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National Grasslands Biodiversity Programme (NGBP) PIMS 2929

Brief Description: The Grasslands biome is the second largest biome in South Africa, occupying 29% of the country's land territory. The biome is a repository of globally significant biodiversity, constituting, in particular, a rich storehouse of floristic, avian and invertebrate diversity. However, in common with other temperate grasslands across the globe South Africa's grasslands are critically threatened. 30% of the area has already been irreversibly transformed by anthropogenic activities and only 2.8% is formally conserved in protected areas. These areas are not representative of species and habitat diversity across the biome. Most of the grasslands habitat presently lies in production landscapes allocated to livestock production, agriculture (cereals, some food crops and cash crops such as sugarcane), and afforestation with fast growing exotic tree species. South Africa's largest urban and industrial centre is located within the grasslands, namely the conurbation of Johannesburg and Pretoria, and these environs are a conservation hotspot. Production activities constitute the main threat to grasslands biodiversity. The high turnover of biodiversity across the grasslands landscape and the nature of threats imply that expansion of protected areas alone will not be sufficient to protect this heritage. There is an unmet need, instead, to mainstream biodiversity management into the production practices of the major production sectors providing the stimulus for land use change in the biome, and devise win-win strategies that conserve biodiversity while catering for development.

The NGBP will complement existing conservation endeavours in the biome by seeking to mainstream conservation objectives into the agriculture, forestry, urban development and coal mining sectors. The programme will lift a number of critical barriers to conservation management, namely, market failure, systemic and institutional capacity weaknesses and management know-how within production sector institutions. These barriers will be addressed through the development of new management tools geared to the needs of specific sectors that protect biodiversity as part of production processes, by internalising the non-pecuniary values of ecosystem services in production, and by strengthening capacity in production sector institutions to address conservation imperatives as part and parcel of economic development. The baseline situation is characterised by many uncoordinated efforts to manage grassland biodiversity. Although the enabling environment for 'mainstreaming' is largely in place, with a supportive policy and legal framework, there is a gap between policy and implementation. This provides an entry point for interventions. The NGBP is designed as a catalytic initiative, which will help coordinate existing conservation efforts and address critical management gaps, such that the effort comes to equal more than the sum of the parts.

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List of Acronyms -----

Agribusiness	Agricultural Business Chamber (ABC)
AgriSA	Agriculture South Africa
ARC	Agricultural Research Council
ASGISA	Accelerated and Sustained Growth Initiative in South Africa
CMA	Catchment Management Agency
CSIR	Centre for Scientific and Industrial Research
DALA	Mpumalanga Department of Agriculture and Land Administration
DEAT	Department of Environmental Affairs and Tourism
DLA	Department of Land Affairs
DoA	National Department of Agriculture
DME	Department of Minerals and Energy
DWAF	Department of Water Affairs and Forestry
EC DEAET	Eastern Cape Department of Economic Affairs Environment and Tourism
ECPB	Eastern Cape Parks Board
EIA	Environmental Impact Assessment
EWT	Endangered Wildlife Trust
FSA	Forestry South Africa
FSC	Forest Stewardship Council
FS DTEEA	Free State Department of Tourism Environment and Economic Affairs
GDACE	Gauteng Department of Agriculture, Conservation and Environment
GrainSA	Grain South Africa
GrassCo	Grassland Coordination Unit
GSC	Grassland Steering Committee
IAIA	International Association of Impact Assessors
IDP	Integrated Development Plan
JMOSS	Johannesburg Metro Open Space
LED	Local Economic Development
KZN	KwaZulu-Natal
MPTA	Mpumalanga Parks and Tourism Agency
NAFU	National African Farmers Union
NBSAP	National Biodiversity Strategy and Action Plan
NERPO	National Emerging Red Meat Producer's Organisation
NSBA	National Spatial Biodiversity Assessment
NW DACE	North West Department of Agriculture Conservation and Environment
NWPTB	North West Parks and Tourism Board
RPO	Red Meat Producers Organisation
SADC	Southern African Development Community
SAMIC	South African Meat Industry Company
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SEA	Strategic Environmental Assessment
SLIMF	Small and Low Intensity Managed Forests
StatsSA	Statistics South Africa
STEP	Subtropical Thicket Ecosystem Planning Programme
TLU	Transvaal Landbou Unie (Transvaal Agricultural Union)
WESSA	Wildlife and Environmental Society of South Africa
WfW	Working for Water Programme
WfWetlands	Working for Wetlands Programme
Wool South Africa	National Wool Growers Association South Africa
WRC	Water Research Commission
W.R.S.A.	Wildlife Ranching South Africa
WWF-SA	World Wide Fund for Nature South Africa

Exchange Rate: US\$ 1= Rand (R) 6.75

SECTION 1: ELABORATION OF THE NARRATIVE

PART 1A: Situation Analysis

1.1 Environmental Context

1. The South African grasslands biome, which constitutes one of seven biomes in the country, straddles an area of 339 237 km² (about 29% of the country's land surface). It is the second largest biome in South Africa (see map in Annex II) (Reyers et al, 2005). The biome lies between 25° and 31° longitude and 25° to 33° latitude, and ranges from the interior of the Eastern Cape and KwaZulu-Natal provinces in the South and South East over the coastal escarpment and onto the central high plateau of South Africa into the provinces of Mpumalanga, Gauteng and Limpopo in its Northern extremity. The Western boundary occurs in the Northwest Province and further South, in the Free State. The altitude varies from sea level to 3,300 metres above sea level at the highest point, with a central plateau ranging from 1,200- 2,000 metres above sea level. Rainfall ranges from ca.400 to 1,200mm year, while the temperature gradient is also high (particularly in winter, when some areas can be snow bound while others remain frost free). Precipitation and temperatures vary according to altitude, topography and proximity to the coast.

2. The topography of the biome is characterized by flat to rolling terrain including in the central plateau, but includes dissected mountainous areas. The plateau is bounded to the South, East and West by a series of escarpments, leading to the coastal fringe in the East and South and to the Drakensburg Mountains in the West. The latter escarpment forms the dividing watershed between the Atlantic and Indian Oceans. Several of South Africa's major rivers flow through the biome. The major rivers draining into the Atlantic Ocean are the perennial Vaal, Caledon and Orange Rivers. Many rivers drain towards the Indian Ocean, including the Tugela, Pongla, and Kei. The most common soil group in the biome is the red-yellow-grey latosol plinthic catena. This is followed by combinations of black and red clays and solonetzic soils, freely drained latosols and black clay soils. These freely drained latosols and black clay soils are largely limited to the biome. Other soil groups include undifferentiated rocks and lithosols, weakly developed lime-poor soils on rock and undifferentiated swamps and alluvial plains.

1.2 Global significance of South Africa's grassland biodiversity

3. Grasslands cover about 40% of the earth's non ice-bound terrestrial surface and are home to over 1 billion people. Globally, grasslands house many important fauna and flora and occur in 15% of Centres of Plant Endemism, 11% of Endemic Bird Areas and 29% of ecoregions with outstanding biological distinctiveness (White et al, 2000). In addition to their biodiversity significance, grasslands provide essential ecosystem goods and services required to support human life and well being. These include forage for livestock, water and nutrient cycling services, soil stabilisation, carbon storage, energy supply, and recreation (Reyers et al, 2005).

4. Despite (and often because of) their economic value, temperate grasslands across the world are one of the biomes most impacted by anthropogenic activities. A recent study on the status of the world's ecosystems concluded that while most global biomes had lost 20 – 50% of their area to cropland conversion, temperate grasslands had lost more than 70% of their natural cover by 1950, with a further 15.4% lost since then (Millennium Ecosystem Assessment, 2005). These findings make the temperate grasslands one of the greatest global conservation priorities. The need for conservation action in these grasslands is also reflected by the threatened status of temperate grasslands in the Global 200 ecoregions assessment (Olson & Dinnerstein, 1998), as well as the report drawn up by the World Resources Institute in their Pilot Assessment of Global Ecosystems (White et al, 2000) where declines in grassland condition, biodiversity and ecosystem service delivery were highlighted as major concerns.

5. An additional concern around grasslands is that they remain one of the least conserved biomes in the world. Globally just over 7% of the grasslands are located within protected area estates. However, this figure

masks great differences between grasslands types and the temperate grasslands biomes are particularly under represented. In fact, temperate grasslands constitute the world's least conserved biomes: only 0.69% of its extant area is protected (Henwood, 1998).

6. South Africa is one of 17 megadiversity countries in the World, assessed on the strength of its floral diversity and endemism. South Africa's plant diversity is estimated at 23,420 species, representing 9% of the world total. The grasslands in South Africa are a very old, complex and slowly-evolved system of diverse plant communities. The area is exceptionally rich in floristic diversity and harbours a very high diversity of indigenous species, second only to the Cape Floristic Region (greater at 1000m² scale; O'Connor & Bredenkamp, 1997). The mean species richness of 82 species per 1000 m² is second only to the Renosterveld vegetation community. Most plant reproduction takes place vegetatively rather than through seed production, particularly among the bulbous plants and climax grasses. Only one in 6 plant species in the South African grassland community is in fact a grass. There are 34 grass taxa that are endemic to the Grassland biome. The remainder are bulbous plants that include arum lilies, orchids, red hot poker, aloes, watsonias, gladioli and at present 54 known species of ground orchids¹ (McAllister, 1998a). Among the herbs, high endemism occurs in the orchids (108 endemics) (Mucina & Rutherford, in press).

7. At regional scale, grasslands have a high alpha diversity and moderate gamma diversity; the Highveld region on its own has almost 4000 species and contains centres of diversity for many speciose genera. Species turnover in grasslands may be relatively high where topographical and environmental gradients are steep. Complete species turnover may occur for every 400m of change in elevation (Hoare 2003). These high rates of beta diversity permit coexistence of species at a landscape level that contributes to the overall richness of the biome.

8. Nearly half (15) of the 34 mammal species that are unique to South Africa are found in the grasslands biome. Several small mammals are restricted to the grasslands of South Africa, including some threatened species e.g. the Critically Endangered Rough-haired Golden Mole (*Chrysospalax villosus*); the Endangered Gunning's Golden Mole (*Neamblysomus gunningi*) and the Endangered Robust Golden Mole (*Amblysomus robustus*). The grasslands have been identified as an Endemic Bird Area — and ranked amongst the highest global conservation priorities for EBAs (Bibby et al, 1992, Stattersfield et al, 1998). The biome hosts 52 of the 122 Important Bird Areas in South Africa. The biome contains 10 of the 14 globally threatened bird species found in South Africa, including Botha's Lark (*Spizocorys fringillaris*), which is strictly endemic to the highveld grasslands, and Rudd's Lark (*Heteromirafraga ruddi*), which is the only species classified as Critically Threatened in South Africa². Of the 195 reptile species endemic to South Africa, 42 (22%) are found in the grasslands biome (Branch, 1988). Of these, 20 (48%) species and a further 7 subspecies are endemic to the biome. The area is also important for the conservation of invertebrates. One-third (31) of the 107 threatened South African butterfly species occur in the grasslands, and half of these species are unique to the biome (McAllister, 1998a). Finally the area harbours important wetlands; of 17 Ramsar sites in the country, five are in the grasslands. These wetlands provide feeding and breeding sites for a range of migratory waterfowl, underscoring their importance.

9. Wetlands are also important because they provide a wide range of ecosystem services upon which people depend directly and indirectly. These include flood attenuation, water quality enhancement, ground water re-charge, provisioning services such as water, food and fibre, cultural and recreational use values, and support for unique wetland dependent biodiversity. The hydrological ecosystem services mediated by

¹ Many of these plants are important to the global trade in cut flowers and garden flowers. While the trade consists mainly of hybridized varieties, the South African grasslands biome is important for the conservation of wild races.

² Its distribution appears to have become dangerously fragmented with some 85% of the remaining world population being centered around the town of Wakkerstroom (one of the NGBP demonstration-sites).

wetlands are critical to the functioning of a number of trans-boundary river basins and the continued integrity of wetlands is thus vital to sound river management.

10. The vegetation of the biome is physiognomically monolithic and characterised by the strong dominance of hemicytophytes of the Poaceae. The vegetation of the biome follows a rainfall gradient which generally corresponds to the relative contributions to the plant cover by ‘sweet’ and sour’ grass.

11. In common with many of South Africa’s other biomes, the biodiversity of the biome is not evenly distributed across the landscape. Presently 80 different vegetation types and 42 river ecosystem types are recognised (see Annex 11 Vegetation types of the grasslands biome). South Africa’s grassland biome can be separated into two climatically-controlled types: temperate inland (including montane³ and highveld⁴ grasslands) and (sub) tropical along the coastal belt⁵. There are also azonal patches of grassland communities occurring outside the main biome boundaries, such as grassy shrublands on koppies (Mucina & Rutherford, in press). The Grassland biome in South Africa occurs mainly on the high central plateau (highveld – dominated by C4 grasses), the mountainous areas of the Drakensberg (dominated by C3 grasses), the inland areas of the eastern seaboard, and the central parts of the Eastern Cape. Five major groups can be distinguished: Drakensberg Grassland, Dry Highveld Grassland, Mesic Highveld Grassland, Sub-Escarpment Grassland, and Indian Ocean Coastal Belt.

12. The Grassland biome coincides with two major phytochoria (White 1983): Kalahari-Highveld Regional Transition Zone and Afroalpine Region. Five Centres of Plant Endemism have been identified within the borders of the Grassland Biome (Van Wk & Smith 2001). The current centres are linked to high altitudes or special substrates and often occur in the Savanna-Grassland ecotone. However, high concentrations of local or regional endemic plant species are also found elsewhere in the Grassland biome (e.g KwaZulu-Natal midlands) which may reveal the existence of other centres of plant endemism.

13. An assessment of conservation priorities in the grasslands biome (Grassland Biodiversity Spatial Priority Assessment 2005) identified 36,7% of the land area as being important for conservation. This is the area that will need to be afforded protection to fully represent biodiversity pattern and process. These lands are currently located in an admixture of production landscapes, with the dominant land uses being agriculture (cultivation and livestock husbandry), plantation forestry, and coal mining. The biome also includes a number of hotspots located in urban areas. For example in terrestrial and freshwater ecosystems, 2 of the vegetation types are critically endangered, 18 are listed as endangered and 27 are classed as vulnerable. 83% of the river ecosystems are ranked as threatened, with 48% critically endangered (see Annex 11 Vegetation types of the grasslands biome). In particular, the urban conurbation in Gauteng is dominated by vegetation types and ecosystems classified as threatened⁶. Thus in order to achieve representation of all unique

³Mountain or montane grasslands span the medium to high altitude areas of the Drakensberg Mountains in South Africa and Swaziland and the high altitude Lesotho Plateau (Bowie & Frank, 2001a). Mountain grasslands are found at elevations ranging between 1800m and 2500m, with rainfall ranging between 450mm in the southwest and 1100mm in the northeast (Bowie & Frank, 2001b).

⁴Mountain or montane grasslands span the medium to high altitude areas of the Drakensberg Mountains in South Africa and Swaziland and the high altitude Lesotho Plateau (Bowie & Frank, 2001a). Mountain grasslands are found at elevations ranging between 1800m and 2500m, with rainfall ranging between 450mm in the southwest and 1100mm in the northeast (Bowie & Frank, 2001b).

⁵ Coastal grasslands occur at sea level and receive more than 1000mm of rain/year (Low & Rebelo, 1998).

⁶ Highveld Grassland is a global eco-region in crisis, assigned to the category of “critical” (Hoekstra *et al.* 2005). Highveld Grassland is one of the two richest primary grasslands in the world, yet <1% is currently conserved. Since Gauteng sits in a centre of distribution for certain flora types representative of this Grassland community, such as Bankenveld and eGoli Highveld vegetation types, the conservation values of the area are globally important.

biodiversity of this biome it is necessary to focus interventions in the various production sectors and across the different provinces.

1.3 Socio-economic context

14. The bulk of the biome occurs within six of South Africa's nine provinces, although fragments occur within all provinces. Table 1 below lists the provinces, the area of grasslands within each (Reyers et al, 2005) and some key socio-economic indicators (South Africa Country Study, 2005).

Table 1: Overlap between grasslands biome and provinces of South Africa

Province	Area (km ²)	% of biome	% of province	% of total GDP	Population density (people per km ²) in province
Eastern Cape	71246.16	21.00	41.91	8.2	38
KwaZulu/Natal	54680.38	16.12	59.26	15.5	102
Mpumalanga	50729.93	14.95	63.86	7.2	39
North-West	32552.85	9.60	28.03	7.3	32
Gauteng	11358.33	3.35	67.07	33.9	520
Northern Cape	4188.60	1.23	1.16	2.0	2
Limpopo	2307.43	0.68	1.87	6.5	43
Western Cape	146.96	0.04	0.11	13.8	35

15. The biome is situated in a socio-economically complex environment, characterized by a great disparity in socio-economic conditions. The biome contains the economic heartland of the country, including the urban conurbation of Gauteng (constituted by the cities of Johannesburg, Pretoria, Soweto and Ekurhuleni) and important mining and plantation forestry estates, amongst others. As a consequence, it is greatly influenced by macro level economic and political developments in the country.

16. Due to the fact that South Africa has experienced jobless economic growth in recent years and has significant poverty, particularly in rural areas, the government has placed a priority on accelerating economic growth and providing employment. The country's Medium Term Expenditure Framework (MTEF) places a priority on strengthening investment, increasing capital spending on economic infrastructure and social services, and promoting tax relief to create a conducive environment for growth and job creation. The objective of the government is to halve poverty and unemployment by 2014. During the period 2005-09 the economic growth rate target is 4.5% and during 2010-14 the aim is to increase this to 6% of GDP. The Government has established an Accelerated Growth Initiative (ASGISA), with the aim of stimulating economic growth. An Expanded Public Works Programme aims to create 1 million short-term employment opportunities that will equip people with skills and work experience needed to participate in the formal economy. The intention is to spend, in the next five years, R15 billion in infrastructure, R4 billion in environment and R2 billion in the social sector. The Programme finances a number of important environment initiatives, such as Working for Water, Landcare, and Coastcare.

17. Increased government spending on development and private sector growth holds both threats and opportunities for biodiversity. As the emphasis is on increasing growth, this clearly brings pressure to bear on the natural resource base. Unfortunately, the economic value of biodiversity has not been adequately expressed or understood within South Africa's macro-economic policies, plans and programmes. It has been estimated that government expenditure potentially affecting biodiversity conservation negatively exceeds that with positive implications for biodiversity conservation by approximately 5:1 (NBSAP Economic Stocktaking Report, 2004). To secure conservation values in the grasslands biome it will be critical to

promote the concept that grasslands ecosystem services have a real monetary value. Economic valuation will assist in mainstreaming the idea that ecosystem goods and services from the grasslands are not ‘free’ goods.

18. Another key strategy is for the conservation community to engage with the development agenda through ‘mainstreaming’ activities, which seek to nest conservation strategies in development strategies for mutual benefit. A more direct involvement in ASGISA will be key to this. ASGISA identifies several aspects of concern to the biodiversity management agenda in the dual arenas of environmental governance and institutional performance. Especially relevant is the perceived drag on development arising from inadequate and imperfect environmental regulatory instruments and governance systems. This calls for systems to improve the efficacy of regulation, including through improving coordination between regulatory agencies. Other entry points for mainstreaming biodiversity management in ASGISA in the context of efforts to protect the grasslands biome include:

- § development of the country’s infrastructure in terms of spatial coverage;
- § contributions to the broader National Industrial Policy framework, particularly regarding the location of new developments;
- § contributions to the development of the wood, pulp and paper sector, to ensure ecological safeguards;
- § contributions to education and skills development, with respect to biodiversity management, including through JIPSA (the Joint Initiative for Priority Skills Acquisition), which has as one of its priorities to ensure that there are sufficient skills for the implementation of the R372bn, three-year infrastructure development programme that lies at the heart of ASGISA, as well as contributing to addressing the skills problems affecting services delivery in local Governments; and
- § the National Livestock Programme, which focuses on the North West province (partly in the grasslands biome).

19. South Africa’s history of colonial occupation, dispossession and racial discrimination under apartheid resulted in great inequities in land distribution, with blacks being restricted to reserves constituting about 13% of the land surface, while the bulk of the land became the private property of white individuals. The state’s land reform programme involves restitution⁷, redistribution⁸, and tenure reform⁹. The Government’s stated target is to transfer 30% of the land to black ownership by 2014. This includes lands in the grasslands. There is a need to strengthen the capacity of these future landowners to manage their land and natural resources.

20. The landscapes occupied by grasslands make a significant contribution to the country’s economy through agriculture, forestry, mining, industrial activities and delivering essential ecosystem services. Agriculture contributes about 3.1% to the GDP and 10% of formal employment¹⁰. South Africa is a net exporter of agricultural goods, with agriculture contributing on average 8% of total South African exports by value (South African Yearbook 2003/04). Commercial forestry contributes about 1% to the GDP and

⁷ Land restitution aims to restore land or provide alternative compensation to those dispossessed as a result of racially discriminatory laws and practices since 1914.

⁸ The land redistribution programme aims to broaden access to land among the country’s black majority, mainly for agricultural purposes.

⁹ Land tenure reform aims to secure the rights of people living under insecure arrangements on land owned by others, including the state (i.e. communal areas) and private owners.

¹⁰ Agriculture contributed 3.1% to the total Gross Domestic Product in 2003 (R35.6 billion) but its contribution via backward and forward linkages to the national economy is more substantial (Strategic Plan for the Department of Agriculture, 2005). Agriculture employs about 940,000 farm workers in the formal commercial sector. The smallholder sector supports a further 1.3 million households.

accounts for 1.4% of formal employment (Genesis, 2005)¹¹. Coal mining contributes about 4% of the GDP and employs about 52 000 people on a permanent basis (Kirkman, 2006)¹².

21. South African grasslands play an essential role in mediating many ecosystem services. The biome is an important source of provisioning services, including for water, food, fibre and medicines. It is a major source of forage for livestock. The grasslands were the subject of one of the Sub Global Millennium Ecosystem Assessments, which aimed to assess the health of ecosystems and their services in the Gariep Basin. This Basin is largely composed of grasslands and is considered an important focus area for the provision of ecosystem services in southern Africa¹³. In particular, grasslands play a critical role in wetland functioning. The supply of water from the grassland catchments is critical to the Highveld power stations (McAllister, 1998b), agriculture industries, and for urban consumption.

22. The grasslands biome is also rich in cultural heritage sites containing three World Heritage Sites – the Cradle of Humankind World Heritage Site (site of some of the earliest hominid remains), the Vredefort Dome, and Drakensberg/Ukuhlamba with its important rock art.

23. South Africa's major mountain catchments are situated within the grasslands biome. For this reason, a substantial amount of water runoff for South Africa is generated *within* the biome, while many rivers also flow *through* grasslands (such as the Orange, Mzimvubu, and Tugela). The biome plays a crucial role in the hydrological cycle, as runoff is stored as groundwater or in wetlands, and released gradually-- so creating a steady water supply (Kotze and Morris, 1994).

24. Most of the land in the grasslands biome is privately owned (>80%). Table 2 below presents the current situation of land use in grasslands based on the 1996 national land cover data (Reyers, 2005).

Table 2: Land uses in grasslands biome

Land Use in the Grasslands	Km² (% of grassland)
Cultivated areas (agriculture)	75,833 (22.1%)
Forest plantations	9,932 (3%)
Mines and quarries	933 (0.3%)
Degraded lands	22,041 (6.4%)
Urban and industrial areas	5,843 (1.7%)
Waterbodies	1,600 (0.5%)
Natural land cover (including rangeland)	217,850 (63.2%)
Protected areas (private, national, provincial)	9,451 (2.8%)

¹¹ The forestry industry contributes an estimated R12.2bn to GDP and employs an estimated 170,025 permanent, contract, and informal workers of which a large proportion are low-skilled and concentrated in rural areas with high unemployment. The industry contributed to the income of rural households through at least 31,500 small growers and about 7,875 small grower employees, providing a livelihood to between 490,000 and 560,000 South Africans. The industry is a net exporter, ranking among the top exporting industries in the country.

¹² Coal is currently the second largest earner of foreign exchange in South Africa and contributes 4% of the GDP. The sector is important for employment, providing 50,832 jobs in 2004. Research by COALTECH indicates that each coal mine employee results in support for 34 people in related upstream and downstream industries and in support systems such as education, commerce, and community infrastructure (Kirkman, 2006).

¹³ The Gariep Basin is subjected to considerable human pressure due to urbanization, industrial, and mining developments. It forms the focus of dry-land cereal production on the subcontinent. The Basin contains some 60% of the South African population, produces 70% of the national cereal crops, and contains 80% of the regional industrial activity. In some of the villages, 80% of the people are unemployed and depend largely on ecosystem resources for their livelihoods.

1.4 Production Sector Profiles

25. The main economic sectors operating in the grasslands biome include rangeland and cultivated agriculture, forestry, and mining (particularly coal). In addition, the hub of South Africa's urban economy is based within the biome. This section provides a profile on these four sectors.

1.4.1 Agriculture

26. South Africa has a dual agricultural economy with a well-developed commercial sector and a subsistence sector in the communal areas (formerly the homelands). At a national level, some 81% of land is dedicated to agriculture, of which approximately 83% is used for grazing and the balance (17%) for cropping. About 13% of South Africa's total area is arable, with 22% of this area comprising high-potential arable land (Strategic Plan for the Department of Agriculture, 2005). Ninety percent of this high-potential land is in Mpumalanga and KwaZulu-Natal (partially in the grasslands biome). Agriculture uses about 50% of South Africa's water and water availability is its most important limiting factor (South Africa Yearbook 2003/04 Chapter 4). The fact that the country has a limited natural resource base for agriculture means that there is limited potential for horizontal expansion in crop and horticultural production, which is a limiting factor to grasslands conversion.

27. A comparative agricultural economics and trend assessment has been undertaken for the main commercial crops and rangeland in the grasslands as part of the programme preparation process. It provides an agricultural profile of the grasslands biome, comparative economic information on agricultural enterprises, and identifies key economic drivers that could result in future habitat transformation. The assessment had a number of interesting findings. The extent of commercial farms in the grasslands biome is 32.44 million hectares. The total amount of land commercially cropped has declined from 18.8% in 1993 to 17% in 2002 (the last year for which accurate census information is available). During the same period the market value of total biome farm output increased from R11.2 billion to R58.4 billion, or R31 billion value in real terms (i.e. the market value discounted by the annual rate of inflation). This increase is the result of increasing production efficiency coupled with above average yields and prices during the period under review (Murray, 2005).

