



USAID | **SOUTH AFRICA**
FROM THE AMERICAN PEOPLE

**FAA 118-119 ANALYSIS
CONSERVATION OF TROPICAL FORESTS
AND BIOLOGICAL DIVERSITY**

**USAID/SOUTH AFRICA
SOUTHERN AFRICA REGION**

PREPARED BY:

USAID/SOUTH AFRICA

IN COLLABORATION WITH

**THE REGIONAL ENVIRONMENTAL ADVISOR,
REGIONAL CENTER FOR SOUTHERN AFRICA**

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TABLE OF CONTENTS

- 1) **INTRODUCTION**
- 2) **STATUS OF TROPICAL FORESTS**
 - 2.1 **South Africa Tropical Forest Overview**
 - 2.1.1 Natural Forests
 - 2.1.2 Forest Plantations
 - 2.1.3 Dependence on forests in South Africa
 - 2.2 **Policies and Laws Affecting Conservation**
 - 2.2.1 Administration
 - 2.2.2 Policies / Legislation
 - 2.2.3 Sustainable Forest Management
 - 2.2.4 Participation in International Treaties
 - 2.3 **Threats to Forests**
 - 2.3.1 Land Degradation, Land Use, and Habitat Fragmentation
 - 2.3.2 Invasive Alien Species
 - 2.3.3 Global Climate Change
- 3) **STATUS OF BIODIVERSITY**
 - 3.1 **South Africa Biodiversity Overview**
 - 3.2 **Species Diversity**
 - 3.3 **Ecosystems Diversity**
 - 3.3.1 Terrestrial Environment
 - 3.3.2 River Environment
 - 3.3.3 Estuarine Environment
 - 3.3.4 Marine Environment
 - 3.4 **Use of Biodiversity in South Africa**
 - 3.4.1 Difficulty in Regulating Biodiversity Use
 - 3.5 **Policies and Laws Affecting Biodiversity Conservation**
 - 3.5.1 Policies
 - 3.6 **Biodiversity “Hotspots” in South Africa**
 - 3.6.1 Maputaland-Pondoland-Albany Hotspot
 - 3.6.2 The Succulent Karoo Hotspot
 - 3.6.3 Cape Floristic Hotspot
 - 3.7 **Threats to Biodiversity**
 - 3.7.1 Threats to Freshwater Ecosystems
 - 3.7.2 Threats to Coastal Ecosystems and Coral Reefs
 - 3.8 **Overall Challenges for Conservation Efforts in South Africa**
 - 3.8.1 Budgetary Constraints
 - 3.8.2 Coordination
 - 3.8.3 Capacity
 - 3.8.4 Need to Factor in Economic Value of Biodiversity

- 4) **INSTITUTIONS INVOLVED IN CONSERVATION OF FORESTS AND BIODIVERSITY**
 - 4.1 **Government of South Africa**
 - 4.2 **Foreign Donors in South Africa**
 - 4.3 **Non-Governmental Organizations**
 - 4.4 **Summary of Forestry and Biodiversity Conservation Activities in South Africa**
 - 4.4.1 Integrated Sustainable Rural Development and Urban Renewal Strategies
 - 4.4.2 Community Based Public Works Programme
 - 4.4.3 Working for Water
 - 4.4.4 Working for Wetlands Programme
 - 4.4.5 Working on Fire Programme
 - 4.4.6 CoastCare
 - 4.4.7 National Action Programme for Desertification
- 5) **ACTIONS NECESSARY TO CONSERVE TROPICAL FORESTS AND BIOLOGICAL DIVERSITY**
 - 5.1 **Recommendations for Reducing Habitat Loss**
 - 5.2 **Recommendations for Dealing with the Threat of Invasive Alien Species**
 - 5.3 **Recommended Climate Change Adaptation Strategies**
- 6) **USAID/SOUTH AFRICA STRATEGY: ACTIONS PROPOSED TO MEET CONSRVATION NEEDS IDENTIFIED**
 - 6.1 **Overview of the USAID/South Africa Strategy**
 - 6.2 **Strategic Objective 10: Strengthened Capacity to Deliver Sustainable and Accessible Integrated Municipal and Judicial Services**
 - 6.2.1 Specific Ways in Which the USAID Program Could Address South Africa's Environmental Needs
 - 6.2.2 Additional Opportunities for Conserving Tropical Forests, Biodiversity and the Environment
 - 6.3 **Strategic Objective11: Strengthened Capacity to Provide Quality Basic Education and Productivity-Increasing Job Skills**
 - 6.3.1 Specific Ways in Which the USAID Program Could Address South Africa's Environmental Needs
 - 6.3.2 Additional Opportunities for Conserving Tropical Forests, Biodiversity and the Environment
 - 6.4 **Strategic Objective 12: Strengthened Public-Private Capacity to Support a Competitive Small Business Sector**
 - 6.4.1 Specific Ways in Which the USAID Program Could Address South Africa's Environmental Needs
 - 6.4.2 Additional Opportunities for Conserving Tropical Forests, Biodiversity and the Environment
 - 6.5 **Strategic Objective 13: Strengthened Capacity to Deliver Sustainable and Integrated Primary Health Care and HIV and AIDS Services**
 - 6.5.1 Specific Ways in Which the USAID Program Could Address South Africa's Environmental Needs

6.5.2 Additional Opportunities for Conserving Tropical Forests, Biodiversity and the Environment

6.6 Possible Threats from USAID Program and Mitigation Measures

7) BIBLIOGRAPHY

LIST OF ACRONYMS

CBD	Convention on Biological Diversity
COP	Conference of Parties
CRIC	Committee for the Review of the Implementation of the Convention
CSP	Country Strategic Plan
CST	Committee for Science and Technology
DAC	Department of Arts and Culture
DEAT	Department of Environment Affairs and Tourism
DLA	Department of Land Affairs
DM	District Municipality
DoA	Department of Agriculture
DPLG	Department of Provincial and Local Government
DST	Department of Science and Technology
DWAF	Department of Water Affairs and Forestry
EMG	Environmental Monitoring Group
EMS	Environmental Management Systems
FSC	Forestry Stewardship Council
FY	Fiscal Year
GDA	Global Development Alliance
GEF	Global Environmental Facility
IDP	Integrated Development Plan
IEE	Initial Environmental Examination
IEF	Industrial Environmental Forum
IFF	Intergovernmental Forum on Forests
IPF	Intergovernmental Panel on Forests
ISRDS	Integrated Sustainable Rural Development Strategy
MCM	Marine and Coastal Management
MEO	Mission Environmental Officer
NAP	National Action Program
NBI	National Botanical Institute
NBSAP	National Biodiversity Strategy and Action Plan
NFAP	National Forestry Action Programme
NGO	Non Governmental Organisation
NRF	National Research Foundation
NSBA	National Spatial Biodiversity Assessment
NSDP	National Spatial Development Perspective
ODA	Official Development Assistance
OGAC	Office of the Global AIDS Coordinator
RCSA	Regional Center for Southern Africa
RDL	Red Data List
REA	Regional Environmental Advisor
SADC	Southern Africa Development Community
SAFCOL	South African Forestry Company Ltd. (currently South African Timber Company Ltd.)
SAFRINET	Southern Africa Network for Taxonomy
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks
SMME	Small, Medium, and Micro Enterprises
SO	Strategic Objective
UCT	University of Cape Town
UNCCD	United National Convention to Combat Desertification
UNDP	United Nations Development Program
UNFF	United Nations Forum on Forests
URS	Urban Renewal Strategy
USAID	United States Agency for International Development

WfW Working for Water Program
WfWet Working for Wetland Program

EXECUTIVE SUMMARY

This report was produced by USAID/South Africa in collaboration with the Regional Center for Southern Africa's (RCSA) Regional Environmental Advisor as part of the mandatory Tropical Forestry and Biodiversity Conservation analyses under the new USAID Strategy Framework.

This assessment has revealed that South Africa has taken huge strides in the past decade in the establishment of an effective and comprehensive environmental management system. Extensive policies are in place, and clear steps have been taken toward implementation. The Government of South Africa's progress is underscored in its ambitious undertaking of a new National Biodiversity Strategy and Action Plan (NBSAP) which was compiled during May 2003 to May 2005. Final recommendations are still being vetted throughout the Government. Several of the documents that are part of the NBSAP were key resources for this report. In particular, the NBSAP itself, in addition to the South Africa Country Study: Situation Assessment Undertaken to Inform South Africa's National Biodiversity Strategy and Action Plan, the Department of Environment Affairs and Tourism 10 Year Review 1994-2004, and the White Paper on Sustainable Forest Development in South Africa, among others.

Overall Challenges for Conservation Efforts in South Africa

Despite the great strides made by the South African Government, major challenges lie ahead both within the governmental system and in society at large. Because environmental management is a function that has been developed since 1994, the Government has a limited and inadequate budget to handle it, which must be expanded if work is to be carried out effectively. This is not only so at a national Government level, but also in the provincial and local spheres of government, where the bulk of the implementation of environmental management, including Environmental Impact Assessments and air quality management take place.

In addition, the capacity to implement government legislation is a cause for concern at all spheres of government, particularly at the municipal level. This is exacerbated by a shortage of qualified scientists in South Africa.

It is also essential that the economic value of biodiversity and biological resources be valued and taken into account in development decisions. Although Government policy has generally moved away from subsidies, for example to agriculture, many subsidies and incentives exist for trade and industry, especially for export-oriented industries. There are few to no incentives for conservation and sustainable use of biodiversity.

Tropical Forests

South Africa's forests cover only about 1 percent of the country's total land area. The country never was heavily forested; however, an estimated 30% of forests (mainly coastal forests) were lost by the end of the 20th century due to clearance for agriculture and human settlements, as well as timber extraction (mostly during the 19th century). About 60% of forest ecosystems are currently protected, including State Forests. However, forests are highly fragmented and isolated, and several endangered species require close monitoring. Some forest types (especially scarp, coastal and mangrove forests) are still under pressure from resource use and development.

Natural forests are generally considered adequately protected. The country has a large network of more than 400 protected areas, including around 18 national parks. Around 54 percent of natural forests are included in protected areas, and 17 % of the woodlands are protected. Only 5 % of the total woodland area occurs on communal lands.

Some 9.2 million rural households depend to some degree on forest goods such as fuel wood and supplementary medicine and food supplies for their well being. Firewood is still the primary source of energy for heating and cooking in a high percentage of households across the country.

Threats to Tropical Forests

Three of the most significant threats to forests and biodiversity in South Africa are land degradation and transformation; alien invasive species; and global climate change. South Africa's diversity of species and level of endemism are so high, that virtually any large scale transformation of land can lead to loss of biodiversity.

Land degradation and transformation

In many areas it is not the direct use of biological resources that is threatening their sustainability, but rather indirect pressures such as changing land use and associated clearing of natural vegetation. Virtually all ecosystems and habitats in South Africa have been modified or transformed by human activities. A high proportion of species in these areas are found nowhere else on earth. There are two key causes of habitat transformation, largely reflecting South Africa's dual economy: transformation of land due to development by and for the rich, such as extensive golf estates, and habitat transformation exacerbated by poverty, such as land degradation caused by overstocking.

Land degradation is a serious threat to rural livelihoods. It sets off a vicious cycle that eventually undermines all the livelihood assets and is a hazard to the natural capital of the local community (as well as to the larger community) in that the natural resources available to households are degraded. It has costs to the nation at large because it depresses national capital regionally, and ripples through the whole economy. Erosion by water, sheet and gully formation, is the main mechanism of land degradation. Domestic livestock grazing practices cause loss of vegetation cover and changes in plant species composition. Bush encroachment and alien plant invasions are significant forms of veld degradation in a smaller number of magisterial districts, and are largely associated with private or state-managed land.

Invasive alien species

According to the Department of Environment Affairs and Tourism's (DEAT) 10 year review of Biodiversity and Conservation, the uncontrolled spread of invasive alien species is one of the key threats to indigenous biodiversity. This spread has negative impacts on the economy, in sectors as diverse as health, agriculture, water supply and tourism, and is likely to become much worse with climate change. If South Africa becomes warmer under the influence of global climate changes it seems likely that its ecosystems will become increasingly prone to invasions by more tropical alien species.

Invasive alien species have very serious negative impacts on the biodiversity and economy of South Africa. Invasive alien species pose a threat to the survival of thousands of endangered species of plants of all ecosystems in South Africa. They can increase fire hazards and accelerate soil erosion. More than 180 species of invasive alien plants already infest the equivalent of 10 million hectares, or 8% of South Africa's surface area, resulting in about 7% of the annual flow of South Africa's rivers being lost.

The first line of defense in combating the spread of invasive species must be prevention. Once an invasive species is firmly established, the costs of control or eradication are high and compete with other demands on scarce financial resources. Due to the extent of the problem in South Africa, containment of existing invasive alien species is also required, with the ultimate goal, where possible, being eradication.

On the other hand, many alien species are highly regarded because of the benefits they can provide, thus, one of the main challenges today is to reconcile the often conflicting priorities of those who depend on invasive alien species for a whole range of goods and services. It is also necessary to take into account the ways in which forests affect and are affected by policies outside the forest sector.

Global climate change

Climate change is likely to accentuate social and ecological vulnerability and limit capacity to adapt to changes in ecosystem functioning. It is expected that the changing climate could have significant impacts on plant diversity in the country. The ability of plants to change their geographic distribution in response to a changing climate is constrained by their possible requirements for specific soil types and by unsuitability of land due to human transformation.

As a result of global climate change, the area amenable to the country's biomes is likely to shrink to about 38 – 55 % of their current area. The largest losses are expected to occur in the western, central and northern parts of the country. Species composition is likely to change across all biomes, leading also to major structural vegetation changes, especially in the Grasslands biome.

Biodiversity

South Africa occupies only 2% of the world's surface area, but is home to nearly 10% of the world's plants and 7% of the world's reptiles, birds and mammals. South Africa is home to approximately 24 000 plant species. Levels of endemism are high, especially for plants, which contributes to the potential for developing new medicines, crops, cosmetics, ornamental plants and other useful products.

South Africa's faunal diversity is also high relative to the land surface area. South Africa is home to an estimated 5.8% of the global total of mammal species (close to 300 species), 8% of bird species (more than 800 species recorded), 4.6% of reptile species (288 species) and 5.5% of the world's known insect species. In terms of the number of endemic species of mammals, birds, reptiles and amphibians, South Africa ranks as the fifth richest country in Africa and the 24th richest in the world. Marine biodiversity is also high. There are over 10 000 species of marine plants and animals in South African waters, which is almost 15% of global species, with 12% of the marine species being endemic to South Africa.

Of the 948 taxa assessed in South Africa, 414 are threatened with extinction, while 108 are data deficient. Fifteen are considered to be Extinct while 19 are Critically Endangered (all are endemic to South Africa). The major threatening processes are noted to be habitat transformation due to agricultural activities, urban development (especially coastal development), mining, industry and roads, the spread of invasive alien species, subsistence harvesting (especially of medicinal plants) and illegal collection for commercial trade (particularly of groups such as cycads and succulents). Climate change is recognized as having potentially very serious consequences for South Africa's vegetation, especially the succulent karoo and grassland biomes.

Three globally recognized hotspots (areas of high biodiversity, which are under serious threat) are found in South Africa: the Cape Floristic Kingdom (equivalent to the fynbos biome), Succulent Karoo (shared with Namibia) and the Maputaland-Pondoland-Albany centre of endemism (Maputaland-Pondoland is shared with Mozambique and Swaziland).

Ecosystems diversity

The spatial biodiversity assessment of South Africa's 440 terrestrial ecosystems showed that 34% are threatened. Of these, 5% are Critically Endangered (mainly in the fynbos and forest biomes), 13% are Endangered (mainly in the grassland and savanna biomes) and 16% are Vulnerable (mainly in the fynbos and grassland biomes). Although close to 6% of South Africa's land area falls within formal protected areas, the protected area network is skewed towards certain biomes such as savanna, leaving biomes such as grasslands under-conserved.

Freshwater ecosystem

The status of river ecosystems in South Africa is cause for concern. The spatial biodiversity assessment of South Africa's 120 river signatures found that 82% are threatened. Almost half, or 44%, are Critically Endangered, while 27% are Endangered, 11% are Vulnerable and 18% are Least Threatened. River ecosystems in South Africa are poorly protected. South Africa is a water-poor country and all freshwater systems are heavily utilized.

The degradation of ecosystem services is already considered a significant barrier to achieving the Millennium Development Goals and the harmful consequences of this degradation could grow significantly worse in the next 50 years, according to the Millennium Ecosystem Assessment completed in 2004. Of the 258 estuaries along the coast, 38% are regarded as being in poor to fair condition, while the rest are in reasonable condition.

Marine ecosystem

The spatial biodiversity assessment of the marine environment showed that 65% of South Africa's 34 marine biological zones are threatened, with 12% being Critically Endangered, 15% Endangered, 38% Vulnerable and 35% Least Threatened. Marine protected areas tend to be located close to the coastline, while offshore biological zones are generally poorly protected. Marine biological zones on the west coast are least protected and most threatened.

Threats to Biodiversity

Three key, inter-related threats to biodiversity are habitat removal, invasive alien species and climate change. The introduction and spread of invasive alien species is closely correlated with human activities. Land degradation, clearing of indigenous vegetation, invasion of land by alien species and climate change all interlink to create synergies that exacerbate and compound the impact on biodiversity, leading in turn to further degradation and loss. These three threats are discussed in the Tropical Forest section of this report. This section will elaborate on additional threats.

Threats to Freshwater Ecosystems

The greatest threat to aquatic biodiversity is not merely unsustainable use levels of the resources, but rather, decreasing freshwater availability and widespread ecosystem degradation. Aquatic habitats are impacted by overgrazing, invasive alien species, informal settlements, urban development and industrial and agricultural pollution. Riparian activities (sand mining, impoundments, cultivation) also threaten aquatic habitats and associated biodiversity. The movement of fish (indigenous and exotic) to new catchments severely threatens biodiversity of aquatic systems.

Threats to Coastal Ecosystems and Coral Reefs

The destructive practice of cyanide and blast fishing, which are currently being practiced in many parts of South Africa especially in fresh water ponds, is destroying the carrying capacity of lakes and other water ponds and the coasts.

