased cultivation with community involvement.
Value Chain Development :- • Permits for marketing are not obtained • There is a little or no market demand	The project will support obtaining the necessary "market intelligence" to advance the positioning of products, product niches, including facilitation of Intellectual Property (IP), licensing and modification of product according to market preferences
Environmental risks Overharvesting of species in the wild continues unregulated	The project will put in place an an online system that will provide information about abundance and availability of resources for bioprospecting activities (linked to the permitting application system) and an online permitting system for efficient access to resource by national, regional and international traders. Further more, Biodiversity Management Plans supported by the project will ensure harvesting of genetic resources is based on current resource assessment, carried out under legitimate tenure arrangements and in compliance with relevant laws, regulations and agreements. Last but not least, the project will support streghtening the capacity for stricter enforcement of BABS regulations; monitoring of wild species' populations.
Social risks • Profitability could make traditionally used, accessible, and affordable medicinal plant resources less available to populations that have relied on them for centuries • Private companies patenting traditional remedies from the wild and selling them at a vast profit, often allowing little or none of that profit to go back to the country or indigenous and local communities of origin	The PPG phase will include a detailed investigation into the current use and access regimes of communities, methods for obtaining free, prior and informed consent, and mechanisms for benefit sharing.
Political Risks Lack of coordination between national and provincial	Coordination will be improved by using platforms such as the bioprospecting forum and the biennial biodiversity economy indaba

environmental protection agencies and/or district environmental agencies as well as across different sectoral ministries to ensure traceability and adherence to various legislations and regulations	whose capacity will be further strengthened by the project.

5. Coordination with relevant GEF-financed and other initiatives.

This project is in line with a global project entitled "Strengthening human resources, legal frameworks and institutional capacities to implement the Nagoya Protocol on Access to Genetic Resources and Benefit Sharing (ABS)" in which South Africa is among the 25 participating countries. The project will be implemented during a three-year period starting mid 2016 and consists of the following three main components:1. Strengthening the legal and institutional capacity to develop or strengthen national laws on access to genetic resources and benefit sharing; 2. Building trust between users and providers of genetic resources to facilitate the identification and implementation of bioprospecting projects for the development of products for the pharmaceutical, cosmetics, biotechnology and agriculture industries, among others; 3. Strengthening the capacity of local communities and indigenous peoples to contribute to the implementation of the Nagoya Protocol. Component 2 of the Global project will include activities that will lay the foundations for creating an enabling environment for the conclusion of ABS agreements and partnerships in line with the Nagoya Protocol. In this regard, as the this project focuses on the development of value chains in specific sectors, the two projects will be highly complementary and synergistic. Furthermore, it is hoped that the Global Project will allow South Africa to strengthen its ABS framework and institutional arrangements which will thus provide a conducive environment for undertaking the activities envisaged in this project in terms of the development value chains.

The project will be implemented in close colaboration *The ABS Capacity Development Initiative* - a multi donor initiative hosted by GIZ which is providing technical support to South Africa in the implementation of the Nagoya Protocol. The support focuses on three areas (i) development of regulatory and institutional frameworks (ii) valorisation and development of ABS agreements (iii) supporting the participation of Indigenous People and Local Communities (IPLCs) for the development of Biocultural Protocols and community procedures .(*details on the nature of the collaboration will be finalized during the PPG)*

6. Consistency with National Priorities.

South Africa has, since November 1995, been a signatory to the *Convention on Biological Diversity (*CBD). This project supports implementation of the BES in line with the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization*

The project is also in line with a Developmental State approach, as envisaged in South Africa's *National Development Plan*, where Government and the private sector form partnerships that support various segments of the biodiversity sector to develop, grow and transform.
Key issues which have been highlighted for consideration in the environmental and biodiversity sector are (1) implementation of sustainable development, (2) developing appropriate responses to the challenges of climate change and (3) to pursue and explore the concept of green jobs and promote the green economy36. These issues have implications for social and economic development. The environmental sector and the BES is underpinned by strong policy and legislative instruments

The *1997 White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity* provides the vision and principles for the sustainable use of the countries resources, where human and the natural environment coexist in harmony and people derive lasting benefits from the conservation and sustainable use of the country's rich biodiversity. This vision is legitimised in three pieces of legislation, the *National Environmental Management Act (Act no 107 of 1998)37 (NEMA), the National Environment Management: Biodiversity Act (Act no. 10 of 2004)1 (NEMBA) and the National Environmental Management: Protected Areas Act (Act no. 57 of 2003)38 (NEMPAA*)

The NEMBA is the chief policy instrument regulating the bioprospecting sector of the biodiversity economy. Other relevant policies and legislation administered by various departments in the country, will also guide the growth and development of the biodiversity economy. These policies and legislation included those which regulate: intellectual property rights in the country (*Intellectual Property Law Amendment Act (2013);* national quality standards such as SABS (*Standards Act 2008* (Act No. 8 of 2008); and small and medium enterprise (*Companies Act 2008* (Act No. 71 of 2008; *Consumer Protection Act 2008* (Act No. 68 of 2008); *International Trade Administration Act 2002* (Act No.71 of 2002). Last but not least the project is in line with the revised NBSAP.

The project will also contribute to the following Aichi Targets: Target 14 -By 2020, ecosystems that provide essential services,

including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable; Target 16; By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation; and by 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

7. Knowledge Management.

Various forms of knowledge management will be used, such as the development of posters to illustrate the project ventures, so that aspiring participants in the natural products sector can learn from these ventures. Also, project participants will be provided with platforms such as, the biennial biodiversity economy indaba, bioprospecting forum meetings and/or biodiversity economy and sustainable use workshops, to impart their experience during the project implementation. Project implementation will also be shared to stakeholders by developing articles and publishing it in the Department of Environment Affairs quarterly magazine and website. *The knowledge management strategy will be further refined during the PPG.*

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT[11] OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

(Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this SGP OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Mr. Zaheer Fakir	GEF Operational Focal Point	Environmnetal affairs, republic of South Africa	08/03/2015

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies[12] and procedures and meets the GEF criteria for project identification and preparation under GEF-6.

Agency Coordinator, Agency name	Signature	Date *(MM/dd/yyyy)*	Project Contact Person	Telephone	Email
Adriana Dinu, UNDP-GEF Executive Coordinator.		08/26/2015	Alice Ruhweza UNDP Technical Advisor, EBD	251-912-503311	alice.ruhweza@undp.org

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[11] For regional and/or global projects in which participating countries are identified, OFP endorsement letters from these countries are required even though there may not be a STAR allocation associated with the project.

[12] GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF