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ZIMBABWE

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

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Executive summary

Zimbabwe is a country endowed with an abundant and diverse natural resource base. As the general decline in the economy and political situation continues, so too does the strain on the natural resources. Zimbabwe's tropical forestry are threatened by poor governance resulting in a lack of accountability for the management of natural resources, misguided agricultural practices, disease, over-logging, and elephant browsing. Major threats to biological diversity include agricultural encroachment, bush fires, elephant browsing, and misguided land tenure and use policies.

Zimbabwe is categorized as a restrictive country. Therefore, USAID/Zimbabwe's strategy focuses on humanitarian relief and democratic transition. It does not include programs to specifically address conservation of tropical forests and biological diversity although the programs in democracy and governance, HIV/AIDS, and humanitarian assistance recognize the importance of good environmental stewardship. As a result of the analysis in this document, a series of recommendations are made related to gathering information on the ever-changing current situation and preparing for future programs in natural resource management when the overall policy environment improves.

1 Introduction and background

USAID/Zimbabwe developed a two-year Country Strategic Statement (CSS) to guide its activities for 2006-2008. This CSS is an integrated approach that addresses the fundamental causes of the nation's instability while contributing to the U.S. Government's (USG) foreign policy strategic objective to advance sustainable development and global interests as defined in the State-USAID Joint Strategic Plan.¹ This new CSS also reflects the policy aims of the Foreign Assistance Framework for restrictive countries and is responsive to the U.S. Government's principal national interests in the country, which are to: 1) prevent a further deterioration of the political and economic situation, and the consequent detrimental impact on the region; 2) strengthen the prospects for stability and national recovery by fortifying democratic institutions and civil society; 3) implement an effective response to the catastrophic HIV/AIDS pandemic; and 4) mount an effective response to the complex humanitarian crisis.

USAID/Zimbabwe will help achieve these goals through two program objectives: 1) Governing Justly and Democratically and, 2) Investing in People. These two objectives aim at increasing the country's capacity to manage crises and promote national stability, recovery, and democratic reform in the short- to medium-term, and will establish the platform and governance capacity for more enduring development measures over the longer term when political conditions allow.

USAID/Zimbabwe recognizes that protection of the environment and wise management of the natural resources base are requirements of any successful humanitarian and developmental assistance program. To ensure that environmental issues are integrated into USAID/Zimbabwe's 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 the needs thus identified.

To conduct this assessment of tropical forestry and biodiversity threats and opportunities USAID/Zimbabwe, through its Mission Environmental and General Development Officer, William Patterson, worked in collaboration with the Regional Environmental Advisor (REA) from USAID/Southern Africa, Camilien Jean W. Saint-Cyr, and Diane Russell, of the EGAT's Biodiversity Team. The Mission Environmental Officer has inter alia facilitated the process of information gathering, including meetings with Non-Governmental Organizations (NGOs) and other donors that are interested in Zimbabwe's biodiversity and natural resources management sectors.

This summary analysis is derived greatly from a series of Government of Zimbabwe documents on tropical forestry, biodiversity conservation and environmental legal frameworks. In particular, Zimbabwe's Biodiversity Strategy and Action Plan (BSAP), the First National Report to the Convention on Biological Diversity, the Government of Zimbabwe's Biodiversity Planning Support Programme (CIFOR, August 2001), UNDP's 2002 Assessment on Land Reform and Resettlement, and the USAID/Zimbabwe July 2005 Bellmon Analysis prepared by Craig Mackay for World Vision International. These documents provided a wealth of information on the country profile, the status of forestry, biodiversity and environmental situation in general. It should be

¹ This strategic objective is defined by four State-USAID strategic goals that advance the growth of democracy and good governance; strengthen world economic growth, development, and stability; improve health, education, environment, and other conditions for the global population; and minimize the human costs of displacement, conflict, and natural disasters.

noted that in this sector, as in others, there is a general lack of transparency in data available from the Government of Zimbabwe.

If sections are missing citations, the information likely came from one of these documents. Other sources of information included USAID/Zimbabwe staff, Environmental Assessments, USAID/Zimbabwe strategy and policy documents, interviews with environmental NGOs and Government of Zimbabwe's pieces of legislation. Despite the importance of the FAA 118-119 analysis on the sustainability of USAID actions, the Mission was only able to do a desk-top study. As such, there may be gaps in some of the analysis. However, it is still expected to be useful in the development of the Operational Plan for 2007 and future strategies.

2 Zimbabwe profile

The Republic of Zimbabwe is a land-locked country located in the southern part of the continent of Africa, between the Victoria Falls, Zambezi River, Kariba Dam and Limpopo River. It is surrounded by South Africa to the south, Botswana to the west, Zambia to the north and Mozambique to the east. Zimbabwe has an area of 390,760 square kilometers.

The country is divided into four ecological zones: eastern highlands, highveld, middleveld and lowveld. The high, middle, and lowveld regions of the country have native vegetation types which include undifferentiated woodlands, scrub woodlands and dry deciduous forests, wooded grasslands and deciduous brushlands, and secondary grasslands. These vegetation types vary according to precipitation, temperature, and soil fertility in the various regions. In large areas of the country, native vegetation is restricted to protected zones and high elevations.



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Although well within the tropics, Zimbabwe has a tropical climate moderated by altitude. Average annual rainfall is 652 millimeters, but ranges from 1,000 millimeters in the Eastern highlands to around 350 to 450 millimeters a year in the lowveld in the south. About 90 percent of the precipitation occurs during the period of mid-November to early April. The winter season is from April to August, and the hottest and driest period is from September to mid-November.

Small areas of primary rainforest remain in Zimbabwe; they are principally located on the windward slopes in the eastern highlands (Nyanga, Chimanimani and Uumba Mountains), and in a few small lowland areas elsewhere in the country. Most of the 80,000 hectares (ha) of rainforest that remains is located about 1,500 meters, where it is inaccessible and or unsuitable for farming. In addition, most of these areas are protected. However in the low, middle and highveld regions of the country, most of the forests and woodlands have been cleared or severely degraded. Most of these forests, except in plantations and in commercial farming areas, have too little timber remaining to support commercial extraction.

Zimbabwe is mainly characterized by savanna woodlands interspersed with open grassed drainage lines or dambos. Impeded drainage gives rise to limited areas of open grassland and a few patches of sub-tropical forests occur in the eastern districts. Deforestation continues primarily due to fuel wood collecting and land clearing for agriculture.²

Agriculture has traditionally the backbone of the Zimbabwean economy. Zimbabwe's varied ecological zones allow for the cultivation of a wide variety of crops. Key export commodities were tobacco and cotton before the political crisis. Currently minerals such as nickel and platinum have surpassed tobacco and cotton in exports. Mechanized commercial farms produced most of the commercial crops, whereas communal farm production is often limited to subsistence needs. Crops grown in large-scale commercial sector were maize, cotton, tobacco, soybean, wheat, and coffee, which occupied approximately 70 percent of the cultivated land areas. In communal lands, maize, millet, sorghum, cotton, groundnuts and sunflower are important crops. The majority of Zimbabwe's agriculture production is rain-fed. Presently, about 8 percent of the country's arable land is being irrigated mainly for growing winter wheat and sugar cane as to supplement rain-fed crops.