Summary of Forestry and Biodiversity Conservation Activities in South Africa

The South African Government is supporting several large-scale forestry and biodiversity conservation activities. Some of them are listed below:

- **Integrated Sustainable Rural Development and Urban Renewal Strategies (ISRDS& URS):** The ISRDS recognizes the importance of natural resources, and their potential contribution to economic growth. Several of the ISRDS priority nodes are located within important biodiversity areas, including internationally recognized hotspots. DEAT initiated a program in 2005, to finance and support an environmental community worker in each node, to build the environmental capacity within the ISRDS and UR nodes and facilitate communication and information sharing on environmental matters.
- **Community Based Public Works Programme** addresses environmental protection through erosion control, donga rehabilitation and re-vegetation projects. The Expanded Public Works Programme was initiated in 2004. More than R1.5 billion had been spent by February 2005, creating over 76 000 job opportunities.
- **Working for Water (WfW)** aims to reduce the invasion of alien vegetation through a public works approach. In the process of clearing invasive alien species, especially woody species, jobs are created, skills are developed and secondary industries are developed to use the wood. Started in 1995 with an annual budget of R25 million, WfW has grown into South Africa's premier environmental rehabilitation and job creation project. WfW has created up to 24,000 temporary jobs per annum in 313 projects.
- **Working for Wetlands Programme** aims to facilitate the conservation, rehabilitation and sustainable use of wetland ecosystems, while at the same time fulfilling functions such as poverty alleviation, job creation, training and empowerment.
- **Working on Fire** is closely aligned to Working for Water, as invasive alien trees greatly increase the impact of fires.
- **The CoastCare Programme** is assisting in increasing awareness regarding coastal management while at the same time addressing poverty.

South African Government Recommendations for Addressing the Three Primary Threats to Tropical Forests and Biodiversity

According to the South African Government policy, all land use should integrate biodiversity considerations into management and mitigation plans and consider the cumulative impact of projects into the decision making process. The national departments responsible for development planning and spatial planning, such as the Department of Land Affairs (DLA) and the Department of Provincial and Local Government (DPLG), must ensure that biodiversity priority areas are integrated into spatial plans. Planning frameworks at various levels – national, provincial and local - must take biodiversity into consideration in order to guide development. In addition, all spheres of government need to develop appropriate strategies to deal with the various threats to biodiversity in South Africa and should engage different sets of stakeholders in each case.

South African Government Recommendations for dealing with the threat of invasive alien species

- Facilitate an enabling environment to deal with invasive alien species
- Build the necessary capacity to manage invasive alien species
- Prevent potential invasive alien species from entering South Africa
- Manage established invasive alien species to minimize their impact and spread
- Establish effective invasive alien species decision support systems
- Mainstreaming of invasive alien species control
- Increase invasive alien species awareness, education and advocacy within and outside South Africa

South African Government Recommendations to Address Climate Change

The following climate change adaptation strategies have been suggested which have particular relevance for the biodiversity sector:

- Improve and expand seed banks and gene banks for agricultural species
- Avoid monocultures and switch to drought-resistant crops
- Reduce dependence on irrigation, apply conservation management principles to agriculture and implement drought management practices
- Reduce stocking rates on rangelands
- Improve monitoring and forecasting systems for fire management
- Conserve water, improve efficiency of use and minimize pollution
- Plan and coordinate water and land use across catchments and include water resources management for sensitive ecosystems
- Improve monitoring and forecasting systems for floods and droughts
- Tailor land use planning and decision making to consider potential climate change and biodiversity impacts, and reduce habitat fragmentation
- Encourage land use practices or patterns outside conservation areas that minimize biodiversity impacts and factor in future dispersal probabilities
- Establish a biodiversity monitoring network in areas with high risk of climate change, high biodiversity and security of tenure
- Restore degraded areas
- Apply sound vegetation and soil management policies
- Promote wise use of biodiversity
- Retain conservation areas predicted to show little climatic change, expand protected area networks to areas with high topographic relief and incorporate redundancy in a representative protected areas network, to buffer the effects of climate change
- Expand *ex situ* conservation and future plant translocation
- Support fundamental research into the effects of climate change on species and ecosystems
- Develop mechanisms to assess the value of biodiversity elements to determine relative importance in the events of unavoidable loss

The USAID/South Africa Strategy: Actions, Opportunities, and Threats

While the USAID/South Africa Strategy does not have a Strategic Objective (SO) for environmental concerns, where possible, the Mission will address tropical forestry and biodiversity needs in its other SOs. In addition, should additional resources be made available for these purposes, USAID/South Africa would consider funding additional activities (with agreement for the South African Government), some of which are identified below.

Strategic Objective 10: Strengthened capacity to deliver sustainable and accessible integrated municipal and judicial services

- USAID will promote sustainable methods of service delivery at the local sphere of government that should result in the abatement of green house gas emissions, improved cost-recovery, biodiversity resource conservation, and energy-efficiency. These activities would also contribute to the US Presidential Initiatives for Global Climate Change, Clean Energy and Water for the Poor. Where possible, USAID will
 - Encourage the use of appropriate technology to reduce pollution and promote cleaner energy use; and
 - Incorporate methods to conserve water.

Additional Opportunities for SO10

Should additional resources become available USAID/South Africa could consider (after discussions with the South African Government) including some of the following activities into its program:

- Protect watersheds and improve water quality, which would ultimately help to preserve biodiversity;
- Engage proactively and constructively with the South African Government at various levels (DPLG, DWAF, Housing, Treasury and local government authorities) to ensure that biodiversity is a key consideration in policy development, budgeting and planning processes. In particular, USAID could assist municipalities to integrate conservation and biodiversity preservation into their integrated development plans, and pay special attention to waste management in areas that impact aquatic ecosystems;
- Build capacity of institutions (both government and non-government) through training managers of protected areas in natural resource management;
- Promote community participation in natural resource management and land use planning decisions;
- Promote renewable energy particularly in rural areas in biologically sensitive areas or adjacent to tropical forests that are heavily reliant on fuel wood and crop residues for basic energy needs, such as household cooking and heating;
- Support public awareness campaigns of environmental and conservation issues, possibly by training the media on ways to improve reporting.

Strategic Objective 11: Strengthened capacity to provide quality basic education and productivity-increasing job skills

- Where appropriate, this program may support environmental training in schools.

Additional Opportunities for SO11

Should additional resources become available USAID/South Africa could consider (after discussions with the South African Government) including some of the following activities into this program:

- Incorporate environmental awareness into the curriculum;
- Train teachers on conservation and biodiversity modules.

Strategic Objective 12: Strengthened public-private capacity to support a competitive small business sector

- For specific Small, Medium and Micro Enterprises (SMME) in which this may be relevant, USAID/South Africa may consider providing training on cleaner production processes. Cleaner Production is a proven business-oriented problem-solving strategy that helps businesses improve the efficiency of their production processes. Increased efficiency generally translates into higher profits and better quality. The more efficient use of input materials and energy equates to reduced waste, resource degradation and pollution, thereby reducing

impacts on human health and the environment. In addition, cleaner production furthers fundamental development goals by enhancing the long-term sustainability of income generation programs.

- For projects involving small scale farmers, USAID should encourage practices to minimize ground water pollution and to incorporate technological improvements, such as the introduction of soil fertility enhancement approaches and improved seeds.
- Targeted biotechnology research will be supported to develop crops that have the potential to help small and marginal farmer participate in agricultural markets.

Additional Opportunities for SO12

Should additional resources become available USAID/South Africa could consider (after discussions with the South African Government) including some of the following activities into this program:

- In biologically sensitive areas, help encourage non-farming income-generating activities to lower the pressure on the natural resource by communities leaving adjacent to parks and protected areas (both inland and coastal zones);
- Support the environmental goods and services investment sector, whereby environmental goods and services and other related amenities could be traded;
- Support SMMEs in the tourism sector that incorporate environmental protection and renewal into their business plans;
- USAID/South Africa could consider supporting innovative public-private alliances under its Global Development Alliance (GDA) programs to support small enterprises that sustainable harvest forest products and link them with regional markets.

Strategic Objective 13: Strengthened Capacity to Deliver Sustainable and Integrated Primary Health Care and HIV and AIDS Services

- Where possible, USAID/South Africa should strive to support health care management practices that address potentials for biohazards and which incorporate proper disposal of hazardous waste. This will help to prevent the spread of disease and to minimize pollution, particularly of groundwater.

Additional Opportunities for SO13

- If USAID/South Africa supports any programs related to the Avian flu pandemic, the activities should minimize any adverse environmental impact and exposure of the flu to humans.

Possible Threats from USAID programs and Mitigation Measures

Some activities implemented under the USAID/South Africa strategy may impact the biophysical environment. To maximize the positive benefits and minimize any damage to the environment, all activities will be subject to 22CFR216. As such, an Initial Environmental Examination (IEE) will be completed for each Strategic Objective in FY2006. Environmental screening of each proposed project shall be undertaken to determine the appropriate extent and type of Environmental Assessment. Proposed projects will be classified into one of three categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental and social impacts. The IEE will lay out measures to help mitigate possible negative environmental impacts. All activities should be designed to be environmentally sound and to adhere to South African rules and regulations. Where possible, USAID should promote sound environmental practices through all of its programs, including those projects that involve Global Development Alliances, and Development Credit Authority.

Conclusion

In conclusion, USAID/South Africa has used recent analyses and reports from the South African Government to analyze the threats to Tropical Forestry and Biodiversity according to FAA 118-119. After extensive consultation with the South African Government of its 2007-2012 strategic plan, the Mission has incorporated activities across its strategic objectives to address these the threats to tropical forestry and biodiversity through several of its activities. Should additional funding become available, USAID/South Africa would consider supporting additional programs that are consistent with the South African Government's objectives.

1) INTRODUCTION

USAID/South Africa is currently in the process of developing a five-year Country Strategic Plan (CSP) to guide its activities for 2007-2012. The Mission will align its proposed strategy with South Africa's key priorities set forth in President Mbeki's State of the Nation address, key budget speeches, and the Government's Programme of Action. These priorities rest on three pillars: 1) Encouraging the growth and development of the 'first economy'; 2) Addressing the challenges of the 'second economy', and 3) building a social security net to alleviate poverty. USAID/South Africa will help achieve these goals through four Strategic Objectives which are: a) Strengthened capacity to deliver sustainable and accessible integrated municipal and judicial services; b) Strengthened capacity to provide quality basic education and productivity-increasing job skills; c) Strengthened public-private capacity to support a competitive small business sector; and d) Strengthened capacity to deliver sustainable and integrated primary health care and HIV and AIDS services.

USAID/South Africa recognizes that protection of the environment and wise management of the natural resources base are absolute requirements of any successful development program. In order to ensure that environmental issues are integrated into USAID/South Africa's development planning, a Tropical Forestry and Biodiversity analysis is required by Sections 118(e) and 119(d) of the 1961 Foreign Assistance Act, which codifies U.S. interests in forests and biological diversity. The provisions require that all country strategic plans include: 1) an analysis of the actions necessary in that country to conserve biological diversity and tropical forests; and 2) the extent to which proposed USAID actions meet those needs.

In addition to being a legal requirement, the FAA 118-119 analysis technically and strategically enables USAID/South Africa to identify opportunities for using funds earmarked by Congress for biodiversity or tropical forest conservation in its programs; it will also help the Mission identify opportunities for increasing the sustainability of its Strategic Objectives in other sectors, (such as economic growth, health, etc.).

To conduct this assessment of tropical forestry and biodiversity threats and opportunities USAID/South Africa worked in collaboration with the Regional Environmental Advisor (REA) from USAID's Regional Center for Southern Africa (RCSA). Special "thanks" goes to Camilien Jean W. Saint-Cyr, REA/RCSA, and from USAID/South Africa, the Mission Environmental Officer (MEO), Sheila Roquette, the Alternate MEO, Dalene Van der Westhuizen, the Supervisory Program Officer, Melissa Williams, and Program Assistant, Gwen Wilkins, all of whom worked diligently to complete this report in time for submission with USAID/South Africa's 2007-2012 Strategic Plan.

This summary analysis was derived from a series of the South African Government documents on tropical forestry, biodiversity conservation and environmental legal frameworks. In particular, information for Section 2, Tropical Forestry, was obtained primarily from the South African Government's White Paper on Sustainable Forest Development in South Africa: The Policy of the Government of National Unity, published by the Ministry of Water Affairs and Forestry. The lionshare of information contained in this report is from three interrelated documents: 1) South Africa's National Biodiversity Strategy and Action Plan, 6 May 2005; 2) South Africa's Country Study: Situational Assessment Undertaken to Inform South Africa's National Biodiversity Strategy and Action Plan, 6 May 2005; and 3) the Department of Environmental Affairs and Tourism 10 year review 1994-2004. If sections are missing citations, the information likely came from one of these documents. Other sources of information included various Annual Reports, State of the Environment Reports, strategy and policy documents, pieces of legislation and minutes of meetings. Many of these documents are available on the South African Government Web-site (www.gov.za), and the web-sites of the Department of Environmental Affairs and Tourism (www.deat.gov.za), Department of Water Affairs and Forestry (www.dwaf.gov.za), South African National Parks (www.parks-sa.co.za), National Botanical Institute (www.nbi.ac.za), and other related links. Information was also obtained from non-governmental organizations and international donor organizations, especially the Forestry section of the FAO.

Despite the importance of the FAA 118-119 analysis on the sustainability of USAID actions, the time available for completion of this study has been brief; hence, there may be some gaps in the report. Specifically, there was insufficient time to contact people or organizations directly involved in biodiversity and tropical forestry conservation in South Africa.

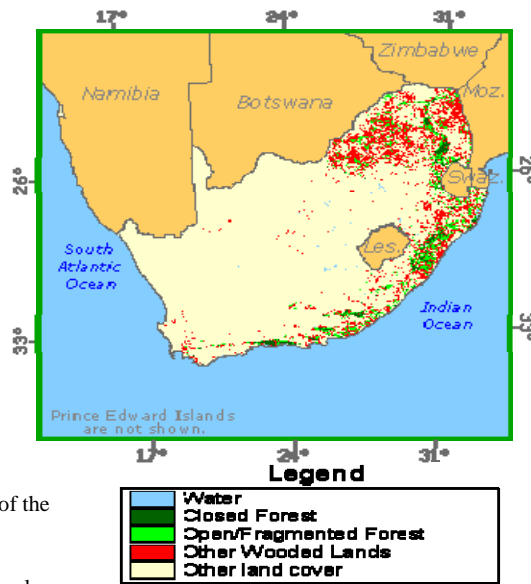
2) STATUS OF TROPICAL FORESTS

2.1 South Africa Tropical Forest Overview

Forests are crucial for the well-being of humanity. They provide foundations for life on earth through ecological functions, by regulating the climate and water resources and by serving as habitats for plants and animals. Forests also furnish a wide range of essential goods such as wood, food, fodder and medicines, in addition to opportunities for recreation, spiritual renewal and other services.

	Land area	Forest Cover 2000	Forest Cover Change 1990-2000		Distribution of land cover/use % (1994)		
	'000 ha	'000 ha	'000 ha/year	%/year	Forest	Other Wooded Land	Other land
South Africa	121,760	8,917	-8	-.09	7.3	52.3	40.2
Africa	3,090,228	649,866	-5,264	-.78	21.0	15.5	61.6
World	13,139,618	3,869,453	-9,319	-.24	29.4	11.2	58.6

South Africa Cover Map



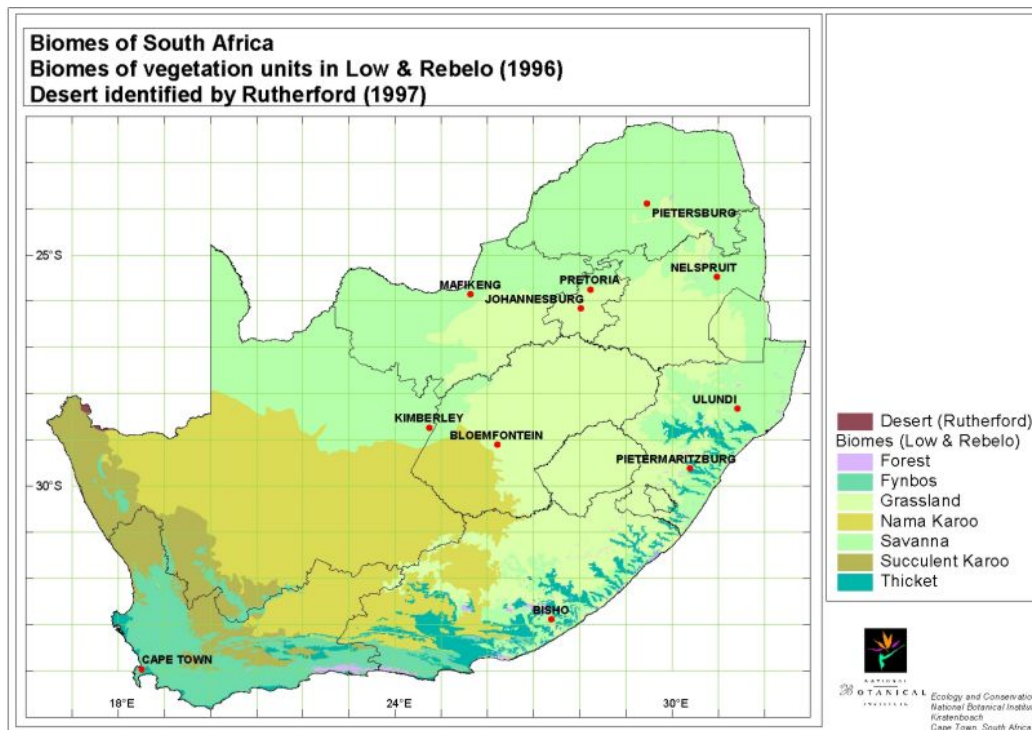
2.1.1 Natural Forests

South Africa's forests cover only about 1% of the country's total land area. The country never was heavily forested, and an estimated 30% of forests (mainly coastal forests) were lost by the end of the 20th century due to clearance for agriculture and human settlements, as well as timber extraction (mostly during the 19th century). About 60% of forest ecosystems are currently protected, including State Forests. However, forests are highly fragmented and isolated and several endangered species require close monitoring. Some forest types (especially scarp, coastal and mangrove forests) are still under pressure from resource use and development.

Natural forests are generally considered adequately protected. The country has a large network of more than 400 protected areas, including around 18 national parks. Around 54% of natural forests are included in protected areas, and 17% of the woodlands are protected. Only 5% of the total woodland area occurs on communal lands.

