



# Forestry Department

Food and Agriculture Organization of the United Nations

## Forest Genetic Resources Working Papers

### *State of Forest Genetic Resources in Botswana*

Prepared for

*the SADC Regional Workshop on Forest and Tree Genetic  
Resources, Arusha, Tanzania, 5-9 June 2000*

Based on the work of

*Patrick S. Mutakela*  
Ministry of Agriculture, Gaborone

August 2001

Forest Resources Development Service  
Forest Resources Division

Working Paper FGR/11E

FAO, Rome, Italy

## **Disclaimer**

The Forest Genetic Resources Working Papers report on issues and activities in related to the conservation, sustainable use and management of forest genetic resources. The purpose of these papers is to provide early information on on-going activities and programmes, and to stimulate discussion.

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations and the Southern African Development Community concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Quantitative information regarding the status of forest and tree resources, including genetic resources, has been compiled according to sources, methodologies and protocols identified and selected by the author. Data comparison between countries using different recording methodologies and sources may not be possible. For standardized methodologies and data on forest resources, please refer to *FAO, 2001. State of the World's Forests 2001* ; and to *FAO, 2001. Global Forest Resources Assessment 2000 (FRA2000). FAO Forestry Paper No 139*. Official information can also be found at the FAO Internet site (<http://www.fao.org/forestry/Forestry.asp>).

Comments and feedback are welcome.

For further information please contact:

Pierre Sigaud, Forestry Officer (Forest Genetic Resources)

Forest Resources Division

Forestry Department

FAO, Viale delle Terme di Caracalla

00100 Rome, Italy

Fax: + 39 06 570 55 137

Email: pierre.sigaud@fao.org

## **Citation:**

Mutakela, P.S. 2001. *State of Forest Genetic Resources in Botswana. Prepared for the SADC Regional Workshop on Forest and Tree Genetic Resources, Arusha, Tanzania, 5-9 June 2000*. Forest Genetic Resources Working Papers, Working Paper FGR/11E. Forest Resources Development Service, Forest Resources Division. FAO, Rome (*unpublished*).

## **ABSTRACT**

The people of Botswana have always depended on the forest resource base from time immemorial and they continue to depend on it for various goods and services, chief of which continues to be fuelwood. It is said that 83% of the population in Botswana still depends on fuelwood for their energy needs. However, this valuable resource base is under threat from the rapidly expanding human population and its related sectoral agricultural and infrastructural developments, persistent annual veld fires, frequently recurring drought and the subsistence utilization of the forests. Various governmental and non-governmental sectors are making frantic efforts to combat these threats through various programmes. But these sectors are usually limited in their efforts by various administrative, technical and institutional weaknesses, such as shortage of manpower and resources. Nevertheless, the situation is slowly improving with the much needed assistance from various regional and international organisations. The government supports all these sectors in their endeavours by constantly reviewing legislation and ensuring its conformity to the notion of forest resources conservation, management and sustainable utilization.