The annual renewable groundwater resource is 5,000 million cubic meters. Groundwater is the main source of rural water supply. The agriculture sector uses 79 percent of the annual withdrawal while domestic and industrial use consumes 14 percent and 7 percent, respectively.³ Localized and seasonal water shortages commonly occur in dry years especially in the middle/lowveld regions of the country. Droughts have emphasized both the importance of groundwater as a natural resource for rural development, and the need for proper planning and management of groundwater resources to avoid pollution and over-exploitation.

There are about 8,000 dams that have a total storage capacity of 5,000 million cubic meters. Of these 8,000 dams, only 94 dams are over 15 meters high.⁴ Large capacity dams are concentrated in the commercial farming areas, while small dams are found in the communal lands.

Most water for irrigation is pumped from regulated-flow rivers or stored in farm reservoirs. Some major environmental issues related to irrigation are soil erosion (with severe impact on

² World Vision CSAFE Program proposal to the Food For Peace Program, September 2004

³ AQUASTAT-FAO's Information System on Water and Agriculture for Zimbabwe.

⁴ IBID.

communal lands), siltation (of dams, intake structures, pumps, canals), and water pollution (due to agrochemicals).

The land-holding rights and obligations in Zimbabwe find their expression in the country's four main systems of land tenure: freehold (private), state land, communal and leasehold (resettlement). The tenure systems impact and shape the property rights and natural resource access regimes that exist today. Land ownership and rights to land remain contentious issues in Zimbabwe, with the Government determined to seize farms from white farmers for redistribution to the landless. Consequently, private property rights are not very secure since the Government can seize property at will. The Government's controversial fast track land reform efforts starting in 2000 have disrupted a significant portion of the commercial farm economy, leading to a sharp drop in tobacco, corn, and cotton production. The country is in its eighth consecutive year of economic decline. Poor government management has exacerbated meager harvests caused by drought and floods, resulting in significant food shortfalls beginning in 2001.

The fast track land reform is generally regarded as a disaster. Many farms were violently seized by force, resulting in the expulsion of white farmers and mass displacement/homelessness of thousands of black farm workers. Farm workers rights to residential lands and food security plots were not addressed. Much of the on-farm infrastructure was removed, stolen or vandalized in the process of taking over farms. What compensation given to a few of the former owners has been below market value. The selection process for the recipients of the land has not been transparent, with the politically connected, including government ministers, receiving large tracks of land. To circumvent any legal challenges to its policy, the government has resorted to frequent legislative changes, including the 17th Amendment to the Constitution which allows the government to compulsorily acquire agricultural land while the dispossessed land owners are denied the right to challenge such acquisitions in courts. The fast track land redistribution has been blamed as the cause of the general economic collapse experienced by Zimbabwe since 2000 because it made property rights totally insecure.⁵

The Government of Zimbabwe also has implemented over the past five years a variety of import/export controls and foreign exchange regulations, which, in conjunction with price controls, has greatly diminished the possibilities of import/export commercial activity. The decline in agricultural production and hence exports, traditionally the country's predominant foreign exchange earner, has meant a greater requirement for imported food for which there is less hard currency available for purchase. This has exacerbated a hyper-inflationary price spiral, which reached 505 percent (April 2004) but has since fallen to 124 percent (April 2005). The government officially rates the Zimbabwe dollar at US\$1 to Z\$1,250, while the parallel market rate has risen to Z\$5000 per US\$1 as of the end of January 2007.

Moreover, the HIV/AIDS epidemic continues to exacerbate the humanitarian crisis in Zimbabwe. According to 2006 estimates from the Demographic and Health Survey, 18.1 percent of sexually active adults aged 15 to 49 are infected with HIV. Approximately 1.8 million Zimbabweans were living with HIV/AIDS in 2006 (of which 300,000 are children under 14), while an estimated 135,000 adults and 36,000 children died from AIDS. Total population is currently estimated at about 11 million.

⁵ Richardson, Craig. 2005.

3 Overview of the forest sector in Zimbabwe

The high, middle, and lowveld regions of Zimbabwe have native vegetation types which include undifferentiated woodlands, scrub woodlands and dry deciduous forests, wooded grasslands and deciduous brushlands, and secondary grasslands. These vegetation types vary according to precipitation, temperature, and soil fertility in the various regions. In large areas of the country, native vegetation is restricted to protected zones and high elevations. Elsewhere, land use changes and degradation have either eliminated or altered native vegetation.

Small areas of primary rainforest remain, located primarily on the windward slopes in the eastern highlands (Nyanga, Chimanimani and Uumba Mountains), and in a few small lowland areas elsewhere in the country. Most of the remaining 80,000 ha of rainforest are located about 1,500 meters, where it is inaccessible and or unsuitable for farming. Most of these areas are protected. There are three types of rainforests, corresponding to the elevation of the area. The medium altitude rainforests (1,400-1,800 meters) and high altitude rainforests (2,100 meters) on the Nyanga Mountains are mostly degraded. The medium altitude rainforests in the Chimanimani and Chipinge Districts of the southeast, originally covered 15,000 ha, but have been reduced to less than 10,000 hectares. The low altitude rainforests (350 to 750 meters) occur only in the Paungwe Valley at the base of the Nyanga Mountains (almost all of the original 4,000 hectares is deforested), and in the Rusitu Valley at the southeast base of the Chimanimani Mountains (only 200 ha remains of an original forest of 4,000 ha). The scattered and small rainforests that remain contain a great deal of biodiversity, although lower than that found in equatorial rainforests.

Industrial forest plantations are 67 percent privately owned and managed, and 33 percent managed by the Government's Forestry Commission. Sixty percent of the plantations are conifers, mostly pines, and the remainder hardwoods. Ninety-five percent of all rural households are dependent on fuelwood for energy and 95 percent of all fuelwood and wood poles are collected for free on communal lands. The rates of depletion and the distribution of current fuelwood shortages are concentrated in communal areas, whereas in commercial farming areas wood surpluses are common.⁶

Exotic forest plantations cover 110,000 hectares of land. These forests are of great commercial importance and produce a range of timber-based products for the domestic and export markets. Exotic plantation forestry industry accounts for most of the 3 percent contributed to the GDP by the forestry sector. The wood supply and demand picture in exotic plantations is mixed (Arnold and Easton, 1993). Average annual timber consumption in the sector was 656,000 cubic meters between 1987 and 1990 and 541,333 cubic meters between 1989 and 1991. The following table gives estimates of wood stocks of indigenous forests and woodlands by land tenure category in Zimbabwe.⁷

Table 1: Land tenure and wood stocks

Land Tenure Category	Land Area (000 Ha)	Wood Stock (Million Tons)
Communal Land	16,350	104
Resettlement Areas	3,290	11
Commercial Farming Areas	12,600	252
Wildlife Estate	5,406	269
Gazetted Forest Lands	800	1
Total	38,446	636

⁶ CSAFE World Vision 2005 IEE

⁷ Enos M. Shumba Biodiversity Planning Support Programme, CIFOR

3.1 Key threats to tropical forestry

Forest degradation and deforestation have occurred widely throughout the country due to shifting agriculture with reduced fallow periods and permanent clearing of forests for agriculture (including coffee and tea plantations). It is estimated that 70,000 ha of forest land is lost to agriculture each year. Overgrazing, intensive fuel wood collection and the introduction of invasive species are other causes. These problems are particularly severe in communal areas throughout the low and middleveld where most of the population lives, and where soil productivity is often marginal. In the highveld area the population density is much lower, soil productivity is higher and modern farming and forest management techniques have provided for productive and sustainable land use. Some of the resettlement areas in the middle and highveld are now also experiencing land degradation problems. Habitat loss to alien species is per the Government of Zimbabwe one of the lead causes of forest biodiversity loss. Specific examples include *Acacia mearnsii* in the eastern highlands, *Pinus patula* in Nyanga National Park and *Psidium cattlensis* in Chirinda forest. Some indigenous species such as *A. nilotca* and *Dichostyichus cinera* are reported to have invaded some degraded sites and pasture lands swamping the natural vegetation.⁸

3.1.1 Governance

Land reform efforts have exacerbated deforestation and weak governance has all but removed significant oversight and regulation. About 70 percent of the country's 11 million people live in communal areas and depend directly on forests for firewood, construction timber, food and fodder. However, the open access to forests in these areas results in their over exploitation due to lack of accountability. This is worsened by poverty; lack of alternatives; poor enforcement of the Communal Lands Forest Produce Act and the appropriate Rural District Council by-laws; and the breaking down of traditional social structures and local customs which facilitated the control of access to forest resources.