These forests are scattered eastwards from the Cape Peninsula through the Outeniqua and Tsitsikamma Mountains and the coastal platform of the southern Cape, through the midlands of the Eastern Cape, and into KwaZulu-Natal. Northwards, forests are distributed along the Drakensberg Mountains of KwaZulu-Natal, the eastern Free State, and the escarpment of Mpumalanga and into the Limpopo Province, where the northern-most forests are located in the Soutpansberg Mountains. Lowland forests extend along the coast from Port Elizabeth in the Eastern Cape through KwaZulu-Natal to Mozambique. These forests of the subtropical coastal zone have a discontinuous distribution in the south, but are nearly continuous in northern KwaZulu-Natal. Lowland forests are usually associated with dunes, rivers, ravines and wetlands near or on the coast.

Most of South Africa falls within semi-arid and sub-humid zones, with extensive shrubland, grassland and savanna ecosystems. These biomes are heavily impacted on by habitat conversion for agriculture and urban development, as well as encroachment by invasive alien species. Land degradation, particularly in overcrowded communal areas is a serious concern, as loss of productivity impacts on people's livelihoods.



2.1.2 Forest Plantations

After World War I, the government began to establish forest plantations to grow trees for commercial use. Located primarily in the northeast and in KwaZulu-Natal, most timber plantations produce pine and eucalyptus trees. Although most wood is used for fuel, industrial uses include construction and mine props, paper products, and a variety of agricultural applications.

Forest plantations are highly important for wood supply, but the available area is limited since South Africa is acutely aware that forest plantations on watersheds may in certain circumstances reduce groundwater. South Africa ranks in the top ten of developing countries in terms of forest plantation development, with 1.35 million hectares of plantations (almost all industrial plantations), predominantly *Pinus* and *Eucalyptus* species. The production from plantations in 2001/02 amounted to approximately 16.6 million cubic meter. In addition, more than 20,000 tons of fuel wood is cut annually from commercial plantations.

Several hundred thousand people are employed on timber farms and in more than 240 wood-processing factories. Although South Africa could supply most of its own needs for wood and wood products, the timber industry faced problems on the export market in the early 1990s. The industry had relied on exports of pulp and paper, but falling world prices threatened profitability.

The government has progressed substantially in restructuring its holdings in industrial forests, which are among the best of their kind in the world. These consist of the plantations held by SAFCOL, the State forestry company, and those held by the Department of Water Affairs and Forestry, together constituting about 30% of the plantation forests in the country. This is one of the largest single privatization of plantations in the world and constitutes a fundamental restructuring of the sector. Government hopes in this way to mobilize private-sector investment in sustainable forestry, while addressing its objectives of local

economic development, employment creation, skill development and equitable redress of past discrimination.

2.1.3 Dependence on Forests in South Africa

The forest sector in South Africa provides many benefits and is well positioned to contribute further to economic growth. Important non-wood forest products are medicinal plants, ornamentals, fodder, wild fruits, nuts, vegetables and bush meat. Some 9.2 million rural households depend to some degree on forest goods such as fuel wood and supplementary medicine and food supplies for their well being. Traditional medicines are considered essential for the welfare of black households in South Africa. In South Africa over 60% of all healing takes place outside the formal western-style medical system. There are reported to be 28 million consumers of traditional medicines in South Africa. However, the current supply of medicinal plants from woodlands and forests is not sustainable.

Firewood is still the primary source of energy for heating and cooking in a high percentage of households across the country. Wood supply for rural areas is scarce in many places. Alternatives to the use of wood fuel are therefore being investigated and promoted. The direct use of wood for domestic purposes is an important source of “income” since it acts as a substitute for formal energy and construction resources. The total adjusted direct consumption value of these products was estimated at R396 million, R1,529 million and R842 million for the Eastern Cape, KwaZulu-Natal and the Limpopo Provinces, respectively in 1998. This translates into 31.3%, 21.2% and 59.1% of the gross geographic products for agriculture of the respective provinces. These numbers are significant and constitute a considerable underestimation of the value and contribution of the natural resources in these provinces to the livelihoods of their people and to their economic development.¹

Where local communities have access to forest resources, e.g. for medicinal purposes or fuel wood, arrangements and agreements between the nature conservation agency and local communities have been structured to ensure that the use is sustainable. However, in many districts, local population growth and migration of customary resource management systems, together with overexploitation to meet the needs of poor households, have led to the degradation of forest resources.

Table of Direct use values of natural woodland and forests products: 1998

	Eastern Cape	KwaZulu / Natal	Limpopo Province
Fuelwood ^a	132.99	229.27	89.54
Construction ^a :			
Buildings	12.96	32.04	16.68
Fences and kraals	11.22	39.69	11.30
Carving timber ^a	19.8	-	0.77
Medicinal products ^a	15.84	91.33	49.50
Edible fruits ^a	4.6	3.41	2.81
Edible herbs and vegetables ^a	-	-	93.36
Thatch grass ^a	6.02	60.30	72.60
Weaving reeds ^a	-	0.72	1.78
Other ^a	18.08	135.39	15.43
Total: Products from the wild ^a	221.51	592.15	353.77
Livestock ^a	64.90	314.38	-
Total: All ^a	286.41	904.63	353.77

¹ South Africa's National Biodiversity Strategy and Action Plan, 6 May 2005, pg. 18.

Conservative average ^a			515.60
Adjusted totals ^{a,d}	558.88	985.76	578.69
Adjusted average ^a			707.48
Total use value: Conservative estimate ^b	203.351	1 406.183	433.015
Total use value: Adjusted estimate ^b	396.180	1 528.914	842.573
Adjusted total use value as % of Agriculture GGP	31.3	21.2	59.1
Harvest value: Conservative estimate ^c	61.62	439.43	60.14
Harvest value: Adjusted estimate ^c	120.06	477.79	117.02

Source: Hassan, R.M. 2002. *Stock and flow values of woody land resources*. Pretoria: CEEPA, University of Pretoria.

Notes: a = R/person/year; b = R million; c = R/ha; d = 50% adjustment made for products excluded from the survey

2.2 Policies and Laws Affecting Conservation

2.2.1 Administration

In parallel with the restructuring of forest holdings, the Department of Water Affairs and Forestry (DWAF) has been reorganized and refocused to address its national role with regard to State forests as well as forest and woodland resources on communal and private land. It focuses on Community Forestry, and it launched an audit of the natural closed forests for assigning management responsibilities to provincial authorities wherever appropriate, on the basis of agreed requirements for sustainable forest management. It is actively pursuing formal arrangements for joint forest management with local communities in cases where joint interest is strong.

The Chief Directorate for Forestry, within the Department of Water Affairs and Forestry, has the objective of promoting the optimum development of commercial and community forests and the efficient management of state forest conservation areas. The directorate works closely with stakeholders in the forestry sector. Its functions are:

- to formulate and implement forestry policy;
- to plan, control and promote conservation and community forestry;
- to manage commercial forestry and contribute to the development of the forestry industry.

2.2.2 Policies / Legislation

South Africa's national forest program is the **National Forestry Action Programme (NFAP)**, which is the implementation plan of the 1996 White Paper "Sustainable Forestry Development in South Africa". NFAP was developed in 1997, in partnership with other government departments, the forestry industry, forestry industry labor, communities and other stakeholders. It forms a part of a National Environmental Plan, coordinated by the Department of Environmental Affairs and Tourism (DEAT).

The **National Forests Act (1998)** makes special provision to clarify land tenure and forest rights, including access rights, and creates the instrument of Community Forest Agreements. Principles guiding decision-making state that forests must be developed and managed so as to sustain the potential yield of their economic, social and environmental benefits, and to conserve natural resources, especially soil and water. Special measures are included to protect indigenous forests and trees. Regulations may be made to control the collection, removal, transport, and various other activities relating to parts of or products from protected trees.

The National Veld and Forest Fire Act (1998) requires that land owners put certain measures in place to combat fires, inter alia, through firebreaks and the formation of fire protection associations. Such associations must develop and implement veld (rangeland) fire management strategies, which also have to take the conservation of ecosystems into account.

The **National Forestry Advisory Council**, established according to the terms of the National Forests Act, provides advice directly to the Minister of Water Affairs and Forestry on all matters of forest policy and on the national strategy for sustainable forest development. It includes representatives of the various stakeholders in the forest sector, as well as any other person regarded by the Minister as able to give advice on forestry matters. The council has two permanent committees, the Committee on Sustainable Forest Management and the Committee for Forest Access.

2.2.3 Sustainable Forest Management

The Committee on Sustainable Forest Management's main task is to oversee the development of criteria and indicators for sustainable forest management of indigenous forests and plantations at the national as well as local (forest management unit) levels, based upon the principles contained in the National Forests Act. This process was finalized in 2003. South Africa participates in the Dry Zone Africa Process for the development of criteria and indicators for sustainable forest management.

The private forestry sector in South Africa has made substantial progress in sustainable forest management over the past several years. In 1995, the industry adopted Guidelines for environmental conservation management in commercial forests in South Africa. These have been progressively deployed in the industry, and their implementation has recently been further formalized through forest certification.

The majority of plantation forests are now certified through the Forestry Stewardship Council (FSC). South Africa has the fourth largest number of FSC-certified forest management units in the world. In addition, the NCT Timber Co-operative has developed an approach to facilitate certification of its members, who each have relatively small forest holdings. Sappi Forest, owner of 500 000 ha of estates with plantation forests, manages its forests under the ISO 14001 environmental management system.

The certification of forests will be influenced by the work of the Committee for Sustainable Forest Management, which will identify, where necessary, minimum standards of forest management which would be enforceable through regulations in terms of the Forests Act. Such measures would be linked with the licensing of plantation forests as stream flow reduction activities under the National Water Act.

The privatization of about 70 000 ha of plantations will also advance sustainable management of industrial forests. The new operators are required to achieve certification within five years of signing the lease. DWAF is actively working with other government agencies, such as the national Department of Environmental Affairs and Tourism, with private-sector forestry and with other parties in streamlining and consolidating the regulatory requirements that govern plantation forestry. The goal is commonly agreed standards to be met through a workable system while the forest sector achieves sustainability as well as international competitiveness.

For natural forests on private land, a number of programs have been developed to inform landowners of the value of these resources and to enlist the support of landowners in their protection. These programs are:

- The establishment of conservancies, where a complex of private landowners commit themselves to the joint management of adjacent lands;
- Biosphere reserves, where a statutorily proclaimed protected area forms a component part of a multiple use zone;
- The South African Natural Heritage Site, where sites are designated as meeting certain criteria and where landowners commit themselves to the conservation management of the sites;
- Sites of conservation significance, where features of regional value for nature conservation are designated.

2.2.4 Participation in International Treaties

South Africa has signed and ratified a large number of international conventions, treaties, protocols and other agreements. South Africa ratified the Convention on Biological Diversity in 1995. South Africa is committed to sustainable development and international co-operation on matters relating to environment, development and human rights. Through the signing of the Convention to Combat Desertification, South Africa has committed itself to combating deforestation as a priority. South Africa has also been an active participant in the Intergovernmental Panel on Forests (IPF), the Intergovernmental Forum on Forests (IFF) and the United Nations Forum on Forests (UNFF), and in many of their inter-session activities, and has collaborated with other member countries of the Southern Africa Development Community (SADC) to develop a common position on relevant issues.

2.3 Threats to Forests

Three of the most concerning threats to forests and biodiversity in South Africa are Land Degradation, Land Use, and Habitat Fragmentation; Alien Invasive Species; and Global Climate Change.

2.3.1 Land Degradation, Land Use, and Habitat Fragmentation

Worldwide, loss of habitat is regarded as the foremost cause of loss of biodiversity, and South Africa is no exception. Land transformation is the most significant factor impacting on South Africa's biodiversity today. The agricultural sector has had the most profound impact on natural habitat across South Africa. The clearing of natural vegetation for crop cultivation has impacted on all biomes. South Africa's diversity of species and level of endemism are so high, that virtually any large scale transformation of land can lead to loss of biodiversity.

Since 1994, land degradation has continued in many areas, as reported by members of communities from across the country. The causes are diverse, and include:

- Undermining of traditional as well as legal tenure arrangements for land and resources, resulting in transgression by interlopers and illegal land occupation, which causes people to cease investment in land management or simply to abandon use of the land;
- New infrastructure and other development projects, often not compliant with standards, that occupy prime agricultural land, cause erosion and have other detrimental effects, and
- Diverse other causes, such as the development of cemeteries.

Land degradation is a serious threat to rural livelihoods. It sets off a vicious cycle that eventually undermines all the livelihood assets and is a hazard to the natural capital of the local community (as well as to the larger community) in that the natural resources available to households are degraded. It has costs to the nation at large because it depresses national capital regionally, and ripples through the whole economy. Erosion by water, sheet and gully formation, is the main mechanism of land degradation. Domestic livestock grazing practices cause loss of vegetation cover and changes in plant species composition. Bush encroachment and alien plant invasions are significant forms of veld degradation in a smaller number of magisterial districts, and are largely associated with private or state-managed land. Experts now regard alien invasive plants to be the greatest hazard to land resources. However, there is now clear scientific evidence of accelerated bush encroachment owing to elevated atmospheric carbon dioxide, a trend highly dependent on how veld fires are managed. Deforestation is a significant form of vegetation degradation in several districts of Limpopo Province, in KwaZulu-Natal, and in the Eastern Cape. Deforestation results from the clearing of trees for cultivation, settlement or the use of wood and non-wood forest products. Large areas of woodland (estimated at 12 000 square kilometers) have been converted to fields and settlement sites.²

Many important biodiversity areas overlap with areas of high population density, higher rainfall and agricultural potential, mineral deposits and scenic beauty important for tourism. This can lead to considerable potential for conflicts regarding various decisions over land use allocations and impacts on biodiversity. This does not mean that development should not take place, but rather underscores the need for extensive consultation regarding land use changes, and the need to set aside areas considered irreplaceable for biodiversity conservation and important for ecosystem services. As far as possible, all land uses should integrate biodiversity considerations into management and mitigation plans. Planning frameworks at various levels – national, provincial and local - must take biodiversity

² Department of Environmental Affairs and Tourism 10 Year Review 1994-2004.

into consideration in order to guide development. Provision is made in various pieces of legislation to encourage coordinated and integrated planning, but the legislation is still in the process of being implemented. For example, legislation administered by the Department of Land Affairs and the Department of Provincial and Local Government, requires provincial and local administrations to develop, with public consultation, economic development and spatial plans that integrate social, economic and environmental considerations. Legislation administered by DEAT, specifically the National Environmental Management Act, 1998 (Act 107 of 1998) requires various national departments to develop Environmental Management Plans and/or Environmental Implementation Plans which should indicate how environmental considerations will be incorporated into their operations, while the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) requires DEAT to develop a National Biodiversity Framework, which will coordinate and guide provinces and municipalities with regard to national biodiversity priorities.

2.3.2 Invasive Alien Species

South Africa's Convention on Biodiversity refers to invasive alien species as alien species that threaten ecosystems, habitats or species. The Biodiversity Act of 2004, differentiates between "invasive" and "alien" species. The Act defines an invasive species as "any species whose establishment and spread outside of its natural distribution range threatens ecosystems, habitats or other species and that may result in economic or environmental harm or harm to human health." The Act defines an alien species as "a species that is not indigenous, or is indigenous but has been translocated outside its natural distribution range". Thus, the Act allows for regulations to control species that are indigenous to South Africa, but which may become problematic outside their natural ranges. Such species include plants, animals and micro-organisms – including those impacting on human health.³

Although the introduction and spread of invasive alien species is closely related to land transformation, invasive alien species are such a serious threat to indigenous species, whether plants or animals, that it is necessary to have a focused and targeted strategy to deal with the threat. The problem is likely to be compounded by the effects of climate change.

According to DEAT's 10 year review of Biodiversity and Conservation, the uncontrolled spread of invasive alien species is one of the key threats to indigenous biodiversity. This spread has negative impacts on the economy, in sectors as diverse as health, agriculture, water supply and tourism, and is likely to become much worse with climate change. If South Africa becomes warmer under the influence of global climate changes it seems likely that its ecosystems will become increasingly prone to invasions by more tropical alien species. Extreme climate events such as floods exacerbate the problem, allowing alien plants to move into riverside areas. Ecosystem transformation and fragmentation due to human intervention tends to promote the entry and spread of invasive alien species and this is likely to intensify in future.

The South African Government champions the fight against invasive alien plants, and controls invading alien plants, for a variety of reasons:

- They are the most significant threat to South Africa's biological diversity;
- They threaten the ecological integrity of the natural systems;
- Certain species threaten the water security;
- They compromise the productive potential of land;
- Certain species are responsible for massive erosion problems; and
- They have other negative impacts such as flooding and changes in water quality.

Transformation of habitats due to the uncontrolled spread of invasive alien species is a serious concern in all biomes and ecosystems across South Africa. More than 180 species of invasive alien plants already infest the equivalent of 10 million ha, or 8% of South Africa's surface area, an area that is constantly expanding. Invasive alien species, particularly large plants, have been well studied in South Africa, when compared to other sub-Saharan countries.

³ South Africa's National Biodiversity Strategy and Action Plan, Country Study, 6 May 1995, pg. 101.

South Africa has a long tradition of listing invasive species present in the country and publishing annotated checklists and field guides to these species.

Invasive alien species have very serious negative impacts on the biodiversity and economy of South Africa. Woody invasive alien species, mainly from Australia and South America, use considerably more water than indigenous vegetation, resulting in about 7% of the annual flow of South Africa's rivers being lost. Invasive alien species pose a threat to the survival of thousands of endangered species of plants of all ecosystems in South Africa. They can also increase fire hazards and accelerate soil erosion.⁴

The most direct economic impact of alien invasive species on the forest sector in South Africa is related to the loss or reduced efficiency of production. Alien invasive species, in particular insect pests and diseases, damage trees in all stages of development and affect the ability of both natural and planted forests to meet their management objectives. The introduction and spread of alien invasive species can have major implications for trade which will depend on the policy response of trading partners to news about outbreaks, the importance of the traded commodities, the extent of the damage, and the demand and supply elasticities. In addition, the associated control costs, including the costs of inspections, monitoring, prevention and response, of even just a few species can be enormous. Alien invasive species can also generate substantial costs to the forest sector in lost conservation values and ecosystem services

The first line of defense in combating the spread of invasive species must be prevention. Once an invasive species is firmly established, the costs of control or eradication are high and compete with other demands on scarce financial resources. Due to the extent of the problem in South Africa, containment of existing invasive alien species is also required, with the ultimate goal, where possible, being eradication.