28. There has been a 23% decline in the number of commercial farming units in the grasslands between 1993 and 2002 (32 981 farming units in 1993 to 25 478 in 2002). This follows the trend throughout South Africa where there was a 21% decline between 1993 and 2002. The main reasons for this trend are that: (i) technological change has made it possible for farmers to extend their operational reach to a greater area per farming enterprise, (ii) the risk factor inherent in agriculture, and (iii) as the economy grows and diversifies the returns to agriculture relative to other economic options tends to decline. It is generally accepted amongst economists that this trend will continue.

29. The leading economic performers in terms of cultivation in the biome are maize (49% of commercially cropped land in the biome), sugar cane, groundnuts, soya beans, and sunflowers¹⁴. The extent of land dedicated to maize crops is expected to decline over the next 5 years (by as much as 350,000ha), but this area is likely to be substituted by other crops. Sugar cane (4.9% of commercially cropped land in the biome) shows the highest growth in terms of area cultivated and this trend is expected to continue. The crop is grown almost entirely in the coastal grasslands. Vegetable farming is small (1.8% of commercially cropped

¹⁴ Maize is the largest locally produced field crop, with an average production of 9.1 million metric tons per year. It is the most important source of carbohydrates in SADC for human and animal consumption and the surplus is exported to neighbouring countries. South Africa is the world's 12th largest producer of sugarcane, producing about 2.1 million mt per season, of which about 50% is exported. It is the world's 11th largest producer of sunflower seeds, producing 965,000 mt in 2002. Of the cereal, tuber, and root crops, sunflower seeds generated the highest income (59.8%), followed by maize for grain (15.4%) and sugarcane (11.6%) in 2000 (South Africa Yearbook 2003/04, Chapter 4).

land in the biome) but attractive due to short-term financial returns. However growth in the horticultural industry is limited by water scarcity.

30. Virtually the entire grassland area that is not cultivated is used as rangeland – either for sheep or for cattle. The biome contains up to 6.4 million cattle (50% of South Africa’s beef cattle) and 13 million sheep (58% of South Africa’s sheep flock)¹⁵. This is high-quality stock farming land in a nation where more than half the agricultural land is classified as ‘marginal’. Many farmers are mixed farmers and as the financial prospects for maize decline, more livestock farming tends to occur. However, in general livestock is much less profitable than cropping in terms of profit per unit area. Almost 60% of cattle in South Africa are finished for slaughter in sophisticated feedlots to produce animals which are well-fleshed, lean and of good conformation. The other 40% of South African cattle are raised on natural pastureland with the final objective to produce healthy, high grade beef. The South African red meat industry boasts facilities of a high standard to support the industry from farm to retail, including suppliers of animal health products, modern abattoirs, and world-renowned research and development institutes.

31. The commercial game ranching industry has shown extraordinary growth during the past 40 years. The sale of game has shown substantial growth in the last decade from 8,292 animals sold in 1991 (worth R9 million) to 20,022 animals sold in 2002 (worth R105 million) (Scriven & Eloff, 2003). Excluding national and provincial reserves, the area surrounded by game fences increased by 2.5 per cent a year, or by 300,000 hectares each year during both 1998 and 1999. There are now about 9,000 commercial game-fenced farms in South Africa, covering an area of more than 17 million hectares. This excludes the approximately 15,000 other farms that also carry game in sufficient numbers to be economically exploited. By far the majority of game farmers are former cattle farmers (Standard Bank AgriReview, 2000). There is a perception that the increase in game farms is taking agricultural land out of production, but this is not the case, as game is kept for both tourism and meat production. There is an increasing domestic market for game meat and it is bought in South Africa supermarkets at prices cheaper than mutton. A selling factor is that some cultures traditionally favour game meat above beef because it is seen as being healthy due to its low fat content.

32. Game production, where the game is within its natural range, is seen as an optimal form of production for grasslands because where game is within its natural range, the grasslands have evolved with these pressures. Where game is from outside its natural range, there is little difference from a biodiversity impact perspective between game and cattle. Sustainable game farming could become one of the most conservation-compatible land uses in the South African grasslands if sound management practices are adhered to and if the game farming production units are of sufficient size to be sustainable.

33. Key drivers of agricultural change are expected to include: political transformation; economic changes driven by exchange rates and interest rates; global warming and climate change; food production in neighbouring countries (if this declines South Africa will increase production to meet demand); biomass fuel production; and the economic outlook for specific agricultural enterprises.

1.4.2 Forestry

34. The biome’s plantation forest industry (based on afforestation by fast growing *Pinus*, *Eucalyptus* and *Acacia* wattle species) makes an important contribution to the national economy. The value of forest product exports, which include paper products, solid wood and pulp, has grown significantly over the past decade, from R2.3 billion in 1992 to R11.2 billion in 2002, a real growth of 129%. The industry’s international

¹⁵ South Africa produces 85% of its meat requirements and imports the remaining 15% from Namibia, Botswana, Swaziland, Australia, New Zealand and European countries (South Africa Yearbook 2003/04, Chapter 4). In 1999 – 2000 the income from the sale of livestock and poultry (including game) was R24 billion (STATSA, 2002). All the major continental breeds such as Angus, Simmentaler and Sussex are well-represented and adapted in the South African cattle herds. Local breeds such as the Bonsmara were specially developed for South African conditions.

competitive advantage is that the plantations have high yields (two to three times more productive than natural forests of the same species) and that 80% is certified by the Forest Stewardship Council (FSC) making it possible to tap into the increased demand for certified products.

35. An estimated 991,900 hectares of land is committed to plantation forestry in the grasslands (Murray, 2005)¹⁶. This amounts to 18% of commercially cropped/planted land within the biome, making it the second largest commercial land use after maize (*ibid*). Most plantations are in the high rainfall, high runoff producing catchments. Many of these plantations were established prior to 1972, when the first controlling legislation on the industry (an Afforestation Permit System) was introduced. This was based purely on the impact of plantations on hydrological functions. Certain catchments were subsequently deemed as stressed and closed to further afforestation. A major new development in the North Eastern Cape saw 34,000 hectares of grassland planted between 1989 and 1997 (Forsyth et al, 1997).

36. Government policies in South Africa since 1994 have introduced changes to the way forests are managed so as to achieve certain national goals. A key element of this redefinition is the privatisation of publicly owned commercial forestry operations – not through outright sale but using long-term leases, and induction of a new licensing system. Another element has been increased support for outgrower schemes allowing smallholders to grow trees with support from companies who later buy the product for pulp. Commercial afforestation is now a declared stream flow reduction activity in terms of the National Water Act 36 of 1998 and requires licensing. The rate of afforestation has slowed, owing to restrictions in water stressed catchments, to biodiversity constraints implemented through the National Environment Management Act 107 of 1998 (NEMA), the industry's self-imposed environmental management objectives, and the economic cost-benefit calculus, in terms of soils and yields. New forestry is regulated through an inter-departmental License Assessment Advisory Committee and this has resulted in more onerous licensing processes. There has also been significant public pressure. Riparian zones within long established plantations are being cleared in line with Government Wetland Delineation Guidelines, a policy that was developed in collaboration with the forestry industry. This is expected to result in the clearance of 60 000ha of plantations over the next five to ten years.

1.4.3 Urban Economy: Gauteng

37. Despite its small geographic extent, Gauteng is the most urbanised province in South Africa, home to approximately 8.8 million people or 20% of South Africa's population, with the number of households growing at 6.7% per year (DACE, 2004). Gauteng is the economic powerhouse of South Africa and plays an instrumental role in driving economic growth for both the region and the African continent. Gauteng's economy, underpinned by the industrial, manufacturing and services sectors, grew at an average of 3.3% per year from 1994 to 2003, above the national average of 2.7%. Its contribution to the Gross Domestic Product (GDP) grew from 32.6% in 1995 to 33.9% in 2002.

38. Gauteng's economy is diverse, ranging from a high-tech manufacturing and industrial sector, a growing services sector and a thriving informal sector (DACE, 2004). Manufacturing (20,5%), trade (14%) and financial services sectors account for approximately 60% of the value added in Gauteng and 52% of South Africa's value added (GEDA, 2006). Other sectors contributing to the provincial and national value-added include transport and communications (with the strongest growth rate of 5.8%), construction, community and social services, electricity, gas and water. Sectors predicted to have growth rates in excess of the average include the transport and communication sectors (6, 7%) and the financial service sectors (5, 8%). Construction is expected to show the most dramatic increase in growth over the next five years. The province absorbs over 50% of the national formal labour force (Statistics SA, 2005). As a result, Gauteng has a huge ecological imprint beyond its legislative boundaries on the biome as a whole. The province is also

¹⁶ The land area in South Africa currently under plantation forestry is in the order of 1.35 million hectares.

home to the policy- and decision-makers whose strategies determine the nature of development in the grasslands, and as a consequence their fate.

39. Gauteng is launching a 'Global City Strategy', set to encourage investment, tourism and business and to increase the province's economic growth to 8% by 2014. In terms of this strategy, Gauteng is projected to be the 12th largest 'global city region' in the world, with 14.6 million people (South African Cities Network, 2004). The nature of the growth envisaged in this strategy will determine the ability of the grasslands biome and the ecosystems services it provides, to support the Gauteng mega-city in 2014. One of the biggest challenges to realising the targets in the strategy is the current pattern of urban sprawl and low density development, which increases the costs of transport and infrastructure. A recent report on South Africa's cities found that the three large metropolitan councils in Gauteng– Johannesburg, Ekurhuleni, and Tshwane (Pretoria) – together with Municipalities of Mogale City to the west and Emfuleni (Vereeniging-Vanderbijlpark) to the south constitute a virtual continuous urban extent (South African Cities Network, 2004). The three metropolitan councils of Johannesburg, Mogale City and Ekurhuleni covers the same area as Greater London, which has a density of 8 000 people/km², compared to 2 000 people/km² in Greater Johannesburg (Fife, 2006).

1.4.4 Coal Mining

40. South Africa is one of the top five countries in the world in terms of coal production, coal consumption and coal exports. Most of the coal produced is consumed locally as 92% of South Africa's electricity is produced by coal powered generation plants. Export coal comprises 27% of sector volume and 51% of total income. Demand for coal is increasing locally due to demand for electricity and also internationally, particularly in Asia. South Africa has the fifth largest coal reserve (48.8 billion tons or 10.2%) in the world. As oil and natural gas reserves decline, coal will become more strategically important as it is estimated that global coal reserves can last at least 190 years if efficiencies in mining and utilisation can be improved (Kirkman, 2006).

41. Coal mining is South Africa's second biggest mining sector after gold, and without it SA's rapid industrialization would not have been possible. South Africa currently operates the only commercial scale coal liquefaction process in the world and supplies about one third of its liquid fuel requirements in this manner from coal. Coal is currently the second largest earner of foreign exchange in SA and contributes 4% of the GDP. The sector is important for employment, providing 50 832 jobs in 2004. Research by COALTECH indicates that each coal mine employee results in support for 34 people in related upstream and downstream industries and in support systems such as education, commerce and community infrastructure (Kirkman, 2006).

42. The profitability of mines and mining companies exporting coal is linked to the strength of the Rand, rising input costs (such as labour) and logistical constraints. The long term economic outlook for the coal industry is sound (Kirkman, 2006). Mining companies own a lot more land than just that which is mined, with agriculture being the dominant form of land use on such land. This non-mined land owned by mining companies is thus not included as "mining" in Table 2 which shows the extent of various land uses in the grasslands biome. The major coal deposits being used in South Africa are found in the Ecca Group, with the bulk currently being exploited falling within the grasslands biome. This activity is particularly intensive in the Mpumalanga Highveld area because the majority of the country's electricity is produced here. Power stations in this area that were decommissioned in the 1980s and early 1990s are being rapidly re-commissioned because of increased demand for electricity. As demand increases so will the extent of land taken for coal mining, given that the coal reserves in South Africa are extensive.

1.5 Policy and Institutional Context

1.5.1 Overarching Policy and Legislative Context

43. South Africa's planning framework is complex, multi-layered and historically has lacked essential integration. Different sectors and spheres of government all have legislative planning requirements that emphasise the importance of their sectoral plans. Provincial and municipal authorities responsible for planning and land development applications utilise different pre-1994 laws from the four provincial and homeland governments. What is common are the two key instruments - plans and schemes – that are used to direct and regulate development activities¹⁷.

44. The Constitution of South Africa provides for the right to a healthy environment and environmental protection while promoting justifiable economic and social development. The Constitution gives concurrent legislative competence to national and provincial governments for most functions relevant to biodiversity conservation with the exception of national parks, botanical gardens, and marine resources, the management of which rests with national government agencies. The national government has the primary responsibility for policy and law enactment, while responsibilities for policy implementation rest with statutory bodies, and with the provincial/local authorities. Provincial governments are empowered under section 104 of the Constitution to pass subsidiary legislation on certain matters, which include environmental management, subject to the confines of national legislation. Each province deals both with the inherited legislation that was in force prior to 1994, especially old provincial Nature Conservation Ordinances, as well as new legislation drawn up by government since 1994. A process is now underway in the different provinces to update and synergize legislation.

45. The National Environmental Management Biodiversity Act of 2004 (the Biodiversity Act) is the key legislation governing biodiversity management¹⁸. Government is busy with the process of further legal reform, developing required regulations and policies so that the Act can be effectively implemented. There are four interrelated processes presently underway that provide an important policy context for the Grasslands Programme. They are 1) the National Biodiversity Conservation Strategy and Action Plan (NBSAP), related National Biodiversity Framework and Bioregional Plans; 2) the listing of threatened ecosystems and species; 3) the listing of Invasive Alien Species; and 4) the promulgation of new Environmental Impact Assessment (EIA) Regulations in terms of the National Environmental Management Act 107 of 1998.

46. The Government has developed a National Biodiversity Conservation Strategy and Action Plan (NBSAP) for South Africa with assistance from GEF/UNDP. This was approved by Cabinet and released on 27 July 2005. The NBSAP sets out a framework and five-year plan of action for the conservation and sustainable use of South Africa's biological diversity and the equitable sharing of benefits derived from this use. It contains a National Biodiversity Implementation Plan that sets out five strategic objectives to achieve

¹⁷ A *plan* is the instrument whereby an organ of state indicates its desired patterns of growth and development and matches its budget and regulatory powers to those patterns and a *scheme* is the instrument whereby an organ of state determines how land may be used and developed and also establishes prohibitions on certain types of land development and use. The ongoing challenge facing the planning system is to ensure that the objectives of the plan are able to translate efficiently and effectively into the controls and prescriptions of the scheme (Berrisford S. 2002), Rationalisation and Alignment of the Environmental Planning Framework, unpublished report for DEAT.

¹⁸ The Act builds on the White Paper on Conservation and Sustainable Use of South Africa's Biological Diversity (1997). A key objective is to expand conservation activities to encompass whole ecological landscapes, focusing on biomes, by seeking to "integrate conservation objectives into the productive sectors, strengthen land-use planning and monitoring functions, develop and support implementation of conservation models, establish new institutional and operational mechanisms, and establish new conservation partnerships bridging the public and private sectors".

the overall goal, which is to “conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future”. These strategic objectives are: 1) An enabling policy and legislative framework integrates biodiversity management objectives into the economy; 2) Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector; 3) Integrated terrestrial and aquatic management across the country minimizes the impact of threatening processes on biodiversity, enhances ecosystem services and improves social; and economic security; 4) Human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of benefits; 5) A network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape.

47. The grasslands biome has been identified as one of the spatial priorities for conservation in the country in the National Spatial Biodiversity Assessment (NSBA), which has been undertaken as part of the NBSAP.

48. The Biodiversity Act provides for the publication of a National Biodiversity Framework which is presently being finalised. The National Biodiversity Framework, will draw heavily from the NBSAP and the NSBA, and contains norms and standards for the development of Bioregional Plans. The Biodiversity Act provides for the establishment of such Plans that must then be taken into account by provincial governments when formulating their Environmental Management and Implementation Plans and local government’s Integrated Development Plans¹⁹. Bioregional plans will provide spatial tools to guide land use planning and decision making undertaken by provincial and municipal government. They will be based on a systematic biodiversity conservation plan and published for a whole province, a district municipality or a group of local municipalities. They will contain a map with biodiversity features in different categories, descriptions of what the features are, and norms and guidelines on land use planning and management.

49. The Biodiversity Act provides for the listing in the government gazette of threatened ecosystems and the identification of threatening processes in those ecosystems that will trigger environmental impact assessments for large physical developments being planned in these areas.

50. Regulations have been drafted for Invasive Alien Species (IAS) as required by the Biodiversity Act, but are yet to be passed. There are two basic components to these draft proposals – firstly on prevention to minimize risk of further invasion, dealing with issues such as how to stop new species becoming invasive through control of imports and so on. Secondly, the regulations deal with the management and control of all invasive species (all taxa, not just plants). Local government and national Departments will be required to demonstrate how they are dealing with IAS and reflect these in their Integrated Development Plans or Environmental Management Plans. Provision is also made for innovations such as requiring a certificate of alien control before the sale or transfer of certain properties. The regulations will generate new mandates for different institutions to become competent authorities to implement the regulations. The need for capacity building within government and civil society bodies such as Fire Protection Organisations, Water User Associations, and Conservancies, will be significant.

51. The Government has issued new Environmental Impact Assessment (EIA) regulations, which came into effect on 1st July 2006. Mining-related regulations will come into effect on 1st April 2007. EIA approval is required before a development can occur. The existing EIA regulations have been in place since 1997 and the new regulations aim at streamlining assessment and approval processes. EIA requirements are triggered by certain listed activities²⁰. National and provincial government will list sensitive areas, such as threatened

¹⁹ Municipal Integrated Development Plans are the principal strategic instrument that informs all decisions regarding the planning, management and implementation of development in the municipalities’ jurisdiction.

²⁰ The key change in the new regulations is that the trigger is a combination of sensitive areas identified upfront and a more nuanced list of activities. There are categories – those activities that have a low impact and can proceed without a

and protected ecosystems and critical catchments. These new regulations will provide an opportunity for the information from bioregional plans and listed threatened ecosystems to be linked into the EIA process, which should strengthen biodiversity conservation within production landscapes.

52. The Government has identified the need for coherent policies on fiscal instruments and incentives that promote sound environmental management and biodiversity stewardship. A series of tax anomalies and perverse incentives hampering private investment in biodiversity management have been identified. A national framework on environmental fiscal instruments, which has the potential to create a positive enabling environment for biodiversity, has been released by National Treasury for public comment. The *Draft Policy Paper: A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa* outlines the role that market-based instruments, specifically environmentally-related taxes and charges, could play in supporting sustainable development in South Africa, and outlines a framework for considering their potential application. The Paper focuses on the options for environmental fiscal reform and the policies and measures capable of contributing to realizing revenue goals and environmental objectives. The policy paper seeks to:

- § Explore how environmentally-related taxes and charges could assist in progressing towards the achievement of environmental goals and objectives in a cost-effective and efficient manner
- § Explore how environmentally-related taxes are able to contribute to revenue-raising requirements
- § Provide a guiding framework and develop a process for considering the use and development of different market-based instruments
- § Provide a consistent set of criteria for evaluating environmentally-related tax proposals.

53. The civil society sector has had some success in ensuring that the opportunity for incentives exists within key legislation – the Biodiversity Act, the Protected Areas Act and the Local Government Municipal Property Rates Act of 2004. The latter Act introduces on rural land – for the first time in South Africa – property rates that have a significant impact on all landowners. In the case where private landowners make a portion of their land available as a nature reserve under the Protected Areas Act, this land will be excluded from municipal rates (S 17 Local Government Municipal Property Rates Act No 6 of 2004). This means that the landowner will not have to pay rates on the portion of their property that is subject to a stewardship contract, provided no commercial or agricultural activity takes place on that land parcel. The owner will still be liable for rates on any improvements to the property. Regulations are presently being developed to codify procedures governing municipal exemptions and rebates.

54. The NGBP addresses national priorities, articulated in other policies and development strategies:

- § National Water Act 36 of 1998 requires licensing for activities, such as forestry, that are declared stream flow reduction activities. New forestry is regulated through a Licence Assessment Advisory Committee comprising environment, water and agriculture departments. The Mountain Catchment Areas Act 63 of 1970 provides for the conservation, management, use and control of land situated in mountain catchments.
- § The National Forest Act 84 of 1998 provides that natural forests must not be destroyed save in exceptional circumstances: a minimum area of each woodland type should be conserved, and forests must be developed and managed so as to, among others, conserve biological diversity, ecosystems and habitats²¹. In addition the NFA states that the principles (as expressed in section 3 (3)), must be

full EIA; a list of areas where it is likely the impact will be sufficiently low and a full EIA is not needed as long as an Environmental Management Framework is in place; and a list of sensitive areas where a full EIA is needed.

²¹ It should be noted that the definition of a forest in the NFA includes plantation forests.

considered and applied in a balanced way in the issuing of a license to use water for a stream flow reduction activity. Further, that in applying the principles of the NFA, an organ of State must recognize that the conservation of biological diversity within plantations should be promoted in a way which is consistent with the primary economic purpose for which the plantation was established.

- § The National Veld and Forest Fire Act 1998 provides for the formation of fire protection associations by owners who wish to co-operate for the purpose of predicting, preventing, managing and extinguishing veld fires.

1.5.2 Institutional Context for Environment Management and Land Use Planning

55. The Department of Environment Affairs and Tourism (DEAT) is the primary custodian of the environment in South Africa. It is responsible for setting environmental policy and legislation, and for monitoring compliance with these policies. Responsibilities for policy implementation rests primarily with statutory bodies and provincial/local authorities. DEAT has policy, legislative and coordination responsibilities in the following areas: co-operative environment governance; environmental impact assessment; biodiversity and protected areas; brown environmental issues and international environmental conventions and agreements. In addition DEAT has exclusive competence for marine and coastal management with the Branch: Marine and Coastal Management being responsible for the promulgation, administration and enforcement of marine resource legislation. DEAT has five branches: Biodiversity and Conservation; Environmental Quality and Protection; Tourism; Marine and Coastal Management; and Chief Operating Officer that includes the poverty relief programmes and normal corporate and financial affairs matters.

56. The South African National Biodiversity Institute (SANBI) serves the South African government as the primary statutory institution devoted to the study, conservation, display and promotion of the country's indigenous biodiversity. SANBI was established in terms of section 10 (1) of the National Biodiversity Management: Biodiversity Act (Act No 10 of 2004) succeeding the National Botanical Institute, which with its predecessors has a history of more than a century of botanical exploration and research in South and Southern Africa. SANBI is a statutory body registered as a schedule 3A entity in terms of the Public Finance Management Act reporting through its Board to the Minister of Environmental Affairs and Tourism via the DEAT. SANBI advises and informs, scientifically, the DEAT with respect to the biodiversity elements of environment policy, and acts as its agent in the ways stipulated in its mandate. It is the coordinator and facilitator of bioregional programmes in South Africa. The Biodiversity Directorate is responsible for the coordination of bioregional programmes, including planning, monitoring and activity coordination.

57. The other key regulatory authorities that provincial and local government level that make decisions about the regulation of land development in terms of cross cutting planning laws that impact significantly on the grasslands are:

- § Municipalities – rezoning, consent uses or subdivision applications or permission to develop or change the use of land in terms of the relevant provincial laws and plans such as the Integrated Development Plan as governed by the Municipal Systems Act 32 of 2000, Spatial Development Framework, Environmental Management Framework and biodiversity-specific plans;
- § Provincial and national departments responsible for the environment – Environmental Impact Assessment (EIA) applications and plans such as the Environmental Implementation and Management Plans as governed by the National Environmental Management Act 107 of 1998.

1.5.3 Institutional Context within the Production Sectors

Agriculture

58. Agriculture is organised into various commodity organisations, producer groups, cooperatives and provincial agricultural associations that are represented by the umbrella organisation AgriSA. There are a number of smaller industry associations such as the National African Farmers Union (NAFU). The Agricultural Business Chamber is the umbrella mouthpiece of agricultural producers' businesses and makes key interventions in the trade environment. Agribusiness members represent total assets of almost R30 billion and an annual agricultural business turnover of about R50 billion (South Africa Yearbook 2003/04, Chapter 4).

59. Commodity associations represent specific commodities and are key stakeholders with whom the grasslands initiative must engage. The South African Meat Industry Company (SAMIC) is the national representative company of the South Africa red meat industry, representing the supply chain from producers through feedlots and abattoirs to the consumer. The National Wool Growers' Association (Wool South Africa) provides production, advisory and training services to wool growers. It has a focus on the upliftment of emerging small-scale producers, mainly in the former homelands of the Eastern Cape. Wildlife Ranching South Africa (WRSA) is the official voice for the game industry. It represents game rangers, not the hunting industry, and has about 1 400 active individual members. Grain South Africa represents many of the crops of importance to the grasslands, namely maize, soybeans, sunflowers, groundnuts, wheat, barley, oats and sorghum. It was founded in 1999 by grain farmers to better represent their interests.

60. South Africa has historically enjoyed a strong agricultural research capability but there has been little collaborative research between environmentalists and agricultural production scientists and economists.

61. In terms of the Constitution, agriculture is a dual competency. The National Department of Agriculture is responsible for policy development, regulatory functions, communication and information services, and research. The Department is responsible for approving applications for cultivating virgin land and burning of veld as governed by the Conservation of Agricultural Resources Act 43 of 1983, and applications for subdivision in terms of the Subdivision of Agricultural Land Act 70 of 1970. Other key focus areas of the Department include agricultural trade and business development, agricultural production, and sustainable resource management. Research is usually contracted out, mainly to the Agricultural Research Council.

62. The Provincial Departments are responsible for providing extension support to farmers, and functions include farmer settlement and development, agricultural economics, technology research and development, sustainable resource management, veterinary services and agricultural training (Strategic Plan for the Department of Agriculture, 2005). Provincial Agricultural Departments are usually larger in terms of staff complements compared to the equivalent environmental departments.

Forestry

63. The commercial forestry sector is organised into Forestry South Africa with 2 500 members, 90% of all registered timber growers. It is organised into three separate and distinct entities, i.e. the large growers group, medium growers group and small growers group. The industry is dominated by less than ten big companies. The Forestry Industry has established its own Environmental Guidelines for Commercial Forestry Plantations that attests to its commitment to mitigate the environmental impacts of plantations through improved management practices,

64. The National Department of Water Affairs and Forestry is responsible for issuing water use license applications where an activity is defined as a stream flow reduction activity (such as forestry) as governed by the National Water Act 36 of 1998 and plans such as Water Resource Use Plans. These govern the construction of dams, or levees, river diversions, and developments that alter the banks of rivers, streams etc. The National Forest Act 84 of 1998 provides that forests must be developed and managed so as to, amongst others, conserve biological diversity, ecosystems and habitats. The system for regulating water is presently undergoing change from a permit system based to a licensing process. This process will include the

establishment of catchment management agencies that will take over functions from existing regional offices of DWAF.