## TABLE OF CONTENT

|   |           |
|---|-----------|
| <b>1. INTRODUCTION</b> .....  | <b>1</b>  |
| <b>2. COUNTRY PROFILE</b> .....   | <b>1</b>  |
| 2.1. LOCATION .....   | 1         |
| 2.2. CLIMATE .....  | 1         |
| 2.3. SOILS.....   | 2         |
| 2.4. VEGETATION .....   | 2         |
| <b>3. SOCIAL-ECONOMIC CONDITIONS</b> .....  | <b>2</b>  |
| 3.1. STATUS OF FOREST RESOURCES .....   | 2         |
| 3.2. UTILIZATION OF TREES .....   | 3         |
| 3.3. IDENTIFICATION OF THREATS .....  | 4         |
| 3.4. LINKS BETWEEN THE FORESTRY SECTOR AND FOREST GENETIC RESOURCES.....                                    | 5         |
| 3.5. LINKS BETWEEN OTHER ACTIVITIES.....  | 6         |
| 3.5.1. <i>Agriculture</i> .....   | 6         |
| 3.5.2. <i>Agroforestry</i> .....  | 6         |
| 3.5.3. <i>Animal husbandry</i> .....  | 6         |
| 3.5.4. <i>Industry</i> .....  | 7         |
| <b>4. PAST AND PRESENT ACTIVITIES IN CONSERVATION? UTILIZATION AND MANAGEMENT OF FOREST RESOURCES</b> ..... | <b>7</b>  |
| 4.1. DEMAND AND SUPPLY OF TREE SEED .....   | 7         |
| 4.2. <i>IN SITU</i> CONSERVATION.....   | 8         |
| 4.3. <i>EX SITU</i> CONSERVATION.....   | 8         |
| 4.4. TREE IMPROVEMENT .....   | 8         |
| <b>5. INSTITUTIONAL FRAMEWORK</b> .....   | <b>9</b>  |
| 5.1. INSTITUTIONS INVOLVED IN FOREST RESOURCES CONSERVATION.....  | 9         |
| 5.1.1. <i>Governmental agencies</i> .....   | 9         |
| 5.1.2. <i>Private, Parastatal and NGOs</i> .....  | 10        |
| 5.2. LEGISLATION, POLICY AND STRATEGY ON FOREST GENETIC RESOURCES.....                                      | 10        |
| <b>6. IDENTIFICATION OF NATIONAL PRIORITIES</b> .....   | <b>11</b> |
| <b>7. SIDE ACTIVITIES</b> .....   | <b>12</b> |
| 7.1. TRAINING AND CAPACITY BUILDING .....   | 12        |
| 7.2. RESEARCH .....   | 12        |
| <b>8. REGIONAL AND INTERNATIONAL COLLABORATION</b> .....  | <b>13</b> |
| 8.1. REGIONAL COOPERATION .....   | 13        |
| 8.2. INTERNATIONAL COOPERATION.....   | 13        |
| <b>9. CONCLUSION</b> .....  | <b>14</b> |
| <b>10. RECOMMENDATIONS</b> .....  | <b>14</b> |
| <b>LITERATURE AND REFERENCES</b> .....  | <b>15</b> |

|  |           |
|--|-----------|
| <b>APPENDICES .....</b>  | <b>17</b> |
| Appendix 1: list of abbreviations .....  | 18        |
| Appendix 2: value and utilization of important species at national level .....   | 19        |
| Appendix 3: management and location of genetic resources by species and population                                     | 22        |
| Appendix 4: level of security and nature of threats to the integrity of genetic resources<br>of priority species ..... | 34        |
| Appendix 5: list of priority species .....   | 56        |

## **1. INTRODUCTION**

Forest resources are an integral part of the environment and have always played a prominent role in the sustenance of human life through various pathways such as regulation of climatic conditions and provision of food, fuelwood, etc. However, with the large human population increases and associated agricultural and infrastructural developments, a lot of pressure is exerted on the forest resource base and has now become inadequate. Botswana is no exception. When she gained independence in 1966, the human population in the whole country was far less than 1 million and probably the forest resources could not have been under much pressure and were probably even adequate. Thirty-three years later, in 1999, the human population has risen to about 1.5 million while the forest resources have not had any corresponding increase. This is now leading to a shortage of the resources as more and more people place varying amounts and types of demand on them.

It is against this background that the idea of conservation and sustainability has gained enormous momentum. The main consideration in the utilization of the resource base is to use them in a sustainable manner taking in to consideration its productive capacity, and to conserve it for the future generations. Conservation though, is not only for the benefit of the future generations, but is also meant to ensure the perpetuation of forest genetic diversity. A reduction in quantities of a certain species will adversely affect the integrity and balance of the genetic resources in any given area.

This country report reviews the institutional, legal, social, economic, scientific and technical aspects of issues related to the status, conservation, utilization and promotion of forest genetic resources in Botswana. Particular focus is given to the problem of otherwise effective but disjointed efforts of both government and non- governmental sectors in addressing the degradation of the forest resource base.