With respect to gazetted forests, biodiversity conservation is being threatened by neighboring communities that illegally obtain timber and non timber forest products from them.

3.1.2 Agriculture

Zimbabwe's agricultural development during the last 80 years has resulted in major losses of habitats for wild flora, fauna, insects and micro-organisms including the wild relatives of domesticated plants and animals. The increasing emphasis on a few crop varieties, monocropping, continuous cropping and use of external inputs such as fertilizers and pesticides is reducing the resilience of agricultural systems to changing environmental conditions and new pest and disease challenges.

The opening up of forest land for agricultural expansion is the major reason for the loss of forest biodiversity. It is estimated that 70,000 ha of forest land is lost to agriculture each year. In fact it is now difficult to find pristine miombo woodlands on the central watershed of Zimbabwe as most have disappeared to give way to cropping and grazing land. The growth of the tobacco industry has also increased the demand for fuelwood for tobacco curing although in the last few years tobacco production is down significantly.

⁸ Ibid.

3.1.3 Disease

Miombo woodlands are considered the richest and most productive in terms of biodiversity. However, some of the key species are threatened by die-back and deaths due to a scale insect called **Aspidoproctus glaber** Linderger (**Homoptera: Margarodidae**) recorded since 1985 (Mazodze, 1995; Mushongahande, 1997).

Pterocarpus angolensis suffers from die-back which is commonly known as mukwa die-back or mukwa blight. This phenomenon occurs in the Kalahari Sand forests, notably Fuller Forest Reserve. The disease has been attributed to a wilt disease caused by **Fusarium oxysporum** and the pre-disposing conditions include droughts, fires, frosts and heavy browsing by wildlife (Pierce, 1979 and Calvert *et al*, 1992). It is projected that the disease will lead to a substantial decline in mukwa tree populations in the next fifty years (Wyk *et. al.* 1993).

3.1.4 Logging and over-harvesting

Commercial timber species found in the teak forests are selectively cut on the basis of diameter (minimum 30 cm) and stem form. This tends to "cream off" the best phenotypes leaving poorly formed trees. If the good phenotypic traits are under genetic control, this leads to gradual genetic impoverishment as superior trees are removed. In addition, selective logging affects species recruitment and dominance. For example, **Baikiaea plurijuga** tends to become the dominant species after logging in teak forests. In other woodland types, selective logging for wood carving leads to a decline in the preferred species such as **Dalbergia melanoxylon** in miombo woodlands.

The selective extraction of trees for various uses by local communities also leads to over exploitation. For example, **Warburgiasalutaris** (muranga), which is well known for its medicinal properties in the Chipinge area, is almost extinct as a result of overharvesting.

3.1.5 Elephant browsing

The impact of elephant browsing on forest biodiversity is a function of their population density. In general terms, biodiversity is reduced where elephant density is high; not affected at low densities; and increased at intermediate densities. It has been reported that high elephant densities lead to shifts in plant species composition in teak and mopane woodlands.

4 Overview of biodiversity in Zimbabwe

The majority of Zimbabwe's population directly depends on a range of biological resources for subsistence and income generation. However, the country's biodiversity is under threat from a number of factors which include conflicting economic policies, rapid population growth rates, restrictive land tenure systems, recurrent droughts, the erosion of cultural values and inadequate incentives for the rural folk who "live with" the biodiversity. Furthermore, government expenditures on biodiversity conservation have declined over time in real terms.

The state also set aside 15 percent of the country as gazetted/protected forests and national parks. These offer good examples of the in-situ conservation and sustainable use of Zimbabwe's biological heritage. Unfortunately, the economic decline of the last few years has effected the management of the protected areas. For example in Hwange National Park, the government provides watering points pumped from wells. As the pumps break down, there is no money for repairs resulting in wildlife deterioration due to lack of water. Some NGOs, such as Hwange Trust, are attempting to intercede but are severely under-funded.

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There are also a number of traditional values that have assisted in the sustainable use of natural resources in Zimbabwe. These include: traditional rules and regulations that forbid the cutting of fruit trees and other "sacred" tree species for uses such as fuelwood and construction and the use of one side and position of a tree to harvest roots or bark for traditional medicines. These traditional practices deterred people from exploiting the same tree before it had sufficiently regenerated. Unfortunately, some of these conservation sensitive traditional beliefs and customs are breaking down.

Zimbabwe is a signatory to several important international and national policy frameworks for sustainable resource use, the majority of which emerged from the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992. These include the Convention on Biodiversity, the Convention on Climate Change, the Convention to Combat Desertification, the Montreal Protocol and the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).

A major motivation for worrying about biodiversity in Zimbabwe is its centrality in the national economy and to human survival against the background of a declining biodiversity base as shown by the following examples:

- Zimbabwe's economy is heavily dependent on natural resources (i.e. forests, wildlife, aquatic life and agriculture) for generating employment, income and foreign exchange.
- Although forests provide a wide range of timber and non timber forest products and services to the majority of Zimbabwe's population, they are being lost at an alarming rate. It is estimated that about 70,000 ha of Zimbabwe's forests are lost to agriculture each year. Furthermore, although about 66 percent of the country is still covered by woody vegetation, the cover in some districts such as Chivi now stand at only 30 percent.

Wildlife is an important source of meat especially in rural areas. Consequently, the increasing human population numbers are imposing tremendous pressure on this important natural resource. For example, it is now extremely difficult to "sight" wildlife species such as the "rabbit" in most communal areas! Furthermore, the international commercialization of wildlife threatens the survival of species such as the rhino.

Fish, a nutritionally and economically important aquatic species is being threatened by over fishing in Lake Kariba (e.g. Kapenta) and by water pollution in Lake Chivero. The commercialization of agriculture has contributed to the disappearance of certain traditionally important food crops (e.g. cereals, legumes and vegetables) and farming systems including those based on traditional agroforestry.⁹ Despite its unquestionable contribution to the national economy, "modern" agriculture tends to be vulnerable to the vagaries of the smallholder farming environment.

Sixty six percent of the country's land area is under various forest types compared to 27 percent which is under cultivation. The heaviest concentrations of forests occur in the gazetted state forest areas, national parks areas, the eastern highlands and large scale commercial farms. Exotic plantations occupy about 156,000 ha of which over 90 percent is in the eastern districts. Also found in the latter are the unique tropical rain forests occupying some 11,500 ha.

⁹ However "modern" agroforestry is being promoted in Zimbabwe by the World Agroforestry Centre and other groups.