Urban economy

65. The key government institutions responsible for directing and regulating land development and use in Gauteng are the Gauteng Department of Agriculture, Conservation and Environment (GDACE), the three Metropolitan Councils of Johannesburg, Tshwane and Ekurhuleni and the eight Local Municipalities. GDACE is responsible for making decisions on Environmental Impact Assessment (EIA). The Tshwane Metropolitan Municipality was formed from the amalgamation of 13 local authorities and is home to 2.2 million people. It is a cross border municipality, as part of the city lies in the North West Province, and has an above average economic growth of 5.1%. The Ekurhuleni Metropolitan Municipality (EMM) is the industrial hub of South Africa with high levels of economic and industrial activity in the area that threaten biodiversity. The Johannesburg Metropolitan Municipality has jurisdiction over the City of Johannesburg and outlying suburbs.

66. Within Gauteng, the Gauteng Economic Development Association (GEDA) is a provincial investment promotion agency set up to attract investment and foster growth and development. The specific interests and activities within economic sectors are represented by a number of industry associations. These associations are key bodies through which economic sectors may be accessed and influenced. Of particular relevance in Gauteng, and to the sectors imprinting on the grasslands biome, are the following associations or chambers:

- International Association of Impact Assessment (South Africa)
- The South African Federation of Civil Engineering Contractors
- South African Association of Consulting Engineers
- Rail Road Association of South Africa
- South African Chamber of Business
- Chambers of Commerce and Industry South Africa
- National African Federated Chamber of Commerce and Industry
- Chamber of Mines South Africa

Coal mining

67. In keeping with world trends, the coal industry in South Africa has been characterized by several mergers, acquisitions and name changes over the past decade. The six main producers are BHP Billiton (Ingwe), Anglo Coal, Sasol Coal, Kumba Resources, Xstrata and Eyesizwe. ESKOM – the South African electricity utility—is the major buyer of coal locally and is in a unique position to influence the market and suppliers. SASOL is also relatively unique because most of its coal is used in-house for the production of fuel through liquefaction processes.

68. The National Department of Mining is responsible for approving applications for reconnaissance permits, prospecting rights and mining rights in terms of the Mineral and Petroleum Resources Act of 2002. The new Act outlines procedures that have to be followed when applying to prospect or to mine. No mining activity can commence without an: approved environmental management programme and a reconnaissance permission, prospecting right, permission to remove, mining right, mining permit, retention permit, technical co-operation permit, reconnaissance permit, exploration right or production right; and notifying and consulting with the land owner or lawful occupier of the land in question. The outcome of the application process includes an Environment Management Plan Report (EMPR) that specifies how environmental issues will be dealt with. The mining related element of the new EIA regulations, which will come into effect in April 2007, will put in place a new system to better align the EIA and mining application processes. The less effective older legislation has created several legacy problems, where old mines have not been rehabilitated and have just been abandoned.

1.5.4 Institutional context within the Environmental Non Government Organisations (ENGOS)

69. There are a range of ENGOS active across the grasslands biome, principal amongst which are:

- § The Botanical Society. The Society is an active membership based ENGO with a core Conservation Planning Unit staff complement. It does pioneering work in fields of direct relevance to the NGBP, including conservation stewardship, mining offsets, fiscal reform, and mainstreaming biodiversity into production sectors such as the wine and biodiversity initiative.
- § WWF-SA leads the WWF SA Grassland Eco-region Program with the aim of securing protected areas; developing habitat webs which would enable commercial production but maximise habitat heterogeneity; and developing of partnerships and funding options for conservation. It has a range of projects throughout the grasslands biome of South Africa.
- § The Endangered Wildlife Trust (EWT) is dedicated to conserving species and ecosystems in southern Africa. It has a range of specialist working groups operative across the grasslands biome including the Blue Swallow Working Group, the African Wattled Crane Programme, the Oribi Working Group, the South African Crane Working Group, the KwaZulu-Natal Biodiversity Programme, the Birds of Prey Working Group, and the Poison Working Group.
- § The Wildlife and Environment Society of South Africa (WESSA) is a long standing membership based ENGO active across the grasslands biome. WESSA has a range of skills and experience to offer the NGBP, of particular relevance being their expertise in capacity building, awareness and education, and work with mainstreaming biodiversity planning into municipal planning systems.

PART 1B: Baseline Analysis

1.6 Threats to Grassland Biodiversity

1.6.1 Comparative impact of land uses on grassland biodiversity integrity

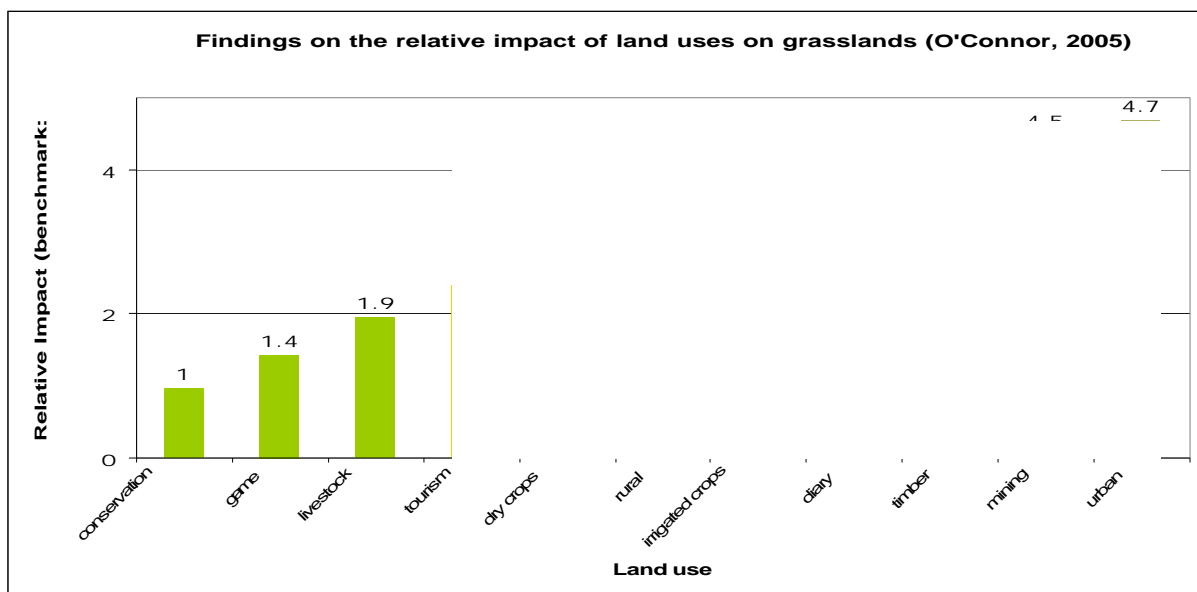
70. A Grassland Biodiversity Profile and Spatial Biodiversity Priority Assessment has been developed as part of the PDF B preparatory stage. This assessment provides up-to-date information on the grasslands biome including biome size, distribution of biodiversity, ecosystem services and the location of production activities, their associated impacts and conservation efforts. It identifies and integrates priority areas for terrestrial and river biodiversity, as well as ecosystem services for future conservation action in the biome. The assessment of terrestrial biodiversity was based on a refinement of the NSBA, and evaluated habitats, species and ecological processes. The study identified 2 Critically Endangered, 18 Endangered, 27 Vulnerable and 33 Least Threatened vegetation types in the grasslands. The assessment identified many priority areas for terrestrial biodiversity which cover an area of about 36.7% of the biome (Reyers et al, 2005). The assessment of rivers of the grasslands highlighted that only 9% of main rivers are intact, with 15% moderately modified and the rest transformed. Of the tributaries, 58% were classified as largely intact and the rest as modified.

71. An analysis of the relative impact of different production activities on the conservation status of the grasslands was also undertaken during the preparatory process. Land uses at a site level were scored against a set of biodiversity indicators to provide a comparative analysis of their ecological impact. The land uses assessed were conservation (protected areas), livestock ranching, game farming, tourism, irrigated cropping, dairy farming, timber plantations, and urban settlement. The three primary indicators of biodiversity applied in the assessment were landscape composition (habitat, species, alien plants), landscape structure (transformation, fragmentation), and ecosystem functioning (fire and grazing regimes, biogeochemical processes, hydrological functioning, soil erosion and biotic processes). A total of 46 individual indicators were assessed across these primary indicators. The use of a large number of indicators should compensate for any deficiencies in scoring of individual indicators. The assessment used multi-criteria analysis (analytic

hierarchy process²²) based on interviews with experts for each indicator. A total of about 50 experts were consulted.

72. The results are shown in the diagram below. Conclusions drawn from the findings include:

- Livestock ranching and game farming are the most compatible land uses
 - NGBBP should focus resources on securing and extending this land use
 - Management is more critical than animal type
- Urban settlement is overwhelmingly negative
 - Contain and direct urban footprint to areas of limited value
 - Create biodiversity corridors and ensure appropriate regulation
- Mining, forestry plantations and dairy are negative
 - Contain and direct footprint to areas of limited value
 - Timber – mitigate impact through improved management of unplanted areas
- Dryland and irrigated cropping impact is severe
 - There are differences between crops, but management is a more important intervention than crop type



1.6.2 Agriculture

73. About 65.2% of the grasslands biome comprises rangelands used for grazing by domestic livestock and game (usually involving the husbandry of native species, but in some cases this includes out-of-range species). Under appropriate conditions and management, this land use is considered to be sustainable and conducive to the maintenance of grassland biodiversity. Inappropriate management practices can, however, lead to habitat disturbance, with accompanying negative impacts on biodiversity. Inappropriate grazing management can take various forms, including over-stocking, maintenance of inappropriate stocking ratios between species, habitat trampling due to inappropriate location of watering facilities, and inappropriate

²² Analytic Hierarchy Process is a formal mathematical means of summarizing respondents' data into a single set of values that indicate the relative impact and rank order of the agents of influence under consideration (i.e. land use, grazing system, or crop type) (O'Connor, 2005).

application of fire as a management tool. The impacts of these practices usually result in reduced or changed vegetation composition and cover. Inappropriate stock watering systems can negatively impact streamflows into wetlands by impounding excessive amounts of water.

74. Cultivation poses a serious threat to grassland biodiversity and ecosystem integrity leading to direct habitat loss, fragmentation of habitats for plants and animals, and disruption of ecosystem function. Vast amounts of geophytic plant species are destroyed during the initial cultivation process, and this portion of biodiversity is usually permanently lost in the process. Hydrological processes are altered through changing the vegetation cover and structure, by physical drainage and water management and by changing runoff patterns. Crop farming is driven by economic considerations; when economic circumstances change, croplands are often abandoned, leaving a poor quality, depauperate form of grassland that is difficult to rehabilitate.

75. Although the impacts of cultivation on biodiversity are severe where it occurs, the threats to biodiversity in the grasslands biome as a whole are considered low to moderate. Economic impulses in the last decade have led to the contraction of cultivated area. A key implication from the comparative agricultural economics and trend assessment within the grasslands biome is that macro level pressure for agricultural expansion in the grasslands biome is not likely in the next five years. This means that it is possible to influence the location of future cropping, to ensure it takes place on previously utilized but now fallow lands, and accommodates biodiversity priorities. Threats are however evident at a more localized level, particularly from the expansion of sugar cane in coastal grasslands. Specific abatement measures are needed in these areas to address prospective impacts.

76. There is also a risk in the future that new threats will emerge with the promotion of new crops. The most significant of these are two types of green fuels from biomass – bio-diesel from vegetable oils and ethanol fuels. Of these, bio-diesel is the most economical to produce and is compatible with existing vehicle engines and commercial fuel distribution systems. In the light of escalating international oil prices, bio-diesel presents itself as an attractive renewable, domestically-produced liquid fuel option that can reduce dependence on foreign oil imports. If the possibilities of job creation and commercial opportunities for emerging enterprises are added to this, it becomes an attractive policy option. If the planting of land takes place on previously cultivated lands, then the impact on biodiversity will be negligible: but if it should take place on a large scale on natural habitat, the impact for biodiversity would be significant.

1.6.3 Forestry

77. New commercial timber plantations have significant negative on-site impacts on biodiversity because they result in direct habitat losses and changes in ecosystem dynamics. Plantations have been found to use between 500 and 1500 million m³/ha/annum more water than the vegetation replaced, reducing measurable streamflow by between 50mm – 150mm/annum, the actual amount being dependent on area, species and rainfall regime (Gush et al, 2002). Thus, the extent and location of new plantations is of key concern to the conservation agenda. The DWAF estimates that a realistic maximum new area of 200,000ha will be afforested over the next 20 years (2005-2025). However, the industry association Forestry South Africa expects that only half of this target will be realised. What is agreed is that the bulk of expansion is expected to occur in the Eastern Cape and KwaZulu-Natal provinces through small grower schemes. The DWAF Strategic Environmental Assessment has identified significant tracts of land (353 000ha) as being available for new smallholder plantations from a biophysical and social perspective if the market expands and economic viability can be maintained.

78. Forestry companies, and in particular the big growers, own large tracts of land that are presently unplanted with trees. It is expected that a large percentage of this land will never be planted with timber for a variety of reasons, including the fact that the land is unsuitable for silviculture, stream flow reduction requirements, or conditions laid out in the development license. There are three threats facing this land. Firstly, the ecological integrity of these areas may be gradually undermined over time through habitat

fragmentation, or because the areas are too small to maintain native species assemblages; and secondly these areas may become invaded by alien species, which outcompete grassland species. Thirdly, this land will soon become subject to the Local Government Property Rates Act which, once implemented, will tax this presently un-taxed land thereby causing the companies to incur new costs. The risk exists that companies may sell land that contains good quality grasslands rather than pay rates, resulting in land presently undeveloped coming onto the market for development, and biodiversity being lost.

1.6.4 Urbanization (Gauteng Province)

79. Within the grasslands biome, the moist grasslands and the Bushveld-Bankenvelde vegetation types were ranked in South Africa's NBSA within the top three priority areas for action in terms of avoiding future pressure (Driver et al, 2004). Gauteng is a centre of distribution for the latter. Of South African's biodiversity, 443 endemic plant species are found within Gauteng, with 3 critically endangered, 8 endangered, 10 vulnerable and 19 listed as rare (NBSA, 2004). Gauteng also has 42 animal species of special concern within select taxa.

80. Urbanisation can lead to near complete transformation of grassland habitat, leaving only small isolated fragments, grossly disrupted ecosystem functioning in the form of dramatically perturbed fire and grazing regimes, biogeochemical processes, and hydrological functioning, and elevated soil erosion; extreme loss of habitat and species and an increased threat of invasive alien species (O'Connor, 2005). Cities have a high impact on available land, impacting on the grasslands, due to urban sprawl. Attempts to correct the imbalances of apartheid have often exacerbated the impact of the built environment on natural resources. For example, between 1996 and 2001 there was a net increase of 745 627 informal dwellings and 743 843 formal self-standing houses, all on new land on the periphery of the city (South African Cities Network, 2004). One of the most significant reasons for increased urban sprawl is the spread of gated estates in outlying green spaces catering for middle-rich income residents.

1.6.5 Coal Mining

81. The grasslands types contains a rich mineral wealth, including coal, gold, diamonds (alluvial and underground), platinum, and stone. Of these coal mining is the most significant mining sector in terms of spatial coverage. Coal is extracted either by underground mining or open-cast mining, with 40% of coal in South Africa being extracted by open-cast methods. Open-cast coal mining has a devastating impact on biodiversity because it has the effect of removing biodiversity values from the landscape permanently. However, its existing footprint in the Highveld Grasslands area is, relative to other land uses such as cropping and forestry plantations, small at about 40 000ha. Set against this is the fact that the vegetation types affected by open-cast mining on the Highveld are Moist Clay Highveld Grasslands, Moist Cool Highveld Grassland, Moist Sandy Highveld Grassland and North Eastern Mountain Grasslands, all of which have a low formal conservation status.

82. Coal mining usually occurs at the lowest point in any given locality (i.e. along drainage lines) because this is usually closest to the seam. Coal mining has a substantially greater impact than any other land use on hydrological functioning and a marginally greater impact on biogeochemical processes, owing to a catastrophic influence on carbon, and on biotic processes (harvestable goods). All forms of coal mining inevitably result in acidification of water. The indirect or downstream impacts include acid rain and pollution (O'Connor, 2005).

83. The potential extent of future open-cast mining areas is unknown as no independent figures exist and the area that small companies may develop is unknown. The main companies have indicated that the areas they are considering are in the region of 40,000ha, with a large proportion of this expected to occur mainly on existing maize fields, where biodiversity has already been compromised. Mpumalanga province is in the process of finalizing its Biodiversity Conservation Plan. The assessment undertaken to prepare the Plan, which covers both terrestrial and aquatic biodiversity, identifies biodiversity priority areas harboring the

highest proportion of irreplaceable, highly significant habitats. In time, this information will be able to be compared with present and future coal mining plans to assess and then manage impacts on a finer scale (Kirkman, 2006).

84. Worldwide, the coal mining industry has a negative reputation. All of the major mining houses active in South Africa are acutely aware of this liability, and have taking steps to improve the record of on-site environmental management. Most have adopted the 'triple bottom line' approach, where financial profitability is aligned with social and environmental considerations. There are a number of opportunities within this sector. Firstly there is a shift taking place in companies' approach to the environment, with biodiversity being seen as a critical component. However, companies are looking for leadership on what this means in practise. Secondly, in some instances there is still a gap between good biodiversity-related policies and implementation, and a biodiversity champion is needed to push the frontiers to their conclusion. Thirdly, the expected increase in smaller companies, with expected lower rates of environmental compliance, is a risk for both the biodiversity and big companies. Fourthly, mining companies own large tracts of land that are not mined. There is a trend to acquire land to stop complaints from farmers where underground mining impacts on such farmer's land (e.g. through subsidence). Mining companies may be open to options where land falling within biodiversity priority areas is legally secured for biodiversity conservation (e.g. contract nature reserve) if they are able to continue underground mining operations.

1.7 Baseline Course of Action

85. Under the baseline scenario, defined as the 'business-as-usual' situation, a number of activities will be implemented by government, the private sector and non-governmental institutions aimed at improving management of natural resources in the grasslands biome. These form an important base on which the NGBP is nested. Activities may be distinguished between those focused on protected areas, and those in production landscapes, involving the major production sectors and enterprises.

1.7.1 Protected Area Expansion

86. South Africa has a well-developed system of formal protected areas. These are classified in the South African National Spatial Biodiversity Assessment (NSBA, 2004) into three broad categories:

- (i) **Type 1** protected areas (equivalent to IUCN categories I, II and IV) including National Parks, Provincial Nature Reserves, Local Authority Nature Reserves and Forest Reserves, have strong legal protection and are primarily managed for the maintenance of biodiversity;
- (ii) **Type 2** protected areas (equivalent to IUCN categories III, IV, V and VI) including Wildlife Management Areas, Private Nature Reserves, National Heritage Sites, undeveloped State land (excluding Type 1 protected areas), Bird Sanctuaries, Botanical Gardens, Mountain Catchment Areas (excluding Type 1 protected areas), Protected Natural Environments, Coastal Conservation Areas and Indigenous State Forests (excluding Type 1 protected areas) have an intermediate level of legal protection and are primarily managed for sustainable use and development without compromising their ecological, landscape and cultural integrity;
- (iii) **Type 3** protected areas (equivalent to IUCN category VI), including Private Game Farms, Private Game Reserves (excluding Type 2 protected areas) and Conservancies (excluding Type 2 protected areas), are often more informal protected areas with a moderate to low legal status and are primarily managed as productive enterprises.

87. The national public entity responsible for management of South Africa's national protected area is the South Africa National Parks (SANParks). The provinces maintain statutory bodies such as Parks Boards or divisions within Departments responsible for the administration of provincial protected areas. These authorities are currently investing in the management of a small and highly fragmented protected area estate in the biome. There are currently 122 Type 1 conservation areas in the grasslands, making up 2.8% of the land area. These include 5 National Parks, 101 Provincial Reserves, 7 Local Authority Nature Reserves and

9 Nature Reserves. In addition, there are 70 Type 2 conservation areas, which collectively make up 0.8% of the biome and include 1 Bird Sanctuary, 7 Conservation Areas, 13 DWAF Forest Areas, 27 National Heritage Sites, 21 Private Nature Reserves and 1 State Land Area. There are, in addition 9 Game Farms all of which are Type 3 protected areas and make up 0.35% of the biome.

88. Some strategic expansions to the protected area estate are also planned. SANParks recognizes that grasslands are severely under-represented in the South Africa protected areas network. Plans are underway to create a Grasslands National Park. While this will expand the area in type 1 conservation hectares, this investment, coupled with that dedicated to the management of existing protected areas will by itself be insufficient to protect the biodiversity of the biome. This is because the biome is characterised by a high rate of biological turnover across its ecological landscape, meaning that many large areas will need to be protected. Furthermore, the protected area estate will not directly address the main causes of biodiversity loss emanating from the land use practices employed by the major production sectors in the grasslands. However, the further development of the protected area estate will complement efforts to mainstream biodiversity management into the production practices of these sectors, and if carefully designed, can serve as refugia for the recruitment of grassland species into surrounding landscapes.

1.7.2 Production Sector Interventions

89. A number of actions are planned within the main production sectors operating in the grasslands to improve the quality of environmental stewardship. Table 3 provides a synthesis of the main baseline activities for each of the four main production sectors and landscapes, namely agriculture, plantation forestry, the urban environment in the Gauteng conurbation and coal mining. Also provided is an analysis of activities designed to improve the enabling environment for biodiversity conservation in the biome, with an emphasis on production landscapes. These interventions are an important collective base on which the Programme is nested.

Table 3 Production Sector Baseline Programs

Category	Baseline Activity	Organisation	Gaps
Enabling Environment	EIA: institution of streamlined assessment and approval process and compliance monitoring.	DEAT	Need to strengthen cooperative governance structures to improve efficiency Need to integrate Bioregional Plans into EIA approval process, with definition of clear guidelines
	Mapping Tools: development of detailed maps at fine scale and meso scale documenting the spatial distribution of biodiversity	SANBI	Need to develop these for grasslands biome
	Developing national framework on environmental fiscal instruments to provide incentives for biodiversity management	National Treasury	National framework on environmental fiscal instruments being developed does not adequately cater for biodiversity management but Treasury is willing to consider proposals. There is a need to pilot new schemes to test their efficacy before broader roll out.
	National resource accounts initiative Integrating data on environmental capital values into national accounts, to guide decision making This is a key instrument for making the case for the value of grasslands ecosystem services in line with the UN System of Integrated and Environmental Accounting	Statistics South Africa	Need for good economic assessments. Current data is fragmented and in some cases needs to be ground truthed.