## **2. COUNTRY PROFILE**

### **2.1. Location**

The Republic of Botswana is roughly situated in the centre of Southern Africa. It is bounded to the north by the Caprivi Strip in Namibia, to the north east by Zimbabwe, to the south-east and south by the Republic of South Africa and to the west by Namibia. Botswana has a total land area of approximately 581 730 km<sup>2</sup> (IUCN, 1992).

### **2.2. Climate**

The average annual rainfall of Botswana varies from a maximum of about 650 mm in the northern part of the country to a minimum of just under 250 mm in the extreme south-west in the Kgalagadi (Otsyina and Walker, 1990). Over 90 per cent of the rainfalls in the summer months between November and April and as such there is high evaporation. Rainfall is irregular and there is considerable variation in actual rainfall from year to year. Temperatures in summer can go above 35°C while winter temperatures can drop to 0°C and below with occasional frost at night in the months of June to August.

### **2.3. Soils**

Soils are generally infertile and derived from acid igneous rocks and about 70 per cent of the country are covered by the Kalahari sands. The sands vary in depth from less than 3 meters to occasionally over 100 meters deep (sand veld). In some areas, the sands are underlain by calcrete of varying thickness. In the eastern side of the country, the soils are characterised by sandy and loamy sand soils (hard veld) (Ntogwa, 1995).

### **2.4. Vegetation**

Forest type vegetation is confined to the miombo woodlands in the Chobe area in the north, the wetland and alluvial forests in and around the Okavango and the Linyanti swamps and a number of relatively small areas of *Colophospermum mopane* (mopane) belt where a high density occurs. Approximately 4 million hectares of Botswana land surface can be characterised as forests and about 455 000 hectares are gazetted forest reserves. Most parts of the country however have a savanna type vegetation. The largest savanna type vegetation is called the sand veld and covers approximately 65 percent of the country and occurs mainly in areas that receive an average rainfall of 400 mm. The sand veld is dominated by *Acacia erioloba* (camel thorn), *Acacia luederitzii* (bastard umbrella thorn), *Acacia tortilis* (umbrella thorn) and *Dichrostachys cineria* (sickle bush) (Ntogwa, 1995).

The vegetation found in the more densely populated areas of eastern Botswana falls into the hard veld vegetation group which is characterised by *Combretum apiculatum* (red bushwillow), *Terminalia sericea* (silver terminalia), *Colophospermum mopane* and *Acacia* species. Riparian woodlands are found along most of the major river courses. The largest riparian woodland formation occurs along the lower reaches of the Limpopo and Shashe rivers. The dominant tree species in these areas include *Combretum erythrophyllum* (river bushwillow) and *Ziziphus mucronata* (buffalo thorn).

## **3. SOCIAL-ECONOMIC CONDITIONS**

### **3.1. Status of forest resources**

The forests provide for subsistence needs in the form of fuelwood, building poles, fencing posts, etc., for about 80 per cent of the population of about 1.5 million. Other wood products include furniture, carvings, pestles and mortars, etc. A survey that was carried out in 1986 by the Energy Resources Limited (ERL) as quoted by Ntogwa (1995) revealed that domestic wood supply depends almost entirely on natural vegetation since there are no plantations of any significant size in the country.

Reliable quantitative data on Botswana's wood resources are still scanty. There is only limited information available on the woodlands and the savanna type vegetation upon which the majority of the people rely for their fuelwood needs. A survey carried out in 1984 by ODA/ERL covering eastern Botswana, including pilot inventories executed by the Energy Affairs Department of the Ministry of Minerals, Energy and Water Affairs show that the average stocking density in the savanna is relatively low. In the undisturbed savanna in the sand veld and hard veld, approximately 10 and 15 tonnes per hectare of air dry wood can be assumed respectively. Productivity ranges between 0.5 and 2 tonnes per hectare per annum and it is even lower in areas with high human population and livestock density because of reduced stems per hectare, approximately 0.33 tonnes per hectare per annum. These areas include Kgatleng and southeast districts (Ntogwa, 1995).