Conflicting Opinions on Invasive Species

Many alien species are highly regarded because of the benefits they can provide, thus creating a quandary because these same species have in some cases become serious threats to forests and the forest sector. Such species are a considerable problem from a management perspective which requires a clear and unbiased analysis of the costs and benefits of their use.

Some examples include the following:

- Many species of Australian *Acacia* have been introduced into the Cape Floristic Region of South Africa for timber, fuelwood and building materials (*A. mearnsii*); for tannins which are used by leather industries (*A. saligna*; *A. mearnsii*); and for sand stabilization (*A. cyclops*; *A. saligna*). Such species have radically altered habitats for wildlife resulting in major changes in the distribution of species, particularly birds, and nutrient cycling regimes in nutrient poor ecosystems due to their ability to fix atmospheric nitrogen. They have also decreased water supplies for nearby communities and increased fire hazards.
- *Leucaena leucocephala* has been widely introduced as a source of timber, fuelwood, fodder and shade and is also used to restore degraded lands, improve soils and stabilize sand. *Leucaena* is a fast-growing, nitrogen-fixing tree that is tolerant of arid conditions and saline soils and as such is highly regarded in arid regions in Asia and Africa. In areas where it has been introduced however, this species tends to form dense impenetrable thickets and readily invades forest margins, roadsides, wastelands, riparian areas and agricultural lands. Also, the toxicity of its seeds and foliage decrease its value as a source of fodder.
- The flatworm *Platydemus manokwari* has been introduced into many areas where it successfully controls populations of another alien invasive species, the giant African snail, *Achatina fulica*. Although successful as a biological control agent, *P. manokwari* is now considered a significant threat to native gastropod species, including rare and endemic species, in the areas where it was introduced.

⁴ South Africa's National Biodiversity Strategy and Action Plan, 6 May 2995, pg. 20.

As forests are complex ecosystems requiring balanced and sustainable management, one of the main challenges today is to reconcile the often conflicting priorities of those who depend on them for a whole range of goods and services. It is also necessary to take into account the ways in which forests affect and are affected by policies outside the forest sector. Such a comprehensive approach requires innovative partnerships and better linkages at all levels and across sectors.

2.3.3 Global Climate Change

Across the African continent, climate change is likely to accentuate social and ecological vulnerability and limit capacity to adapt to changes in ecosystem functioning. These changes have serious economic implications. Vulnerability is high due to heavy reliance on rain-fed agriculture, frequent floods and droughts, and poverty. Adaptive capacity is low because of limited financial resources, skills and institutional capacity. Plant richness in South Africa is generally correlated with climatic variables and environmental variability, and it is expected that changing climate could have significant impacts on plant diversity in the country. The ability of plants to change their geographic distribution in response to a changing climate is constrained by their possible requirements for specific soil types and by unsuitability of land due to human transformation.

A South African country study on climate change, published in 1999, used bioclimatic modeling techniques to assess vulnerability and adaptation of plant biodiversity. This predicted that the area amenable to the country's biomes is likely to shrink to about 38 – 55 % of their current area. The largest losses are expected to occur in the western, central and northern parts of the country. These changes include the almost complete loss or displacement of the Succulent Karoo biome along the west coast and interior coastal plain, an extensive eastward shift of the Nama-Karoo biome across the interior plateau, and contraction of the Savanna biome on the northern borders of the country. For maps of the Succulent Karoo, see Annex 1. Higher levels of atmospheric carbon and reduced levels of frost are expected to encourage tree growth and an expansion of the Savanna biome into the Grassland biome. Although the Fynbos biome is not expected to contract much in terms of area, many species are likely to be lost, due to more frequent and more intense fires, and loss of animal species important for pollination and seed dispersal. The mountainous areas may provide refuges for some species, if they are able to migrate to new areas. Species composition is likely to change across all biomes, leading also to major structural vegetation changes, especially in the Grasslands biome.⁵

⁵ South Africa's National Biodiversity Strategy and Action Plan, Country Study, 6 May 2005, pg. 108.

3) STATUS OF BIODIVERSITY

Biological diversity is the variety and variability of living organisms. The earth's biodiversity consists of genes, species, and ecological processes making up terrestrial, marine and other aquatic ecosystems that both support and result from this diversity. All of these elements of living systems interact with each other to produce the web of life on earth—the biosphere—a whole much greater than the sum of its parts (“ Biodiversity Conservation: A Guide for USAID Staff and Partners” USAID, 2005)

3.1 South Africa Biodiversity Overview

The diversity of peoples, topography, climate and geology of the country ensures a wide diversity of landscapes, scenic vistas, lifestyles and knowledge. These natural and cultural resources underpin a large proportion of the economy, and many urban and rural people are directly dependent on them for jobs, food, shelter, medicines and spiritual well being.

South Africa is considered one of the most biologically diverse countries in the world, largely due to the species diversity and endemism of the vegetation. The major natural systems of the country have been classified in terms of the biome concept, based on dominant plant life forms, correlated with climatic variations. Biomes found in South Africa are Desert, Fynbos, Succulent Karoo, Nama Karoo, Grassland, Savanna, Albany Thicket, Forest and Wetland vegetation.

South Africa occupies only 2% of the world's surface area, but is home to nearly 10% of the world's plants and 7% of the world's reptiles, birds and mammals. South Africa is home to approximately 24 000 plant species. Levels of endemism are high, especially for plants. Plant genetic diversity is also unusually high, contributing to the potential for developing new medicines, crops, cosmetics, ornamental plants and other useful products.⁶

South Africa's faunal diversity is also high relative to the land surface area. South Africa is home to an estimated 5.8% of the global total of mammal species (close to 300 species), 8% of bird species (more than 800 species recorded), 4.6% of reptile species (288 species) and 5.5% of the world's known insect species (50 000 species have been recorded in South Africa, but an estimated further 50 000 have not yet been described). In terms of the number of endemic species of mammals, birds, reptiles and amphibians, South Africa ranks as the fifth richest country in Africa and the 24th richest in the world. Marine biodiversity is also high. There are over 10 000 species of marine plants and animals in South African waters, which is almost 15% of global species, with 12% of the marine species being endemic to South Africa.⁷

Three globally recognized hotspots (areas of high biodiversity, which are under serious threat) are found in South Africa: the Cape Floristic Kingdom (equivalent to the Fynbos biome), Succulent Karoo (shared with Namibia) and the Maputaland-Pondoland-Albany centre of endemism (Maputaland-Pondoland is shared with Mozambique and Swaziland).

3.2 Species Diversity

The first assessment of the conservation status of certain southern African plants was published in the 1980s, with a comprehensive assessment published only in 1996. The 1996's southern African plant Red Data List (RDL) was updated in 2002, with a particular emphasis on socially and economically important species, species known to be unsustainably harvested, and species of special interest. However, about 75% of the plants listed in the 1996 RDL have not been updated. Of the 948 taxa assessed, 414 are threatened with extinction, while 108 are data deficient. Fifteen are considered to be Extinct while 19 are Critically Endangered (all are endemic to South Africa). The major threatening processes are noted to be habitat transformation due to agricultural activities, urban development (especially coastal development), mining, industry and roads, the spread of invasive alien species, subsistence harvesting (especially of medicinal plants) and illegal collection for commercial trade (particularly of groups such as

⁶ South Africa's National Biodiversity Strategy and Action Plan, 6 May 2005, pg. 14.

⁷ South Africa's National Biodiversity Strategy and Action Plan, 6 May 2005, pg. 14.

cycads and succulents). Climate change is recognized as having potentially very serious consequences for South Africa's vegetation, especially the Succulent Karoo and Grassland biomes.

The most comprehensive assessment of the conservation status of South Africa's mammalian species was made in 2002/03. The Red Data Book of Mammals of South Africa indicates that of the 295 species and sub-species of South African mammals evaluated, 12% are endemic, 57 species (19.3%) are considered threatened (Critically Endangered, Endangered or Vulnerable), while a further 38 (12.8%) are Near Threatened. Of the Critically Endangered and Endangered species, 70% and 33%, respectively, are endemic to South Africa. Almost a fifth of all mammal species could not be assessed, due to data deficiencies. The main threatening processes impacting on mammals are habitat loss and land transformation due to deforestation, agriculture, commercial timber planting and urban and industrial development as well as poisoning, pollution and hunting.

An assessment of the status of birds in southern Africa indicates that two species are Extinct in the region while 59 species are threatened and 64 are Near Threatened.

The Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland, published in 2004 indicates that 20 of the 114 recorded species of frogs (17%) are threatened and a further 5 species are Near Threatened. Eight species are data deficient. Four species of frogs are Critically Endangered.

3.3 Ecosystems Diversity

Assessments of biodiversity in South Africa have mainly focused at the species level in the past. The first comprehensive national assessment of the status of biodiversity at the ecosystem level was carried out in 2004, as part of the National Biodiversity Strategy and Action Plan process. The National Spatial Biodiversity Assessment (NSBA) used systematic biodiversity planning techniques to determine the conservation status of ecosystems and national priority areas for conservation action and more detailed planning. It has four components, dealing with terrestrial, river, estuarine and marine environments.

3.3.1 Terrestrial Environment

The spatial biodiversity assessment of South Africa's 440 terrestrial ecosystems showed that 34% are threatened. Of these, 5% are Critically Endangered (mainly in the Fynbos and Forest biomes), 13% are Endangered (mainly in the grassland and savanna biomes) and 16% are Vulnerable (mainly in the Fynbos and Grassland biomes). Although close to 6% of South Africa's land area falls within formal protected areas, the protected area network is skewed towards certain biomes such as savanna, leaving biomes such as grasslands under-conserved.

3.3.2 River Environment

The status of river ecosystems in South Africa is cause for concern. The spatial biodiversity assessment of South Africa's 120 river signatures found that 82% are threatened. Almost half, or 44%, are Critically Endangered, while 27% are Endangered, 11% are Vulnerable and 18% are Least Threatened. River ecosystems in South Africa are poorly protected. South Africa is a water-poor country and all freshwater systems are heavily utilized.⁸

The declining status of South Africa's ecosystems is cause for considerable concern, since international and national research has shown that degradation of ecosystems leads to a reduction in ecosystem services, such as a reduced capacity to generate clean water and a loss of food production due to land degradation. These losses are often felt disproportionately by the urban and rural poor, who are most exposed to the effects of pollution and who rely directly on the natural environment for their livelihoods. This is a concern in all regions of the world and particularly in sub-Saharan Africa, where the condition and management of ecosystem services is a dominant factor influencing prospects for reducing poverty. The degradation of ecosystem services is already considered a significant barrier to achieving the Millennium Development Goals and the harmful consequences of this degradation could grow significantly worse in the next 50 years, according to the Millennium Ecosystem Assessment completed in 2004.

⁸ South Africa's National Biodiversity Strategy and Action Plan, 6 May 2005, pg 16.

3.3.3 Estuarine Environment

South Africa has 259 estuaries, which can be divided into five different types: estuarine bays permanently open estuaries, river mouths, estuarine lakes and temporarily closed estuaries. These various types are distributed across three zones, namely the cool temperate zone on the west coast, the warm temperate zone on the south coast, and the subtropical zone on the east coast. This classification gives us 13 estuarine zonal-types or groups. Of these groups, 3 are Critically Endangered and 5 are endangered. Only two estuarine groups are considered well protected.

Estuaries--Located between rivers and the sea, estuaries are subject to a range of physical and chemical processes because of pollution from runoffs, which contain loads of nutrients (Nitrogen, Phosphorus, potassium and heavy metals) from nearby industries and other human actions. Of the 258 estuaries along the coast, 38% are regarded as being in poor to fair condition, while the rest are in reasonable condition. Estuaries along the South African coast can be divided into subtropical, warm temperate and cool temperate zones, with subtropical estuaries having higher biodiversity. Endemism in South Africa estuaries, particularly the warm temperate and cool temperate estuaries found along the coast of the Western Cape and Eastern Cape, is high. The top 10 estuaries ranked in terms of conservation importance, are the Knysna, Berg, Olifants, Kosi, St Lucia, Swartvlei, Gariep, Bot/Kleinmond, Klein and Mhlathuze estuaries.

3.3.4 Marine Environment

South Africa has a long (3,000 km) coastline and marine and coastal biodiversity is high. The coast, defined as the area within 60 km of the sea, supports 30 % of the human population of South Africa and has a high population density. Globally important breeding sites for the African black oystercatcher and other threatened endemic species occur on the shoreline.

Three oceans meet around the coast of South Africa, the Indian, Atlantic and Southern Oceans. Seventeen small off-shore islands are located around the coast and are globally important breeding sites for birds, including African penguin and Cape gannet. The fishing industry is locally extremely important, supporting some 27,000 fishermen. However, stocks of linefish, abalone and lobster are declining. Abalone in particular faces extinction through rampant poaching.

The sub-Antarctic Prince Edward Islands, situated 2 300 km southeast of Cape Town, are South African territory and support millions of pairs of breeding seabirds. Marion Island (4,500 ha) and the Prince Edward Islands (29,000 ha) were declared conservation areas in 1995.

Marine and Coastal Management of the Department of Environmental Affairs and Tourism has introduced a revised quota system for fisheries, which sets catch limits according to scientific assessment of the resource, while ensuring more equitable access by historically disadvantaged communities. A number of fisheries-related policies have been developed, such as on abalone, octopus and recreational fishing. In December 2001 regulations were promulgated limiting vehicular access to beaches. More than 50 Marine Protected Areas have been established, in terms of section 43 of the Marine Living Resources Act (Act 18 of 1998). A programme is underway to expand the number and extent of Marine Protected Areas, with a target of 20% of the coastline by 2010. However, despite these gains, human and financial resources are limited and poaching is a problem, in terms of both deepwater fisheries and coastal species such as crayfish (rock lobster) and abalone.

The spatial biodiversity assessment of the marine environment showed that 65% of South Africa's 34 marine biological zones are threatened, with 12% being Critically Endangered, 15% Endangered, 38% Vulnerable and 35% Least Threatened. Marine protected areas tend to be located close to the coastline, while offshore biological zones are generally poorly protected.⁹ Marine biological zones on the west coast are least protected and most threatened.

⁹ South Africa's National Biodiversity Strategy and Action Plan, 6 May 2005, pg 16.

3.4 Use of Biodiversity in South Africa¹⁰

In South Africa, terrestrial, inland water, coastal and marine ecosystems and their associated species are widely used for commercial, semi-commercial and subsistence purposes through both formal and informal markets. While some of this use is well managed and/or is at levels within the capacity of the resource for renewal, much is thought to be unsustainable. "Use" in this case refers to direct use, such as collecting, harvesting, hunting, fishing, etc. for human consumption and production, as well as more indirect use such as ecotourism.

There is generally good information available on formal commercial industries based on biological resources (e.g. hunting, game farming, ecotourism and organized forest timber, wildflower and fern harvesting) because they are regulated, and managed through permit and licensing systems. This trade is largely regulated through the provincial conservation agencies. Wildlife ranching (game farming) is an important economic activity in the savanna biome, particularly in Limpopo (where more than half of all game farms are located) and the Northern Cape. Game farming is also growing rapidly in the Eastern Cape. There are an estimated 9,000 privately owned game ranches in South Africa, covering an area of more than 17 million hectares. 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) at 52 auctions held throughout South Africa. Hunting, however, is much more profitable than the sale of wild game. Professional hunting is estimated to support 70,000 jobs and generates R1 billion per annum from trophy hunting fees, taxidermy, accommodation and venison.

As with game farming, the farming of wildflowers to service the horticultural industry has become big business in some areas, especially in the Western Cape. While some indigenous species are cultivated as with any other agricultural crop, selected fynbos plant species are also harvested from the wild for commercial purposes. Harvesting is done according to international certification standards based on currently known sustainable levels. A number of fynbos plants yield traditional beverages (such as rooibos tea and honeybush tea), aromatic oils or remedies (such as buchu, hoodia and devil's claw) which have been commercialized. The market for wildlife and wildflowers has had positive impacts and has led to an increase in the area of land under conservation management.

South Africa is actively engaged in bioprospecting and the past decade has witnessed a flurry of activities in the exploration of local biodiversity for commercially valuable genetic resources and biochemicals. This is due largely to the country's extraordinarily rich and unique biodiversity and well-developed research and institutional capacity, which combined provide an extremely favorable environment for bioprospecting, as well as for other approaches based on trading and using biodiversity for commercial gain.

The marine fishing sector is an important economic sector in South Africa. About 600 000 tons of marine resources are harvested annually by 27 000 South African fisherman, with a value of approximately R2.5 billion. The value of the entire fishing industry, incorporating commercial, recreational and subsistence fishing, is estimated to be R4.5 billion per annum. As with terrestrial resources, the commercial sector is regulated, coordinated and well researched, but there is limited information on the subsistence sector. Strict allocation of fishing licenses linked to scientific assessment of Total Allowable Catches has enabled some pelagic fisheries to recover. Despite the strict controls, certain commercial sectors (particularly abalone and line-fishing) are under severe threat and priority actions are needed to address this. Certain rocky intertidal invertebrates are over-exploited by subsistence and semi-commercial harvesting. Sea birds (especially Albatross, nine species of which are listed as Endangered, Vulnerable or Near Threatened) suffer high mortality during longline fishing activities for hake, tuna, swordfish, Patagonian toothfish and sharks. These indirect impacts of fishing are being monitored and addressed. A national plan to reduce the incidental catch of seabirds in longline fisheries was launched in 2002 but levels of success are as yet unknown. Poaching is a significant problem for some marine resources, particularly abalone. Coastal and estuarine resources are particularly difficult to manage, due to the extensive coastline and overlapping jurisdictions.

3.4.1 Difficulty in Regulating Biodiversity Use¹¹

¹⁰ Information for this entire section was taken from South Africa's National Biodiversity Strategy and Action Plan, 6 May 2005, pgs 17-19.

The absence of legal and administrative mechanisms to control access to South Africa's genetic resources and to set conditions for benefit-sharing has in the past been a key constraint towards achieving more meaningful benefit-sharing. South Africa's legislation with respect to Access and Benefit Sharing is currently in a transition, and new legislation encapsulated in the Biodiversity Act has yet to be implemented.