4.1 Flora diversity¹⁰

The southern Africa region is dominated by six phyto-regions called the Flora Zambeziaca, Karoo-Namib, Cape Floristic, Afromontane, Indian Ocean Coastal Belt and the Kalahari-Highveld transitional zone (Beenje, 1996). The Flora Zambeziaca region is the richest in terms of species and dominates most of Zimbabwe. The eastern highlands of the country form part of the Afromontane region and has the largest level of endemism notably in the Chimanimani Mountains, Nyanga and Chirinda Forest. Vegetation characteristics of the Cape Floristic region such as fynbos (fire bush) occur in the Nyanga mountains. Although the other phyto-regions do not extend into Zimbabwe, remnant species are not uncommon. *Much of the information that follows on ecosystem, species and exotic species biodiversity is derived from the Government of Zimbabwe's National Biodiversity Strategy and Action Plan of 2003.*

4.1.1 Ecosystem biodiversity

- a) Flora Zambeziaca Phyto-region: The Flora Zambeziaca phyto-region is a complex phytogeographic region situated in South Central Africa between latitudes 80°E10°N and Longitudes 20°E50°N. The phyto-region is the centre of diversity for most woodland types found in the Southern African region. In Zimbabwe, the phyto-region has five woodland types, namely Miombo, Mopane, Teak, Acacia and Terminalia/Combretum. The phyto-region has about 8,500 plant species of which 4,600 are endemic (White 1983). The latter taxa include *Bolusanthus*, *Cleistochlamys*, *Colophospermum*, *Diphorhynchus*, *Pseudolachnostylis* and *Viridivia*. Most tree species in the phyto-region are economically important and are used for timber, poles, firewood, fruit and medicines. They have also high browse value and support rich diversity of faunal species.
- b) Afromontane Phyto-region: The Afromontane phyto-region is located in the eastern highlands of Zimbabwe, mainly on the windward side of the mountains along the border with Mozambique, where about 740 vascular plant species are found. This phyto-region has four distinct vegetation types. The main factors controlling species distribution and composition in this phyto-region are altitude, moisture availability, human disturbance, soil type and topography. Some of the forests remained fairly intact due to inaccessibility, legal protection and the presence of the botanical gardens. However, a number of these forests are being threatened by plantation forest development, agricultural expansion and invasion by alien species such as jacaranda and wattle.
- c) Exotic Plantations: Zimbabwe has a well established plantation forest resource base covering some 155,833 ha (about 0.4 percent of the country's total land area). About 90 percent of the plantations are located in the Eastern districts. This area is characterized by high altitudes (700 to 2,200 meters above sea level) and high rainfall (average of 1,000mm/year). About 71 percent of the planted area is under softwoods (pines), 13 percent under hardwoods (eucalyptus) and 16 percent under wattle. With respect to plantation ownership pattern, about 42 percent belong to the State, 54 percent to private companies and the remainder to small private growers that include cooperatives.

4.1.2 Species biodiversity¹¹

Species flora diversity in Zimbabwe is described in the context of the five woodland types of the Zambeziaca phyto-region, the four vegetation types of the Afromontane phyto-region, and the

¹⁰ Enos M. Shumba, CIFOR Biodiversity Planning Support Programme: Zimbabwe, August 13, 2001.

¹¹ Zimbabwe National Biodiversity Strategy and Action Plan 2003

exotic plantations. The five woodland types are: miombo, mopane, teak, acacia and terminalia/combertrum.

- a) Miombo Woodlands: The Miombo woodlands are the most extensive woodland type covering most parts of the central watershed of the country. A number of sub-types are found within this woodland based on the dominant species. The most common is the *Brachystegia spiciformis* type, found in association with *Julbenardia globiflora* and *Brachystegia boehmii*. On the Kalahari sands, *B. spiciformis* is often associated with *Baikiaea plurijuga* and *Pterocarpus angolensis*. The second type is *B. boehmii* which commonly occurs on escarpments at higher altitudes. Common tree associates under warm and drier conditions include *Azelia quanzensis*, *Kkikia acuminata* and *Acacia* spp. This sub-type often merges with Mopane woodlands at lower altitudes. The fourth type is *Parinari curatellifolia* occurring as pure un-stratified stands on sandy soils with a high water table. It is believed that the whole central plateau of the country was once covered *P. curatellifolia* which was invaded by *Brachystegia* spp. This woodland type is now very limited in extent and has generally been degraded to grasslands and savanna as a result of slash and burn. The fifth type is *Uapaca kirkiana* which occurs as pure stands generally situated on well-drained soils in frost-free areas. Miombo woodlands have diverse uses, ranging from watershed protection, provision of soil fertility (through leaf litter), grazing and browsing, firewood, edible fruits, mushrooms, caterpillars and timber. Thickets of Miombo woodland hold little commercial-quality timber except for small areas in demarcated forests such as Mafungabusi Forest Reserve. Furthermore, most of these forests have been converted into intensive agricultural areas, hence it is difficult to locate pristine woodlands.
- b) Teak or Baikiaea Woodlands: The teak woodland, which is exclusive to Kalahari sands, is predominantly found in the demarcated forests of western Zimbabwe and parts of Hwange National park. *Baikiaea plurijuga* is the dominant species and is usually found in association with *Pterocarpus angolensis* and *Guibourtia coleosperma*. Other associates include *Azelia quanzensis*, *Kirkia acuminata*, *B. spiciformis* and *J. globiflora*. The woodland has a long history of management for commercial timber exploitation, wildlife utilization, cattle grazing and water catchment.
- c) Mopane Woodlands: Mopane woodlands are quite widespread in Zimbabwe and are often associated with low altitudes and hot areas with sodic and alluvial soils. The woodlands are often adjacent to the miombo or lowland woodlands dominated by *Combretum* or *Terminalia* spp, and are known for their low alpha diversity. *Colospospermum mopane* is the dominant species. *C. mopane* has economic importance especially as a source of browsing for both domestic and wild animals. It is also a source of timber for craftwork, small household items, fence poles, mine props, railway sleepers; it is also very good firewood.
- d) Acacia Woodlands: Acacia woodlands occupy sizeable tracts of land in the dry areas and grow on eutrophic soils. Available woodland sub-types include: *Acacia erioloba* on Kalahari sands; *Acacia nilotica* on black clays; and *Acacia gerrardii* on basement schist in association with *A. karroo* and *A. tortilis* on the alluvial sands of the Zambezi valley. *A. albida* on alluvial soils in the major river systems in the lowveld areas, and *A. nigrescens* on the Pereminan sands of the Save valley. Three species associated with acacia woodlands are quite varied. Because of their soil enriching properties, the woodlands are often associated with rich grass under storey. They are therefore important in pastoral systems as the trees provide browse and grasses are used for grazing.
- e) Terminalia/Combretum woodlands: They are often found as tree shrub combinations. In its natural state, *Terminalia* tends to be associated with other species but it becomes dominant when it colonizes burnt sites. However, this woodland type has been severely

cut and most of the existing vegetation is secondary. It also tends to be the recruitment species in areas affected by elephant damage. It provides firewood, poles for construction and tool making, and diesel brooms.

4.1.3 Exotic flora biodiversity:

The Government of Zimbabwe introduced a series of non-indigenous species in the country. The main genera introduced were Pinus and eucalyptus. As per the Government of Zimbabwe, through its Forest Commission, the presence of this exotic forest biodiversity has made it possible for Zimbabwe to develop a forestry industry which contributes about 3 percent of the GDP.