Category	Baseline Activity	Organisation	Gaps
	Environmental and land use planning Regulatory functions re EIA applications Responsible for developing biodiversity conservation plans and ensuring incorporation of them into other provincial sectoral plans and decision making processes	Provincial Departments responsible for environment (North West, Free State, E Cape, KZN, Mpumalanga, Limpopo, Gauteng)	Establishment of appropriate capacity for implementation of conservation plans Need for province wide systematic biodiversity conservation plans in North West, Free State and Limpopo Need for gazetted bioregional plans throughout the grasslands biome to strengthen backbone of planning apparatus Need for improved coordination and collaboration of efforts to reach cumulative impact in the grasslands biome
	Re-zonings, consent uses or subdivision applications or permission to develop or change the use of land in terms of relevant laws Implementation of planning instruments such as the Spatial Development Framework (SDF), and element of the Integrated development Plan (IDP) and Environmental Management Frameworks (EMF)	Local and District Municipalities	Capacity building needed within context of huge developmental needs Need for incorporation of biodiversity conservation objectives into municipal planning and decision making
	Graduate and post graduate studies Specific research programmes and projects within grasslands biome – ranges from rehabilitation to diversity studies including aspects such as veld management, fire management, genetics and the spread of invasive alien species	Research and tertiary education institutions (Universities, institutes such as ARC & CSIR)	Need to link research agenda undertaken by different disciplines, to ensure biodiversity management needs are considered.
Agriculture	Responsible for policy development, regulatory functions regarding agricultural sector management, communication and information services and research. Key focus areas include farmer settlement and development, agricultural trade and business development, agricultural production and sustainable resource management. The LandCare programme aims to optimize land productivity and engender sustainable use of natural resources. It offers practical assistance to effect land conservation activities that are identified, implemented and monitored mainly by the farming community with a predominant focus on communal farming areas. Although the scale and impact of the programme is quite small, it operates at the farm level and thus offers an opportunity to engage with land users about how to farm in a biodiversity-friendly manner. LandCare initiatives have been expanded to include specific sub programmes in different focus areas such as WaterCare, VeldCare, Soilcare and Alien Invasive Plants.	DoA (national)	Biodiversity not adequately incorporated into agricultural policy, planning, guidelines and decision making Insufficient knowledge and experience in regulatory authority Awareness and appreciation by agricultural decision makers of value of grassland ecosystems is limited & mindset is production focused Agricultural research largely excludes biodiversity

Category	Baseline Activity	Organisation	Gaps
	The Provincial Departments are responsible for agricultural support to farmers, and functions include farmer settlement and development, agricultural economics, technology research and development, sustainable resource management, veterinary services and agricultural training	Provincial DoA (in six provinces)	Incorporation of biodiversity in agricultural planning, guidelines and decision making limited Insufficient knowledge and experience in regulatory authority Fragmentation of expertise and lack of coordination between province and local government
	Represent agricultural interests of their members	Industry organisations – AgriSA, NAFU, TLU, Agribusiness	Incorporation of biodiversity in agricultural planning and decision making limited
	Represent agricultural interests of the grain sector Ongoing initiatives by industry to improve efficiency re water use, fertilizer use etc Some crop sectors use no tillage/minimum tillage practices Initiative for green certification of sugar cane	Commodity associations - GrainSA, Sugarcane Association etc	Limited information on biodiversity priority areas resulting in crop expansion in inappropriate areas Knowledge re best practice guidelines re cultivation practices and use of pesticides, fertilizers and herbicides needs to be developed
	Represent agricultural and economic interests of the red meat and game sectors	Commodity associations – RPO, NERPO, W.R.S.A.	Game industry still in process of organizing Need to develop biodiversity-compatible grazing management systems
Forestry	Continued regulatory functions re Stream Flow Reduction Activities (SFRA) Support for small forestry grower expansion Wetland and Riparian Zone Delineation Programme DWAF planning for expansion process (SEA in E Cape etc)	DWAF	Further work needed to incorporate biodiversity conservation objectives in to DWAF planning tools for small grower expansion Development and piloting of small grower and environment guidelines in demonstration projects
	Wetland and Riparian Zone Delineation Programme FSC certification and attempt to extend to small growers Support to Working for Water and Working on Fire Programmes Ongoing environmental management activities	ForestrySA	FSC certification does not adequately address land use change/conversion as a principle Management of permanently unplanted forestry owned land does not adequately incorporate biodiversity management best practice – need work re management objectives and systems, inventories, monitoring Permanently unplanted forestry owned land that contains biodiversity of significance is not formally secured for conservation Need for incentives to further expand environmental programs, such as tradeable development rights & implementation of Municipal Property Rates tax exemption for conservation stewardship

Category	Baseline Activity	Organisation	Gaps
Urban Gauteng Province	<p>Environmental and land use planning Regulatory functions re EIA applications Responsible for ongoing implementation of Gauteng biodiversity conservation plan and ensuring incorporation of this key decision support tool into other provincial sectoral plans and decision making processes Environmental enforcement</p> <p>The Gauteng Provincial Cabinet has approved the Gauteng Conservation Plan (known as C-plan 2), which specifies that 25% of Gauteng needs to be conserved to meet the province's biodiversity management targets. C-plan 2 is being used as a decision-support tool specifically for the administration of EIA regulations and also being integrated with municipal planning tools. Development of key policies and plans at a provincial level include the Gauteng Open Space Programme, Wetlands Policy, Provincial Ridges Policy, Provincial Red Data Plant Policy and Environmental Management Frameworks.</p>	GDACE	<p>Limited coordination among spheres of government responsible for land use planning and development Need for coordination and collaboration of efforts to reach cumulative impact in the grasslands biome Urgent need to formally secure key urban sites for conservation as open spaces seen as fair game for development</p>
	<p>Environmental management Regulatory functions re land use and development applications Protected area (parks) management and expansion Incorporation of Gauteng's conservation plan into municipal plans, such as SDFs, EMPs etc Environmental enforcement</p>	Gauteng Province Municipalities	<p>Limited coordination among spheres of government responsible for land use planning and development Need for coordination and collaboration of efforts to reach cumulative impact in the grasslands biome Resources for conservation compete with developmental needs and agenda Awareness and appreciation by urban decision makers of value of grassland ecosystems and biodiversity in urban economy is limited</p>
	<p>Wide range of biodiversity interventions at local programme site level, e.g. community projects, and often driven by need to respond to development applications during the EIA process Some interventions at a broader scale – e.g. Gauteng Conservancy Association</p>	Gauteng based NGOs – e.g. Gauteng Conservancy Association, WESSA etc	<p>Need for coordination and collaboration of efforts to reach cumulative impact in the grasslands biome</p>
	<p>Preparation of EIAs Undertake urban developments</p>	Professional associations & related companies – e.g. EIA Impact assessors	<p>Such professions need to incorporate biodiversity into their professional work Toolkits for how to do this needed</p>

Category	Baseline Activity	Organisation	Gaps
Coal mining	DME responsible for implementation of mining laws and policies, ensuring the EMPR is done, and enforcement of conditions and ensuring rehabilitation occurs MPB responsible to comment on mining applications	DME, MPTA	Proposed location of future expansion of coal mining does not reflect biodiversity priorities Awareness and appreciation by mining sector of value of grassland ecosystems and biodiversity is limited
	Working for Wetlands is a public works poverty alleviation programme undertaking rehabilitation of wetlands. It is funded through DEAT and located within SANBI	WfW	Needs to find more sustainable solutions for wetlands such as wetland mitigation banking. Policy and pilots for offsets needed
	Environmental policies and management schemes of big coal mining companies Joint dialogue on mining and biodiversity. The objective is to provide a platform for communities, corporations, NGOs and government to engage in a dialogue regarding the need to balance ecosystem protection with production interests. Development of user guides, identifying systems, tools and processes that can be used at various stages of the mining cycle (programme development, operations and closure planning/implementation). The issue of biodiversity offsets is being discussed in this forum. CoalTech 2020 is a collaborative research programme which was formed by the major coal companies, universities, the Centre for Scientific and Industrial Research (CSIR), and government to develop technology for the coal industry to remain competitive including research to address a range of environmental issues such as land rehabilitation.	Private companies Chamber of Mines CoalTech2020	Small mining companies, environmental awareness limited No biodiversity off-sets policy or practice in place

1.8 Normative Solutions needed to Address Threats

1.8.1 Enabling environment

90. The baseline situation is characterised by many, but uncoordinated, efforts to manage grassland biodiversity. Although the enabling environment is largely in place, with a supportive policy and legal framework, there is a gap between policy and implementation. Measures are needed to improve enabling conditions further, geared to ensuring that production sectors are accommodating biodiversity management objectives in their production practices. The normative solution entails a number of improvements in the enabling environment. A knowledge management system that will facilitate information sharing, networking and replication of good management practices in different production sectors will be in place, catering to the information needs of the public sector, private enterprises, and civil society. Informed production enterprises, led by industry champions in each sector, will be negotiating tradeoffs between production endeavors and conservation needs with informed regulatory authorities, based on sound data. The capacity of regulatory institutions across the environment and production sectors to coordinate the implementation of

policies, develop and adapt plans, and monitor their implementation will be in place. These actions will ensure that stakeholder interventions are coordinated so that efforts are more than the sum of the parts.

1.8.2 Agricultural sector

91. Under the baseline scenario, rangeland practices will be geared towards enhancing the productivity of grazing, and will not incorporate larger biodiversity management considerations. Although rangelands constitute the most conservation-compatible production enterprise, the biodiversity dividends will be sub-optimal in that scenario. In particular, burning regimes and stocking practices will adversely affect the floristic and invertebrate component of the grassland biota. Where cropping expansion occurs, it will do so regardless of biodiversity management needs.

92. The normative solution will engineer a better alignment between production needs and conservation imperatives on agricultural lands. A range of measures will be in place, facilitating the integration of biodiversity management objectives into sector production practices. These include the application of win-win biodiversity-compatible rangeland management systems. The incentives for farmer uptake of these practices will be improved through the emergence of a certified domestic red meat market, recognising environmental good practice. The organised livestock and game production associations will be playing a pivotal role in bridging the information divide between farm enterprises and the conservation fraternity concerning the employment of biodiversity-friendly management systems. Finally, expansion of cultivated lands, in particular for the new generation of crops such as bio fuels, will be occurring on fallow lands, or those of low conservation significance.

1.8.3 Forestry sector

93. The organised forestry sector in South Africa is environmentally aware and part of the international certification system operated by the Forest Stewardship Council (FSC). The future location of plantations is of concern because new plantations have significant negative impacts on biodiversity, resulting in direct habitat loss and changes in ecosystem dynamics. Existing forestry estates contain large areas of unplanted grasslands which are not being managed specifically to address threats to biodiversity. In the normative solution, companies will be managing these lands to protect biodiversity, and earning recognition for good management practice through improved industry certification schemes. Land allocation decisions for new plantation developments will accommodate biodiversity management needs, ensuring that tradeoffs are being considered in the allocation process. Off-site impact offset arrangements will be applied as a standard mitigation measure.

1.8.4 Urban economy in Gauteng

94. Urbanisation in Gauteng on its present trajectory will result in unmitigated development and accompanying biodiversity loss. As the area is a centre of distribution for components of grassland biodiversity, such development will undercut global environmental benefits. The normative solution will see the induction of a suite of activities to address the underlying problem. First and foremost, there will have been an attitudinal shift in the institutions responsible for regulating urban development, and amongst the developers themselves (i.e. city planners, architects and the construction industry). The management tool box will have been expanded, improving decision making and mitigation options. While regulatory functions will be strengthened to protect the most critical sites for biodiversity, this will be complemented by development offset arrangements aimed at internalising the costs of land conversion in green spaces into the development equation. Coordination and cooperation amongst the three spheres of government will have been facilitated.

1.8.5 Coal mining sector

95. Steps are being taken by the government and the coal mining industry to address the larger environmental impacts of coal mines. Coal mining in the grasslands biome does not pose a substantial on-site threat to biodiversity because the actual surface area mined, even in open-cast operations, is relatively small. However, mining companies are major landholders in the biome, and undeveloped lands within the mining estate have important conservation values. The sector imposes significant off-site impacts, particularly on wetlands affected by water abstraction. The normative solution will see biodiversity planning information used by mining companies and regulatory authorities to plan new coal mines. Moreover, innovative new market mechanisms, in particular wetland offsite mitigation measures and wetland mitigation banking, will be piloted, lessons shared and good practice accommodated in business practice. This will be applied in partnership with State sponsored wetland protection schemes, such as Working for Wetlands, and designed so as to ensure adequate regulatory oversight. The Water Research Commission will also support the necessary scientific research regarding difficult issues such as mitigation ratios, maintaining catchment integrity and the need to mitigate type for type.

1.9 Barriers to the Conservation of Biodiversity

96. Under the baseline scenario, many activities that directly and indirectly contribute to improved management of the natural resources within the grasslands biome will occur, but these will not by themselves ensure that biodiversity management objectives are being attained. Natural veld will be gradually transformed into cultivated lands, plantations, coal fields or urban settlements without due regard to biodiversity management considerations. Production activities will continue to pose an unmitigated threat to biodiversity in production landscapes, where the bulk of the biome's biodiversity resides. A number of barriers are presently impeding efforts to address these problems. If left unattended, this will result in a continued mismatch between conservation objectives and practices and production interests and practices. The main barriers can be clustered as follows: a) Market failure and paucity of incentives; b) Systemic and institutional capacity weaknesses; and c) management tools and limited management capacity. A summary of the threats to grasslands biodiversity within the biome, root causes, and the barriers to their mitigation is given in Annex I.

1.9.1 Market failure

97. The economic heartland of South Africa is within the grasslands biome and thus here, more than anywhere else, market forces drive development. Ecological goods and services supplied by grasslands tend to be public goods that do not have a market price determined through market forces where a price is agreed between a willing buyer and a willing seller. As a consequence, the ecosystem functions of the grasslands are not being accounted for in land transactions and management. The perceived free value of the ecosystem leads to land use allocations that may not optimize the total economic value. There are three immediate opportunities available to address this imbalance:

(i) While a number of environmental certification systems have been established in certain industries, most notably the plantation forest sector, these do not yet accommodate the specific management needs of the grasslands. For forests, certification systems are geared, in terms of biodiversity reach, to addressing the management of native forests rather than non-forest ecosystems. Although about 80% of plantations are ISO 14001 or FSC compliant, grassland biodiversity management objectives are not adequately integrated into the FSC system. However, these systems provide the conservation community with a good basis for strengthening management, working in close association with the industry and certification body. The possibility also exists of developing a certification programme for livestock and game farmed meat using environmentally friendly standards, applying good management practices for biodiversity. Option assessments undertaken during programme preparation have shown that such an initiative could have far reaching consequences in promoting biodiversity-friendly management practices. It could also lower the dependence of the beef industry on grain from cultivated lands for feeding cattle in feedlots.

(ii) The existing incentive in the Local Government Municipal Property Rates Act should be better utilized. This Act provides for a tax exemption on private and communally owned land that is formally conserved under different categories of protected area. Capacities will need to be built amongst landowners and users, to enable them to set up conservation management systems that qualify for this exemption. There is a danger, otherwise, that large tracts of unplanted forestry owned land containing important biodiversity will be sold to avoid payment of this new rural land tax.

(iii) Regulated offset arrangements²³ need to be developed, such as wetland mitigation banking, or urban greenspace offsets, that allow developers to compensate for the direct impacts and externalities imposed by production operations, through protection and/or restoration of land with equivalent conservation value. While this, by itself, will not uncover all the non-pecuniary elements of biodiversity value forfeited in production processes, it will help to make the costs more tangible. Such schemes may also be more efficient than command-and-control systems, which do not allow developers to weigh the costs and benefits of achieving mitigation targets through different means.

1.9.2 Systemic and institutional capacity weaknesses

98. While a strong macro-enabling framework is in place, subsidiary regulations, plans, and management guidelines and tools have yet to be developed to put policies into effect. The impetus for action by production sectors operative in the landscape is being undermined, in part, because awareness amongst key decision makers of the economic value of grasslands ecosystems is limited. Furthermore, existing data, including of the ecological and economic parameters for grassland management, is not being adequately shared and used for management purposes. As a consequence, it is difficult to ascertain the acceptable level of tradeoff needed between development objectives and practices in production sectors, and those for biodiversity conservation.

99. The above-mentioned barriers are compounded by inadequacies in the systems for coordinating conservation management with the regulatory functions of public production sector institutions. Coordination and collaboration between spheres of government responsible for land use planning, decision making, and land management will need to be improved. Biodiversity conservation plans that identify biodiversity priority areas need to gain legal status as formally gazetted bioregional plans so that other sectors and spheres in government will take them more seriously when making land use and development decisions. While the Biodiversity Act gives legal teeth to these plans, information gaps and mechanisms to cultivate collaboration between production interests and conservation practitioners will be needed to put them into action, allowing for a process of informed negotiation. As a consequence, the planned location of new developments, is they for urban expansion, coal mining, plantations or cultivation, do not yet adequately reflect biodiversity priorities.

1.9.3 Management tools and capacity

100. There has never been a focus on accommodating biodiversity conservation objectives in veld management practices, which tend to be solely production focused. However, existing research shows that win-win options exist, that allow biodiversity conservation needs to be accommodated in grazing management systems. However, weak links within and between tertiary education institutions, government, industry associations, and farmers have meant that innovative trials on biodiversity-friendly veld

²³ The ICMM defines biodiversity offsets as “sustainable conservation actions intended to compensate for residual, unavoidable harm to biodiversity caused by development projects, so as to aspire to a no net loss in biodiversity” (ICMM, 2005). Offsets could offer companies a means of ensuring continued access to the license to operate, and investors a mechanism to help minimise risk associated with corporate impacts on biodiversity.

management have not been taken to scale in the field. Current mechanisms for supplying this information to land users are inadequate, and the information that is available is too general to accommodate the heterogeneity in ecological conditions at the farm level.

101. Gaps in know-how also affect management interventions in other sectors, including plantation forestry and coal mining. These industries manage large swathes of undeveloped grasslands, which while not necessarily threatened by direct habitat conversion by the companies themselves, are subject to other pressures which remain largely unmitigated. These include invasion by alien species, which out-compete native species, predator control programmes at landscape level, and fragmentation of small habitat plots. Tools are needed to inform enterprises of cost-effective management measures to improve stewardship of these areas, to be accompanied by due recognition through market schemes or incentives. These needs extend to the agricultural sector, where management of critical habitats, such as riparian zones, wetlands and rivers has been problematic.

102. These problems can be resolved to some extent through the production of good practice guidelines. However, there are two additional impediments to action, namely, capacity weaknesses at the enterprise level to put these guidelines into effect, and effective ways and means of disseminating information at a mass level. While the industries themselves can play a big role in addressing these gaps, particularly where organized industry associations are in place, there has been little attempt thus far to build capacity and provide support to capitalize on the opportunities.

PART 2: Strategy

2.1 Programme Rationale and Programme Conformity

103. The NGBP responds to the critical threats confronting grassland biodiversity by addressing barriers to the attainment of normative solutions to their remediation. The normative solution, established to accommodate the special needs and circumstances of the biome, is to mainstream biodiversity management into production practices employed by the main production sectors in the grasslands landscape. There are a number of conservation efforts already underway in the grasslands biome, but by themselves these will not ensure that biodiversity management objectives are adopted by production sectors or that ecosystem services are sustained and secured within the grasslands.

104. The programme will complement and facilitate synergies between existing grassland biodiversity conservation initiatives by seeking to mainstream conservation objectives into the production strategies and operational practices of the agriculture, forestry, urban development, and coal mining sectors. Programme interventions have been identified with the active involvement of these production sectors. The strategy has been developed based on an analysis of needs in the target sectors facilitated through feasibility assessments undertaken during the preparatory stage. These have allowed the programme to focus on the most critical barriers to positive action. Success in this endeavour will depend to a large extent on the leadership and ownership exemplified by the different production sector institutions involved in implementation. This will depend to a large extent on the ability to forge an acceptable consensus on tradeoffs between production and conservation.

105. The GEF-supported element of the programme will be the core catalyst around which the rest of the programme will form. The NGBP is conceptualised as a ten year programme and adopts a phased approach comprising a suite of carefully designed and targeted interventions split into two phases of five years each. During the first phase (2007-2012), GEF supported activities will be focussed on building South Africa's capacity to absorb and sustain investments designed to sustain and secure grassland biodiversity. At national level, GEF resources will be dedicated towards building capacity at the systemic, institutional and individual scales to plan, execute and monitor activities. The funding is intended to improve the enabling environment, an endeavour towards which other funding has been leveraged. At the same time, local level activities will

demonstrate how production practices in the different production sectors can be adapted in order to address biodiversity management objectives.

106. The second phase (2012 – 2017) will focus on leveraging investments to consolidate progress from phase 1, scaling up best practices which have been identified during the first phase and advancing state of the art measures to adapt mainstreaming approaches to anticipated long-term climatic changes. These interventions will ensure that land is not just conserved but productively used, thus ensuring social and economic sustainability beyond environmental objectives. GEF funding for phase 2 would be dependent upon the successful attainment of agreed outcomes in phase 1, which will be subject to independent validation, as well as the commitment of significant additional co-financing over that leveraged in phase 1. Phase 1 interventions are designed to ensure that global environmental benefits will continue to be delivered, irrespective of the availability of further GEF investment. The programme will be continued beyond the life of the GEF intervention, building on the measurable results it fosters.

107. The spatial biodiversity priority assessment undertaken during the preparatory phase of the programme has helped identify conservation priorities in the grasslands biome. This included an assessment of terrestrial biodiversity, wetland ecosystems and ecosystem services²⁴. The information from the assessments was integrated into a common planning unit of the quaternary catchment to identify 434 higher priority catchments (out of 1033). These catchments were aggregated to form priority clusters. The clusters were assessed as to their biodiversity and ecosystem service content, as well as the land use situation and conservation efforts, to produce a profile for each. 15 priority clusters were identified, occupying 50% of the biome. This information allows for the development of appropriate biodiversity mainstreaming mechanisms in these areas.

2.2 Programme Goal, Objectives, Outcomes and Output

108. The programme will contribute to the achievement of the following goal:

The biodiversity and associated ecosystem services of the grasslands biome are sustained and secured for the benefit of current and future generations.

109. The programme will be responsible for achieving the following programme objective:

Major production sectors are directly contributing to the achievement of biodiversity conservation priorities within the grasslands biome.

110. The Programme Objective will be achieved through five Programme Outcomes

Outcome 1	Enabling environment for biodiversity conservation in production landscapes is strengthened
Outcome 2	Grassland biodiversity conservation objectives mainstreamed into agriculture
Outcome 3	The forestry sector directly contributes to biodiversity conservation objectives in the grasslands biome
Outcome 4	Grassland biodiversity management objectives mainstreamed into urban economy in Gauteng

²⁴ Ecosystem services were mapped for the grasslands based on the importance of the ecosystem service and availability of data for mapping the service. Services mapped included water production, groundwater production, soil protection, carbon sequestration, and grazing. From these maps areas of high importance to each ecosystem service were established and maps were combined to produce an integrated map of ecosystem service priorities in the grasslands. Water production through surface run off was kept apart due to its importance in the biome and was assessed as a separate layer. From the combined layer of services, areas of importance to 2 or more services were highlighted and take up approximately 18% of the biome.

Outcome 5	Biodiversity management secured in coal mining sector
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2.2.1 Outcome 1: Enabling environment for biodiversity conservation in production landscapes is strengthened

111. The enabling policy and regulatory framework is deepened. The broad enabling legal and policy framework for mainstreaming biodiversity into production practices is in place but needs to be deepened through the development of subsidiary regulations, plans, and guidelines. The National Biodiversity Framework sets norms and standards for publishing bioregional plans. Bioregional plans for the grasslands biome will be gazetted at the appropriate level according to these norms and standards. Gazetted bioregional plans will be incorporated into provincial and local government planning systems. Multilayer GIS maps at both the grasslands biome wide level and fine scale level will be produced, providing decision makers with a mechanism for multi criteria analysis. SANBI's conservation planning section is primarily responsible for this work. The NGBP will provide technical assistance to help frame the guidelines, and the bioregional plans and provincial subsidiary regulations.

112. The NGBP will engender the informed use of economic valuation for the management of the grasslands. This will require the development of rigorous, comparable, estimates of the economic value of grasslands ecological capital. The following steps are needed: update the inventory of grasslands goods and services, perform valuation, construct official national accounts, and promote the use of such values in decision making. The NGBP will address this need in collaboration with the National Statistical Service of South Africa, which has started to develop a national resource accounts system. It is proposed that the System of Integrated and Environmental Accounting, which served as a basis for the United Nation's Handbook on Environmental Accounting, will be used as a framework for this exercise.

113. Knowledge management system for the umbrella NGBP is developed and implemented. A knowledge management system will be developed that will facilitate information sharing, and knowledge networking within and across the different outcomes of the Programme across the public, private, and civil society sectors. This will facilitate the dissemination of knowledge management toolkits developed under the Grasslands Programme. The objective is to engineer the replication of good management practices across the biome. Opportunities for facilitating knowledge exchange such as seminars, field trips, exchanges etc, will be created. In conjunction with this, a data management system, including website and stakeholder database will be created. An effective programme-level communications system will be put into place and managed on a continual basis. A robust M&E system and reporting process will be designed whereby all affiliated institutions will report into the system.

114. Increased capacity of stakeholder institutions to engage effectively in mainstreaming biodiversity management into production practices. For any mainstreaming programme to be successful, a range of institutions and stakeholders whose core business is not biodiversity management will need to be actively engaged. Processes and protocols for facilitating such engagement will be developed. These will a) allow for formal institutional affiliation with the NGBP, b) put in place MoUs that set out the roles and responsibilities of the different implementing parties, and c) allow for a peer review system of the implementation process. Another element will involve building the capacity of institutions to mainstream biodiversity management effectively across various divisions within their organisations. This will include: a) strengthening the capacity within SANBI as the coordination hub for the Programme; b) supporting targeted training to strengthen capacities within the implementing agents.

2.2.2 Outcome 2: Grassland biodiversity conservation objectives mainstreamed into agriculture

115. Improved rangeland management systems piloted that incorporate biodiversity management objectives²⁵. The NGBP will work with groups of landholders, land users and workers at a local level in discrete areas to test ways and means of accommodating biodiversity needs in production practices, building on the strength of existing research. A matrix of land uses will be promoted, which include set asides and legally binding contract nature reserves, eligible for tax exemption in terms of the Local Government Municipal Property Rates Act²⁶. The NGBP will support two field demonstrations aimed at testing and adapting rangeland management²⁷:

- Wakkerstroom/Luneberg area of Mpumalanga province (see map in Annex 11). This site covers an area of 182 108 hectares, with 79.8% still in its natural state and a population of 45 771 people. It has been selected because of its high biodiversity significance; because the primary main land uses are red meat and wool production which are highly compatible with biodiversity conservation; and because there is institutional capacity for implementation, through the Ekangala Grasslands Trust.
- Inland River Ecosystems: Free State Province (see map in Annex 11). This site contains a high number of endangered river ecosystems. However, there is still potential to meet conservation targets. It aims at adapting agricultural use practices to ensure congruity with wetland and river ecosystem management objectives. There will be a focus on the Middle Modder River catchment comprising an area of about 685 600 hectares, including the tributary Renosterspruit River which supplies water to Bloemfontein, Thaba Nchu and Botshabelo. The bulk of the land in the catchment is natural veld (75%) used for cattle and game farming in the west, and sheep farming towards the east. The health of the Modder River is being compromised because of extensive agriculture (irrigation, ploughing of floodplains, over-grazing and incorrect farming practices); artificial structures (road construction, bridges, weirs, dams); and urban development (abstraction, stormwater runoff and sewerage effluent etc).

116. Activities will be undertaken in three streams:

- Biodiversity-compatible best practice management strategies developed and used: In an industry that lacks a focus on and awareness of biodiversity, the primary role of the NGBP is to provide leadership and direction. Demonstration of rangeland management strategies that are successful from both a biodiversity outcomes and an economic perspective is critical to raising awareness of the role and importance of biodiversity to agricultural sustainability. The NGBP will coordinate the activities of several role players including the National and Provincial Departments of Agriculture, commodity associations, and landowners to develop, collate and disseminate information to land users on biodiversity-compatible best practice grazing management strategies. This will be implemented at the demonstration sites and replicated through incorporation into policy guidelines.
- Conservation Stewardship Arrangements in place: conservation stewardship on private land is critical to secure and sustain grassland biodiversity in agricultural production areas. Stewardship involves the wise use, management and protection of natural resources by private landowners, underpinned by incentives.

²⁵ This includes associated cultivation such as pastures; and also crops such as various grains as it is common in the grasslands for farmers to have both cattle and crops.

²⁶ This and other potential incentives need to be actively pursued as they are key tools in promoting the development of conservation areas on privately owned land, incorporating both livestock and crop farms.

²⁷ These sites have been selected using three criteria, namely: (i) agricultural land use patterns and associated pressures on biodiversity must be broadly representative of those prevailing across the biome; (ii) there must good prospects for effectively addressing these pressures, particularly in terms of landholder receptivity to action; and (iii) the site must contain biodiversity of global significance.

The NGBP will promote 3 options, with each option permitting different perturbations of land uses, and benefits for the landowner. The entry level involves a voluntary conservancy; the middle level requires a co-operation agreement; while the highest level results in formal proclamation of a contract nature reserve. Incentives that can be provided through government programmes include: general land management planning support, support for the development of invasive weed management plans, Municipal rates rebates, marketing assistance, advanced extension service support and access to game animals, to stock land. The highest level results in the highest benefit being an exemption from payment of Local Government Property Rates. 15 landowners in the Wakkerstroom/Luneberg demonstration area have established an interest in managing 22,000 hectares of biodiversity priority under stewardship arrangements. The NGBP will provide the capacity to catalyse the demonstration. In addition the Programme will provide seed resources for the creation of a biodiversity stewardship capacity within the three affected provinces²⁸, so that they are able to respond effectively to the needs of private landowners, particularly with respect to incentives. This capacity will also be utilised to support stewardship within the forestry sector. The beneficiary agencies will commit themselves to long term future funding of the positions. KZN-Wildlife has already funded and filled a Stewardship Manager position.