There is considerable lack of understanding of subsistence use of terrestrial and coastal resources in South Africa except that it is known to be extensive and in many cases is thought to be unsustainable. Poverty and unemployment is high, particularly in the communal areas, and natural resource harvesting is often a significant component of livelihood strategies. Permits are required to collect resources such as thatch, reeds, bulbs, etc. from protected areas; these regulations differ from province to province. However, the existence of regulations does not ensure sustainability. Resource use in communal areas and use of resources from protected areas is extensive but difficult to quantify. A wide variety of resources are harvested for food and a subsistence income, from multiple food types, material for craft production, building material, fuel and medicinal plants. In many cases, subsistence use is undertaken by very poor people to satisfy daily needs or to collect funds to do so. One of the biggest constraints is a lack of research and monitoring, both to determine sustainable quotas and to ensure compliance. There are very few examples of resource monitoring to assess sustainability of terrestrial resource use.

It is well known that informal resource use is an essential element of the livelihood strategy of many poor rural communities, especially in the savanna and forest biomes. Wood, reeds and thatch are widely used for housing and shelter of livestock, many species of plants are collected for food and medicines, while "bushmeat", birds and insects also help poor communities meet their nutritional requirements. Natural resources provide very important dietary supplements to rural communities, particularly during times of hardship. Wetlands play an important role in the livelihood strategies of rural communities, including cultivation, winter grazing and harvesting resources such as reeds, thatch and fish, but many are in poor condition.

3.5 Policies and Laws Affecting Biodiversity Conservation

The peaceful transition in South Africa presented a unique opportunity for redress and recovery. Starting with the constitution, new policies and legislation have been developed across all sectors, with full public consultation and participation. The fundamental objectives of the policies and legislation are to secure sustainability and equitable access to resources. The National Environment Management Act (Act 107 of 1998) notes: "The environment is held in public trust for the people. The beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage." It is regarded as framework legislation relating to biodiversity and conservation; its objectives are further defined and supported by the Protected Areas Act and Biodiversity Act.

3.5.1 Policies

Some of the key national legislation on biodiversity is listed below; however, this list is not comprehensive.

The National Water Act, (Act 36 of 1998) requires Catchment Management Agencies to develop Catchment Management Plans. The Act also establishes the Reserve, including the Ecological Reserve, in order to meet basic human needs and the ecological requirements of freshwater ecosystems.

The Marine Living Resources Act (Act 18 of 1998) was introduced on 1 September 1998 by the Department of Sea Fisheries. This legislation has been developed through extensive participation by user groups and interested parties of the marine environment. The Act consolidates the Sea Fisheries Act and provincial nature conservation ordinances which previously regulated marine resource utilization, and also provides a number of new regulations. It also permits the extension of certain rights to undertake commercial or subsistence fishing, engage in mariculture or operate a fish-processing establishment.

¹¹ Information for this entire section was taken from South Africa's National Biodiversity Strategy and Action Plan, 6 May 2005, pg. 18.

The National Environmental Management: Biodiversity Act of 2004 aims at providing a regulatory framework to protect South Africa’s valuable species, ecosystems and its entire biological wealth. It implements the White Paper on the Conservation and Sustainable Use of South Africa’s Biological Diversity and multilateral agreements like the Convention on Biological Diversity. It provides the framework, norms and standards for the conservation, sustainable use and equitable benefit-sharing of South Africa’s biological resources. It facilitates the transformation of the National Botanical Institute into the South African National Biodiversity Institute (SANBI). It also enables the development of a National Biodiversity Framework, which will provide for an integrated, coordinated and uniform approach to the conservation and sustainable use of biodiversity in South Africa.

The National Environmental Management: Protected Areas Act of 2004 provides for the protection and conservation of ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes, seascapes and the management thereof. The Act envisages a national register of protected areas, with a simplified classification system of Special Nature Reserves, National Parks, Nature Reserves and Protected Environments. It brings in the concept of biological diversity protection and ecosystem management for the first time. Biodiversity, conservation and ecosystem management are noted as important aims in policy and legislation governing marine and coastal resources, freshwater and natural forests. It also proposes a new system of protected areas linking various kinds of protected environments to replace the existing fragmented system. Based on experience with Biosphere Reserves, and informed by the new bioregional approach to conservation (linking the protected area network along mountains, rivers, wetlands, the coastline and other areas of natural vegetation), the Act will result in an interlocking system of protected areas that explicitly encourage the inclusion of private land. It recognizes that people are the custodians of the land and they need to be involved in the management of the protected land and should benefit from it. It caters for concurrent competence in the management of protected land. For example, an area with National Park status can now be managed by another agency, for example a provincial parks authority. Steps have been put in place to make sure standards are upheld. South Africa is a signatory to the Convention on Biological Diversity (CBD).

The White Paper on the Conservation and Sustainable Use of South Africa’s Biological Diversity (July 1997) is guided by conservation of biodiversity, sustainable use of biological resources, and equity. The key goals of the policy are conservation of the diversity of landscapes, ecosystems, habitats, communities, populations, species and genes; sustainable use of biological resources; and minimization of adverse impacts on biodiversity. South Africa is one of the only two countries in the world to have promulgated legislation specifically related to the World Heritage Convention (the other being Australia). The country’s **World Heritage Convention Act (Act 49 of 1999)** notes that all World Heritage Sites must have an integrated management plan in place, to ensure cultural and environmental protection and sustainable development of the site.

Due to capacity limitations, the various pieces of legislation (listed above and in Section 2.2.2) have not yet been fully implemented, particularly at provincial and local spheres of government. In addition, the Government of South Africa is currently defining the roles and responsibilities of various government departments with overlapping responsibilities. (Republic of South Africa NBSAP, 2005)

3.6 Biodiversity “Hotspots” in South Africa

Short descriptions of the three areas that are listed as biodiversity “hot spots” (areas of high biodiversity, which are under serious threat) in South Africa follow:

3.6.1 Maputaland-Pondoland-Albany Hotspot, which stretches along the east coast of southern Africa below the Great Escarpment, is an important center of plant endemism. The region’s warm temperate forests are home to nearly 600 tree species, the highest tree richness of any temperate forest on the planet. The celebrated, bird-of-paradise flower is a distinctive hotspot endemic.

The rescue of the southern subspecies of white rhinoceros from



© Patricio Robles Gil/Sierra Madre
The Tembe Elephant Reserve located in the eastern South Africa in the Maputaland-Pondoland-Albany Hotspot.

extinction, which took place in this hotspot, is one of the best-known success stories in African conservation. Regrettably, much of the once expansive grasslands and forests in which many of the large mammals dwell is facing increased threats from industrial and local farming and also the expansion of grazing lands.

Hotspot Original Extent (km ²)	274,136
Hotspot Vegetation Remaining (km ²)	67,163
Endemic Plant Species	1,900
Endemic Threatened Birds	0
Endemic Threatened Mammals	2
Endemic Threatened Amphibians	6
Extinct Species†	0
Human Population Density (people/km ²)	70
Area Protected (km ²)	23,051
Area Protected (km ²) in Categories I-IV*	20,322

3.6.2 The Succulent Karoo Hotspot--Stretching along the Atlantic coast of Africa, from southwestern South Africa into southern Namibia, the Succulent Karoo hotspot covers 102,691 square kilometers of desert. Some pockets of this hotspot are scattered within the Cape Floristic Region Hotspot, which borders it to the south. In fact, the Succulent Karoo exhibits a particularly strong floristic affiliation with the Cape Floristic Region, to the point that some have argued convincingly for the region's inclusion as part of a greater Cape Flora.

The Succulent Karoo, which consists primarily of winter rainfall desert, is one of only two hotspots that are entirely arid (the other is the newly recognized Horn of Africa). The region is commonly divided into two zones. The first, Namaqualand, extends along the west coast of South Africa and southern Namibia. It is a winter rainfall desert with a mild climate moderated by cold Atlantic Ocean currents. The mild climate has contributed to the evolution of a rich array of endemic species. The second zone, the Southern Karoo, experiences peaks of rainfall in spring and autumn and has more extreme climate variations than the Namaqualand desert. Dwarf shrubland dominated by leaf succulents is found throughout the hotspot.



© C. Paterson-Jones
The rare *Aloe pilansii* enhances the beauty of the Succulent Karoo landscape.

These drought-adapted plants have thick, fleshy leaves or stems for water storage. In the Succulent Karoo, there are about 1,700 species of leaf succulents, and this dominance is unique among the world's deserts. The recent and explosive diversification of the Mesembryanthemaceae, the largest group, has been described as an event unrivaled among flowering plants. Stem succulents are also found here (around 140 species), as are seasonal bulbs and annuals that display magnificent spring blooms in the open spaces between the shrubs, particularly during the spring in the Namaqualand. Hilly areas in the southern Karoo are dotted with evergreen shrubs and tall aloes.

Hotspot Original Extent (km ²)	102,691
Hotspot Vegetation Remaining (km ²)	29,780
Endemic Plant Species	2,439
Endemic Threatened Birds	0
Endemic Threatened Mammals	1
Endemic Threatened Amphibians	1
Extinct Species†	1
Human Population Density (people/km ²)	4
Area Protected (km ²)	2,567
Area Protected (km ²) in Categories I-IV	1,890

3.6.3 Cape Floristic Hotspot--coastline along the far southwestern tip of the African continent, the 78,555 km²: Cape Floristic Region hotspot is located entirely within the borders of South Africa. It is one of the five temperate Mediterranean-type systems on the hotspots list, and is one of only two hotspots that encompass an entire floral kingdom (the other being New Caledonia).

The vegetation on the Cape is dominated by fynbos (an Afrikaans word for “fine bush”), a shrub land comprising hard-leaved, evergreen, and fire-prone shrubs that thrives on the region's rocky or sandy nutrient-poor soils. Although the region was once covered by lush rain forest, climate changes around 15 million years ago resulted in the retreat of the forests. Trees were replaced by flammable sclerophyllous plants, and periodic fires became an integral ecosystem process.

The Cape also includes several non-Fynbos vegetation types. Of these, *Renosterveld* (Afrikaans for “rhinoceros veld,” referring to the presence of the black rhinoceros (*Diceros bicornis*), that used to browse there but is now extinct in this region) is the most extensive, covering some 20 000 km². This plant community comprises a low shrub layer, usually dominated by the renosterbos (*Elytropappus rhinocerotis*), with a ground layer of grasses and seasonally active bulbs.



Today, trees are very rare in pristine Cape landscapes and true forests occupy a mere 3,850 km², mostly in moist, fire-protected sites on the southern coastal forelands and lower mountain slopes. The Cape forests, 10-30 meters tall, are essentially outliers of the Afromontane forests of the high mountains of tropical Africa.

© Conservation International, photo by Haroldo Castro. A tree pincushion (*Leucospermum conocarpodendron*) near the South African coast is typical of the Cape's exquisite fynbos vegetation.

3.7 Threats to Biodiversity

In many areas it is not the direct use of biological resources that is threatening their sustainability, but rather indirect pressures such as changing land use and associated clearing of natural vegetation. Virtually all ecosystems and habitats in South Africa have been modified or transformed by human activities. A high proportion of species in these areas are found nowhere else on earth. Three key, inter-related threats are habitat removal, invasive alien species and climate change. The introduction and spread of invasive alien species is closely correlated with human activities. Land degradation, clearing of indigenous vegetation, invasion of land by alien species and climate change all interlink to create synergies that exacerbate and compound the impact on biodiversity, leading in turn to further degradation and loss. These three threats have already been discussed in Section 2.3 of this report. This section will

only cover supplementary material. See Section 2.3 for information on habitat change, invasive alien species, and climate change. This section will elaborate on additional threats.

3.7.1 Threats to Freshwater Ecosystems

Although land degradation and over-harvesting of terrestrial resources is a concern in many areas, it is South Africa's freshwater ecosystems which are under most pressure. South Africa is a water poor country and freshwater is a scarce resource. Most river systems in South Africa have been transformed, both physically and in terms of water quality. The poor condition of most inland aquatic ecosystems is a direct reflection of poor land and water management and development within the catchment area. Thus, the greatest threat to aquatic biodiversity is not merely as a result of unsustainable use levels of the resources, but rather because of decreasing freshwater availability and widespread ecosystem degradation. Aquatic habitats are impacted on by overgrazing, invasive alien species, informal settlements, urban development and industrial and agricultural pollution. Riparian activities (sand mining, impoundments, cultivation) also threaten aquatic habitats and associated biodiversity. The movement of fish (indigenous and exotic) to new catchments severely threatens biodiversity of aquatic systems. The movement of fish between catchments requires strict control and strong enforcement.

3.7.2 Threats to Coastal Ecosystems and Coral Reefs

Fisheries policies have been completely overhauled to set quotas within sustainable limits and increase fines and penalties for over fishing and poaching of marine species. At the same time, the permit system has been revised, to ensure that there is more equitable access to the resource by those people and communities previously discriminated against by apartheid legislation. However, the destructive practice of cyanide and blast fishing, which are currently being practiced in many parts of South Africa, especially in fresh water ponds is destroying the carrying capacity of lakes and other water ponds and the coasts.

3.8 Overall Challenges for Conservation Efforts in South Africa

3.8.1 Budgetary Constraints

Because environmental management is a function that has been developed since 1994, the Government has a limited and inadequate budget to handle it, which must be expanded if work is to be carried out effectively. This is not only so at a national Government level, but also in the provincial and local spheres of government, where the bulk of the implementation of environmental management, including Environmental Impact Assessments and air quality management take place.

3.8.2 Coordination

In terms of the constitution, environment is a concurrent function that is shared between the **national** and the **provincial** spheres of government and with specific elements of its management being allocated to the **local government**. This constitutional dispensation requires that all spheres of government work in close cooperation with each other, if environmental management is to take place effectively. A great deal of work has taken place over the past decade to begin to achieve this. However, much more must be done if the challenge of implementation of the new environmental legislation is to be fully met.

Likewise, successful implementation will also require more streamlined relationships with industry, labour and other key stakeholders in civil society in order that there is a unified national intention to ensure that South Africa as a country manages its environment in the most responsible way and according to best practice principles. Because roles and responsibilities for the environment are shared between a number of national departments and agencies as well as all three spheres of government, and because the activities of all sectors, the private sector and citizens impact significantly on biodiversity, the principles of cooperative governance and partnerships are essential for the effective implementation of policy and laws. This may possibly be one of the biggest implementation hindrances, that has led to biodiversity outside of the protected area system effectively "falling through the cracks" or unaddressed completely.

These challenges of implementation will set the agenda for the focus of environmental management over the next coming decade. The progress thus far is already a reflection of the huge commitment and enormous quantity of work that all stakeholders in the environmental management sector have undertaken in the past decade.

3.8.3 Capacity

There is a pressing need to ensure coordination and cooperation and to train and mentor young emerging scientists. Resources are particularly limiting for identification and monitoring programmes for invertebrates, lower order plants, microbes and fungi. SAFRINET(Southern Africa Network for Taxonomy), the SADC-wide Southern African sub-regional Network of BioNET-International, the Global Network for Taxonomy (www.bionet-intl.org), was established in 1996 to help to overcome this lack of capacity. However, SAFRINET has been unable to raise the funds required to implement the necessary capacity building programmes.

3.8.4 Need to Factor in Economic Value of Biodiversity

Poverty alleviation and biodiversity conservation are themes of the Government agenda that should be seen as integrated solutions, rather than working against each other. A problem is that, the usual indicator of economic growth, GDP does not factor biodiversity into the equation. South Africa is experiencing economic growth, but without an increase in jobs, with worsening poverty, and with declining biodiversity. Expenditure on sectors that negatively impact biodiversity is orders of magnitude higher than expenditure on sectors that conserve biodiversity. It is essential that the economic value of biodiversity and biological resources be valued and taken into account in development decisions. Although Government policy has generally moved away from subsidies, for example to agriculture, many subsidies and incentives exist for trade and industry, especially for export-oriented industries. There are no incentives for conservation and sustainable use of biodiversity.

Important Initiative by the South African Government: The 2002 plastic bag agreement was the most high profile of DEAT's waste minimization initiatives because of the extent of public involvement and debate. In essence, it challenged the growing 'throwaway' culture prevalent that threatens sustainable development. By setting standards for the thickness of plastic bags and ensuring a voluntary system of charging by large retailers until a mandatory levy could be instituted on plastic bags, the costs of waste were for the first time ever, made visible to the public at large. The initiative reduced the amount of plastic bags littering the landscape, filling landfills and choking rivers and animals. It also brought home to consumers the extent of their input into the plastic waste stream and vividly brought home the 'polluter pays' principle. As with the plastic bag agreement, specific waste streams have been identified for stricter control with the aim of minimizing pollution and reducing the depletion of scarce non-renewable resources. Other identified waste streams that are receiving immediate attention from the South African Government, are tires and glass. It is encouraging to note that in these two areas, the industries themselves have taken the initiative to put plans in place to address their waste streams.

4) INSTITUTIONS INVOLVED IN CONSERVATION OF FORESTS AND BIODIVERSITY¹²

4.1 Government of South Africa

Several government departments have a role in conservation and biodiversity as well as provincial and local government. Some of the key government organizations are listed below.

The **Department of Environmental Affairs and Tourism (DEAT)** has 5 branches:

- Environmental Quality and Protection (dealing with pollution, waste management and regulatory services, including impact management);
- Biodiversity and Conservation (dealing with protected areas, transfrontier conservation, natural resource use and management, bioprospecting, biodiversity planning, trade and regulation);
- Marine and Coastal Management (dealing with marine and coastal matters, including fisheries and Antarctica);
- Chief Operating Officer: this includes sections that deal with Corporate Affairs; Poverty Relief; Communications; Environmental Capacity Building; Planning and Co-ordination (including State of Environment Reporting, International Liaison, Sustainable Development Coordination, and Governance Planning and Conciliation); and
- Tourism (mainly tourism development and support).

South African National Biodiversity Institute (SANBI): SANBI's primary functions include the following:

- Monitoring and reporting on the status on the Republic's biodiversity, including the conservation status of all listed threatened or protected species and listed ecosystems, and the status of all listed invasive species;
- Monitoring and reporting on the impacts of genetically modified organisms released into the environment, including the impact on non-target organisms and ecological processes, indigenous biological resources and the biodiversity of agricultural species;
- Coordination and promotion of taxonomy;
- Management of national botanical gardens;
- Environmental education; and
- Collation of research, management of databases and information sharing on sustainable use of biological resources.