- a) Pine Species: The introduction of Pinus species into Zimbabwe may have started around 1903 when seed requirements were met by imports from South Africa. The major commercial species is *P. patula*. It is well adapted to most afforestation areas of Eastern Zimbabwe to develop forestry that are above 1,500 meters above sea level and receive not less than 1,000 mm of annual rainfall with mean annual temperature below 18° C. Species diversity is represented as sub populations. Other species have been introduced from Mexico and other central American countries through the central and Mexican Coniferous Resources Co-Operative (CAMCORE) of which Zimbabwe Forestry Commission was a member until 1999. The second commercially important species is *P. elliottii* which has ten sub-populations (four from Zimbabwe selections, one from South Africa, one from Malawi, three from the USA and one from Queensland in Australia).
- b) Eucalyptus Species: Eucalyptus was introduced into Zimbabwe to meet the demand for hardwood timber, poles and firewood. The major species are *E. grandis*, *E. camaldulensis* and *E. tereticornis*. *E. grandis*, which originally came from Eastern Australia, has proved to be a versatile species in Eastern Zimbabwe and the highveld. *E. camaldulensis* is regarded as the most reliable species for the drier parts of the country. The diversity of this species in the country is very broad and includes materials from Australia and Zimbabwean landraces (selection from commercial stands). *E. tereticornis* is also well represented in the country with populations from Australia.
- c) Australian Acacia: Other than Eucalyptus and pines, Australian acacias form an important component of exotic introductions into Zimbabwe. *Acacia mearnsii* is an important commercial tree species for the production of tannin and charcoal. Other Australian acacia species being evaluated in the country are *A. holoseria*, *A. auriculiformis*, *A. cowleana* and *A. tumida*.

4.2 Fauna diversity

The presence of warm temperatures, woodlands and open savanna grassland; swamps and man made lakes provide ideal environment for a wide variety of wildlife species in Zimbabwe.

4.2.1 Mammal diversity

About 337 species of mammals are around the Southern Africa region, of which 175 are in Zimbabwe. The most widely monitored mammals are those of some economic importance. Population status data are available for 19 species with the elephant being the most surveyed especially in the Hwange National Park. Other large mammals counted during elephant surveys include buffalo, eland, giraffe, kudu, waterbuck, zebra, roan, antelope and sable. The elephant population currently stands at twice the ecological requirement and threatens habitats of many species and biodiversity in general. White and Black Rhino numbers are also increasing following the establishment of four intensive protective zones in response to heavy poaching of these mammals during the eighties.

Table 2: Diversity of mammal species in Zimbabwe ¹²

Order	No. of families	No. Species in Southern africa	No. of Species in Zimbabwe
Insectivora	4	40	16
Chiroptera	10	73	51
Primates	2	7	5
Pholidota	1	1	1
Lagomorpha	1	6	2
Rodentia	8	74	40
Carnivore	6	36	31
Tubulidentata	1	1	1
Proboscidae	1	1	1
Hyracoidea	1	4	1
Artiodactyla	6	40	26
Perissodactyla	2	5	4

Table 3: Protected mammal species in Zimbabwe

Local Names	Scientific Names
Aardwolf	<i>Proteles cristatus</i>
Bat-eared fox	<i>Octocyon megalotis</i>
Cheetah	<i>Acinonyx jubatus</i>
Gemsbok	<i>Oryx gazelle</i>
Lichtenstein's hartebeest	<i>Alcelaphus lichsteini</i>
Pangolin	<i>Manis temmincki</i>
Black rhinoceros	<i>Diceros bicornis</i>
White rhinoceros	<i>Ceratotherium simun</i>
Roan antelope	<i>Hippotragus simum</i>

4.2.2 Bird diversity

Southern Africa has very high bird diversity, consisting of about 900 species of which 133 are endemic. Over 600 of these species occur in Zimbabwe. The families with the largest numbers of species are: the Sylviidae (warblers) with 53 species; the Charadriidae (Plovers, turstones) with 34 species; the Ploceidae (Queleas) with 27 species; the Estrildidae (finches) with 22 species; the Hirundinidae (swallows, martins) with 20 species; the Turdidae (thrushes, chats, robins) with 20 species; and the Loniidae (storks) with 20 species; and the Ardeidae (herons, egrets) with 17 species.

The large number of species found in the country is due to high habitat diversity. The richest bird habitats are the bushveld and the woodland (Newman 1983). This population is however decreasing due to habitat loss. Twenty-five species of birds are currently protected species in Zimbabwe.

4.2.3 Fish diversity

Although Zimbabwe has no natural lakes, it has over 8,000 impoundments. The major artificial impoundments are the Kariba, Mutirikwi, Chivero, manyame, Mazvikadei, Osborne and

¹² Zimbabwe National Biodiversity Strategy and Action Plan 2003

Manyuchi dams. Kariba is the country's largest dam and is shared with Zambia, it supports an important fishery, based on introduced sardine (*Limnothrissa miodon*), which yields about 20,000 tons per year. Exotic fish species were introduced in Zimbabwe by angling societies for fishery stocking and aquaculture. Tilapia (*Oreochromis mossambicensis*, *O. macrochir*, *O. Andersoni*) exotic trout, prawn and crayfish are actively farmed in Zimbabwe.

Zimbabwe is drained by six major river systems namely the Zambezi, Save-Runde, Limpopo, Nata, Bubi and Pungwe. The Zambezi river system has 84 species of fish that occur above and 70 species that occur below the Victoria Falls. Species specific to the upper Zambezi system include *Pollimyrus castelnaui*, *hepsetus odoe* and *Coptostomobarbus wittei*.

4.2.4 Reptile diversity

Southern Africa has about 400 species of reptiles of which a considerable number occurs in Zimbabwe. The families with large numbers of species are the Boaedontinae (with 12 species), the Gekkonidae (with 10 species), the Corylinae sub family (with 9 species), the Calubrinae sub family (with 9 species), the Atractaspidinae (with 9 species), and the Nnajinae (with 10 species).

Reptiles in Lake Kariba are dominated by crocodiles whose flesh (especially the crocodile tail) is a delicacy, especially for tourists. Crocodile skins are used as hides in the leather manufacturing industry.

Table 4: Reptile biodiversity in Southern Africa and Zimbabwe¹³

Order	No. of Families	No. Species in Southern Africa	No. of species in Zimbabwe
Chelonii	6	20	6
Squamata	11	68	64
Amphoisbeania	1	12	7
Sauria	7	229	186
Crocrodilians	1	1	1

4.2.5 Invertebrate diversity

Zimbabwe still lacks a systematic inventory and monitoring system for insect species. However, indications from the Natural History Museum in Bulawayo and the insect collection at the plant protection research institute in Harare are that the country has a rich diversity of insects and all 29 insect orders have been found in Zimbabwe. Most collections are of beetles, where 128 genera have been recorded in the carabid family alone. Nine families of butterflies have been recorded with well over 400 species mostly collected from eastern highlands (Cooper 1973).

Grasshoppers and locusts constitute an important widely distributed economic invertebrate order with nearly 300 species. Most of the species are defoliators with seasonal abundance. Four families of termites have been recorded. Termites are both important as a food source and in nutrient recycling and at least 45 species have been documented in Zimbabwe.

More than 1,600 species of mosquitoes have been recorded world-wide and Zimbabwe has only one genus (*Anopheles*) which is important for being the intermediary host of the malarial parasite. The other (*Culex*) is a carrier of a parasite causing elephantiasis.