- Capacity building of the organised agricultural sector bodies. The NGBP will provide support to build the capacity of livestock and game production associations to enable them to serve as a purveyor of information on conservation-compatible farming to their members. The capacity building efforts will include the development of toolkits, and training and linkages will be forged with the SANBI knowledge management system to facilitate extrapolation of critical information.

117. Biodiversity-friendly livestock/game production systems promoted through certification scheme. Working in collaboration with the retail sector and livestock industry associations, the NGBP will facilitate development of a domestic certification system for range- fed beef, mutton and/or game, with a view to recognising good environmental management practice. Lessons will be learned from Namibia where an initiative has started that will see Namibia export beef under the label Cheetah Country Beef²⁹.

118. Land use allocation decision making processes reflect biodiversity conservation priorities. The NGBP will engage with the land use planners in Provincial Departments and with the National Department of Agriculture to ensure that new cultivation developments do not compromise biodiversity value (for example ploughing virgin grassland) and are appropriately located. This will be facilitated through the use of the gazetted Bioregional Plans, and the collection and utilisation of data at appropriate scale to facilitate robust multi-criteria analyses accommodating economic, operational and conservation needs. The programme will work with government and industry bodies to influence the future location of bio-fuel crops. The NGBP will support DWAF investigations into the possible proclamation of sugar cane as a stream flow reduction activity which would provide impetus for market evolution.

2.2.3 Outcome 3: The forestry sector directly contributes to biodiversity conservation objectives in the grasslands biome

119. Improved management of existing unplanted forestry owned land. The NGBP will work with forest companies to improve the management of unplanted lands within the forest estate. Seed funding will be provided for a working group of company managers responsible for this land to meet to discuss and agree on

²⁸ KZN, Mpumalanga and Eastern Cape

²⁹ Started three years ago, this initiative of the Cheetah Conservation Fund and its partners, the Conservancies Association of Namibia, Meatco and the Meat Board to export an eco label of meat for Namibian farmers is still in its pilot phase. In return for being good stewards to the land and wildlife on their farms, Cheetah Country Farmers will be paid a premium for the best beef they sell, while consumers in Europe will pay slightly more for this beef that is raised without harm to the Cheetah.

biodiversity best management practices. A network of industry specialists mandated with providing extension support to companies and out-growers will be trained, to engender outreach to plantations and out-grower forestry schemes. Specific outputs include the development of site management plans, improved management of wetlands and riparian zones, and clearance of alien invasive species. Awareness raising within the forestry industry, that identifies industry champions and deepens understanding through the various company departments is needed. This will include presenting the case for biodiversity framed in terms of social and financial benefits and creating conditions favourable for companies to become champions for mainstreaming grassland biodiversity management.

120. Conservation Stewardship Arrangements operationalised. A number of companies have indicated that they are interested in designating unplanted lands containing natural grassland as private nature reserves or contractual parks, managed by the enterprise. This interest is partly driven by the Local Government Property Rates Act which, once implemented, will tax this presently un-taxed land, thereby causing the companies to incur new costs. Based on an assessment of GIS spatial grassland biodiversity location data from SANBI and the seven big forestry companies and meetings between the NGBP and these companies, 35 000ha of land have already been prioritised for the programme to focus on (see map in Annex 11). Criteria used to select the sites included biodiversity significance, willingness from the company to make the land available and a combination of opportunities (such as land being adjacent to an existing protected area) and threats. The Programme will work with companies in designated areas to develop plans and operating procedures; to provide a toolbox to be used by company champions for a range of purposes such as presentations needed to convince their Board of Directors; and to develop legal tools for the required proclamation. In addition, the Programme will provide seed resources for the creation of a biodiversity stewardship capacity within the three affected provinces conservation agencies³⁰, so that they are able to respond effectively to needs of the private sector particularly on the issue of the formal proclamation process that requires the sign off by the relevant MEC, land management and monitoring issues. The cost of this capacity building will be shared with the agricultural component.

121. Certification Systems strengthened: The NGBP will provide support to further integrate Grassland biodiversity management into industry-led certification systems and standards. There are two initiatives currently underway that the NGBP will work through to influence industry standards: (i) The National Forest Certification Initiative which seeks to develop a system based on South African characteristics; (ii) The FSC Plantation Review process that has two objectives, namely: “To engage social, environmental and economic stakeholders in an international review of the implementation of the FSC Principles and Criteria for plantations, and to provide clear guidance for their future implementation, with the broad support of the FSC membership; and To provide for the benefit of the global community, clear authoritative and widely accepted social and environmental standards for responsible plantation management (FSC News, Volume 3, 2005).” The NGBP will work with the forest industry to integrate small growers into the certification system. This is critical as future expansion of plantations in South Africa is expected to be predominately small grower based. Attempts to implement the FSC SLIME³¹ policy, which requires small growers to comply with the same standard as larger businesses, though with streamlined application and reporting systems, have been impeded by limited capacity amongst small growers. The NGBP will collaborate with Forestry SA and community based organisations that represent small growers to overcome these challenges in demonstration-sites, building capacity to plan and implement the operational guidelines.

122. Appropriate expansion of new forestry plantations in terms of location. The NGBP will work with government regulatory authorities for the forestry sector and the industry to ensure that future forest plantation expansion does not occur within areas designated as high priorities for biodiversity conservation.

³⁰ KZN, Mpumalanga and Eastern Cape

³¹ Small and Low Intensity Managed Forests

The integration of systematic biodiversity conservation plans that spatially incorporate biodiversity priority areas into forestry expansion plans is expected to make a significant contribution towards grassland conservation objectives. Water permit allocations would be varied by location depending on the impact on ecosystem services and external impacts on wetlands, thus regulating the expansion.

2.2.4 Outcome 4: Grassland biodiversity management objectives mainstreamed into urban economy in Gauteng

123. Biodiversity toolkit (policy, guidelines, decision-support tools) developed for use by province and municipalities within urban areas. A biodiversity toolkit (policy, guidelines, decision-support tools) for use by provincial and municipal government, and private sector associations such as environmental impact assessors, estate agents etc will be developed. Specific areas of focus in the toolkit will include fine scale maps defining areas of conservation priority; guidelines for the integration of conservation planning and management needs into Integrated Development Plans and other spatial development frameworks; and guidelines on how to use offsets arrangements to allow developers to compensate for impacts on greenspaces allocated for development though conservation of areas of equivalent value. A key area will be to provide guidance on the use of the Record of Decision tool issued by authorities as the outcome of development applications to address biodiversity priorities. This might include additional sources of information such as precedent decisions and how terms and conditions can be used in a positive decision on a development application to integrate biodiversity considerations into the development.

124. Strengthening Capacity through Targeted Awareness, Communication and Training: Increasing the understanding of the importance of biodiversity and ecosystem services within the urban economy will be of the essence, if conservation objectives are to be realised. Awareness raising with decision makers is seen as a key strategy to integrate policies that acknowledge the importance of biodiversity with decisions that approve development applications. The capacity of provincial and municipal authorities responsible for town and country planning and regulatory enforcement to address biodiversity planning needs will be enhanced through targeted programmes. Planning, environmental and property professionals will also be targeted as they are responsible for drafting development applications.

125. Secure Priority Areas as Biodiversity Refugia: The NGBP will work with the Gauteng provincial authorities, settler associations and developers to designate refugia representative of biodiversity as set asides. Forty-three sites have been identified, with twelve prioritised for site action. These areas will be subject to different management arrangements, with some sites classified as formal protected areas, and other sites managed through conservation easements, which circumscribe the types of physical development that may be permissible in future. A range of management options will be pursued, vesting management rights to local municipalities, CBOs or citizens groups or groups of developers, participating in the new biodiversity offset scheme. Actions around these priority sites will serve as demonstrations for closing the policy and practice loop, for developing best practice in mainstreaming biodiversity within an urban sector and for identifying specific needs and developing the biodiversity toolkit and communications and awareness raising needs (above). Working with provincial legislative and decision-making officials will also serve to strengthen their capacity and ability to better integrate biodiversity priorities into the development and land-use planning processes under their jurisdiction.

2.2.5 Outcome 5: Biodiversity management secured in coal mining sector

126. A Biodiversity Offset Scheme is developed: the NGBP will work with DWAF, the Working for Wetlands Programme, the Water Research Commission and Mpumalanga provincial authorities to establish wetland offsite mitigation measures and a wetland mitigation banking scheme. Working for Wetlands has started to pilot wetland offsite mitigation with coal mining companies but the initiative is nascent and capacities need to be built. The NGBP will support this initiative by funding capacity building that will play a catalytic role in demonstrating application of the concept through concrete interventions, learning and disseminating lessons and then making the appropriate policy interventions. Wetland offsite mitigation can

happen without the existence of banks, whereas banks imply a third party that comprises the marketplace for buying and selling of mitigation credits. The mitigation bank concept is more developed and will comprise tracts of wetlands, either natural or restored, that will be conserved by developers in order to provide off-site compensatory mitigation for future mining projects. The scheme will be designed to facilitate compliance with regulatory requirements by providing a mechanism for the restoration of wetland areas, in advance of anticipated losses. The wetlands thus protected will be registered as credits which can be sold to permit applicants, or used by the bank sponsor to meet permit conditions. The scheme will be designed to allow credits to be sold to individual companies, or joint ventures between large companies, or large and small mining companies. It will be piloted in the Upper Oliphant's catchment within the Mpumalanga highveld.

127. These market mechanisms are being piloted to secure and safeguard biodiversity. The NGBP will ensure that due process is followed and that mitigation does not override the need to accurately assess impacts and ensure that they do not constitute a fatal flaw i.e. unacceptable loss of biodiversity, before resorting to mitigation options. Key issues that will be addressed include: a) Mitigation Ratios – in the case of functional wetland a greater area of wetland is rehabilitated than that which will be lost, whereas the loss of degraded systems may only require rehabilitation on the basis of 1ha for 1ha; b) Maintaining Catchment Integrity – is it acceptable for an area of the catchment to be fully developed so that natural functions are lost, while other sections are well managed (or should a certain level of functionality be maintained throughout the catchment); c) The need to mitigate with Type for Type – apart from biodiversity linked to different wetland systems, they also perform different ecological services such as flood attenuation. This requires an understanding of the implications of losing specific types such as flood plains, beyond a threshold where further loss will have immitigable downstream implications.

128. Coal mine expansion planned using biodiversity information. The NGBP will work with mining companies, the DME, and the Mpumalanga provincial authorities responsible for EIA decision making and conservation to identify areas marked for coal mine expansion that overlap with biodiversity priority areas and to develop mitigation measures. The Mpumalanga Biodiversity Conservation Plan has only recently been completed. SANBI will support the province to have this gazetted as one of the first bioregional plans that conforms to the National Biodiversity Framework. This will give the plan legal status. Coal mining companies will overlay their GIS information with the MBCP so as to identify where future expansion plans will conflict with areas of high biodiversity. The authorities and companies will then jointly plan mitigation measures such as offsets. The bulk of the costs will be borne by the sector and the concerned regulatory authorities. However, the NGBP will provide funding for an enterprise outreach programme on offset options, and the production of information needed for planning.

Summary of the Threats, Normative Solutions, Barriers and Programme Strategy

129. A Summary of the Threats, baseline, Normative Solution, and Barriers that underpin the Programme Strategy is provided below:

Agriculture

Threat	Baseline	Normative solutions	Barriers	Programme strategy
<p>Cultivation poses greatest threat through habitat loss, fragmentation and disruption of ecosystem function</p> <p>Rangeland threats include habitat degradation and soil erosion through trampling, inappropriate fire regimes</p>	<p>Policy development, regulation, communication and information services, and research on farmer settlement and development, agricultural trade and business development, production and sustainable resource management; Landcare programme; Provincial farmer support; Industry and commodity representation</p>	<p>Better alignment between production needs and conservation imperatives on agricultural lands through integration of biodiversity management objectives into production practices (e.g. application of win-win biodiversity-compatible rangeland management systems).</p> <p>The incentives for uptake of these practices will be improved through the emergence of a certified domestic red meat market, recognising environmental good practice.</p> <p>The organised livestock and game production associations will bridge the information divide between agriculture and the conservation concerning the use of biodiversity-friendly management systems.</p> <p>Expansion of cultivated lands, in particular for new generation crops (e.g. bio fuels) will be occurring on lands of low conservation significance.</p>	<p><i>(a) Management tools:</i></p> <ul style="list-style-type: none"> - No focus on biodiversity in veld management practices; - Weak links between tertiary education institutions, research, government, industry and farmers on biodiversity appropriate management practices and poor communication of information to land users <p><i>(b) Market failure:</i></p> <ul style="list-style-type: none"> - Costs of biodiversity management not reflected in consumer prices <p><i>(c) Institutional capacity:</i></p> <ul style="list-style-type: none"> - Weak integration of conservation management into agriculture sector programmes - Biodiversity information and know how for application of information not available, relevant or accessible resulting in poor expansion decisions <p><i>(d) Management capacity:</i></p> <ul style="list-style-type: none"> - Agricultural decision makers are not aware of or addressing biodiversity objectives/values 	<p><i>(a) Management tools</i></p> <ul style="list-style-type: none"> - Develop biodiversity compatible grazing management best practice to demonstrate compatible rangeland management - Publicise success stories to stimulate farmer interest and convey information - Incorporate biodiversity into relevant national and provincial agricultural policies <p><i>(b) Incentives</i></p> <ul style="list-style-type: none"> - Develop certified system for range-fed beef and promote consumer awareness - Promote use of rates exemption in Property Rates Act for formal conservation of private land. <p><i>(c) Institutional Strengthening</i></p> <ul style="list-style-type: none"> - Capacity building of organized agriculture to address conservation imperatives in rangeland sector programs - Develop tool kits, training, knowledge management system to facilitate replication - Incorporate biodiversity priority areas into planning and decision-making for new cultivations (e.g. bio-fuels) <p><i>(d) Management Capacity</i></p> <ul style="list-style-type: none"> - Facilitate landowner/user response, through engagement of industry associations - Demonstrate good practice for biodiversity best management practices re river ecosystems

Forestry

Threat	Baseline	Normative solutions	Barriers	Programme strategy
Habitat loss – fragmentation of habitat, loss of beta diversity, loss of species Disruption of ecosystem function – altered hydrological system, increased wood biomass, spread of IAS	Regulation of stream flow reduction activities, support small grower expansion, planning for expansion DWAF & Forestry SA wetland and riparian zone delineation programme Poverty relief programmes (working for water, wetlands, fire) Forest Stewardship Council certification Private sector environmental interventions	Forestry companies will be managing the unplanted grasslands that they own to protect biodiversity, and earning recognition for good management practice through improved industry certification schemes. Land allocation decisions for new plantations will accommodate biodiversity management needs, ensuring that tradeoffs are being considered in the allocation process. Off-site impact offset arrangements will be applied as a standard mitigation measure.	<i>(a) Management capacity</i> - Need to negotiate trade offs between location of future forestry production and biodiversity management - Little biodiversity best management practice tools, guidelines, scientific understanding and capacity within industry to manage unplanted forestry owned land for biodiversity conservation <i>(b) Market failure</i> - Existing certification schemes do not adequately incorporate grassland biodiversity management objectives - Forestry management dominated by command and control rather than by incentives and industry led strategies	<i>(a) Management capacity</i> - Incorporate biodiversity priority areas into planning and decision-making for new plantations to avoid these areas - Identify biodiversity priority areas that overlap with unplanted forestry owned land to be formally conserved for tax rebates - Develop and improve biodiversity best management practice tools, guidelines and capacity - Establish specialists/stakeholders network to provide capacity, co-ordination, fund raising and lobbying for grasslands conservation <i>(b) Market failure</i> - Strengthen market incentive, i.e. certification, to recognise conservation value of grasslands - Develop accessible certification for small growers - Develop market-based instruments to incentivise self-regulation (tradable rights)

Urban

Threat	Baseline	Normative solutions	Barriers	Programme strategy
Ecosystem degradation and loss through construction in biodiversity priority areas Habitat and species loss	Implementation of GDACE Conservation Plan Management of urban protected areas network Environmental and land-use planning EIA applications and conditions attached in development authorisations Municipal development and spatial planning frameworks	An attitudinal shift in the institutions responsible for regulating urban development, and amongst the developers will result in greater integration of biodiversity priorities into urban development planning. The management toolbox will have been expanded, improving decision-making and mitigation options. Strengthening regulation to protect	<i>(a) Institutional capacity</i> - Biodiversity partially factored into decision-making, but not enough capacity at (a) assessment, (b) decision-making, and (c) implementation - Limited coordination among spheres of government responsible for land use planning and development - Open space needs to be utilised for conservation or else it will be developed and	<i>(a) Institutional capacity</i> - Integrate biodiversity management objectives into urban planning and decision making - Strengthen coordination and collaboration between spheres of govt - Work with champions within the regulatory authority and private sector dealing with development - Build capacity of the municipal and

Threat	Baseline	Normative solutions	Barriers	Programme strategy
		<p>the critical biodiversity sites will be complemented by offset arrangements aimed at internalising the costs of land conversion in green spaces into development.</p> <p>Coordination and cooperation amongst the three spheres of government will have been facilitated resulting decisions with greater integration of environmental priorities.</p>	<p>community buy-in is required</p> <p><i>(b) Management tools</i></p> <ul style="list-style-type: none"> - Inadequate awareness of high biodiversity and ecosystem values within urban areas especially amongst decision makers - Tools to facilitate trade offs limited 	<p>provincial environmental departments and Councilors in reviewing EIAs, land use applications etc</p> <ul style="list-style-type: none"> - Build economic case and incorporate into provincial spatial development strategies, SDFs of IDPs, OSFs etc <p><i>(b) Management tools</i></p> <ul style="list-style-type: none"> - Develop guidelines and tools for biodiversity management in priority areas, which are not part of protected area network, to assist decision-making - Demonstrate tradeoffs that complement 'command and control' - Promote attitude change amongst decision makers

Coal mining

Threat	Baseline	Normative solutions	Barriers	Programme strategy
Disruption of ecosystem function (altered hydrological systems, acidification of soil, nutrient cycling on rehabilitated land, water quantity and quantity)	<p>Policy development and regulation, strong regulation of on-site environmental management</p> <p>Triple bottom line approach of big companies</p> <p>Formal dialogue between mining industry and conservation sector</p> <p>Research to address environmental issues</p>	<p>Biodiversity planning information used by mining companies and regulatory authorities to plan new coal mines.</p> <p>Innovative new market mechanisms, e.g. wetland offsite mitigation measures and wetland mitigation banking, piloted in partnership with state and research institutions, lessons shared and good practice accommodated in business practice.</p>	<p><i>(a) Institutional capacity</i></p> <ul style="list-style-type: none"> - Focus on command and control to regulate wetland/water is expensive to enforce and inefficient - Market mechanisms to promote wetland/water conservation nascent <p><i>(b) Market failure</i></p> <ul style="list-style-type: none"> - Institutional capacity to regulate markets is weak 	<p><i>(a) Institutional capacity</i></p> <ul style="list-style-type: none"> - Pilot wetland mitigation and banking to improve capacity to manage offset - Incorporate biodiversity priority areas into planning and decision-making for new coal mines so that these areas are avoided if possible <p><i>(b) Market failure</i></p> <ul style="list-style-type: none"> - Consolidate biodiversity and mining offset policy - Pilot voluntary wetland mitigation / banking scheme

2.3 Programme Risks and Assumptions

130. The risks confronting the programme have been carefully evaluated during programme preparation, and risk mitigation measures have been internalized into programme design. The relative ratings of risks have informed the programme work plan and budget so as to ensure that time budgets and programme funds are properly geared to addressing risk at the scale needed. A listing of the main risks, risk ranking, and risk mitigation measures is presented in Table 4 below.

Table 4: Risk Analysis

Risk	Risk Rating	Risk Mitigation Measures
1. Significant increase in external development pressures beyond projected scenario - Major economic changes to production sectors, with consequent impacts on biodiversity, could result from potential macro-economic changes triggered by factors such as continued major increases in the world price of petroleum/ devaluation of the rand etc.	M	- Activities have been designed based on a thorough analysis of threats including a strategic economic assessment - The M&E system will provide early warning of threats, allowing mitigation measures to be proactively instituted - Economic fundamentals are strong in South Africa
2. Difficulties in attaining mutual consensus between biodiversity sector and production sectors on biodiversity needs and production imperative	M	- Demonstrate benefits of real tradeoffs - Programme places major emphasis on voluntary led schemes championed by industry - Carefully monitor and disseminate conservation gains from programme
3. Delays in instituting appropriate incentives that trigger mainstreaming in targeted production sectors	M	- Emphasis to be placed on supporting cabinet approval of the Treasury policy framework for fiscal incentive - Winnable specific fiscal incentives for agriculture that comply with the above framework are already in place - Tax incentives for stewardship in the Property Rates Act, translated into practice on the ground, serve as strong illustration of benefits to farmers - Achievable certification scheme supported by strong marketing campaign to stimulate market demand for certified agricultural products
4. Institutional commitment for mainstreaming outside conservation division remain shallow and do not percolate across other divisions such as operations etc	S	- Identification and building of champions for biodiversity at the decision-maker level - Influencing attitude change towards a better appreciation of the role of biodiversity and ecosystem services by the appropriate pitching of the importance of ecosystem services to underpinning economic growth and development - Demonstration projects show the beneficial link between biodiversity conservation and socio-economic benefits for the poor and the local municipality - Increased brand awareness of the grasslands biome and effective communication strategy implemented
5. Governance by regulatory authorities weakens resulting in increased lack of compliance	M	- Development of partnerships between institutions involved in the programme resulting in shared knowledge and skills - Effective capacity building - Continued engagement with decision-makers at national, provincial and local levels to raise concerns - The M&E system will provide early warning of threats, allowing mitigation measures to be proactively instituted

* Risk rating – H (High Risk), S (Substantial Risk), M (Modest Risk), and L (Lowest Risk). Risks refer to the possibility that the assumptions, defined in the logical framework may not hold.

2.4 Alternative Strategies Considered

131. A number of alternative strategies were evaluated during programme design. These alternatives and the rationale for adopting the selected approaches are summarized in Table 5.

Table 5: Alternative Strategies and Rationale for Approach

Alternative	Rational for Approach Selected
Focus the programme on improving the management effectiveness of protected areas	A pure protective area focus would not be effective because of the small percentage of land within the grasslands biome (2.8%) under formal protection and the fact that the bulk of biodiversity lies in production landscapes under private and communal land ownership. SANParks is committed to the establishment of a National Grasslands Park, and is utilizing information provided by the programme to identify where this will be located. This will slightly expand the Protected Areas estate. However, the PA will not be able to cover all the diversity of vegetation types and river ecosystems needing protection. The high gamma diversity of the grasslands means that large areas would need to be conserved to meet conservation targets. This is difficult to achieve through protected areas. However, mainstreaming activities engineered under the programme will be designed to complement activities in protected areas, to reduce external threats to sites.
Increase or limit the sector scope of the programme	<p>At the outset, the programme considered both limiting the scope to fewer sectors and inclusion of additional sectors. The value of limiting the programme to two sectors is that maximum effort can then be focused on them. The disadvantage is that the scope and scale of the programme would be too narrow. Further sector activities do not occur in isolation but in a matrix of land uses —meaning that there are strong cross sectoral inter-relationships that need to be considered and managed. There are good reasons underpinning the selection of four sectors.</p> <ul style="list-style-type: none"> - The agricultural sector is clearly the biggest player in terms of scale and also in terms of the potential to create win-win situations because of the high compatibility of well-managed cattle, sheep and game farming with grassland biodiversity. - About 90% of forestry plantations occur within the grasslands biome. Plantations have a high negative impact on grasslands, but the industry is open to mainstreaming biodiversity management in operations because there is an existing market incentive (certification), and a strong regulatory framework is in place, which is driving environmental compliance. A number of fundamentals exist that bode well for mainstreaming. These include: a history of engagement by the industry on environment, a well organized sector, and large tracts of unplanted forestry-owned land that contains important grassland biodiversity which the industry has indicated an interest in protecting -The urban economy of Gauteng cannot be ignored as the economic and decision-making powerhouse of South Africa, and also because it is an important storehouse of grassland biodiversity. The potential impact of attitude change engendered by the programme amongst key decision makers of the role of biodiversity and ecosystem services in underpinning economic growth should have dividends for the grasslands as a whole. - Coal mining stands to increase as the energy crunch hits home and there are a number of opportunities in the sector that bode well for mainstreaming. These include: the companies face risks from non compliance with environmental standards, including lost access to potential mining licenses, access to finance, damage liabilities and shareholder activism; the industry is well organised and well resourced; the companies own large tracts of land that are not mined, which could be secured for conservation; time is ripe within this sector to explore offsets, such as wetland mitigation banking. <p>The inclusion of two additional sectors – tourism and medicinal plants – was carefully considered. However, these sectors are not included in the scope of the GEF initiative as it was clear from the agricultural economic, land use compatibility and spatial biodiversity assessments undertaken in the beginning of the design phase that their perceived impact on biodiversity at a landscape level is lower than the target sectors.</p>

2.5 Expected Global and National Benefits

132. A range of economic benefits are associated with grassland biodiversity, including:

- § Direct consumptive use values such as firewood, meat, medicinal plants, and grass used for thatching and baskets that underpin various commercial and subsistence agricultural practices;
- § Direct non-consumptive use values such as cultural, spiritual, and heritage value underpinning the recreation and tourism sectors;
- § Indirect use values, sometimes called ecological functions, such as watershed protection, carbon sequestration, and nutrient recycling;
- § Non-use values that include bequest and existence values, being the premium placed on maintaining biodiversity for possible future uses, and the intrinsic significance that biodiversity holds.