The National Botanical Institute (NBI) was established in terms of the Forests Act (122 of 1984), with responsibility for National Botanical Gardens. The NBI is well known as a leader in horticulture, botanical education and research with respect to the indigenous flora of southern Africa. The NBI has served as the primary statutory institution devoted to the study, conservation, display and promotion of the country's indigenous floral heritage. It collaborates with multiple government departments and aligns its research activities to the international environmental conventions of which South Africa is a signatory.

South African National Parks (SANParks): SANParks's primary mandate is the establishment, development and management of national parks, including tourism management and research and monitoring. In addition SANParks is increasingly concerned with economic development and engagement with neighboring communities.

¹² Information for this entire section was taken from the South Africa Country Study, Situational Assessment Undertaken to Inform South Africa's National Biodiversity Strategy and Action Plan (NBSAP), May 2005.

Greater St Lucia Wetlands Park Authority: Established in 2003 terms of the World Heritage Convention Act (49 of 1999), the Greater St Lucia Wetlands Park Authority is a statutory body under DEAT, and is the first authority to be established specifically to manage a World Heritage Site in South Africa.

Department of Water Affairs and Forestry: The national Department of Water Affairs and Forestry (DWAF) is responsible for legislation regarding water resources and forest resources. DWAF is responsible for legislation governing protected areas such as state forests and mountain catchment areas, although management authority has in many cases been delegated to SANParks or to the relevant provincial agency.

The Department of Agriculture (DoA) is responsible for national food security and the management of agricultural resources, including soil and agrobiodiversity, and a key roleplayer in the promotion of rural development. Since more than 80 % of the land area of the country is zoned for agricultural use, the DoA has a significant role to play in the conservation and management of biodiversity. Each province has a provincial department which implements agriculture policy.

The **Department of Land Affairs (DLA)** is responsible for land-related functions, such as:

- Deeds registration
- Cadastral surveys
- Surveys and mapping (including National Land Cover)
- Spatial planning, land-use management and spatial information
- Land reform, including implementation, management and support services.

The **Department of Science and Technology (DST)** funds several key public entities, with supporting functions to biodiversity research, such as the National Research Foundation (NRF) and the Innovation Fund Trust.

Department of Arts and Culture: In South Africa, museums are collectively considered to be heritage institutions and are administered and funded as such. National Museums fall under the Department of Arts and Culture (DAC) and are legally declared cultural institutions in terms of the Cultural Institutions Act (1998). Museums have undergone extensive restructuring to provide an enhanced national museums service in line with Arts and Culture. This restructuring has not supported the biodiversity research component of museums.

Department of Education: Universities are teaching institutions that fall under the National Department of Education. Biodiversity related research in universities is undertaken by individual researchers, and research groups, located within Schools or Departments associated with the life sciences. Most universities house environmental sciences and natural sciences departments. Research directions for university-based scientists are not stipulated by any specific mandate. In many cases, the research undertaken follows the personal interests of the researchers. Research is supported by the universities themselves and by the National Research Foundation (NRF). The NRF performs an agency function on behalf of its line department, the Department of Science and Technology, and its objective is to support and promote research in South Africa.

Considerable efforts have been made to integrate environmental considerations into sectoral or cross-sectoral plans, programmes and policies. In terms of Section 15(1) of the National Environmental Management Act (Act 107 of 1998), all national departments whose activities impact on the environment – specifically the Departments of Environmental Affairs and Tourism, Land Affairs, Agriculture, Housing, Trade and Industry, Water Affairs and Forestry, Transport and Defence - and all provinces, are required to develop Environmental Implementation Plans, to be updated every four years.

Provincial departments and conservation authorities: Nature conservation is a national and provincial concurrent legislative competency in South Africa. Overall policy and legislation is determined at national level and while provinces need to align provincial legislation with the national framework, they are also mandated to promulgate legislation specific to their needs.

Conservation agencies responsible for protected areas and the conservation of biodiversity outside of protected areas vary in institutional character and structure across the nine provinces. While certain provinces have conservation

boards, in other provinces the conservation function is included as directorates within government departments, which may include various other functions, such as economic affairs, tourism and agriculture.

In many cases, provinces are still in the process of repealing old legislation and promulgating new laws and regulations. Conflicting legislation is still in place in some areas, and may include old provincial ordinances and/or old homelands statutes.

Local government is a distinct sphere of government in South Africa. Local government, in terms of the Constitution, is required to provide environmentally sustainable service delivery and to promote a safe and healthy environment within the municipal area.

The Local Government Transition Amendment Act (97 of 1996) requires all local government (municipalities) to produce an Integrated Development Plan (IDP). IDPs are seen as a process, with priorities being set and plans revised as part of annual planning cycles. IDPs need to comply with a range of national legislation. However, capacity and resources in many local municipalities, other than the larger urban metros, is severely limiting and in many cases, biodiversity concerns have not been adequately addressed. Several of the larger metropolitan councils have completed State of the Environment Reports, and have developed strategies for biodiversity conservation, notably the City of Cape Town. Environmental Impact Assessments are required in terms of Sections 21, 22 and 26 of the Environmental Conservation Act (Act 73 of 1989). Updated regulations are in the process of being drafted.

4.2 Foreign Donors in South Africa

Foreign donor presence in South Africa has increased significantly after 1994. Official Development Assistance (ODA) has assisted South Africa in meeting the incremental costs associated with the implementation of AGENDA 21 and re-ordering priorities among the social, economic and developmental components of sustainable development. Many of the new policy developments and implementation programs would not have been possible without foreign donor funding. Examples include the National Waste Management Strategy, the Coastal Management Policy Programme, Phases I-IV of the Sea Fisheries Policy and the development of the white paper on Biological Diversity. As part of the National Local Agenda 21 campaign of the DEAT, **USAID** has provided funding to develop and implement training programs for senior and middle level management in local and provincial government with regard to sustainable development. Most of the ODA funding are channelled either as bilateral flows provided directly by a donor country, such as **Denmark, Germany, United Kingdom, Norway, the USA and France**, or multilateral flows channelled through an International Organization such as the World Bank, the Global Environmental Facility (GEF) and the United Nations Development Program (UNDP). For a list of current donor projects (according to the South African Government's website for Donor Coordination and Information System www.dcis.gov.za), see Annex 2.

4.3 Non-Governmental Organizations and the Private Sector

Non-governmental organizations (NGOs) with a biodiversity focus are well-established in South Africa and have played a significant role in the establishment of protected areas, monitoring of species and environmental education. Conservation-oriented NGOs have been very successful in mobilizing business support for conservation in South Africa and a number of partnerships have been established. Although their focus has traditionally been on protection, especially with regard to large charismatic species, conservation NGOs are increasingly broadening their perspective to include poverty alleviation, sustainable use and benefit sharing.

A full list of civil society organizations is beyond the scope of this report, but the contribution of the civil society sector to conservation (both *in situ* and *ex situ*), capacity building, awareness-raising, research and monitoring should not be underestimated. A number of NGOs were instrumental in initiating the large bioregional planning projects in the Fynbos, Succulent Karoo and Thicket biomes, such as Botanical Society, WWF-SA and Conservation International.

The updating of Red Data Lists in South Africa is largely due to the commitment of NGOs, such as Endangered Wildlife Trust, Conservation Breeding Specialist Group, BirdLife, university research units such as the Avian Demography Unit at University of Cape Town and volunteer public interest groups.

Organizations that focus on sustainable use issues include IUCN-SA and ResourceAfrica. More recently, NGOs and networks have been established that focus on emerging issues such as Access and Benefit Sharing and biosafety, such as Biowatch and SafeAge.

Conservation on privately owned land: Several categories of land ownership exist in South Africa, characterized by a broad division between freehold ownership, and customary approaches to land ownership. Most state land and commercial agricultural land is held under freehold systems. More than 80% of the land area in South Africa is privately owned, making conservation on privately owned land extremely important. An estimated 13% of the land area of South Africa is under some form of private conservation management, in the form of conservancies, private game reserves, game farms and mixed game/livestock farms.¹³

Conservation on communal land: Land under customary tenure is located within the so-called ex-homelands and comprises 13% of the country. In addition to statutory laws, in communal areas a layer of customary law also applies, and this is frequently the system best understood and implemented by communities living in the area. In communal areas, customary laws form a central component of the practice of natural resource use. Where traditional systems are intact, strong cultural taboos exist – and have long existed - to regulate the use of particular resources.

Private Sector: The implementation of various environmental objectives in the private sector is influenced by the Industrial Environmental Forum (IEF). The IEF was established in 1991, and represents the interest of 30 leading corporations in South Africa (Re: IEF Environmental Report, 1999). The IEF in many ways serves as an important barometer of environmental trends and practices within the industry and business. While national policy is an important factor of influence, international trends such as changing consumer preferences, trade agreements, and environmental conventions have also impacted on the private sector. The nature of these influences varies, but tends to be mainly focused on the introduction of Environmental Management Systems (EMS) such as the ISO 14000 standards and cleaner production technologies. The IEF report indicates an increased environmental awareness in the corporate sector. However, how far companies have actually implemented these measures is still open to question. In 1999, an assessment of the status of Environmental Management Strategies in South Africa (Sunday Times, April 18, 1999) reviewed 83 local and foreign organizations operating in South Africa. The study showed that South Africa organizations lag about five years behind their international counterparts in terms of Environmental Management Strategy implementation. Unfortunately, it is unclear how much progress has been made since 1999.

4.4 Summary of Forestry and Biodiversity Conservation Activities in South Africa

The following represents a list of some of the major environmental initiatives supported by the South African Government.

4.4.1 Integrated Sustainable Rural Development and Urban Renewal Strategies

In 2000 the Government approved the ten-year Integrated Sustainable Rural Development Strategy (ISRDS) and in February 2001 the President announced the 13 nodes in which the ISRDS would be implemented. These nodes are located at the poorest district municipalities in the country. The vision of the ISRDS is to attain socially cohesive and stable rural communities with viable institutions, sustainable economies and universal access to social amenities, able to attract and retain skilled and knowledgeable people who are equipped to contribute to growth and development.

The aim is to empower these rural communities economically, to productively and substantially contribute to South Africa's growth and global competitiveness. The ISRDS focuses on integration of existing programmes through the local government planning framework. The strategy indicates the need to build capacity and strengthen rural institutions to guarantee local participation. The ISRDS recognizes the importance of natural resources, and their potential contribution to economic growth.

¹³ Department of Environmental Affairs and Tourism (2004) 10 Year Review (1994 – 2004)

The 13 ISRDS nodes are located in the following provinces and municipalities:

- Northern Cape: Kgalagadi District Municipality (DM) and Central Karoo DM
- Limpopo: Greater Sekhukhune DM
- Free State: Thabo Mofutsanyana DM
- KwaZulu-Natal: uMkhanyakude DM; Zululand DM; uMzinyathi DM and Ugu DM
- Eastern Cape: Alfred Nzo DM; OR Tambo DM; Ukhahlamba DM and Chris Hani DM

Several of the IRSDS nodes are located within important biodiversity areas, including internationally recognized hotspots.

The Urban Renewal Strategy (URS) similarly aims to systematically reverse the decay of inner cities, bolster the infrastructure of predominantly black townships and make these areas fit for human habitation.

DEAT initiated a program in 2005, to finance and support an environmental community worker in each node, to build the environmental capacity within the ISRDS and UR nodes and facilitate communication and information sharing on environmental matters.

4.4.2 Community Based Public Works Programme

The Community Based Public Works Programme driven by the Department of Public Works, focuses on clusters of projects within identified poverty pockets in rural disadvantaged communities. The objectives are poverty alleviation and job creation through labor-intensive construction methods to create community assets. Community projects implemented address environmental protection through erosion control, donga rehabilitation and re-vegetation projects. The Expanded Public Works Programme was initiated in 2004. More than R1.5 billion had been spent by February 2005, creating over 76 000 job opportunities.

4.4.3 Working for Water

The Working for Water Programme (WfW), led by the Department of Water Affairs and Forestry (DWAF) aims to reduce the invasion of alien vegetation through a public works approach. In the process of clearing invasive alien species, especially woody species, jobs are created, skills are developed and secondary industries are developed to use the wood, for example for charcoal and furniture. Started in 1995 with an annual budget of R25 million, WfW has grown into South Africa's premier environmental rehabilitation and job creation project. WfW has created up to 24 000 temporary jobs per annum in 313 projects. The program is funded through the Poverty Relief funds from government, as well as through revenues from secondary industries.

The Working for Water Programme is primarily funded primarily by DWAF and to a lesser degree by the DoA and DEAT poverty alleviation budgets. Finance is also provided by the private sector, Rand Water, Municipalities and foreign funding is also secured on an annual basis. The program is concerned with the rehabilitation of river systems and catchments as a whole through the eradication of alien invasive species, while at the same time providing employment opportunities and contributing to the poverty alleviation, training and empowerment imperatives of national government. WfW provides the basis for collaboration between a wide range of government agencies, conservation organizations, NGOs, international funders and research organizations. It facilitates improved relationships, increases responsibility and awareness between these partners and in broader society.

Since its inception a decade ago, Working for Water's annual budget has increased 20-fold. Mistakes, such as the occasional removal of indigenous trees can be attributed to pressure to spend the budget and inadequate training. The WfW annual report recognizes the importance of an effective management structure to ensure that this ever expanding program meets expectations of the many partners, that the social and ecological benefits of the program are maximized, and any secondary impacts are eradicated.

Key opportunities within the WfW program are in the identification and prioritization of sites to be cleared so that these overlap more with biodiversity priority areas, an expansion of the program to deal with all invasives (flora and fauna) and a more focused approach to rehabilitation and follow up work.

The success of WfW has led to the initiation of a number of related programs, such as Working for Wetlands and Working on Fire.

4.4.4 Working for Wetlands Programme

The Working for Wetland Programme (WfWet) was established by DEAT in 2002 and was originally housed within the WfW program. WfWet is a collaboration between DEAT, DWAF, WfW, the Mondi Wetlands Project, Landcare (DoA) and the Water Research Commission. The program aims to facilitate the conservation, rehabilitation and sustainable use of wetland ecosystems, while at the same time fulfilling functions such as poverty alleviation, job creation, training and empowerment. Fourteen rehabilitation projects have been implemented on state, private and communal land covering various wetland types. Funding comes from the WfW Poverty Relief Fund allocation, with additional support from Rand Water. The program was transferred to SANBI in 2004 where funding and operational structures have been streamlined.

4.4.5 Working on Fire Programme

Working on Fire is closely aligned to Working for Water, as invasive alien trees greatly increase the impact of fires in areas such as the Western Cape. It is a public-private partnership aimed at promoting an integrated approach to fire management in South Africa and involves collaboration between a number of national departments, statutory bodies, the private sector and civil society. It integrates fire management with livelihoods strategies, training and research.

4.4.6 CoastCare

The CoastCare Program is assisting in increasing awareness regarding coastal management while at the same time addressing poverty. The program has various components ranging from rehabilitation of the coast to education. CoastCare is a public private partnership, lead by DEAT towards:

- Implementation of the White Paper for Sustainable Coastal Development,
- Creation of sustainable coastal livelihoods,
- Unlocking the potential value of our coastal resources,
- Protecting marine and coastal resources.

The WfW, Working for Wetlands, Landcare and Coast Care programs are good examples of collaborative programs that involve both a range of national agencies and include municipalities at a local level. They are important in raising awareness at all levels, especially local government and this will be increased with greater delegation of authority for implementation by municipalities. There have been suggestions of a working for woodlands project, based on similar basis to the Working for Water Programme and to potentially be sourced from carbon sequestration funding.

4.4.7 National Action Programme for Desertification

South Africa, as a signatory to the United National Convention to Combat Desertification (UNCCD), developed a National Action Programme (NAP) in 2003/4. This builds on a number of existing initiatives, including the various public works and poverty relief programs noted above, initiatives to combat land degradation such as the National LandCare Programme, and a number of research-oriented programs such as the Desert Margins Programme and the Desertification Monitor initiative.

The Desert Margins Programme is co-funded with the GEF to support research activities related to desertification in nine African countries, including South Africa. The overall objective is to conserve and/or restore biodiversity and arrest land degradation in Africa's desert margins through demonstration and capacity building activities for sustainable utilization of dry land ecosystems. The South African component of the project focuses on test communities in selected target areas in the Northern Cape and North West provinces. Existing LandCare projects have been targeted. The Potchefstroom University has been appointed as the National Coordinating Unit for the Desert Margins Programme in South Africa.

The Desertification Monitor initiative of an NGO, the Environmental Monitoring Group (EMG), establishes a non-state reporting and monitoring mechanism to report on the status of implementation of the UNCCD in South Africa. This initiative aims to complement the existing state-based reporting procedure as well as the UNCCD's implementation review process. It monitors, reports and influences the extension of the UNCCD in relation to the work program and decision of its Conference of Parties (COP), the Committee for the Review of the Implementation of the Convention (CRIC) and the Committee for Science and Technology (CST).

5) ACTIONS NECESSARY TO CONSERVE TROPICAL FORESTS AND BIOLOGICAL DIVERSITY

Since the three primary and interrelated threats are the same for both tropical forests and biodiversity, the recommended actions will be listed in the following three areas: land transformation and loss of habitat; invasive alien species, and climate change. These recommendations are taken directly from South Africa's Country Study: Situational Assessment Undertaken to Inform South Africa's National Biodiversity Strategy and Action Plan, May 2005. See Annex 3 for a chart of South Africa's Goal, Strategic Objectives and 15-year Targets for the National Biodiversity Implementation Plan.

5.1 Recommendations for Land Use and Reducing Habitat Loss

All land use should integrate biodiversity considerations into management and mitigation plans and consider the cumulative impact of the countless projects into the decision making process. It is essential that the national departments responsible for development planning and spatial planning, such as DLA and DPLG, ensure that biodiversity priority areas are integrated into spatial plans. Planning frameworks at various levels – national, provincial and local - must take biodiversity into consideration in order to guide development.

There are two key causes of habitat transformation, largely reflecting South Africa's dual economy: transformation of land due to development by and for the rich, such as extensive golf estates; and habitat transformation exacerbated by poverty, such as land degradation caused by overstocking. This highlights the need for different strategies and the need to engage with different sets of stakeholders in each case.