¹³ Zimbabwe National biodiversity Strategy and Action Plan, 2003

4.2.6 Value, use and economics of biodiversity in Zimbabwe

Biodiversity generates and helps to maintain the supply of myriad goods and services that are essential for human well-being and economic development of Zimbabwe. Zimbabwe's economy depends heavily on its natural resource base. The forestry sector contributes around 3 percent to Zimbabwe's Gross Domestic Product (GDP), largely from exotic plantations and the exploitation of commercial indigenous timber species. On the other hand, natural woodlands generate a wide range of timber and non-timber products and services whose value was estimated around Z\$4.2 billion/year in 1996. The current figures are unknown.

Zimbabwe's natural forests generate a wide range of timber- and non-timber products and services. The products include: fuelwood for charcoal making, sawn timber and pulpwood, building materials, wood for small artisan crafts, fodder, fruits, honey, mushrooms, insects, bark for rope, medicines, leaf litter and gum. The service includes watershed conservation, carbon fixation; and the provision of windbreaks, shade, soil stability, and wildlife habitat.

As per the Government of Zimbabwe, forest (both indigenous and exotic) plays an integral role in the social and economic development of Zimbabwe through the provision of various goods and services. Commercial forestry is highly vertically integrated into timber production, processing, packaging and marketing. It employs about 16,000 people and contributes some 3 to the Gross Domestic Product (GDP).

Wildlife constitutes a real source of income for the economy. Income from the tourism sector was valued at around 6 percent of GDP and the sale of hunting concessions in CAMPFIRE¹⁴ project areas generated substantial funds during the 1990s. These revenues have experienced a major drop in the last six years. Other direct benefits from wildlife include: meat, hides and other natural products from commercial hunting and game ranching and insects such as mopane worms, which are gathered for food and for sale by local communities.

Zimbabwe's economy benefits from its aquatic biodiversity. Fish catch represents a non-negligible source of revenue for communities. For example, the gross kapenta value is very important. Other direct uses of Zimbabwe's aquatic biodiversity center around tourism related to aquatic ecosystems mainly around Lake Kariba and Victoria Falls.

The primary and secondary agricultural sectors contributed (around 1996) as much as 20 percent to the country's GDP. This figure has fallen due to the overall economic decline experienced in the last six years. The current figures are unknown. Agro-biodiversity also has indirect use values or ecological services, which include maintenance of natural cycles, reservoir of natural biological control systems, symbiotic associations and genetic resistance.

¹⁴ As part of USAID's Natural Resource Management Program in Zimbabwe, the agency provided approximately \$27 million to the Communal Areas Management Program for Indigenous Resources (CAMPFIRE) program over the period 1989-1999. CAMPFIRE's objective was to build the capacity of local authorities to manage natural resources and wildlife in order to increase incomes of rural people and to help them provide for basic needs of their communities. Initially, it was a wildlife-based/trophy hunting program. It later diversified to other activities supporting conservation in communal areas of marginal land not suitable for agriculture.

4.2.7 Policy, laws and institutional frameworks affecting biodiversity conservation

In contrast to many African countries, the environmental legislation of Zimbabwe is quite comprehensive and encompasses all the most important areas. Acts relating to the environment are enforced by a number of different ministries and there is no framework law (umbrella legislation). There are almost twenty acts and twice as many statutory instruments (subsidiary legislation) for the environment in Zimbabwe. They include the Natural Resources Act, Forest Act, Parks and Wildlife Act, Trapping and Animals Control Act, Hazardous Substances and Articles Act, Atmospheric Pollution Prevention Act, Noxious Weeds Act, Plant, Pests and Diseases Act, Mines and Minerals Act, Water Act, Regional Town and Country Planning Act, Rural District Councils Act, Communal Land Act and Communal Forest Product Act.¹⁵

One of the most important pieces of legislation is the Natural Resources Act which aims to control the use of resources. However, it cannot be applied in the communal areas, about half of the total land area of Zimbabwe, since it is enforced by way of legal title to land.

Generally the enforcement of some of these acts is difficult due to the provision of exemptions, which allow companies to pollute. In some cases, the various pieces of legislation are conflicting, which leads to further problems of implementation.

Other governmental agencies responsible for environmental policy and procedures are as follows. However, it should be noted that poor management and under-funding has severely weakened the effectiveness of these organizations.

The Department of Natural Resources (DNR) is responsible for the promotion of standards for environmental quality, and to provide information on the environment. The DNR is the institution in charge of mitigating adverse environmental impacts of projects.

The Department of National Parks and Wildlife Management (DNPWM) has the responsibility for the management of parks and wildlife, and for the sustainable use of animal resources. The Communal Area Management Program for Indigenous Resources has facilitated sustainable wildlife production, and reduced the degradation of land by offering a viable alternative to the farmer. The revenue generated by the Communal Area Management Program is turned back to the local community and utilized in accordance with community-identified development priorities.

The Forestry Commission is promoting rural afforestation.

The Ministry of Lands Agriculture and Rural Resettlement (MLARR) implements its mandate in agriculture through *Agriculture, Technical and Extension Service (AGRITEX)*. AGRITEX has extension workers all over the country, and through its extension work, land use planning and soil and water conservation are emphasized. MLARR has therefore considerable influence on environmental matters. AGRITEX has established its own Soil and Water Conservation Unit.

The Ministry of Local Government Urban and Rural Development (MLGURD) is responsible for community development in a broad sense through the Department of Rural Development. In practice their function tends to overlap with that of AGRITEX. MLGURD is further in charge of

¹⁵ African Development Bank African Development Fund Country Environmental Profile Zimbabwe Environment and Social Policy Working Paper Series Working Paper No. 2

working with the district and local authority system, through the Development Committees on the district, ward, and village levels respectively. This is intended to encourage a bottom-up approach, but the influence of traditional leadership, which historically has been responsible for land allocation, has been reduced significantly. Village Development Committee (VIDCO) views are not systematically taken into account by decision makers on the district and national levels. MLGURD also controls the District Development Fund (DDF), which is used for the construction of rural roads.

Other ministries responsible for environmentally related matters include: *The Ministry of Energy and Water Resources Development (MEWRD)* which implements the Water Act, and gives advice on issues related to surface and ground water. *The Ministry of Health* provides health services to urban and rural communities, and monitors health related practices in industry.

4.2.8 Zimbabwe's participation in international environmental conventions

Zimbabwe is an active party in a range of international environmental conventions and is a signatory to the following global multilateral environmental agreements (MEAs):

- Convention Concerning the Protection of the World Cultural and Natural Heritage
- Convention on International Trade in Endangered Species (CITES)
- United Nations Convention on the Law of the Sea (UNCLOS)
- Vienna Convention for the Protection of Ozone Layer
- Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal protocol)
- United Nations Framework Convention on Climate Change (UNFCCC)
- UN Convention on Biodiversity (CBD)
- United Nations Convention to Combat Drought and Desertification (UNCCD)

Zimbabwe is also a signatory to a number of regional multilateral environmental agreements including, among others, the Bamako Convention on the ban of the importation into Africa of hazardous waste, the Southern African Convention for Wildlife Management, the Lusaka Agreement on Co-Operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora, the Protocol on Wildlife Conservation and Law Enforcement in Southern Africa, and the Protocol on Shared Watercourse Systems in the Southern African Development Community.