133. **Global Benefits:** Despite, and often because of their value, grasslands across the world are one of the biomes most impacted on by human activity. A number of global ecosystem/region assessments have found that grasslands are one of the greatest conservation priorities worldwide. Globally they remain one of the least conserved biomes, with just over 7% of grasslands falling into protected areas, and temperate grasslands having less than 0.69% protected. The principal global environmental benefit of the programme derives from the added security provided for grassland ecosystems and constituent flora and fauna through effective mainstreaming of grassland biodiversity conservation objectives into production sector practices. In addition, the stewardship element embedded within the mainstreaming approach will result in innovative formal protection of refugia representative of grasslands biodiversity within the agricultural, forestry and urban sectors. One important global benefit will be the protection in situ of the wild races of many hybrid flowers important to commerce. These include the arum lilies, watsonias, and gladioli.

134. **National Benefits:** Initial work carried out to attach values to various ecosystem services from the grasslands biome using existing information, estimates that the value of the flow of ecosystem services in grasslands to be in the order of R9.7billion per annum, or R29,005 per km².

Table 6: Preliminary estimated grassland values

	Unit	Grasslands
Total Economic Value	R million	R 9,761
Area	Km ²	336,544
TEV/Area	R/ km ²	R29,005
Consumptive use	R million	R 1,589
Non-consumptive use	R million	R 233
Indirect use values	R million	R 7.939

135. Beneficiaries include national, provincial and local government agencies mandated with responsibilities for environmental management, who will benefit from enhanced collaboration, knowledge management systems, and institutional mainstreaming effectiveness. Production sectors will benefit from improved institutional capacity to address grassland biodiversity management objectives. Better biodiversity management practices linked to incentives, such as an environmentally appropriately-farmed red meat certification scheme, will enhance economic production for farmers. Formal conservation of refugia representative of grassland biodiversity arising through the stewardship approach, will result in tax benefits for private landowners. Civil society will be actively involved in demonstration interventions and benefit through capacity enhancement.

2.6 Country Eligibility and Drivenness

2.6.1 GEF Eligibility

136. The Government of South Africa is a recipient of UNDP assistance and meets the eligibility criteria for GEF Funding. The programme concentrates on GEF Strategic Priority 2 (BD2): “Mainstream biodiversity in production landscapes and sectors”. The programme is consistent with guidance prepared by GEF on activities under this strategic priority, the specific objective of which is “to integrate biodiversity conservation in production systems and sectors to secure national and global environmental benefits. The operational emphasis is flexible to allow for the development of tailored activities based on understanding of country context, biodiversity conservation problems, opportunities and demand.” The Programme adopts STAP guidance to the GEF Council on activities under BD II: Mainstreaming Biodiversity in Production Landscapes and Sectors Report (GEF/C.24/Inf.11). A STAP workshop was organised by the programme sponsor, SANBI in Cape Town in September 2004, and the programme was developed in close parallel to development of the strategy. The programme addresses the following elements of the GEF Strategy:

137. Addressing barriers to the uptake of biodiversity production systems in key production sectors, in particular by strengthening management capacities at the systemic and institutional levels;

138. Strengthening policy to accommodate biodiversity management needs in production activities;

139. Integrating biodiversity conservation objectives into planning systems including physical plans and production sector specific plans;

140. Establishing/ strengthening certification schemes to recognize good management practices; and

141. Demonstrating good production practices at the site level and providing for wider replication.

142. The programme is consistent with the GEF Operational Strategy and Operational Programme (OP) 4 for the ‘Biodiversity’ Focal Area: Mountain Ecosystems, while contributing to OP 2: Freshwater Ecosystems, through the protection of wetlands.

143. The programme addresses the following elements of the GEF strategy:

- a) **Threat Removal.** Removal of the specific causes of, or threats to, biodiversity loss;
- b) **Sectoral Integration.** Incorporation of biodiversity protection into the main productive sectors of the economy; integrated community development addressing livelihood issues of local and indigenous communities living in buffer zone areas of influence of conservation areas;
- c) **Sustainable Use.** Sustainable subsistence and land use practices; and
- d) **Institutional Strengthening.** Stronger institutions and well-trained staff to address these issues.

144. The programme offers an opportunity to show how biodiversity conservation objectives can be integrated into production sectors, and how landowners and industry can themselves ensure that their activities do not compromise ecosystem function.

2.6.2 Eligibility under the UN Convention on Biological Diversity (UNCBD)

145. South Africa ratified the UNCBD in 1992. The proposed programme will fulfil a number of provisions of the CBD, including Article 6, General Measures for Conservation and Sustainable Use, Article 7, Identification and Monitoring, Article 8, *In Situ* conservation, Article 10, Sustainable Use Management, Article 11, Incentive Measures, and Article 12, Capacity Building. The programme will play a critical role in achieving the 2010 Biodiversity Goals, especially in regard to the following goals: a) Promote the conservation of the biological diversity of ecosystems, habitats and biomes; b) Promote sustainable use and consumption; c) Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced; e) Address challenges to biodiversity from climate change, and pollution, and; f) Maintain capacity of ecosystems to deliver goods and services and support livelihoods. The programme intervention will contribute significantly to support South Africa to achieve these goals.

146. The programme will address a number of elements in the proposed thematic work programme on 'Mountain Ecosystems' with a focus on mainstreaming biodiversity in productive landscapes and sectors such as Agriculture, Forests and Mining. Linkages will also be made with the CBD guidelines on 'Dry and Sub-Humid Biodiversity' as well as 'Forest Biodiversity'. The programme also has relevance to the cross-cutting areas on 'Incentive Measures' as well as 'Sustainable Use of Biodiversity', 'Indicators' and 'Impact Assessment'.

2.6.3 Country Drivenness

147. The South African Government has a strong commitment to biodiversity conservation. It has signed and ratified a large number of international conventions, treaties, protocols and other agreements, including the Convention on Biological Diversity, which it became a signatory to in 1995. Since the early 1990s, South Africa's policy and legislative framework has been strongly influenced by these international agreements and the associated principles of sustainable development. A strong regulatory framework for environmental management has been established, with particularly innovative policies and legislation constructed for the protection of biodiversity in the Biodiversity Act (2005). The Constitution of South Africa provides for the right to a healthy environment and environmental protection while promoting justifiable economic and social development. South Africa is a strong supporter of African initiatives, such as the New Partnership for Africa's Development (NEPAD) which identifies biodiversity, desertification, and climate change as key issues in its Environmental Plan. South Africa is also committed to meeting the targets of the Johannesburg Plan of Action agreed at the 2002 World Summit on Sustainable Development.

148. The grasslands biome was identified as a strategic priority for conservation actions in the GEF Medium-Term Programme Priority Framework (DEAT, 2001) and the National Spatial Biodiversity Assessment (2005), a key element of the National Biodiversity Strategy and Action Plan. Recent steps that have been, or are being, taken that resonate positively for conservation include:

- § The broadening of the legal mandate of SANBI from plants to cover all biodiversity;
- § Incorporation of a National Biodiversity Framework that will allow Bioregional plans to be gazetted. This is designed to engender a better integration of biodiversity management needs into the development framework at the regional and local levels;
- § The new EIA regulations that provide an opportunity for the information in Bioregional Plans and the listed threatened ecosystems to be linked into the EIA process;
- § The release by National Treasury of the *Draft Policy Paper: A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa*;
- § The increased support by government of the core costs of bioregional programmes such as CAPE, SKEP and the NGBP;
- § An increased interest in conservation stewardship, illustrated by DEAT funding a national stewardship coordinator position located within the Endangered Wildlife Trust, the appointment of a stewardship coordinator in KZN Wildlife and increasing interest expressed by the MPTA.

149. The extent of government support for the NGBP is illustrated by the fact that formal letters of commitment and co-finance contributions have been pledged by all three spheres of government – national, provincial and local. Total Government co-financing for the NGBP will be \$27.34 million.

2.7 Linkages with UNDP Country Programme

150. The programme will contribute to meeting the objectives as set out in the UNDP Country Programme 2007-2010 for South Africa (CP 2007-2010), and will be implemented within the rubric of that framework. The programme falls under Objective B of the Country Programme 'Promoting Equitable Growth, Poverty Reduction and Sustainable Development'. The programme will contribute to Service Line 3.5 'Conservation and Sustainable Use of Biological Diversity', under Goal 3 'Managing Energy and Environment for Sustainable Development', of the Multi-Year Funding Framework 2004-2007 (MYFF 2004-2007). Furthermore, the programme is in line with the major development challenges identified in the United Nation's Common Country Assessment (CA) of development needs, prepared by the Government of South Africa in 2005. The CA underlines biodiversity's critical role in providing for

sustainable development and poverty alleviation. This will be facilitated by strengthening the capacities of national stakeholders to mainstream biodiversity in productive landscapes and sectors with a view to promoting economic development, environmental protection and sustainable livelihoods. The programme will also foster dynamic partnerships between public, private and civil society institutions.

151. In addition, the programme is in line with other international activities and regional programmes that have a bearing on UNDP work. In particular, it is in line with the *Millennium Development Goals* (MDGs) adopted by South Africa, especially MDG-7 on 'Environmental Sustainability', MDG-1 on 'Poverty Alleviation' and MDG-8 'Global Partnership for Development'. The data sets established by the Programme will help South Africa report on progress in meeting the targets set out in the MDGs pertaining to biodiversity conservation.

2.8 Linkages with GEF Financed Projects

152. The programme is highly complementary with a number of national GEF-funded biodiversity projects. The programme development team has worked in close collaboration with other project teams and relevant national and international partners to avoid any duplication and overlap between the initiatives, and to optimise synergies. Other GEF Biodiversity initiatives are all focused on conservation efforts elsewhere in South Africa, in other Major Habitat Types, address different conservation needs, and employ different strategies. None of the other GEF-sponsored projects are geared specifically towards mainstreaming conservation objectives into agriculture, forestry, urban development and coal mining sectors, as proposed under this programme. The project thus provides significant added value in terms of the contribution of the GEF to South Africa's national conservation agenda.

153. The NGBP will liaise closely with the "World Bank/UNDP-GEF CAPE Action for People and the Environment Project", which is a strategic intervention to secure the long-term conservation of the Cape Floristic Region. The CAPE is also designed as an umbrella programme, which includes a strategy to mainstream biodiversity in production landscapes. CAPE does not, however, specifically address mainstreaming objectives at vertical level within production sectors, focusing on mainstreaming biodiversity in cross sectoral development plans. The NGBP will also work in partnership with the "UNDP-GEF Agulhas Biodiversity Initiative" and synergies between the two initiatives shall be promoted, particularly with regard to the strengthening of institutional and policy contexts, awareness raising, facilitating payments for ecological services and the development of other financial incentives to promote conservation.

154. The NGBP will also collaborate with the "UNDP-GEF supported Conservation and Sustainable Use of Biodiversity on the South African Wild Coast Project". Both project teams shall for instance inform one another on co-management practice in communal and private land contexts. The NGBP is working with the "World Bank-GEF supported Maloti-Drakensberg Conservation and Development Project (MDTP)" which is a collaborative initiative between South Africa and the Kingdom of Lesotho to protect the exceptional biodiversity of the Drakensberg and Maloti mountains through conservation, sustainable resource use, and land-use and development planning. This project focuses on protected areas and tourism planning in the highest mountain areas of South Africa and Lesotho while the NGBP focuses on mainstreaming biodiversity into major production sectors across all of the grasslands biome. MDTP staff are involved in providing technical and conceptual inputs into the design of the NGBP.

155. Taken collectively, the GEF portfolio in South Africa makes a significant and highly strategic contribution towards strengthening the national institutional and policy framework, piloting innovative approaches to mainstreaming biodiversity in productive sectors as well as introducing new management paradigms, as needed to meet the conservation needs of different regions and ecosystems. The SANBI has been mandated under the biodiversity legislation with providing co-ordination services for a number of bioregional programmes and other initiatives active at a bio-regional level. This provides a mechanism for assuring cross-project synergy, and sharing lessons between projects. However project-to-project contact will also be facilitated, where relevant. UNDP will continue to liaise closely with the World Bank and other relevant implementing agencies and partners in spearheading GEF activities in South Africa, with the aim of assuring complementarity.

2.9 Sustainability

156. The programme has been designed to optimize prospects for achieving sustainability of the outcomes. The strategy is designed to ensure that production sector institutions, including regulatory bodies and industry associations and leading companies, are capacitated with the necessary skills to protect biodiversity in the course of business operations. In other words, the production sectors themselves will become key vehicles for spearheading conservation initiatives in the grasslands. It is acknowledged that this result cannot be accomplished without attitude change. The intention is to work with champions in each sector to demonstrate win-win management schemes, which through industry recognition, market mechanisms, and knowledge management services will be self promoting within each of the target industries at large. A major outreach programme has been undertaken during the process of programme preparation, focused on production sector institutions including regulatory bodies, industry associations, and private enterprises. This has helped build confidence between these sector institutions and the conservation fraternity, a relationship that has in some sectors been marked historically by a mutual distrust. Such relationship building will be key to ensuring the continued commitment of production interests. A key element, cutting across all targeted sectors will be the roll out of a holistic incentive framework shown in the table below.

Table 7 Incentive Framework

Incentive options	Application / example	Sectors
<i>Regulatory</i>		
Rates exclusion for protected areas through Property Rates Act	Rates exclusions for protected areas, applies to all formally conserved land	All
Enforcing the conditions and regulations of environmental legislation to mitigate and control impacts	EIA process, conditions attached in development authorizations	All
Environmental fiscal reform	Tax rebates, removal of perverse incentives	All
<i>Optional</i>		
Marketing opportunities	Access to niche markets, increased marketability of environment good practice	All
Certification	Price premiums secured for good biodiversity practice (e.g. Forest Stewardship Council)	Agriculture, forestry
Development of compatible nature -based tourism enterprises	Eco-tourism activities linked to stewardship initiatives	Agriculture, forestry, urban
Biodiversity offsets	Equivalent biodiversity secured to offset loss of biodiversity due to production	All
Recognition award system	An awards system that recognises best practice will implemented by the Grasslands Programme. Existing award systems managed by other bioregional programmes and in production sectors will be adapted for use	All
<i>Negotiable</i>		
Technical and land management planning support from conservation agencies, incl. management of critical habitats	This can include support for alien weed management, fire management, advanced extension service, access to game animals	Agriculture, forestry, urban
Financial support from public works and donor funding	Poverty relief funding for conservation -related infrastructure, donor funding for biodiversity management activities	All

157. The different facets of sustainability are analyzed sectorally for each of the outcomes of the programme.

158. **Enabling environment.** The time is ripe to fill the policy implementation gap with the necessary plans, guidelines and tools. The technology and methodologies for biodiversity conservation planning are in place and the opportunity to align these with land-use planning and management systems in provincial

and municipal governments is good. Stakeholders across the biome acknowledge the need for knowledge information management systems and data sharing.

159. Mainstreaming into agriculture. A long term perspective is required in this sector as it is the sector where the least collaboration has taken place between production and biodiversity interests. A comparative agricultural economics and trends assessment was undertaken during programme preparation. It provides an agricultural profile of the grasslands biome, comparative economic information on agricultural enterprises, and identifies key drivers that could result in non-transformed land being put under pressure. A key implication from the assessment within the grasslands biome is that macro level pressure for agricultural expansion in the grasslands biome is not likely in the next five years. This means that it is possible for the biodiversity establishment to ensure, through the mechanisms provided in the Biodiversity Act and Integrated Development Plans, that new cropping transformation takes place on old lands. A second study on the comparative impact of land uses, grazing systems and crop types on grassland biodiversity integrity found that livestock ranching and game farming are the most compatible land uses as well as being the most extensive land uses across the biome. The thrust of interventions in this industry is on uncovering benefits to landholders from improving land uses to assure greater conservation compatibility, through the generation of appropriate economic incentives (certification schemes and securing rates rebates for stewardship programs).

160. Direct contribution by the forestry sector to biodiversity conservation. This sector is more advanced regarding environmental issues and has an existing FSC certification system and industry standards. The receptiveness of the industry to the programme and agreement by the Industry Association Forestry South Africa to act as implementing agent for this sector is indicative of the commitment that exists. This commitment provides good fundamentals for achieving sustainability. Key regulatory drivers are already in place, in particular the stream flow reduction system. This provides incentives for the industry to improve the effectiveness of environmental management.

161. Mainstreaming into Gauteng's economy. One of the key elements of a sustainability strategy in this sector is the building of institutional capacity. The commitment by the provincial authority to act as implementing agent for this sector and involvement of all three metropolitan governments and the majority of district and local municipalities bode well for building programme sustainability. The high cost of regulating development is a constraint on sustainability. The NGBP will develop voluntary management schemes and market tools, as greenspace offset mechanisms to ensure that the highest biodiversity sites are protected as cost efficiently as possible.

162. Securing biodiversity management in the coal mining sector. Similar to the forestry sector, this is one sector where the need to comply with international environmental standards is understood by the industry. The industry is keen to engage around biodiversity, and this has been constrained more by the limited capacity of the biodiversity sector, rather than lack of willingness on its part. The focus of investment by the NGBP is on engendering the development of new market-based solutions to ensure more effective management on unmined land in the mining estate, and mitigate off-site impacts, such as impacts on wetlands. Wetlands mitigation banking is expected to provide a potent mechanism for both uncovering biodiversity values in this ecosystem, and also raising new sources of funding for land managers, including the Working for Wetlands programme.

163. Climate change: The impacts of climate change on biodiversity in South Africa are projected to be significant, but spatially variable. The summer rainfall biomes of eastern South Africa, including the grasslands biome, are expected to experience a temperature increase of between 1.5 and 3°C by between 2050 and 2100, using mid-range greenhouse gas emissions scenarios. Rainfall projections are very uncertain, being projected to decrease by up to 10% by a suite of global climate models, but with contrasting projections of a possible increase of a similar order if a regional downscaling modeling approach is used. Relative to the other South African biomes, the grasslands are expected to be more resilient to climate change in terms of the retention of their spatial coverage. This is almost certainly because the increased temperatures and rainfall changes, although significant, remain within the bioclimatic range suitable for the dominant growth forms of the biome. Bioclimatic modeling, however, does not take into account two important issues, namely the direct effects of rising atmospheric CO₂ on plants, and the potential impacts of changing climate on fire regimes. While fire regimes might be

slightly altered by the expected increased productivity of grasses under future higher temperatures, especially if rainfall increases, the direct effects of CO₂ are likely to be more significant in favoring the greater success of woody shrubs and trees. The effect is likely to be compounded by warmer winters, and may lead to greater rates of bush encroachment on the margins of the grasslands biome (WWF, 2001).

164. Projections of the effects of climate change on South Africa biota, including animal species, have identified grasslands as an important future habitat for many species from lower altitudes in the summer rainfall region. The high altitude of the biome makes this an important refuge for summer rainfall biota that require cooler conditions. This refugial function has been shown to be crucial for the persistence of biodiversity in times of past climate change, and thus greatly elevates the importance of biodiversity management efforts in the biome. Retention of a functioning grasslands biome is also crucial because of the water yield from this biome to the major rivers of this region. An invasion of larger-stature woody plants will threaten this important function, in addition to placing the highly diverse flora of this currently open system at risk. Apart from losing the ability to function as a watershed, suitable habitat for specialist grassland and wetland species may be lost. This could lead to an overall reduction in biodiversity and the loss of the provisioning function delivered by the ecosystem. Limiting the fragmentation of this habitat will become ever more important as a means to retain ecosystem function and allow greater resilience under conditions of climate change (www.sanbi.org/countrystudy).

165. The programme will accommodate these climate change issues by seeking to maintain corridors of natural habitat across climatic gradients to allow species to adapt changing climate. The fragmentation of ecosystems would foreclose adaptation under a changing climate. Priority corridors have been identified through the grasslands spatial assessment that if maintained in a natural state will therefore provide species and ecosystems with the ability to adapt to changing climate. In addition to maintaining these key sites the management activities proposed, such as fire management and alien invasive clearing will be adapted to include the potential impacts of climate change. In the agricultural sector, emphasis will be placed on rangeland management practice that is resilient to climate change impacts.

2.10 Replicability

166. The programme has been designed on a detailed identification and analysis of barriers to grassland biodiversity conservation and opportunities. It is built on lessons culled from similar initiatives across the world and incorporates best practices, while proposing further innovations.

167. The NGBP has developed specific strategies to maximize the impacts of activities at the landscape level, and is designed to have a catalytic effect. Because of the scale of the grasslands biome, interventions are needed at both macro and meso levels to inform policy, strategies and activities. A feedback loop will be created between macro level biome-wide interventions focused on creating the appropriate enabling environment, management tools and incentives, and demonstration interventions aimed at showing the application of these at a site level. Table 8 below identifies the needs and opportunities for replication and presents the planned replication strategy.

Table 8: Replication Strategies

Outcome	Need/Opportunities for Replication	Programme Strategy for Replication
Outcome 1: Enabling environment for biodiversity conservation in production landscapes in the grasslands biome is strengthened	<ul style="list-style-type: none"> - Demonstrate value of ecosystem services and grassland biodiversity to economy and heritage - Integration of biodiversity priorities into planning system at three spheres of government - Strong core coordination and facilitation capacity in programme 	<ul style="list-style-type: none"> - Knowledge Management System - Data management system - M&E system - Collaborative Programme Governance structures - Exchange programme that facilitates sharing of experiences across sectors, provinces and bioregional programmes - Lessons learning seminars - Use of institutional mainstreaming effectiveness tool to assess institutional capacity to replicate good practices
Outcome 2:	- Demonstration districts show implementation	- Lessons learnt shared within demonstration

Outcome	Need/Opportunities for Replication	Programme Strategy for Replication
Mainstream grassland biodiversity conservation objectives into agriculture	of incentives and biodiversity best management practice - Certification scheme would apply and be built across the country - Regulatory framework allows for incorporation of biodiversity best practice into policy and guidelines	districts and to wider programme through knowledge management system - Feedback loop between demonstration projects and policy and guidelines that are taken up by industry and DoA - Communication strategy - Establishment of network of specialists to provide capacity, coordination of activities and knowledge sharing
Outcome 3: The forestry sector directly contributes to biodiversity conservation objectives in the grasslands biome	- Deepening biodiversity issues within industry norms and standards applies across plantations - One successfully proclaimed forestry owned and managed nature reserve will provide a catalyst	- Methodology and toolkit to establish reserve distributed through knowledge management system - Feedback loop between meso and macro level interventions - Communication strategy - Establishment of network of specialists to provide capacity, coordination of activities and knowledge sharing
Outcome 4: Grassland biodiversity management objectives mainstreamed into urban economy in Gauteng	- Global City Strategy and need for integration of planning systems between spheres of government - Demonstrate value of ecosystem services and biodiversity to Gauteng economy and heritage through: a) projects which secure refugia and fulfil socio-economic/heritage function; b) negotiated trade-offs with developers	- Development of toolkit based on demonstrations that enables other similar projects and development to occur - Working through champions at various levels: political, provincial and municipal government, private sector associations involved in property development process - Communication strategy
Outcome 5: Biodiversity management secured in coal mining sector	- Demonstration offset projects on wetland mitigation and mitigation banking - Regulatory framework allows for negotiated offsets to be incorporated in mining license conditions	- Lessons learnt from offsets projects on wetland mitigation and banking shared through knowledge management system - Feedback loop between demonstration projects and policy and guidelines that are taken up by industry and DME

2.11 Lessons Learned

168. An assessment of pertinent lessons and good practices has been undertaken during preparation of this programme, covering Bioregional Programmes in South Africa sponsored by the GEF, mainstreaming initiatives in the region, work done by the GEF Scientific and Technical Panel (STAP), and lessons collated through the Biodiversity Planning Support Program on forestry and agriculture.

Table 9: Lessons Learned

Lessons	Notes on South Africa	Design Feature
Cross Cutting		
A supportive policy and institutional framework is needed to encourage and sustain production sector investment in BD mainstreaming.	A strong macro policy framework is in place for biodiversity conservation. This makes provision for integrating biodiversity management and production sector planning frameworks and strategies. However, a gap exists between policy and application on the ground. Weak institutional capacities within the main production sector institutions (ranging from regulatory authorities to industry associations to enterprises) inhibit effective integration.	Capacitate production sector institutions to bridge the gap between policy and implementation.
Regulatory drivers must be in place to protect the public interest where environmental benefits cannot be	The regulatory framework for biodiversity management and production activities is in place, but its efficacy is compromised by a	The Grasslands Programme will strengthen coordination between regulatory agencies (including

Lessons	Notes on South Africa	Design Feature
internalised. There must be effective enforcement of rules, and a perceived level playing field in enforcing compliance.	fragmentation in regulatory effort.	national/ provincial and environment/ production).
The success and sustainability of biodiversity mainstreaming efforts is predicated to a great extent on the underlying cost-benefit calculus of intervention. The benefits accruing to the target sector must outweigh the costs.	There is a strong conservation fraternity and receptive private sector already investing in social and environmental responsibility programmes within major production sectors in the grasslands (especially mining and forestry). Codes of conduct established by mainstream businesses (particularly those listed on the Johannesburg Bourse) recognise that environmental responsibility is part of good business practice.	An emphasis is placed on ensuring cost-effectiveness – interventions that maximise conservation dividends per unit investment will be promoted. The cost benefit calculus of such intervention will be assessed through economic studies undertaken jointly with industry associations and businesses.
Stakeholders need to come to a common understanding of the objectives and <i>modus operandi</i> for 'mainstreaming'. Mechanisms need to be instituted to address conflicts.	Levels of tradeoff between production and conservation objectives need to be negotiated between the conservation sector and production interests. The negotiations will need to be informed by appropriate economic and biophysical information.	The programme explicitly recognises the need for tradeoffs between production sector and conservation objectives. The programme will work with champions (industry associations or specific enterprises) in each target sector to pilot good management practice. The intention is to demonstrate the utility of mainstreaming to the conservation fraternity and production interests.
Strong programme coordination facility is needed to ensure coherence in efforts across sectors and institutions, monitor progress in implementation and share information.	The lesson from other Bioregional programmes in South Africa is that it is essential to have well resourced coordination units, able to work across sectors and institutions.	The Programme Executing Agency SANBI has established strong capacities to coordinate the programme, as witnessed by the success of other Bioregional programmes that it manages. The institutional effectiveness of SANBI in performing this role has been assessed as part of programme preparation.
Urban		
The opportunity costs associated in protecting urban green spaces tend to be high. Tradeoffs will be necessary. Voluntary management schemes can complement 'command-and-control' by allowing developers to weigh the relative costs and benefits of different management responses in decision making. If carefully managed, this can improve the rate compliance.	Many urban areas in the South African grasslands are important repositories of biodiversity, and there is a need in these areas to integrate economic and ecological management objectives. There is a need to carefully define spatial biodiversity priorities, and to focus conservation efforts.	The programme focuses on changing attitudes in bodies responsible for regulating urban development, and amongst the developers themselves (i.e. city planners, architects and construction industry). Activities will expand the tool box available for decision making on the location of and the management of urban green spaces for biodiversity protection. This includes, <i>inter alia</i> , providing recognition for good development practices, and impact offset arrangements.
Plantation Forestry		
A green market place has evolved in the sector, underpinned by	The plantation sector already demonstrates a high level of environmental awareness.	The programme builds on existing certification schemes.