To help address these problems, the Presidency has established the National Spatial Development Perspective (NSDP), which conceptualizes the national space economy and is a significant national-level government plan that needs to consider biodiversity seriously.

Spatial Development Frameworks should be included in the Integrated Development Plans of local government.

Environmental Management Frameworks_ (defined in terms of the 2005 draft Environmental Impact Assessment Regulations) should be used as a spatial framework within which specific environmental management parameters and conditions are set in respect of development activities.

5.2 Recommendations for Dealing with the Threat of Invasive Alien Species

The following key interventions have been identified to prevent, contain, manage and eradicate invasive alien species in South Africa¹⁴.

Facilitate an enabling environment to deal with invasive alien species

- Consult all stakeholders to ensure buy-in.
- Get expert input and guidance.
- Create co-coordinating mechanisms.
- Formulate policy to meet the aims of all government departments and address the concerns of all stakeholders.
- Promulgate effective legislation to give the necessary powers to co-coordinating mechanisms.
- Coordinate the activities of government departments to optimize prevention and management of species invasion.
- Establish agreed-upon mechanisms for fairly and transparently resolving potential conflicts of interest concerning invasive alien species.

¹⁴ IAW Macdonald, BW van Wilgen and TN Mgidi (March 2004) Towards a National Strategy for Dealing with Invasive Alien Species in South Africa. Working for Water Programme, Cape Town.

- Coordinate international activities affecting the introduction, export and trans-border management of invasive alien species.

Build the necessary capacity to manage invasive alien species

- Source adequate funding to train and deploy the necessary capacity in government and elsewhere.
- Create the necessary staff positions in government departments to address the management of invasive alien species.
- Develop training programs for managers, researchers and extension officers.

Prevent potential invasive alien species from entering South Africa

- Limit the importation of alien species to approved or otherwise acceptable species.
- Assess the risks associated with new alien species before they are allowed to be imported.
- Assess the risks associated with the movement of indigenous species across provincial borders before such movements are undertaken.

Manage established invasive alien species to minimize their impact and spread

- Develop and implement best management practices for invasive alien species.
- Develop an informed prioritized national list of all established invasive alien species and adapt accordingly at provincial and local levels.
- Compile and implement a set of management objectives for each invasive alien species, which are realistic and measurable both in terms of ecosystem processes and economic value.
- Identify and implement the most cost-effective management tool (method of control) for each of the prioritized invasive alien species.
- Avoid or mitigate negative ecological, social or economic impacts of control methods.
- Implement regular monitoring, documentation and reporting systems to measure the impacts and/or outcomes of management programs and adapt these as necessary.

Establish effective invasive alien species decision support systems

- Regularly review management objectives for each of the prioritized invasive alien species and improve the management initiatives through a system of adaptive management.
- Acquire the necessary level of support (scientific research and resources) within and outside South Africa to effectively implement and improve the management objectives of all invasive alien species.
- Improve research on the taxonomy, inventory, good management and monitoring procedures of invasive alien species in South Africa in order to effectively inform management objectives.
- Broaden invasive alien species research to include aquatic plants; terrestrial and aquatic vertebrates and invertebrates; and micro-organisms.
- Continue and improve research capacity (including funding) on the already well-studied invasive alien plants and vertebrates.
- Provide the necessary financial support and other capacity needs for research on invasive alien species control methods (particularly biological control) and their integration.
- Carry out research on global climate change, its potential impact on ecosystems and on invasive alien species and their management.
- Document research results on the predicted influence of climate change on invasive alien species impacts and management and adapt invasive alien species strategies and management plans accordingly.
- Document and report all research, prevention, management and monitoring initiative results on invasive alien species in South Africa and make data and reports readily available in easily utilizable format to all decision makers and other stakeholders.

Mainstreaming of invasive alien species control

- Derive maximum possible socio-economic benefits from the control of all prioritized invasive alien species.
- Implement legally enforceable (through effective legislation) incentive and disincentive schemes for private landowners to promote good management of established invasive alien species across South Africa.

- Communicate the financial and economic costs of invasive alien species to all important and influential stakeholders.

Increase invasive alien species awareness, education and advocacy within and outside South Africa

- Design and implement awareness campaigns on invasive alien species directed at key stakeholders within the South African public and government.
- Include invasive alien species issues in the national curricula at primary, secondary and tertiary education levels.
- Design and implement an advocacy campaign on invasive alien species aimed at South African decision makers in all levels of government and the private sector
- Design and implement an advocacy campaign on invasive alien species aimed at the Southern African Development Community (SADC), the rest of the African continent and the international community.
- Incorporate the results of any research related to invasive alien species, their impacts and/or management, in South Africa and internationally into the national awareness, education and advocacy campaigns.

5.3 Recommended Climate Change Adaptation Strategies

It is important to note that many of the measures so far identified to adapt to climate change are necessary to deal with existing pressures on biodiversity from changing land use, land transformation and degradation.

The following climate change adaptation strategies have been suggested which have particular relevance for the biodiversity sector:

- Improve and expand seed banks and gene banks for agricultural species
- Avoid monocultures and switch to drought-resistant crops such as cassava, millet and sorghum
- Reduce dependence on irrigation, apply conservation management principles to agriculture and implement drought management practices
- Reduce stocking rates on rangelands (possibly linked to methane reduction credits in terms of the Kyoto Protocol)
- Improve monitoring and forecasting systems for fire management
- Conserve water, improve efficiency of use and minimize pollution
- Plan and coordinate water and land use across catchments and include water resources management for sensitive ecosystems, such as estuaries
- Improve monitoring and forecasting systems for floods and droughts
- Tailor land use planning and decision making to consider potential climate change and biodiversity impacts, and reduce habitat fragmentation
- Encourage land use practices or patterns outside conservation areas that minimize biodiversity impacts and factor in future dispersal probabilities
- Establish a biodiversity monitoring network (including indicator or detector species) in areas with high risk of climate change, high biodiversity and security of tenure (this should include plant and animal species, as well as terrestrial and aquatic ecosystems)
- Restore degraded areas
- Apply sound vegetation and soil management policies, including control of weeds and invasive species
- Promote wise use of biodiversity
- Retain conservation areas predicted to show little climatic change, expand protected area networks to areas with high topographic relief and incorporate redundancy in a representative protected areas network, to buffer the effects of climate change
- Expand *ex situ* conservation and future plant translocation
- Support fundamental research into the effects of climate change on species and ecosystems
- Develop mechanisms to assess the value of biodiversity elements to assess relative importance in the events of unavoidable loss

6) USAID/SOUTH AFRICA STRATEGY: ACTIONS PROPOSED TO MEET CONSERVATION NEEDS IDENTIFIED

As indicated in Sections 2, 3, and 4 of this document, South Africa is addressing its conservation of tropical forests and biodiversity through its extensive legislative framework, its myriad of government departments and offices, as well as through NGOs and the business sector.

As part of South Africa’s National Biodiversity Strategy and Action Plan, a list of actions are indicated in Section 5 of this report to address the three most prominent threats to the tropical forests and biodiversity, namely: loss of habitat, alien invasive species, and climate control.

Although USAID/South Africa does not have an Environmental Strategic Objective (SO), environmental concerns will be integrated (consistent with the South African Government’s objectives), where possible, into its strategy.

6.1 Overview of the USAID/South Africa Strategy

The new USAID/South Africa strategy will support the two operational goals for transformational development countries set forth in the USAID Strategic Framework for Africa:

- Foster a healthier, better educated, and more productive population;
- Increase the effectiveness of African institutions in promoting a vibrant private sector and democratic governance

This strategy also directly linked to South Africa’s key priorities set forth in President Mbeki’s State of the Nation address, key budget speeches, and the Government’s *Programme of Action*, which revolve around three pillars: 1) encouraging the growth and development of the ‘first economy’; 2) addressing the challenges of the ‘second economy’, and 3) building a social security net to alleviate poverty. The new USAID/South Africa strategy will encompass four Strategic Objectives:

- 1) Strengthened capacity to deliver sustainable and accessible integrated municipal and judicial services,
- 2) Strengthened capacity to provide quality basic education and productivity-increasing job skills,
- 3) Strengthened public-private capacity to support a competitive small business sector, and
- 4) Strengthened Capacity to Deliver Sustainable and Integrated Primary Health Care and HIV and AIDS Services.

While the USAID/South Africa Strategy does not have a Strategic Objective (SO) for environmental concerns, where possible, the Mission will address tropical forestry and biodiversity need in its other SOs. In addition, should additional resources be made available for these purposes, USAID/South Africa would consider funding additional activities, some of which are identified below.

6.2 Strategic Objective 10: Strengthened capacity to deliver sustainable and accessible integrated municipal and judicial services

USAID programs will strengthen capacity to deliver quality municipal services in a sustainable manner through active engagement of citizens and local authorities to identify bottlenecks and seek resolution in a mutually supportive manner, and through approaches that protect water, energy and biodiversity resources. This approach will include addressing the challenges of a culture of non-payment and disparate operational policies. It will also require increased capacity building in financial management, deepening financial management reforms in budgeting, accounting, and reporting including building the expertise and leveraging of resources from domestic financial markets to support the environmentally sound expansion of services such as water and sanitation, housing and energy.

USAID will support capacity building in Government and the development of indigenous solutions for public-private partnership models through the use of, inter alia, creative financing and credit guarantees to help address the financial gap. Enabling civil society to play its role in joint problem-solving while assisting South African Government efforts to ensure transparent local government are also key elements to sustainable service delivery and enduring institutional capacity supported by this program. Capitalizing on previous successful efforts to assist South Africa to reduce levels of crime, justice sector activities in this new program will advance South Africa objectives to

Comment [m1]: See M&E sentence in Program Structure Section

improve effectiveness of the criminal justice sector, including support for dedicated courts, and to strengthen the capacity of the justice system to protect the rights of women and children, including expansion of victim support services and diversion programs.

6.2.1 Specific ways in which the USAID program could address South Africa’s environmental needs

- USAID will promote sustainable methods of service delivery at the local sphere of government that should result in the abatement of green house gas emissions, improved cost-recovery, biodiversity resource conservation, and energy-efficiency. These activities would also contribute to the US Presidential Initiatives for Global Climate Change, Clean Energy and Water for the Poor. Where possible, USAID will
 - Encourage the use of appropriate technology to reduce pollution and promote cleaner energy use; and
 - Incorporate methods to conserve water.

6.2.2 Additional Opportunities for Conserving Tropical Forests, Biodiversity and the Environment

Should additional resources become available USAID/South Africa could consider including some of the following activities into their program:

- Protect watersheds and improve water quality, which would ultimately help to preserve biodiversity;
- Engage proactively and constructively with the South African Government at various levels (dplg, DWAF, Housing, Treasury and local government authorities) to ensure that biodiversity is a key consideration in policy development, budgeting and planning processes. In particular, USAID could assist municipalities to integrate conservation and biodiversity preservation into their integrated development plans, and pay special attention to waste management in areas that impact aquatic ecosystems;
- Build capacity of institutions (both governmental and non-government) through training managers of protected areas in natural resource management;
- Promote community participation in natural resource management and land use planning decisions;
- Promote renewable energy particularly in rural areas in biologically sensitive areas or adjacent to tropical forests that are heavily reliant on fuel wood and crop residues for basic energy needs, such as household cooking and heating;
- Support public awareness campaigns of environmental and conservation issues, possibly by training the media on ways to improve reporting.

6.3 Strategic Objective 11: Strengthened capacity to provide quality basic education and productivity-increasing job skills

Because sound foundational skills such as literacy and numeracy as well as math and science knowledge are essential to securing productive employment, many of USAID’s efforts will strengthen key South African systems enhancing teachers’ capacity to provide quality student-centered instruction, strengthening supervisory and administrative management for teachers and school systems promoting quality assurance. In addition, South Africa has prioritized teacher professional development as a key factor in improving quality of education. USAID programs will move to a systemic approach to support development of both new and in-service teachers. Activities will work with selected teachers who urgently need professional development in math, science, information communication technology, and languages, linking this training to the creation of sustainable models of collaboration between South African higher education institutions and provincial and national education structures to ensure a quality supply of professional teachers both for the present and the future of South Africa. A key skills development priority for South Africa is to recapitalize all technical training institutions. USAID programs in workforce skills development will complement and leverage South African Government and private sector partnerships in this field by working with these institutions to increase efficiency and effectiveness to provide employment-relevant training and placement services to the nation’s youth.

6.3.1 Specific Ways in Which the USAID Program Could Address South Africa’s Environmental Needs

- Where appropriate, this program may support environmental training in schools.

6.3.2 Additional Opportunities for Conserving Tropical Forests, Biodiversity and the Environment

Should additional resources become available USAID/South Africa could consider (after discussions with the South African Government) including some of the following activities into this program:

- Incorporate environmental awareness into the curriculum;
- Train teachers on conservation and biodiversity modules.

6.4 Strategic Objective 12: Strengthened public-private capacity to support a competitive small business sector

While the ultimate objective of the Mission’s small business development program will be integration of South African small businesses, including those in agriculture, into regional and international markets, activities will focus on strengthening businesses to reliably meet domestic market-driven requirements with the intent that they will enter the export market as suppliers to larger exporting firms. To build sustainability, the program will pay special attention to strengthening Small, Medium, and Micro Enterprises (SMME) business development service providers. Targeted biotechnology research will be supported to develop crops that have the potential to help small and marginal farmers participate in agricultural markets. Activities will build on opportunities under the African Growth and Opportunity Act, as well as focus on business linkages and business sector clusters that can contribute to employment generation, e.g., tourism and value-added aspects of the minerals industry. USAID will direct limited resources to address specific policies, responding to South African requests. Because sustained equitable economic growth requires a productive workforce, USAID activities under this program will complement those implemented under the Education Strategic Objective to accelerate skills-building programs.

6.4.1 Specific Ways in Which the USAID Program Could Address South Africa’s Environmental Needs

For specific SMMEs USAID/South Africa may consider providing training on cleaner production processes. Cleaner Production is a proven business-oriented problem-solving strategy that helps businesses improve the efficiency of their production processes. Increased efficiency generally translates into higher profits and better quality. The more efficient use of input materials and energy equates to reduced waste, resource degradation and pollution, thereby reducing impacts on human health and the environment. In addition, cleaner production furthers fundamental development goals by enhancing the long-term sustainability of income generation programs.

- For projects involving small scale farmers, USAID should encourage practices to minimize ground water pollution and to incorporate technological improvements, such as the introduction of soil fertility enhancement approaches and improved seeds.
- As mentioned above, targeted biotechnology research will be supported to develop crops that have the potential to help small and marginal farmer participate in agricultural markets.

6.4.2 Additional Opportunities for Conserving Tropical Forests, Biodiversity and the Environment

Should additional resources become available USAID/South Africa could consider (after discussions with the South African Government) including some of the following activities into this program:

- In biologically sensitive areas, help encourage non-farming income-generating activities to lower the pressure on the natural resource by communities leaving adjacent to parks and protected areas (both inland and coastal zones).

- USAID/South Africa could consider supporting innovative public-private alliances under its GDA programs to support small enterprises that sustainably harvest forest products and link them with regional markets.
- Help support environmental goods and services investment sector, whereby environmental goods and services and other related amenities could be traded;
- Help support SMMEs in the tourism sector that incorporate environmental protection and renewal into their business plans.

6.5 Strategic Objective 13: Strengthened Capacity to Deliver Sustainable and Integrated Primary Health Care and HIV and AIDS Services

In response to South African Government requests, USAID assistance will concentrate on systems strengthening (e.g., logistics, management information systems, supervision systems, and clinical training) in selected provinces, districts and municipalities in order to improve demand, availability, quality, and management of key primary health care services. The program will assist districts selected in consultation with the Department of Health in the five most disadvantaged provinces which hold 60% of the national population to: 1) strengthen key elements of the primary health care; 2) build effective health management capacity and systems; 3) provide a comprehensive package of quality maternal and child health services with special attention of the needs of young mothers; 4) strengthen the capacity of community networks to manage their health status; and 5) leverage effective public private partnerships at the community and district level, a key issue for South Africa as it relates to strengthening the link between the first and second economies. The HIV and AIDS program component, which is implemented under the President's Emergency Plan for AIDS Relief and which supports the South African Government's HIV and AIDS plan is covered in the five year strategy submitted to the Office of the Global AIDS Coordinator (OGAC) and is not discussed here.

6.5.1 Specific Ways in Which the USAID Program Could Address South Africa's Environmental Needs

- Where possible, USAID/South Africa should strive to support health care management practices that address potentials for biohazards and which incorporate proper disposal of hazardous waste. This will help to prevent the spread of disease and to minimize pollution, particularly of groundwater.

6.5.2 Additional Opportunities for Conserving Tropical Forests, Biodiversity and the Environment

- If USAID/South Africa supports any programs related to the Avian flu pandemic, the activities should minimize any adverse environmental impact and exposure of the flu to humans.

6.6 Possible Threats from USAID Programs and Mitigation Measures

Some activities implemented under the USAID/South Africa strategy may impact the biophysical environment. To maximize the positive benefits and minimize any damage to the environment, all activities will be subject to 22CFR216. As such, an Initial Environmental Examination (IEE) will be completed for each Strategic Objective in FY2006. Environmental screening of each proposed project shall be undertaken to determine the appropriate extent and type of Environmental Assessment. Proposed projects will be classified into one of three categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental and social impacts. The IEE will lay out measures to help mitigate possible negative environmental impacts. All activities should be designed to be environmentally sound and to adhere to South African rules and regulations. Where possible, USAID should promote sound environmental practices through all of its programs, including those projects that involve Global Development Alliances, and Development Credit Authority.