In addition to the above national policy, Zimbabwe has ratified a number of other treaties covering areas such as trans-boundary movements of hazardous waste, protection of the ozone layer, climate change and biological diversity.¹⁶

4.3 Threats to biodiversity conservation

4.3.1 Agricultural encroachment

Cultivation poses a severe threat to the integrity of the eco-region, as forested land is increasingly being converted to crops such as tea, maize, finger millet, and other staple crops. Cultivation does not only change the composition of the ecoregion's flora, but it can create serious erosion problems, as fields are often plowed on steep slopes. Overgrazing by large numbers of livestock also cause erosion problems in areas of high human population.

¹⁶ C-SAFE/Zimbabwe Initial Environmental Examination by World Vision International, July 2005

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The loss of forest land to agriculture due to human population pressure is a major cause of diversity loss in Zimbabwe, especially on communally-owned land. Consequently, it is difficult to find pristine miombo woodlands on the central watershed of Zimbabwe, as most have disappeared to give way to cropping and grazing land. This situation has worsened with the recent resettlement schemes adopted by the Government. Furthermore, the purposeful extraction of certain tree species by local communities is leading to their overexploitation. Such threatened species include: *Warburgia salutaris* (muranga), a medicinal plant on the verge of extinction in the Chipinge area.

4.3.2 Bushfire

The most significant force of natural or man-made disturbance within Zimbabwe's ecoregions is undoubtedly fire. Each year, large areas in wooded lands are swept by fires. These fires negatively impact on habitats as they kill individual organisms, damage unprotected living tissues, modify growth and reproductive rates and alter the competitive balance between organisms. In some areas of Zimbabwe, large densities of elephants (*Loxodonta Africana*) act synergistically with fire in reducing woodlands and thickets to grasslands. By opening the wood canopy, elephants enable more grass to grow and this provides fuel for fires (Norton-Griffiths 1979).

4.3.3 Habitat destruction by elephant browsing

At high density, elephants can radically modify habitats by reducing both faunal and floral species diversity as has been the case in Zimbabwe's major national parks. For example, the decline in the population of buffalo, roan, and bushbuck in Hwange National Park was due in great part to a reduction in tree density caused by elephant destruction (Wilson 1997). In the Chizarira National Park, elephants reduced well developed *Julbernardia globiflora* savanna woodland to virtual grassland within a decade (Thompson 1975). Elephants were a destructive force in the *Colospospermum mopane* woodlands in Zimbabwe. Mopane is habitat of key endangered species such as the black rhinoceros (*Diceros bicornis*) and the wild dog.

4.3.4 Land tenure and use policies

Over the last eight years, there has been increasing political and social tension in Zimbabwe over land-distribution and compensation. In July 2000, President Mugabe stated that he would adopt a "fast track" land reform process in Zimbabwe where a national committee, the National Land Identification Committee would identify tracks of land for redistribution. This fast-track model consists of two approaches: model A1, to benefit 160,000 of the poor from the general landless population; and model A2 aimed at creating 51,000 black commercial farmers.¹⁷ This process has been noted as an inefficient and inconsistent method of allocating land. Moreover, there were increasing concerns that these methods were not monitored by the judicial system, open to human rights abuses, and corruption.

The current land distribution policies that are taking place in Zimbabwe have generated "perverse" incentives, which have the potential to accelerate the loss of biodiversity through unsustainable farming techniques, forestry or fishery activities, over-exploitation of natural resources, such as wildlife, logging and encroachment of new pristine areas.

Moreover, these controversial policies have caused disruption to local communal and social structure by creating conflicts between indigenous people and the newly resettled individuals under the current land distribution schemes. It is clear that the fast track land reform has been a

¹⁷ Human Constitutional Rights, 2002.

disaster. Moreover, the Zimbabwean government is less than open in providing information on the new ownership of land, and its future plans related to redistribution.

4.4 Actions needed to address the threats to biodiversity conservation

4.4.1 Priority actions (possible in current context)

Currently “sustainable development” programs in economic growth and/or natural resource management are not possible given the weak governance and poor management and policy environment. Therefore, this is not a part of the USAID strategy. In fact, most Western donors are not supporting development programs under the current policy environment. Given this context, these recommendations are actions that can be taken now as part of preparation for a development-oriented strategy once there is a change in the policy environment:

- Highlight the need for scientific and participatory assessments of biodiversity for priority setting and planning. Within this process, strengthen and target threat analysis. Data are lacking for accurate and targeted analysis and action.
- Request a synthesis of experience and lessons on local governance options and processes for forestry and conservation in the context of decentralization of NRM and land tenure reform, drawing lessons from other African countries through knowledge resources such as FRAME (http://www.frameweb.org/ev_en.php) and Nature Wealth and Power (http://www.usaid.gov/our_work/agriculture/landmanagement/pubs/nature_wealth_power_fy2004.pdf). This could be done through the Center for Development Information and Evaluation (CDIE), Frame, EGAT or a regional mechanism.
- Update information on government-managed and communal protected areas in terms of how recent political and economic changes have affected these areas and species within them. Continue to get up-to-date information on what other donors and institutions are doing in the forestry and biodiversity sectors.
- Species choice and targeting of future agro-forestry and forestry interventions must be made carefully. In degraded areas, forest rehabilitation and agroforestry may be used to replenish important products from trees and shrubs. Attention to species choice and targeting of extension to non-elites and women is important. Often extension services do not reach these groups, and species choice may be limited to fast-growing exotics.

4.4.2 Other actions (future context)

- Assess changes in threats such as poaching and accelerated use of natural resources due to break-down in institutions and regulations, and declining economy.
- When appropriate and feasible, the Mission can begin to craft a *sustainable economic growth strategy* that provides viable alternatives to youth and promotes investment in rural areas in non-extractive industries: diversified smallholder plantations, community forestry, biodiversity research, tourism, and small-scale artisan and other industries.
- Gather lessons from CAMPFIRE, wildlife management and ecotourism in southern Africa. What needs to be done to revitalize this sector?

- In the context of community or communal forestry, sustainable production and commercialization of non-timber forest products (NTFP) and fuelwood/charcoal needs to be based on the best models and lessons from Africa and other parts of the world.
- Support monitoring efforts. A number of projects incorporating vegetation inventories have been carried out by a number of institutions in Zimbabwe; there have been no biodiversity specific monitoring programs in the forestry sector. Such studies are necessary for the design of effective forest biodiversity conservation and utilization programs.
- Rebuild institutional capacity. All conservation and land use planning has to be done within an institutional structure. Zimbabwe's institutions are rapidly weakening. Uncertainty and conflict have wreaked havoc on institutions. When appropriate a thorough review of conservation and forestry institutions is needed including regulations, the effect of recent land use patterns and migrations, and brain drain of Zimbabwean professionals.
- Assess potential for trans-boundary conservation efforts and potential for harmonizing policies among countries in the region. How has Zimbabwe's situation destabilized other countries? Have migration flows changed patterns of cross-border natural resource management?
- Ensure that future land tenure policy takes the above into consideration.

5 Tropical forestry and biodiversity considerations in USAID/Zimbabwe's strategy statement

The extent to which USAID programs meet actions needed to conserve Zimbabwe's tropical forests and biodiversity is summarized in the table below.