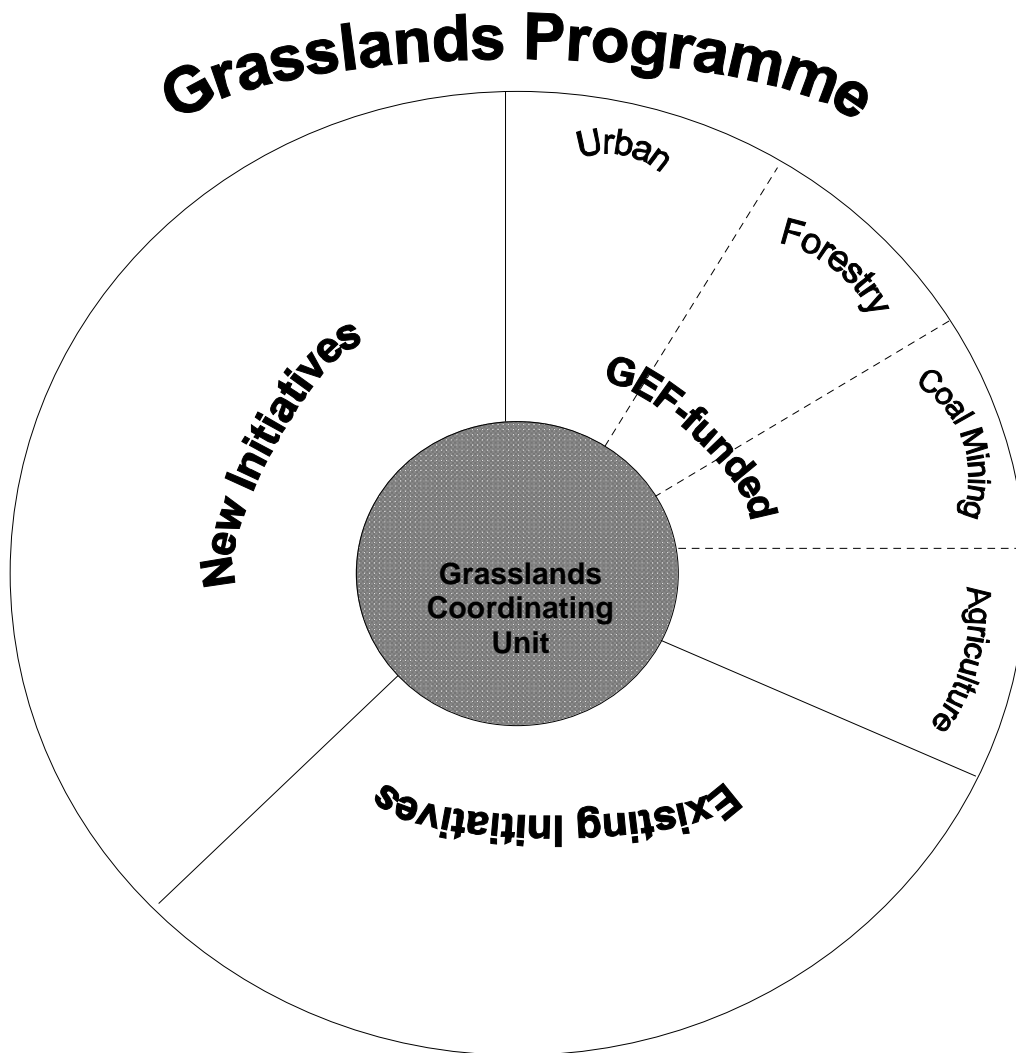
Lessons	Notes on South Africa	Design Feature
certification systems such as the Forest Stewardship Council. There is a need to recognise existing good practices and build on their success.	This is the only sector in South Africa subject to streamflow reduction conditions, imposed on new developments.	These do not explicitly address management needs in the grasslands biome. The focus of interventions is on developing cost-effective management systems for unplanted land in the forestry estate—the management of which can be incorporated into existing management and marketing systems.
Agriculture		
Decisions to change land use should weigh the costs from change against risks. Biodiversity benefits to agriculture tend to be undervalued, an effect amplified by distortionary subsidies.	South Africa has eliminated agricultural subsidies, reducing the distortionary effects of Government policies. However, many ecological services, such as watershed protection remain non pecuniary and uncompensated. This implies that the total economic value of the grasslands ecosystem is not being accommodated in land use conversion decisions. The expansion of croplands is not considered to be a serious immediate threat in the grasslands, and the area under cultivation has actually retracted in some areas. However, changes in the price of fuel may stimulate demands for the cultivation of bio-fuel crops in the biome, implying that a watching brief is needed in this arena.	<p>Programme to develop markets for ecological services (i.e. wetland mitigation banking) by strengthening the enabling environment and demonstrations. Stream flow reduction permitting systems are being introduced for certain cash crops (i.e. sugarcane), providing an impetus for market evolution.</p> <p>Programme will work with the agricultural sector, through regulatory agencies and industry bodies to influence the future location of bio-fuel plantations.</p>
There is a need to diagnose the causes of biodiversity loss in different farming systems, and design abatement measures geared to the different needs, and accommodate the differential cost - benefit calculus of these systems.	There is a great diversity of farming systems and associated land use practices in the grasslands biome, and no common formulae for mainstreaming biodiversity management in the sector.	<p>Mainstreaming strategies developed by the programme in association with partners in the agricultural sector accommodate this heterogeneity.</p> <p>Mass communications framework established using industry associations to make information available to landholders.</p>
Mining		
There is a need to distinguish and address on-site and offsite impacts on biodiversity from mining.	Mining does not pose a substantial on-site threat to biodiversity in the grasslands, given that the actual area mined, even in open-cast operations, is relatively small. However mining companies are major landholders in the biome, and a number of biodiversity hotspots are located on these lands. The quality of the companies' stewardship of unmined land will accordingly have a bearing on the conservation status of the biome. The sector imposes significant off-site impacts, particularly on wetlands affected by water abstraction.	<p>Work with mining sector to improve stewardship of unmined lands held by the companies (i.e. through the creation of set-asides).</p> <p>Develop an enabling framework and test biodiversity offset schemes in threatened wetlands through induction of wetland mitigation banking.</p>

PART 3: Programme Management Arrangements

3.1 Execution and Implementation Arrangements

169. The NGBP is conceived as an umbrella programme for the grasslands biome as a whole. The overall goal/vision is that “the biodiversity and associated ecosystem services of the grasslands biome are sustained and secured for the benefit of current and future generations”. It has two essential elements. The first element is that which is supported by UNDP/GEF where the focus is on mainstreaming within agriculture, forestry, coal mining, and the urban sector, and the programme objective is “major production sectors are directly contributing to achievement of biodiversity conservation priorities in the grasslands biome”. This document sets out the focus of components under this element. The second element consists of a wide range of existing and planned interventions by other institutions who are working in the grasslands biome with the same vision but who will not receive direct support through UNDP/GEF. For the objective to be achieved, it is essential that stakeholders work in a coordinated fashion so that the whole effort comes to equal more than the sum of the parts. The umbrella nature of the NGBP is illustrated below.

Figure 1: Umbrella nature of the Grasslands Programme



170. The NGBP will be executed over a five year period by SANBI, in close consultation with all implementing agencies and relevant stakeholders, following UNDP guidelines for nationally executed programmes. As the Executing Agency, SANBI will sign the grant agreement with UNDP and will be accountable to UNDP for the disbursement of funds and the achievement of the programme objective and outcomes according to the approved work plan. In particular, the Executing Agency will be responsible for the following functions:

- (i) coordinating activities to ensure the delivery of agreed outcomes;
- (ii) certifying expenditures in line with approved budgets and work -plans;
- (iii) facilitating, monitoring and reporting on the procurement of inputs and delivery of outputs;
- (iv) coordinating interventions financed by GEF with other parallel interventions;
- (v) approval of Terms of Reference for consultants and tender documents for sub-contracted inputs; and
- (vi) reporting to UNDP on programme delivery and impact.

171. As the objective of the programme is to mainstream grassland biodiversity conservation objectives into production sector activities, a high level of involvement of these sectors is essential. For this reason, the forestry outcome will be implemented through the industry association Forestry SA and the urban outcome will be implemented through the Gauteng Provincial Governments Department of Agriculture, Conservation and Environment, which is responsible for land use planning. Due to the diversity and complexity of the agricultural sector, where there are many institutions representing different commodities, it is not feasible to have one implementing agent. SANBI will house an agricultural programme manager who will contract various institutions for implementation. Implementation of the coal mining outcome will be outsourced through an open tender process to an environmental institution active in the mining sector.

172. The NGBP programme management arrangements comprises the following structures:

- The Grasslands Forum
- The Grasslands Steering Committee (GSC)
- The Grasslands Coordination Unit (GrassCo)
- The Grassland Urban Task Team
- The Grasslands Forestry Task Team
- The Grasslands Agricultural Task Team
- Grassland Demonstration District Task Teams
- Grassland Coal Mining Task Team

173. The *Grasslands Forum* is an open meeting of private, public, civil society, and academic institutions and individuals who are committed to the vision of the NGBP. At its latest meeting, there were over 70 participants from all seven provinces, the private sector and civil society. The Forum's function is to act as an information sharing and learning opportunity and a barometer to gauge programme progress and perceptions of success. It is the broader constituency that holds the Grasslands Coordination Unit accountable at a stakeholder level.

174. The *Grassland Steering Committee* (GSC) provides strategic direction and advice, and oversees and facilitates the design and implementation of the NGBP. It consists of the following institutions: DWAF, DEAT, DoA, AgriSA, Forestry South Africa, GDACE, UNDP/GEF, WWF-South Africa and SANBI. It meets approximately three times a year. It is chaired by SANBI.

175. The *Grasslands Coordination Unit* (GrassCo) is housed within SANBI's Biodiversity Directorate based in Pretoria, reporting to SANBI's Biodiversity Director. The main functions that are being, and will be, undertaken are: programme coordination and leadership; leadership on macro level interventions particularly in the agricultural sector; development of annual and quarterly work plans and reports; management of implementing agencies and service providers including development of terms of reference and tender processes; donor liaison; communication; stakeholder liaison including establishment of protocols and processes for the umbrella programme; financial management, administration and reporting including maintaining accounting books and records required for sound financial record-keeping and internal control. During the design phase GrassCo was composed of a

Programme Developer and Programme Coordinator. During implementation it will be composed of a Programme Manager, Programme Coordinator, and Finance Manager funded by GEF. Further to this, SANBI/DEAT will fund the following: Finance Assistant, Administration Assistant, Liaison Officer, Projects Developer, Research Fellows and Interns.

176. The *Grasslands Urban Task Team* was born out of the Urban Development and Biodiversity workshop that was attended by 74 people from 31 institutions, held in July 2005. The aim of the Urban Team is to fulfill a strategic direction and oversight role regarding the urban Gauteng-based component of the programme, to serve as a discussion forum for implementation of the Gauteng conservation plan, and to facilitate information sharing amongst its members and other stakeholders. Members are: GDACE, the three metropolitan municipalities, two district municipalities, two local municipalities, WESSA, IAIA and SANBI. The Grasslands Urban Task Team elected a member to represent the urban component on the Grassland Steering Committee. As GDACE is the Implementing Agent for the urban outcome, the urban Programme Manager and Grassland Ecologist funded by GEF will be located within GDACE's offices with administrative assistance, office space and logistical/communication support provided by GDACE.

177. A *Grasslands Forestry Task Team* was formed out of the Forestry Development and Grasslands Biodiversity workshop that was held on 28 September 2005. The team consists of representatives from: SANBI, DWAF, Forestry South Africa, large timber growers, small/emerging timber growers, medium timber growers, civil society, research institutions, and the three provincial conservation authorities most affected by forestry (Ezemvelo KZN Wildlife, Mpumalanga Parks and Tourism Agency, and the Eastern Cape Department of Economic Affairs and Environment). The design team has developed the high level log frame for the forestry component of the programme. It will continue during implementation to fulfil an oversight and strategic direction role. As FSA is the Implementing Agent for the forestry outcome, the Forestry Programme Manager and short term advisers funded by GEF will be located within Forestry SA's offices with administrative assistance, office space and logistical/communication support provided by FSA.

178. A *Grasslands Agriculture Task Team* is responsible to provide leadership and direction to the content of the agricultural component and to facilitate information sharing amongst its members and stakeholders. It has representation from the Agribusiness Chamber, AgriSA, NAFU, RPO, NERPO, Grain South Africa, Wildlife Ranching South Africa and the national Department of Agriculture. As there is no one agricultural institution acting as Implementing Agent for the whole agricultural outcome, the agricultural programme manager and part time agricultural economist funded by GEF will be located within SANBI. Resources to support the establishment of three stewardship officers positions, who will support both the forestry and agricultural outcomes, will be made available to the three provincial conservation authorities in KZN, Mpumalanga and the Eastern Cape. The details of the responsibilities of all involved will be set out in Memoranda of Agreement. A key aspect of this will be the commitment by the conservation authorities to take on future funding of these positions.

179. *Grassland Demonstration District Teams* will be formed as coordination and oversight mechanisms to ensure effective implementation at the agricultural demonstration-sites. For example, the demonstration district identified within the agricultural component in the Free State has established such an oversight structure with participation by the following organisations: DWAF, FSDTEEA, DoA, University of Free State, local farmers' association and SANBI.

180. A *Grassland Coal Mining Task Team* that will fulfil a similar oversight and strategic direction function as the other Teams is still to be established. Implementation of the coal mining outcome will be outsourced through an open tender process to an environmental institution active in the mining sector.

181. As the GEF implementing agency for this programme, UNDP will monitor all activities and outputs. UNDP will ensure that the activities are being conducted in co-ordination with the government and other stakeholders. UNDP will be ultimately accountable to GEF for programme delivery and responsible for supervising programme implementation. UNDP will provide technical backstopping services and monitor adherence to the work plan. The programme will comply with UNDP's monitoring, evaluation and reporting requirements, as spelled out in the UNDP User Guide.

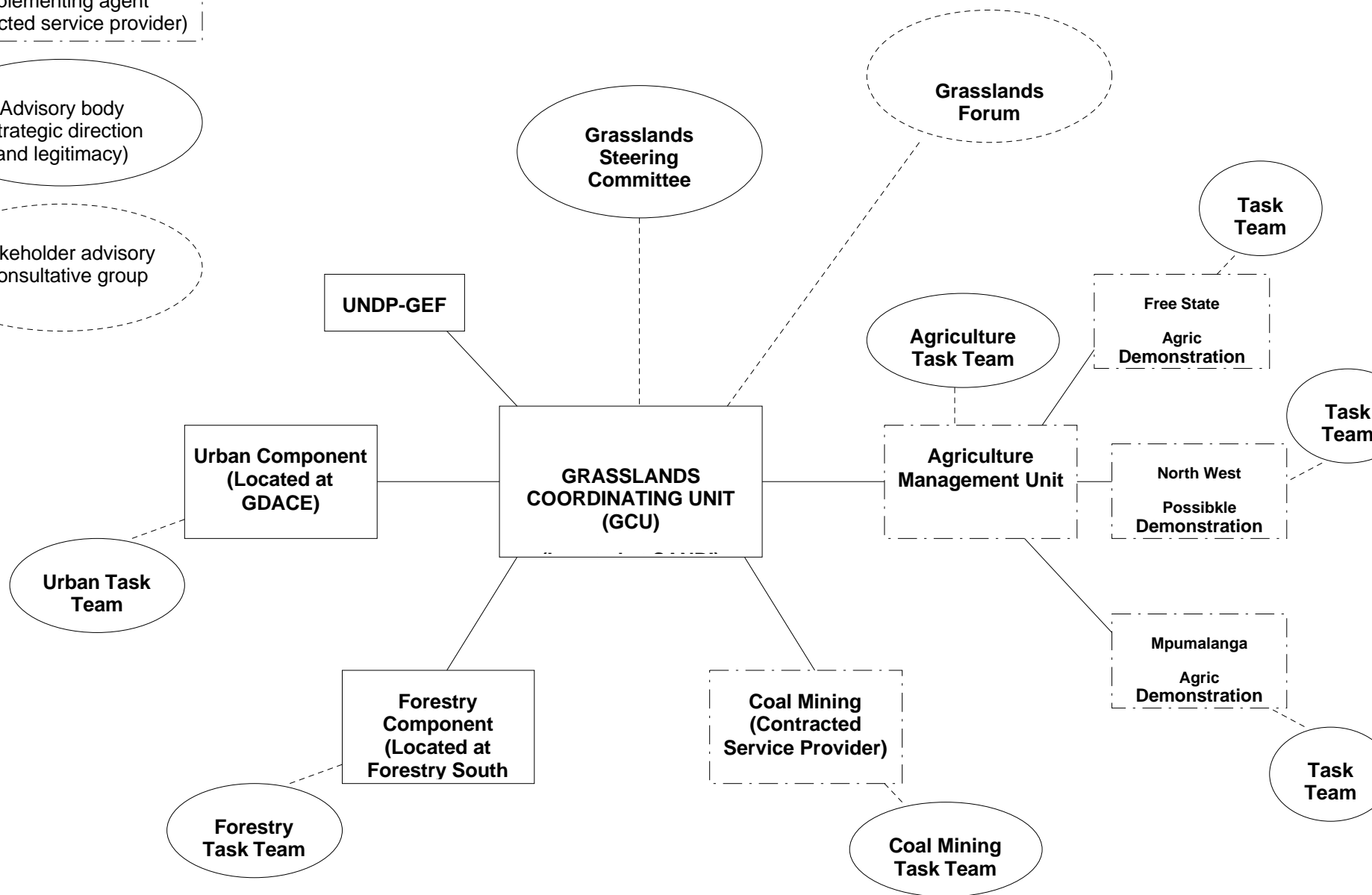
Key:

Implementing agent
(partnership)

Implementing agent
(contracted service provider)

Advisory body
(strategic direction
and legitimacy)

Stakeholder advisory
/ consultative group



PART 4 : Monitoring and Evaluation Plan and Budget

4.1 Monitoring and Evaluation Plan

182. Programme monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures. The Logical Framework Matrix in Section II provides impact indicators for programme implementation along with their corresponding means of verification. The Monitoring and Evaluation Plan is appended (see Annex III). This provides: (i) a detailed explanation of the monitoring and reporting system for the programme; (ii) a presentation of the evaluation system; and (iii) a work plan and the budget for M&E.

183. The Programme Management Unit will be responsible for day-to-day monitoring activities. The Programme Manager will be responsible for the preparation of reports for the Steering Committee and UNDP on a regular basis, including the following: (i) Inception Report; (ii) Annual Project Report; (iii) Project Implementation Review; (iv) Quarterly Progress Reports; and (v) Programme Terminal Report. The objectives of these reports are detailed in Annex III. The Quarterly progress reports will provide a basis for managing programme disbursements. These reports will include a brief summary of the status of activities, explaining variances from the work plan, and presenting work-plans for each successive quarter for review and endorsement. The Annual Programme Report will be undertaken annually, and will entail a more detailed assessment of progress in implementation, using the set indicators. It will further evaluate the causes of successes and failures, and present a clear action plan for addressing problem areas for immediate implementation.

184. *Annual Monitoring* will occur through the *Tripartite Review (TPR)*. The TPR will be composed of representatives of the Government of South Africa, UNDP and the Programme. This will serve as the highest policy-level meeting of the parties directly involved in the implementation of the programme. The programme will be subject to Tripartite Review (TPR) at least once every year. The first such meeting will be held within the first twelve months of implementation. The programme proponent will prepare an Annual Programme Report (APR) and submit it to UNDP-CO and the UNDP-GEF regional office at least two weeks prior to the TPR for review and comments.

185. The programme will be subjected to at least two independent external evaluations:

186. *Mid-term Evaluation* - will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed.

187. *Final Evaluation* - will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals.

188. The Government will provide the designated UNDP Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

4.2 Budget and cost-effectiveness

189. Total programme: Total project financing amounts to US\$45.56 million excluding preparatory costs. Of this, the GEF will finance US\$ 8.3 million. Total co-financing amounts to US\$37.26 million broken down as follows:

Table 10: Outcome Budget (\$US, 5 years)

Outcome	GEF	GoSA	Private Sector	ENGO's	TOTAL
1. Enabling Environment	1,997,797	10,615,785	0	207,966	12,821,548
2. Agriculture	4,012,971	8,815,984	0	398,776	13,227,731
3. Forestry	1,061,733	2,828,543	7,034,667	201,345	11,126,288
4. Urban	727,110	5,083,614	0	36,034	5,846,758
5. Coal Mining	500,389	0	1,982,030	57,020	2,539,439
TOTAL	8,300,000	27,343,926	9,016,698	901,141	45,561,764

4.2.1 Cost effectiveness

190. **Enabling Environment:** Production activities that take little or no cognisance of biodiversity conservation in relevant or cross-sectoral plans, programmes and policies pose a risk to the ecological integrity of the grasslands. In a business-as-usual scenario, natural veld will be gradually transformed into cultivated lands, plantations, coal fields or urban settlements without due regard to biodiversity management considerations. This is likely to impose high economic costs by undermining environmental service provisioning capacities. In contrast, the costs of preventing ecological degradation from occurring in the first place are more modest. The NGBP will spearhead the precautionary principle in advancing interventions. Economic assessments will help inform the appropriate level of tradeoffs needed to secure environmental well being, while allowing for the pursuit of development objectives. This is expected to result in a more optimum employment of scarce conservation resources, and improve the chances that the initiatives these resources are committed to are sustainable.

191. This programme marks a departure from past efforts at biodiversity conservation in South Africa in that it seeks to engage, at a biome level, directly with production sectors and constituent public and private sector institutions in order to change attitudes and instil an appreciation of the dependence of the different sectors on biodiversity and ecosystem services. It is recognised that command-and-control systems are costly to implement at a large scale, and that where highly prescriptive, they can also impose high financial costs on production activities. The NGBP has been designed to allow production interests to weigh the costs and benefits of different mitigation options in assuring regulatory compliance with conservation statutes. This will include the option of off site impact offset arrangements (in circumstances where off site investments in conservation may be cheaper than on site investments). This is designed to improve the uptake and efficacy of conservation management within production processes. To ensure that environmental management objectives are not compromised in the process, attention will be paid in developing the necessary regulatory frameworks to ensure that the conservation value of offsets is greater than or at least equal to the value of the lands cleared for production purposes. This approach is expected to be cost effective in the long run by shifting the costs of biodiversity conservation from government to the custodians and users of land and water resources in the grasslands.

192. **Agriculture:** The cost of integrating agricultural production with conservation planning and management programmes through the engagement of national and provincial level actors, including farmers, is less formidable than that associated with enforcing conservation approaches using a top-down regulatory approach. Engaging actors allows the sectors to drive and take ownership of innovative

conservation initiatives based on the perceived benefits. This is only possible through inculcation of a wide appreciation of the monetary value of ecosystem services derived from the land user's immediate environment. The visible association between production imperatives and ecological capital will be critical to success. The NGBP focuses on promoting win-win land management strategies that simultaneously protect biodiversity and allow for production. Where this end cannot be accommodated, such as where habitat must be cleared for cultivation, the NGBP will influence the location of new farms. Stream flow reduction requirements are being gradually introduced for certain crops (i.e. sugar cane), and will complement Bioregional Plans in helping to regulate the spatial location for such investments. The economic cost benefit calculus of agriculture indicates that a major expansion of cultivation is unlikely to happen in the next five years, but with the development of new market opportunities (i.e. for bio-fuels) it is a risk over the long-term. The costs of planning support provided under the NGBP to ensure that land use planning for farm expansion accommodates conservation values is nominal, compared to the costs of land purchase for the creation of protected areas, or rehabilitation of ecosystems once damaged.

193. **Forestry:** The programme aims to complement and build on previous and current biodiversity conservation efforts by the forestry sector. The costs of neglecting the medium to small grower sector could, however, will erode the gains made by the sector's big growers through voluntary certification systems and adherence to environmentally-friendly management practices. The location of future medium to small grower plantations and their management warrants attention. Central to this area of focus will be the development of planning tools to guide decisions on forestry expansion. A further set of activities will aim at securing permanently unplanted natural forestry land for conservation, using regulatory and market instruments. This land forms part of the biodiversity bank consisting mainly of wetlands, riparian zones and indigenous forest. Such innovations will encourage all enterprise scales within the sector to incorporate the cost of biodiversity conservation within operations.

194. **Urban:** The costs of uncoordinated conservation efforts against a backdrop of immense pressure from urban development in Gauteng are high. However, this area has important conservation values that will need to be sustained. The cost of regulatory control and enforcement by government without the participation of the development sector is expensive and often unsustainable. The intervention strategy in the urban component aims at sharing the costs of protecting the most critical biodiversity hotspots between the State and land users. The development of urban greenspace offsets, complemented by a stronger land use planning system is expected to reduce the opportunity costs to developers of complying with environmental strictures, and thus ultimately, ensure a higher compliance rate in the industry.

195. **Coal mining:** The project seeks to harness support and investment from the coal mining industry in developing and managing off-site as opposed to on-site externalities. Interventions in this sector are designed with an understanding that the government and the affected sector have made substantial investments in mining and biodiversity initiatives and that the sector is highly capitalised and has a huge financial base. However, there is an unmet need to address off-site impacts, particularly on wetlands affected by water abstraction. Hence the emphasis will be on piloting wetland mitigation measures and a wetland mitigation banking scheme. The scheme will be designed to facilitate compliance with regulatory requirements by providing a mechanism for the restoration of wetland areas, in advance of anticipated losses. This way the impacts on biodiversity and associated costs will be borne by mining companies, thus setting in place a process of standard setting capable of sustaining itself. The costs of piloting the scheme are modest in light of the expected conservation dividends.