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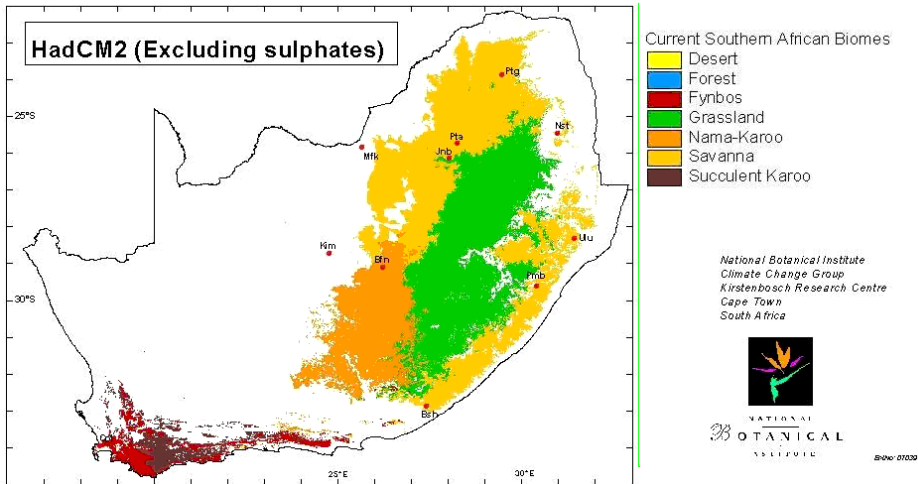
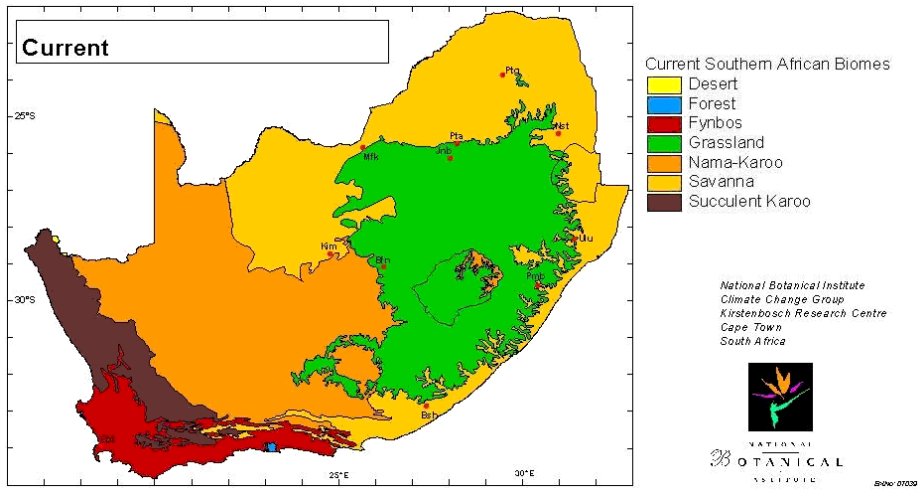
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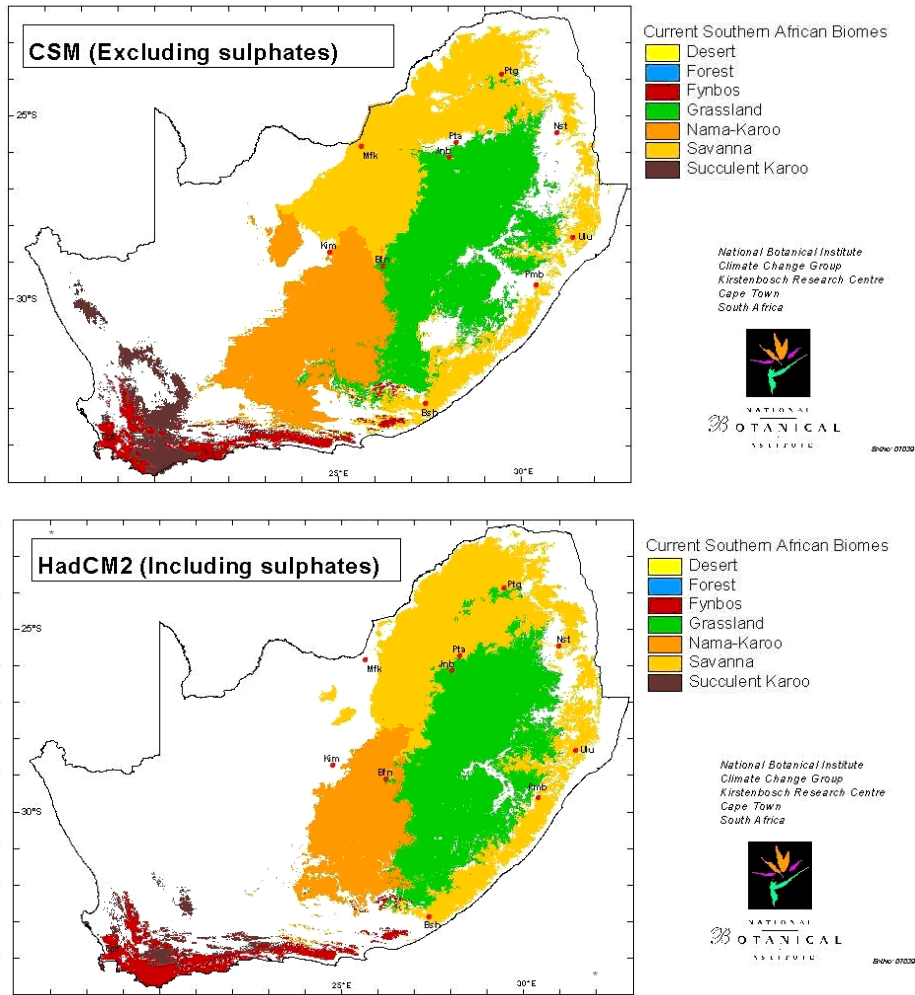
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Annex 1: Succulent Karoo Bioclimatic Modelling, projections in 50 years





Methodology (Copied from the source: <http://www.nbi.ac.za/climrep/10.htm>)

We used a bioclimatic modeling approach (e.g. Busby 1991) to derive an apparent climate envelope (that is, a "realized niche", [Cao 1995]) for the Succulent Karoo Biome as it exists under current climate conditions. Essentially, bioclimatic modeling determines the environmental limits of an entity with a given spatial distribution by matching its known distribution to climatic surfaces. This is done at a spatial resolution sufficient to avoid ambiguity due to local spatial and topographic heterogeneity.

The spatial distribution of the Succulent Karoo Biome (and the other dominant biomes of South Africa) was digitized from the map presented in Rutherford and Westfall (1994). A climatic database at a spatial resolution of 1 x 1 minute (approximately 1.2 x 1.2 km at this latitude) provided temperature and water availability data for the entire area of interest.

We used as environmental determinants five relatively independent climatically-derived parameters we consider critical to plant physiological function and survival. These are mean minimum temperature of the coldest month (Tmin), heat units (annual sum of daily temperatures (°C) exceeding 18°C [HU18]), Annual Potential Evaporation (PE), Winter soil moisture days (SMDwin), and Summer soil moisture days (SMDsum). Soil moisture days are defined as those days on which soil moisture is above a critical level for plant growth. All of the above parameters were among those derived for South Africa by Schulze and Perks (1999). Climate envelopes were defined simply by the upper and lower limits of each parameter, which is an approximation of the species' realized niche space or bioclimatic envelope (Rutherford et al. 1995, 1996). While there is little experimental work to rely on locally, we consider these five environmental parameters as the minimum basic set for defining a bioclimatic envelope in South Africa's indigenous flora. Tmin is likely to discriminate between species based on their ability to assimilate soil water and nutrients, and continue cell division, differentiation and tissue growth at low temperatures (lower limit), and chilling requirement for processes such as bud break and seed germination (upper limit). Heat units discriminate between species based both on their requirement for a minimum temperature to complete growing cycles (lower limit), and ability to tolerate excess tissue temperature (upper limit). PE discriminates through processes related to transpiration-driven water flow through the plant, and xylem vulnerability to cavitation and water transport efficiency. Soil moisture days in winter and summer discriminate through determining the intensity and duration of seasonal drought stress and growing opportunities, which are especially crucial for seedling recruitment and the survival of this sensitive plant life stage. It should be noted that results are affected by choice of months which define seasonality - in the current study winter was represented by May to August, and summer by November to February.

Predictions of future climate change utilized climate scenarios generated by the widely-used general circulation models CSM and HadCM2, interpolated for South Africa (Schulze and Perks 1999). The HadCM2 model produced two scenarios by using different predictions of warming amelioration by sulphate emissions - these are referred to simply as HadCM2 with, and HadCM2 without sulphates. All models generated predictions of temperature and precipitation change for southern Africa for the mid 21st century (~2050), equivalent to an atmospheric CO₂ concentration of 550ppm. Expected rates of change are not given by Schulze and Perks (1999), but in general, more or less linear rates of temperature change are assumed for the next 50 years (Hulme 1996). This assumption allows results for intermediate CO₂ levels to be interpolated from the endpoints.

Annex 2: South African Government's list of Environment-related projects

Source: www.dcis.gov.za

<u>Project Title</u>	<u>Partner Institution</u>
Institutional Strengthening of the Department of Agriculture (ISDA)	Australian Agency for International Development (AusAID)
Contribution to the National Capacity Building Programme of the National Land Committee	Austrian Development Agency (ADA)
Centralised Integrated Rural Development	Austrian Development Agency (ADA)
Support for the Investigation into behaviour in the South African food and agriculture	Department for International Development (DFID)
	Public Service and Administration (DPSA)
	British Council
Community Based Land Reform	Agriculture
	Canadian International Development Agency (CIDA): SA
Darling 5 MW Wind Farm Demonstration Project	Minerals and Energy (DME)
	Danish International Development Agency (DANIDA): SA
Urban Environmental Management 2002-2004	Environmental Affairs and Tourism (DEAT)
	Danish International Development Agency (DANIDA): SA
Land Markets and Post-Transfer Service Delivery	National Land Committee (NLC)
	Land Affairs (DLA)
	Department for International Development (DFID)
Land Reform Support Programme: Platfontein	Department for International Development (DFID)
	Ixu & Khwe Vereniging Community Property Association
Northern Province Labour Intensive Rural Roads Maintenance Programme	Northern Province Road Agency
	Department for International Development (DFID)
Support for the Investigation into behaviour in the South African food and agriculture	Department for International Development (DFID)
	Public Service and Administration (DPSA)
	British Council
Restructuring of the forest of the former homelands	Department for International Development (DFID)
	Water Affairs and Forestry (DWAF)
Eastern Cape Community Forestry Pilot Projects	Department for International Development (DFID)
	Water Affairs and Forestry (DWAF)
Post Settlement Restitution Support Programme	National Land Committee (NLC)
	Southern Cape Land Committee (SCLC)
	Association for Rural Advancement (AFRA)
	Land Access Movement of South Africa (LAMOSA)
	Directorate General for Development Co-operation (DGDC)
Support to Environment and Sustainable Development in the North West Province	Embassy of Finland
	Agriculture
Limpopo Agricultural Development Programme (LADEP)	Embassy of Finland

	Limpopo: Agriculture and Environmental Affairs
Development of Strategic Management Plans for the Apies-Pienaars and Limpopo river catchments; Limpopo river changed in 2002 to Crocodile river.	Embassy of Finland
	Water Affairs and Forestry (DWAF)
Community Development (Forestry) Project in the Northern Province	Embassy of Finland
Promoting a Co-operative System in South Africa, Namibia and other African Countries	Embassy of the Federal Republic of Germany
	Yebo - Co-operative Ltd.
	German Co-operative and Raiffeisen Confederation (DGRV)
Supporting the Validation Campaign Land Restitution Commission Department of Land Affairs Government of the Republic of South Africa	Land Affairs (DLA)
Speeding up the Land Restitution Process for the Commission on Restitution of Land Rights in the Department of Land Affairs	Embassy of the Kingdom of Belgium
	Land Affairs (DLA)
	Embassy of the Kingdom of Belgium
Support to the Wild Coast Spatial Development Initiative Pilot Programme	Environmental Affairs and Tourism (DEAT)
	European Commission (EC): SA
Agricultural Information Centres	Flemish Representative Office
Community Project Fund Programme in the Free State	European Commission (EC): SA
AWEPA - South African Provincial Legislation Support Programme "Speakers Forum Human Resource Development Committee"	Flemish Representative Office
Quantification and Optimisation of Land Use Patterns (QOLUP)	Flemish Technical Agency (VVOB)
	KwaZulu-Natal: Agriculture and Environmental Affairs
	Flemish Representative Office
Capacity building for the use of Agricultural Information Centres	Flemish Technical Agency (VVOB)
	Flemish Representative Office
Traditional Food Promotion Project	Flemish Technical Agency (VVOB)
	Flemish Representative Office
	KwaZulu-Natal: Agriculture and Environmental Affairs
Agricultural Information Centres	Flemish Representative Office
Promoting a Co-operative System in South Africa, Namibia and other African Countries	Embassy of the Federal Republic of Germany
	Yebo - Co-operative Ltd.
	German Co-operative and Raiffeisen Confederation (DGRV)
Sustainable Management of Natural Resources at Municipal Level (Training and Support for Resource Management = TRANSFORM)	German Technical Co-operation Agency (GTZ): SA
	Environmental Affairs and Tourism (DEAT)

Broadening Agricultural Services & Extension Delivery (BASED) / Development of Rural Services (DRS)	NOVAFRICA
	German Technical Co-operation Agency (GTZ): SA
The Integrated Holistic Rural Development and Soil Conservation Programme in the Schoonoord Area in Sekhukhune District	Limpopo: Agriculture and Environmental Affairs
	Japan International Co-operation Agency (JICA): SA
	Limpopo: Agriculture and Environmental Affairs
Agriculture Education in the Eastern Cape	Luxembourg Honorary Consulate of the Grand Duch Of
	Education (DoE)
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Marine Fisheries Co-operation	Environmental Affairs and Tourism (DEAT)
	NORAD/Norwegian Embassy
Robben Island Cultural Project	NORAD/Norwegian Embassy
Sustainable Development of Groundwater Sources	NORAD/Norwegian Embassy
Municipal Demarcation Board Phase 2	NORAD/Norwegian Embassy
Extended Basic Disaster Management Training	NORAD/Norwegian Embassy
	Provincial and Local Government (DPLG)
Sectoral Budget Support / Rural Development II	Land Affairs (DLA)
	Royal Netherlands Embassy
Sectoral Budget Support / Rural Development	Agriculture
	Royal Netherlands Embassy
Furniture Technology Centre	Furniture Technology Centre, PE Technikon, George Campus
Urban Planning and Environmental Project	King William's Town Municipality
	Swedish International Development Co-operation Agency (SIDA)
PE Tree Planting Project	Nelson Mandela Metropolitan Municipality
Tree, Pavement and Lighting Project	Sol Plaatjie Municipality
CUP Follow-up projects	Sol Plaatjie Municipality
	Swedish International Development Co-operation Agency (SIDA)
Tenure Security Project- Land Rights Officers Provincial Department of Land Affairs-KwaZulu Natal.	Swiss Agency for Development and Co-operation (SDC)
Tenure Reform Research	Land Affairs (DLA)
	Swiss Agency for Development and Co-operation (SDC)
Land Tenure Reform - Communal Land Rights Bill	Swiss Agency for Development and Co-operation (SDC)
	Land Affairs (DLA)
Land reform facilitation - Tenure reform	Land Affairs (DLA)
	Swiss Agency for Development and Co-operation (SDC)
Making Archives Accessible to Land Restitution	Swiss Agency for Development and Co-operation (SDC)
Making Archives Accessible to Land Restitution	Land Affairs (DLA)
	Swiss Agency for Development and Co-operation (SDC)

Communal Land Rights Bill Research (CLRBR) Department of Land Affairs (DLA)	Swiss Agency for Development and Co-operation (SDC)
	Land Affairs (DLA)
Department of Land Affairs	Land Affairs (DLA)
	Swiss Agency for Development and Co-operation (SDC)
Eastern Cape Transformation Authority (ECTA)	Swiss Agency for Development and Co-operation (SDC)
	Eastern Cape Transformation Authority (ECTA)
Limpopo Agricultural Programme (LADEP)	UN Development Programme (UNDP): SA
Shelter and Urban Development Support (SUDS)	Mega Tech Inc
	United States Agency for International Development (USAID)
	Housing
Dept of Environmental Affairs and Tourism-Global Climate Change	United States Agency for International Development (USAID)
	Environmental Affairs and Tourism (DEAT)
Grant for Increased Commercial Viability of Existing Small and Medium-size Agribusinesses (NDA)	Agriculture
	United States Agency for International Development (USAID)

Annex 3: South Africa’s Goal, Strategic Objectives and 15-year Targets for the National Biodiversity Implementation Plan

National Biodiversity Implementation Plan		
Goal:	<i>Conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future.</i>	
Strategic Objectives		15-year Targets
SO 1: Policy Framework for Biodiversity Management	<i>An enabling policy and legislative framework integrates biodiversity management objectives into the economy.</i>	<ul style="list-style-type: none"> • Fully and consistently meet our international obligations regarding biodiversity in the context of national priorities • Biodiversity values are fully integrated into the macroeconomy, informing policy, planning, budgeting and decision-making processes at all levels and all sectors
SO 2: Institutional Framework for Biodiversity Management	<i>Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector.</i>	<ul style="list-style-type: none"> • Biodiversity concerns occupy a significant place on the national agenda • All organs of state in all spheres of government, and all stakeholders and roleplayers, cooperate and work effectively and efficiently to achieve biodiversity management objectives
SO 3: Integrated Management of Terrestrial and Aquatic Ecosystems	<i>Integrated terrestrial and aquatic management minimizes the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security.</i>	<ul style="list-style-type: none"> • Effective control of known priority invasive species is achieved, primarily through programmes focussed on poverty relief • Catchment Management Agencies are established in all biodiversity priority areas, are effectively achieving integrated resource management and are meeting biodiversity objectives • Disaster prevention and management plans (including climate change impacts) incorporate wise ecosystem management principles and practices, especially for water, fire and coastal processes • No release into the environment of genetically modified organisms posing a threat to biodiversity • All sectors that impact on biodiversity are making a significant contribution towards biodiversity management and consider biodiversity in all decisions regarding resource use
SO 4: Sustainable Use of Biological Resources	<i>Human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of the benefits.</i>	<ul style="list-style-type: none"> • Economies based on use of species and genetic resources are optimised and sustainably managed and contribute significantly to livelihoods and equity • Priority fish stocks recover to exploitable levels • No species status declines • Natural products sector contribution to GDP grows by 50% compared to 2005 baseline • Poverty is alleviated through more equitable and effective resource use
SO 5: Conservation Areas	<i>A network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape.</i>	<ul style="list-style-type: none"> • Comprehensive biodiversity monitoring systems inform planning • The protected area network covers 12% of the terrestrial and 20% of the marine environment thereby contributing to representation targets in priority areas • No further loss of endangered and critically endangered ecosystems and no attrition of ecosystem functioning in priority areas • At least two entire "watershed to coast" protected environments established and effectively managed