5.1 Extent to which USAID/Zimbabwe strategy meets actions needed

Table 5: Summary table: actions and activities proposed

Actions necessary	Activities proposed
<i>From recommendations</i>	
Information update	Link with FRAME, donors and key NGOs to get updated information on biodiversity and tropical forestry, government and community based protected areas
Status assessments	Find out if NGOs or donors are carrying out research or monitoring of biodiversity and forestry
Lessons learned	Link to FRAME, regional and EGAT teams working on forestry, community forestry, wildlife management; brainstorm on options for Zimbabwe in the future
Species choice/extension	Discuss with C-SAFE and other food security/HIV-AIDS partners their species

	choices and extension methods for-food-work programs.
Sustainable economic growth strategy	Brainstorm priority areas, target populations and components of strategy
<i>From existing program</i>	
Inclusive governance	Civil society strengthening around NRM, use of local media, policy reform through parliamentary committees.
Persons affected by crisis	Alternative income generation that is environmentally-friendly.
Basic economic activity/livelihoods	Crop diversification, environmentally friendly options and technologies such as conservation farming.
HIV/AIDS	Proper disposal of medical waste

5.2 Threats and opportunities of proposed USAID activities

The USAID/Zimbabwe strategy for 2006-2008 is comprised of two objectives. There are several activities designed to address each objective. Proposed activities have been evaluated against two criteria:

- 1) What, if any, are the threats (direct and/or indirect negative impacts) to forests and biodiversity that would result from implementing the activity and how could it be mitigated; and
- 2) What are the additional opportunities for USAID to better contribute to meeting conservation needs?

A brief summary of the proposed activities and analysis of threats and opportunities is presented below, organized under each of the two objectives.

Governing Justly and Democratically

In order to achieve this strategic objective, the Mission will implement a program focusing on the following intermediate results (IRs):

Inclusive governance advanced:

Under this Intermediate Result (IR), the focus of the USAID program will be to promote good governance by supporting activities of civil society, faith-based organizations, other democratic forces and selected government institutions that strengthen democratic processes and systems. This focus will address the source of Zimbabwe’s fragility – centralized, unchecked power in the executive branch – by supporting organizations and institutions that can build a foundation for democratic accountability. By doing so, we will help to ensure that democratic systems and practices are revived and institutionalized.

Threats: There are no specific threats to biodiversity conservation and natural resource management foreseen under this component of the program.

Opportunities:

- Improved ability for community organizations to advocate for policy reform and service delivery: Strengthening community-based organizations' ability to advocate for policies such as land tenure and use-right certification should help to improve land management by providing incentives for long-term investments in land productivity and tree planting. Community organizations could also advocate for greater community participation in land use planning decisions, which could limit encroachment into protected areas and forests.
- Support to private media: Efforts to improve reporting on background information for policy debates could play a critical role in moving land certification forward, and informing the public about the threatened status of Zimbabwe's forest, wildlife and biodiversity.
- By strengthening the capacity of relevant portfolio committees in Parliament, management of natural resources will be improved and public debate on environmental issues will be supported.

Persons affected by crises assisted

USAID is implementing activities that provide lifesaving support to people most directly affected by Zimbabwe's multi-faceted crisis. A large segment of the population is critically affected by the cumulative and disastrous effects of the government's political, economic, and social policies, especially the policies on displacement and state-sanctioned violence and torture. Through these programs, USAID is working to provide affected individuals and communities with access to basic medical, legal, psychological, and social support to help them recover from their trauma and assist them in reintegrating into their communities to become fully productive contributors to economic, political, social, and cultural stabilization and democratic reform.

Threats: There are no possible threat to biodiversity anticipated under this IR.

Opportunities:

USAID/Zimbabwe could support, within its humanitarian assistance framework, activities that encourage non-farming income-generating activities to lower the pressure on the natural resource base by communities living adjacent to environmentally sensitive areas. By ensuring the basic needs are met, these actions will reduce pressures to seek short term profits from unsustainable agricultural practices.

Basic economic activity an livelihoods maintained/restored

USAID has supported emergency humanitarian assistance in Zimbabwe since 2002. Although inconsistent rainfall in the country and the region is a contributing factor, the primary cause of the humanitarian crisis is counterproductive economic and other policies, including the disruptive fast-track land reform program under which nearly 4,000 white commercial farmers were dispossessed and previously productive farms were handed over largely to members of the ruling elite and their supporters. Studies have shown that until the start of fast-track land reform, Zimbabwe's GDP and annual rainfall moved in tandem. However, since the start of land reform that link has been broken. Even in years when rainfall was above average, such as 2000 and 2001, GDP declined.

Under this intermediate result, USAID will support interventions to ameliorate asset depletion and malnutrition for up to a third of the population under the FFP activities with U.S. and local NGOs and the World Food Program (WFP).

Threats: Activities such as Food-For-Work which build vital infrastructure, such as small drip-irrigation systems for nutrition gardens, could negatively impact the environment, unless proper attention is paid to environmental safeguards. Such possible negative impacts will be mitigated through the implementation of Reg. 216 regulations and Best Management Practices (BMPs)

Opportunities:

- USAID/Zimbabwe can work with affected communities, through local and international NGOs to develop, under its humanitarian framework, incentives that will promote community-based conservation and utilization of forest/tree resources as a means of alleviating poverty as well as agroforestry practices.
- Meeting basic needs of at-risk farmers and herders: cash transfers, food and other input resources will be used to reduce vulnerability of cultivators and pastoralists. In particular this will include providing food for work or other rewards for activities to enhance the environment such as tree planting, erosion control infrastructure, construction of enclosures for pasture rehabilitation and soil fertility improvements. Credit and other resources can also be used to diversify and expand livelihood options such as through crop diversification, wood lots, tree nurseries and agroforestry and beekeeping.

Investing in People

Under this objective, the Mission is integrating family planning activities into the prevention of mother-to-child transmission of HIV (PMTCT) in order to decrease the number of unintended pregnancies. Integrating these programs will also reduce the ever increasing orphan population and provide choices for HIV positive women.

Threats: Immunization programs and some HIV/AIDS treatment interventions will need to address potential for biohazards and proper disposal of hazardous waste.

Prior to implementation, all activities under this objective, will be subject to an Initial Environmental Examination (IEE) according to 22 CFR 216. It is foreseen that the activities could potentially have detrimental environmental impacts and will need to be designed to avert or minimize such impacts.

Opportunities:

- Develop an HIV/AIDS and natural resources activity which provides HIV/AIDS vulnerable populations with improved access to water, energy, and low labor intensive agricultural technologies.
- Immunization programs and some HIV/AIDS treatment interventions will need to address potential for biohazards and proper disposal of hazardous waste.

5.3 Areas of further study

- The Mission may consider providing conflict training and Do No Harm training to partners through the CMM office:
www.usaid.gov/our_work/cross-cutting_programs/conflict/
www.cdainc.com/publications/dnh/do_no_harm_handbook.php

6 Conclusion and next steps

Given the current situation in Zimbabwe, it is not possible for the Mission to invest in a full-fledged biodiversity or forestry program. However, it can be alert to the impacts on natural resources of fragility, conflict and economic collapse. During this period, strategies can be devised for how to rebuild the conservation and forestry sectors and to mitigate the impacts of the years of collapse. Economic recovery and an end to conflict can also lead to accelerated exploitation: the example of Mozambique after the civil war is of interest as conservationists reported greatly increased exploitation of wildlife and natural areas during reconstruction,

Brain drain affects all sectors in Zimbabwe and will take a toll on forestry and conservation institutions with resulting impacts on species and protected areas. Keeping in touch with other donors and NGOs working in these domains can help the Mission to better understand impacts and potential for investment in the future.

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