SECTION 11: STRATEGIC RESULTS FRAMEWORK AND GEF INCREMENT

PART 1 : Incremental Cost Analysis

National Development Objectives

196. Despite the substantial social and economic gains that South Africa has achieved over the past 12 years, it is still faced with high levels of poverty and unemployment in the formal sector. The Government of South Africa is presently placing emphasis on fostering growth and expanding employment opportunities. The Medium Term Expenditure Framework places a high emphasis on increasing investment and capital spending on economic infrastructure and social services. In addition, the Accelerated Growth Initiative (ASGISA) focuses on lifting barriers to economic growth. This centres attention on, among other issues, improving environmental governance and institutional effectiveness so as to ensure that necessary efforts to protect the environment are spearheaded effectively and do not create false inefficiencies. The Government is committed to environmental management as part of its social charter, and recognizes that ecological services make a huge contribution to development (though unquantified in the national accounts). The Government is, accordingly, seeking to balance the need for development on the one hand, with environmental management.

Global Environmental Objectives

197. South Africa is one of 17 megadiversity countries in the World, assessed on the strength of its floral diversity and endemism. South Africa's plant diversity is estimated at 23,420 species, representing 9% of the world total. The grasslands in South Africa are a very old, complex and slowly-evolved system of diverse plant communities. The area is exceptionally rich in floristic diversity and harbours a very high diversity of indigenous species, second only to the Cape Floristic Region. The magnitude of South Africa's conservation challenge is amplified by its extraordinary species richness, and high beta and gamma diversity. There are a large number of priorities for conservation management, covering seven biomes and numerous habitats. While the Grasslands biome comprises such a conservation priority, the Government, acting unilaterally, is unable to wholly underwrite the high initial start up costs of conservation management in the immediate term. Only 2.8% of the biome is currently within the protected area estate. The high costs of land purchase to create protected areas, coupled with the biological heterogeneity of the grasslands implies that most species and habitats will continue to lie outside of protected areas, in production landscapes, and will need to be protected in situ therein. The project will establish the capacities needed to engender biodiversity conservation by creating new partnerships between conservation authorities, production sector bodies and the private sector to mainstream biodiversity management into production sector operations. The resultant prevention of increased rates of species extirpation and habitat fragmentation will yield high global environmental benefits.

Baseline Scenario

198. The threats to grasslands biodiversity, and their root causes are presented in Annex 1. A total investment of some US\$143 million will be provided by different national, provincial and local stakeholders over the next five years to address the multi-faceted threats facing grassland biodiversity in South Africa. The baseline is made up of diverse interventions being undertaken in the forestry, urban, agriculture and coal mining production sectors. A large part of the investment is based on conventional environmental management approaches and these investments are largely uncoordinated. The baseline investment is also geared towards underwriting biodiversity conservation efforts that will deliver certain

domestic benefits³². It is not adequate to provide for the scale of conservation needed to protect biodiversity widely across the grasslands landscape, and thus to secure global environmental benefits. Nevertheless, the baseline forms an essential base upon which to pursue biodiversity mainstreaming objectives. The baseline is summarized below for each Programme Outcome³³.

199. Enabling Environment: Conservation Planning: The total baseline investment under this component is estimated at US\$13 million. This includes spending by government on SANBI's biodiversity planning responsibilities, including spatial planning undertakings and related capacity building, and associated spending by provincial authorities on conservation planning. The baseline includes funding allocated under the SANBI Working for Wetlands project to plan and negotiate measures for rehabilitating wetlands in the grasslands biome.

200. Agriculture: The total baseline investment under this component is estimated at US\$56.49 million. This includes investments of some US\$55.19 million by the National Department of Agriculture for programmes aimed at improving veld management, including landcare, emerging farmer settlement support and resource auditing. Included in the total baseline is a contribution by ENGO's worth US\$1.29 million, of which part is from the Botanical Society's Ekangala project located within the grasslands biome. This is earmarked as support for the national biodiversity stewardship programme and a sustainable sugar production initiative. The Ekangala Project will be one of the critical partners in implementing the NGBP. They are facilitating the process of involving farmers using creative stewardship approaches in conserving biodiversity in the threatened high altitude moist grasslands.

201. Forestry: The total baseline investment under this component is estimated at US\$19.14 million. This includes investments through the forestry association and by government to carry on conservation work in the forestry sector. A total investment of about US\$11.75 million from Forestry SA is the private sector's contribution in the development of several certification systems (small grower/SLIMF, national and FSC), work on improving fire management, and on clearing planted forests from important wetland and riparian areas. The investment demonstrates the strong commitment of the sector to addressing conservation issues. The NGO contribution is around US\$1.35 million, of which part is an input geared at facilitating WWF's participation on the national working group dealing with certification standards. The baseline excludes the general costs of health, safety and environment initiatives undertaken by forestry firms that have no associated dividend for grasslands biodiversity.

202. Biodiversity Conservation in an Urban Environment: Gauteng Province: The total baseline investment under this component is estimated at US\$55.13 million—the high sum reflecting the high costs of environment management in an urban setting. This includes investments through Gauteng's Provincial Department of Agriculture, Conservation and Environment of about US\$49.77 million for environmental assessments, EMF studies, resource protection permits and resource mapping. The baseline also includes an investment by Municipalities in the management of several small municipal protected areas. The baseline excludes the costs of general environment management in the urban environment, including waste management, sewage and sanitation services and health and safety management initiatives.

³² These include recreational benefits, micro watershed management. Many- although not all of these measures-- are being undertaken to meet national regulatory standards. Accordingly they have tended to be applied at an enterprise scale, and left uncoordinated with similar conservation management initiatives.

³³ The systems boundary is set by the activities of production sectors in the grasslands biome. The spatial boundary for the baseline assessment, therefore, differs for each sector, depending on the amount of sector production land. However, the total spatial boundary for all sectors covers the biome in its entirety with the exception of the urban component, where investments outside of conservation hotspots have not been counted. Also excluded from the analysis are expenditures on protected areas outside the production landscape.

203. Mining: The total baseline investment under this component is estimated at US\$4.2 million. This includes investments through private sector donations to a public works programme of about US\$4 million in the form of wetland rehabilitation projects. However, this investment does not directly accommodate biodiversity conservation needs, and is focused mainly on water management. The NGO sector has also earmarked about US\$175,707 for engaging with the mining sector with a view to promoting conservation stewardship. The baseline excludes the costs of on site environmental management and mine rehabilitation, which are pursued as general environment management measures, and not with the intent of protecting biological diversity.

Alternative Strategy

204. The baseline investment in biodiversity conservation, while significant, will not be adequate to ensure that biodiversity conservation objectives are taken care of as an integral part of day-to-day production activities across the agriculture, forestry, urban and coal mining sectors. Apart from the typical pressures associated with urbanisation and investment, experienced in industrializing countries across the world, South Africa has further challenges stemming from the high inequalities and incidence of poverty. Expansion is therefore proposed in most production sectors, and this will, if left unattended pose a significant threat to grasslands biodiversity. The GEF Alternative aims at making a paradigm shift in conservation methods, moving beyond treating biodiversity conservation as an add-on activity to development towards actively engaging production sectors with a view towards accommodating biodiversity management in sector production practices. The GEF investment is aimed at creating a positive enabling environment to facilitate this shift in approach. The GEF contribution will contribute to the creation of capacity and coordination systems that will allow benefits from national investments in biodiversity conservation to be optimized. It is focused on acting as a catalyst at a strategic level in a context where a sound base already exists. The total incremental cost of the Alternative Strategy is US\$45.56 million exclusive of preparatory assistance, for which GEF assistance of US\$8.3 million is requested³⁴.

205. Enabling environment for biodiversity conservation in production landscapes in the grasslands biome is strengthened: The incremental cost for this component is US\$12.82 million with requested GEF funding amounting to US\$1.99 million to ensure the mainstreaming of biodiversity management concerns into development planning processes, in particular through support for economic evaluations as an input in decision making processes. The government will commit an amount of US\$10.62 million toward strengthening the environmental governance system for grasslands conservation. Important elements of this will be the establishment of biodiversity indicators and accompanying monitoring and evaluation system. NGOs will provide some US\$207,966 to undertake biodiversity assessments, and undertake targeted advocacy work with production interests. The costs include spending on programme coordination within the Grassland Coordinating Unit (GCU).

206. Mainstream grassland biodiversity conservation objectives in agriculture in grasslands biome: The total incremental costs for this component are US\$13.23 million, of which the GEF will contribute US\$4 million. The National Department of Agriculture will contribute US\$8.82 million to policy activities focusing on strengthening veld management programmes, to specifically accommodate biodiversity concerns. The GEF will provide funding to demonstrate the usefulness of conservation stewardship approaches in agriculture. Findings will feed into the development of market incentives for biodiversity conservation in agriculture. GEF funding will also help to spatially delimit areas of high biodiversity value which will need to be 'ring-fenced' when plans are drawn up for future agriculture sector investments.

207. The forestry sector directly contributes to biodiversity conservation objectives in the grasslands biome: The total incremental cost for this component is US\$11.13 million with requested GEF funding

³⁴ The GEF has invested US\$350,000 in preparatory assistance.

amounting to US\$1.1 million. The Government will fund activities related to riparian zone clearing and wetland rehabilitation in forest areas. This work is important in terms of assuring stream flow integrity, and thus improving the conservation status of several important wetlands. The private sector will set aside approximately US\$7 million for strengthening the national forestry certification system and associated industry standards. This initiative links in closely with the project's key mainstreaming principles—specifically that of regulating production activities through market incentives. Environmental NGOs will provide some US\$201,345 to engage with the national certification system working group and perform advocacy functions to protect certain ecologically sensitive areas. The GEF contribution will be applied towards improving fiscal and market incentives within the sector for biodiversity friendly production and conservation efforts. In addition, the GEF will also provide technical assistance to help regulatory authorities; municipalities and forest companies enter into compacts for the permanent conservation of unplanted forestry land.

208. Grassland biodiversity management objectives mainstreamed into urban economy in Gauteng: The total incremental cost for this component is US\$5.85 million with requested GEF funding of US\$727,110. The Government of South Africa will contribute US\$5.1 million for fine scale mapping of conservation values in the Province, and the establishment of protected zones. The GEF will help build the capacity of provincial and local authorities to coordinate conservation measures, and strengthen regulatory oversight in sensitive green spaces. The GEF will specifically fund the process of formally securing priority sites that have been identified within the urban areas. This will be achieved through an admixture of regulatory instruments and green space offsets, facilitated through planning applications.

209. Grassland biodiversity management secured in coal mining sector: The total incremental cost for this component is US\$2.54 million with requested GEF funding of US\$500,389. The GEF will fund a barriers to establishing a pilot wetland mitigation banking system, including by establishing norms and standards for qualifying investments, strengthening planning systems and regulatory oversight and helping broker investments into the system by the private sector,. The GEF will also provide funds for technical assistance, provided to the Ministry of Mines to ensure that future expansion plans address biodiversity needs. The NGO sector will invest approximately US\$57,000 in keeping a watching brief on coal mining expansion in ecologically sensitive areas of Mpumalanga province. A contribution worth US\$1.98 million is planned by the private sector for the pilot wetland mitigation banking system³⁵.

Incremental Cost and Benefits

210. The incremental costs of the NGBP are the costs associated with lifting barriers towards mainstreaming biodiversity in four production sectors operating in the grasslands biome. Although the broader enabling environment is in place, barriers to mainstreaming biodiversity in production practices stem from market failure, whereby the benefits of biodiversity are not internalised in production prices, weak institutional capacities across the public and private sectors, and limited know how, regarding the specific manner in which production needs to be adapted to address biodiversity needs. South Africa would capture a portion of the benefits of conservation and has consequently agreed to co-finance a part of the incremental costs of the project in addition to absorbing the baseline. Incremental costs have thus been partitioned between the GEF and non-GEF sources. The GEF will fund activities with largely intangible benefits over the short term, such as capacity building, coordinating stakeholder activities to ensure better congruence in efforts, demonstrating new conservation approaches, including market based approaches, strengthening communications, and strengthening the information system. Investment heavy activities will be co-financed.

³⁵ This captures the amount leveraged in managing the pilot offsets initiative, covering an area of 4000 hectares. The total expected investment by the private sector in offsets should the pilot prove successful is expected to be significant. However, as the investment is predicated on the results of the NGBP, and will be catalysed during implementation—it has been omitted from the scope of the incremental cost assessment.

211. The baseline cost, incurred irrespective of the GEF support and which is undertaken primarily to produce domestic benefits and investments amounts to US\$143 million. The cost of the additional activities required to achieve the programme outcomes is estimated at US\$45.56 million of which the GEF would finance US\$8.3 million and co-financiers (local and international) would finance US\$37.26 million. PDF B project preparation costs amounted to US\$705,500 with US\$350,000 from GEF. The total cost of the Alternative Strategy, comprising of the total project costs and the baseline, excluding preparatory assistance is US\$189,011,907. The GEF contribution is a modest 4.4% of this aggregate.

Table 11: Incremental Cost Matrix

				National Benefits	Global Benefits
Outcome	Cost	Cost ('000 USD)			
Outcome 1: Enabling environment for biodiversity conservation in production landscapes is strengthened	Baseline	GoSA	12,817,288	- Improved environmental governance capacities (policies, legislation and institutional set up)	- Integrated policy, legal and market foundations for biodiversity conservation creates a better enabling environment for conservation
		ENGO's	303,704		
		Total	13,120,992		
	Increment	GEF	1,997,797		
		GoSA	10,615,785		
		ENGO's	207,966		
		Total	12,821,548		
	Alternative	Total	25,942,540	- Integration of biodiversity management tools in sectoral planning and development improves the efficacy and cost efficiency of biodiversity conservation - Markets for ecological services cultivated, and provide incentives for compliance with environmental legislation and pursuit of good environmental practices by production sectors.	-Biodiversity hot spots of global importance have an improved status - Regular biological, social and economic assessment enables management to be adapted to maximise impact
Outcome 2: Mainstream grassland biodiversity conservation objectives into agriculture	Baseline			Agricultural extension services geared to optimizing land productivity.	Certain production impacts mitigated, such as the use of pesticides
		GoSA	55,196,823		
		ENGO's	1,294,586		
		Total	56,491,409		
	Increment	GEF	4,012,971		
		GoSA	8,815,984		
ENGO's		398,776			

Outcome	Cost	Cost ('000 USD)		National Benefits	Global Benefits
		Total	13,227,731		
	Alternative	Total	69,719,140	- Improved biodiversity conservation capacities safeguards ecosystem services vital to agriculture	- Integrated environmental governance system provides a foundation for adaptive land management to reduce BD loss in priority areas - High biodiversity areas 'ring fenced' from future sector expansion.
Outcome 3: The forestry sector directly contributes to biodiversity conservation objectives in the grasslands biome	Baseline	GoSA	6,046,878	- Enhanced environmental governance capacities for forest sector planning and management	- Improved policy foundations for forestry management create an enabling environment for integrating BD- friendly practices into production processes.
		Private Sector	11,752,593		
		ENGO's	1,350,477		
		Total	19,149,947		
	Increment	GEF	1,061,733		
		GoSA	2,828,543		
		Private Sector	7,034,667		
		ENGO's	201,345		
		Total	11,126,288		
	Alternative	Total	30,276,235	- Shared management of hot spot areas reduces the costs of management to the state - Improved fiscal and market incentives for biodiversity friendly production and conservation increases areas under effective conservation management	- Total area of ecologically sensitive areas under effective and sustained conservation management increased - Biodiversity conservation objectives integrated cost-effectively in production activities of the forestry sector - Improved markets for biodiversity friendly produced goods
Outcome 4: Grassland biodiversity management objectives mainstreamed into urban economy in Gauteng		GoSA	49,770,497	- Enhanced environmental governance capacities for urban planning and management	- Integrated and efficient policy, legal and market foundations for environment management provides stronger baseline for pursuit of global BD imperatives
		ENGO's	360,340		
		Total	50,130,836		
	Increment	GEF	727,110		
		GoSA	5,083,614		
		ENGO's	36,034		
		Total	5,846,758		
	Alternative	Total	55,977,594	- Conservation of ecologically sensitive areas within the built environment included in land use planning	- Improved conservation status of ecologically sensitive area - Biodiversity conservation

Outcome	Cost	Cost ('000 USD)		National Benefits	Global Benefits
				processes and adopted by developers and urban authorities - Improved and aligned governance systems guided by provincial and local conservation plans - Monetary value of grassland ecosystems and biodiversity seen as part of the urban economy and used for planning	is integrated in urban development and management - Increased conservation status of endangered species
Outcome 5: Biodiversity management secured in coal mining sector		ENGO's	175,707	- Enhanced environmental governance capacities for coal mining planning and management	- Good environmental standards and receptive industry provide fertile grounds for testing innovative new conservation methods
		Private Sector	4,031,252		
		Total	4,206,959		
	Increment	GEF	500,389		
		ENGO's	57,020		
		Private Sector	1,982,030		
		Total	2,539,439		
	Alternative	Total	6,746,398	- Improved fiscal and market incentives for biodiversity conservation increases areas under effective conservation management - Adaptive regulatory framework providing impetus for coal mining to integrate biodiversity imperatives in their operations and future expansion	- Regulations reduce the impacts on globally important biodiversity from pollution and habit loss - Off site impacts on biodiversity reduced through offsets arrangements - Biodiversity concerns addressed by coal mining industry in future expansion

Table 12: Summary Incremental Cost Matrix US\$

Grand Totals	Baseline	All Stakeholders	143,100,143
	Increment	GEF	8,300,000
		Non GEF	37,261,764
	Preparation	PDF B	350,000
		Alternative	189,011,907

PART 2: Logical Framework Analysis

Table 13 LFA with Programme Goal, Objective, Outcomes and Impact Indicators

Programme Strategy	Objectively verifiable indicators					
	Indicator	Baseline	Mid-term Target	End of Programme Target	Sources of verification	Risks and Assumptions
Goal: The biodiversity and associated ecosystem services of the grasslands biome are sustained and secured for the benefit of current and future generation						
Programme Objective: Major production sectors are directly contributing to the achievement of biodiversity conservation priorities	Contribution of NGBP towards achievement of biodiversity target for grasslands biome. The target is 22.3% of vegetation types within natural areas in the grasslands biome	1.9%	2.6%	4%	Annual reports of SANBI and implementing agencies in the NGBP	Political stability, law and order are maintained; There is relative stability in South Africa's economic position
	Biodiversity Intactness Index ³⁶	65	No less than 1% of decline from baseline	No less than 2% of decline from baseline	NGBP M&E reports based on: - Biodiversity Intactness Index - Remote sensing and national land cover data - Site based monitoring in biodiversity priority areas	External pressures on grasslands biome remain within projected threat profile including the impact of human induced climate change
	Degradation indicator – percentage of biome degraded	11 – 20% based on expert opinion	Timeframe too short to have mid-term indicator	No major increase in degradation		The increase in the morbidity and mortality from the HIV/AIDS pandemic does not outpace the response capacity of healthcare services and institutions

³⁶ The BII developed for use in the Southern Africa Millennium Ecosystem Assessment is an indicator of the state of biological diversity within a geographic area. It uses spatial data on species richness and land use activities per ecosystem type to weight estimates, provided by taxon experts, of the reduction in abundance of all well known species under a range of land uses. Work done to date will be adapted through inputting new data on degradation levels and land use impacts within the grasslands biome.

Programme Strategy	Objectively verifiable indicators					
	Indicator	Baseline	Mid-term Target	End of Programme Target	Sources of verification	Risks and Assumptions
Outcome 1: Enabling environment for biodiversity conservation in production landscapes in the grasslands biome is strengthened	1.1 Bioregional plans for grasslands biome gazetted at appropriate levels	0%	15% of biome covered	45% of biome	Gazetted bioregional plans	Enabling legal and policy framework continues to supports effective cross sectoral institutional collaboration Implementing agencies and other key stakeholders continue to maintain a cooperative, collaborative working relationship that results in information sharing and knowledge management No undue delay in bioregional plans being gazetted
	1.2 Number of key affiliated private and public sector organisations that have entered into MoU with NGBP contributing towards conservation targets ³⁷	0	10 institutions	21 institutions	M&E reports	
	1.3 Institutional mainstreaming effectiveness scorecard SANBI GDACE, Forestry SA	Mainstreaming effectiveness scorecard has been developed 29% 28% 29%	 51% 43% 46%	 76% 72% 66%	Institutional effectiveness reports	
Outcome 2: Mainstream grassland biodiversity conservation objectives into agriculture	2.1 Agricultural laws, policies and guidelines incorporate biodiversity management objectives	Laws, policies and guidelines focus on production	Veld management guidelines for biodiversity on rangeland	Sustainable Land Use Management Act passed DWAF's SFRA includes some agricultural activities	Government gazette Agricultural policies and guidelines DWAF's SFRA list	Economic drivers of agriculture remain within projected scenario Predictable and measured roll out of land reform Conflicts in demonstration areas effectively managed and

³⁷ In forestry sector key institutions are DWAF, FSA; in agricultural sector key institutions are AgriSA, NAFU, RPO, NERPO & W.R.S.A.; in urban sector key institutions are GDACE, Jo'burg Tshwane & Ekurhuleni Metros; in coal sector key institutions are Chamber of Mines & specific company involved in off-set; for enabling environment key institutions are DEAT, MPB, KZN Wildlife, EC DEAET, NW DEAT, WESSA, EWT, Botanical Society, GSSA

Programme Strategy	Objectively verifiable indicators					
	Indicator	Baseline	Mid-term Target	End of Programme Target	Sources of verification	Risks and Assumptions
	2.2 Certification system and marketing programme in place for environmentally appropriately farmed red meat	None	Certification system approved by industry	Industry led marketing scheme for certified produce in place	Industry approved certification scheme	stakeholder social relations conducive to effective action Continued growth in demand for certified agricultural produce
	2.3 Amount of agricultural land in the grasslands biome where agricultural planning, decision making and extension incorporates biodiversity management objectives 2.3.1 Amount of land in demonstration districts where biodiversity management good practice (BMGP) is being implemented by farmers 2.3.2 Amount of land in demonstration districts within biodiversity priority areas where stewardship has secured land for biodiversity conservation	0 hectares	Amount of agricultural land in demonstration districts where: 1. BMGP is being implemented: 60 000 2. Stewardship has secured biodiversity: 9 000	Amount of agricultural land in demonstration districts where: 1. BMGP is being implemented: 180 000 2. Stewardship has secured biodiversity: 22 000	M&E reports - Remote sensing and national land cover data - Site based monitoring in biodiversity priority areas	Regulatory authorities within the forestry sector govern effectively

Programme Strategy	Objectively verifiable indicators					
	Indicator	Baseline	Mid-term Target	End of Programme Target	Sources of verification	Risks and Assumptions
Outcome 3: The forestry sector directly contributes to biodiversity conservation objectives in the grasslands biome	3.1 Amount of forestry estate in grasslands biome under 3.1.1 Plantation 3.1.2 Options areas, i.e. existing unplanted forestry company owned land that is better managed 3.1.3 Formal conservation areas	Area of existing forestry estate in South Africa under 1. Plantation: 1.15 million ha 2. Basic management as unplanted land: 532,780 hectares 3. Formal conservation : 0 ha	Amount of forestry estate in South Africa under 1. Plantation: 10 000ha expansion; 5 000ha where clearing of riparian zones decreases size of plantation 2. Better management as unplanted land: 133,195hectares 3. Formal conservation: 15,000 hectares	Amount of forestry estate in South Africa under 1. Plantation: 20 000ha expansion; 10 000ha where clearing of riparian zones decreases size of plantation 2. Better management as unplanted land: 426,224 hectares 3. Formal conservation: 35,000 hectares	NGBP M&E reports based on: - Remote sensing and national land cover data - Site based monitoring in biodiversity priority areas Industry reports National Protected Area Register	Continued profitability of forestry industry is assured Continued growth in international market demand for environmentally certified forest products No material breakdown in the institutional relation between the key stakeholder groups (small growers, FSA, DWAF, EIA authorities) Regulatory authorities within the forestry sector continue to govern effectively
	3.2 No new plantation development in biodiversity priority areas within the grasslands biome	No formal definition of priority areas	Priority areas designated	No new plantations in designated priority areas	SANBI and DWAF GIS maps	

Programme Strategy	Objectively verifiable indicators					
	Indicator	Baseline	Mid-term Target	End of Programme Target	Sources of verification	Risks and Assumptions
	3.3 Industry certification system and standards better incorporate grassland biodiversity objectives	National FSC compliant Standard not yet set Grassland biodiversity not adequately reflected in FSC Principles & Criteria No small grower certification system successfully implemented	National FSC compliant Standard exist FSC Principles & Criteria incorporate grassland biodiversity objectives Sustainable forestry management system for small growers piloted	Small grower certification system implemented	FSC certification reports M&E reports	
Outcome 4: Grassland biodiversity management objectives mainstreamed into urban economy in Gauteng	4.1 Biodiversity priorities accommodated in municipal open space frameworks and spatial development frameworks	Overlap between c-plan and existing municipal SDFs and EMFs estimated at 40%	10% increase in overlap	20% increase in overlap	Gauteng conservation plan Municipal SDFs and EMFs	Continued buy-in to address biodiversity concerns in urban domain by political decision makers and private sector Programme builds and maintains effective coordination between departments and spheres of government
	4.2 Conservation areas give legal protection to refugia representative of grassland biodiversity	0	12 000ha	30 000ha	Legal documents	

Programme Strategy	Objectively verifiable indicators					
	Indicator	Baseline	Mid-term Target	End of Programme Target	Sources of verification	Risks and Assumptions
	4.3 Institutional mainstreaming effectiveness scorecard for GDACE, Tshwane MC, Ekurhuleni MC, Jo'burg MC, Mogale LM, West Rand DM, Sedibeng DM and Lesedi LM	Mainstreaming effectiveness scorecard has been developed and score will be determined before project implementation starts	12% increase in score	30% increase in score	Institutional effectiveness report	Restructuring of local government does not result in a significant loss of institutional memory Regulatory authorities within the urban sector continue to govern effectively
Outcome 5: Biodiversity management secured in coal mining sector	5.1 Amount of land where wetlands protected through wetland mitigation and/or banking offsets	0 ha of protected wetlands	800ha of wetlands protected through offsets	2 000ha of wetlands protected through offsets	Mining company reports	Extent of coal mining expansion remains within projected threat profile Pressures on government for delivery of economic growth amongst small growers does not result in environmental short cuts
	5.2 Biodiversity planning information used by mining companies and regulatory authorities to plan new coal mines	MBCP ³⁸ not yet adopted by provincial cabinet	MBCP used by Mp DME & 3 companies	MBCP used by Mp DME & all big companies	Maps showing location of coal mines has taken biodiversity priority sites into account	Environmental risks and liabilities provide driver for industry investment in environmental management

³⁸ MBCP = Mpumalanga Biodiversity Conservation Plan