The wood collection zones around major towns and villages in south-eastern Botswana are the most seriously affected by deforestation and its negative impacts on rangeland quality, soil fertility and water retention capacity. Soil erosion caused by removal of vegetation cover is on the increase. The most favoured fuelwood and/or poles species are *Terminalia sericea*, *Combretum imberbe* (leadwood), *Acacia nigrescens* (knob thorn) and *Spirostachys africana* (tamboti).

### 3.2. Utilization of trees

Forests and woodlands are a valuable source of various goods and services. Forests, besides providing building materials, food, cosmetics, medicine, fuelwood and shelter also regulate micro climatic conditions. Forests also have a cultural importance. In Namibia, *Combretum imberbe* has been respected as an ancestral tree (Asare, 1990, as quoted by Totolo, 1997). There are various usages that can be derived from forests and woodlands of which the most common in the SADC region is fuelwood. It has been confirmed by Kgathi (1989), as quoted by Totolo (1997), that the distance to collect fuelwood has increased with time. Totolo (1997) goes on to quote Cogill and Kiugu (1990) as saying that in Namibia, in the Owambo, 95 per cent of the households had no electricity and 85 per cent used wood for cooking. Botswana is no exception, the most important usage of forest resources for rural populations is fuelwood. Mogalakwe and Mpotokwane (1986), quoted by Magole (1997,) found out that 83 per cent of the population in Botswana depended on fuelwood for cooking in 1986. With a substantial increase in human population since then, it goes without saying that there indeed has been an obvious increase in quantities of fuelwood used. Arntzen and Veneendaal (1986), as quoted by Magole (1997), estimated various uses of wood per annum as follows: Construction 34 000 tonnes, fencing of kraals 170 000 tonnes, domestic fencing 204 000 tonnes, fuelwood 500 000 tonnes.

The most important timber species in the country are *Pterocarpus angolensis* (Bloodwood) and *Baikiaea plurijuga* (Zimbabwe teak). Trees used mainly for veld products like wild berries are *Boscia albitrunca* (Shepherd's tree), *Ximenia caffra* (Large sour plum), *Berchemia discolor* (Bird plum), etc. Nuts are mostly from *Schinziophyton rautanenii* (Manketti tree), *Sclerocarya birrea* subsp. *caffra* (Morula), etc. *Phoenix reclinata* (Wild date palm), *Adansonia digitata* (Baobab) and *Hyphaene petersiana* (Real fan palm) provide the fibres. For pole production, the most important tree species in northern Botswana is *Colophospermum mopane* (Totolo, 1997).



Cereal containers, fishing baskets and tunnel nets are usually made from leaves of young *Hyphaene petersiana*. Wooden containers, cups and buckets are made from the fairly soft woods of *Albizia anthelmintica* (Worm-cure *albizia*), *Berchemia discolor*, *Commiphora africana* (Poison-grub *Commiphora*), *Commiphora angolensis* (Sand *Commiphora*), *Peltophorum africanum* (Weeping wattle) and *Schinziophyton rautanenii*. Mortars are obtained from the heartwood of *Burkea africana* and occasionally from *Combretum imberbe* or *Pterocarpus angolensis*. The pestle is obtained from *Colophospermum mopane* heartwood. Musical instruments are usually derived from hardwoods such as *Pterocarpus angolensis* or *Sclerocarya birrea* subsp. *caffra*. Dugout canoes which are used commonly along rivers and flooded areas, are made from *Baikiaea plurijuga*, *Guibourtia coleosperma* (Large false mopane) and *Pterocarpus angolensis* (Totolo, 1997).

Apart from medicinal uses, forest resources play an important role in cultural and religious activities such as initiation ceremonies where certain indigenous tree species e.g. *Euclea undulata* (Thicket *Euclea*) are put to great use. They are also used for aesthetical purposes and “providing a natural environment for citizens to come closer to nature” (Totolo, 1997). Forests and woodlands also protect watershed from water erosion. Finally, forests, by virtue of their diversity, provide an all important pool of diverse genetic material.

### **3.3. Identification of threats**

Hobona (1995) quotes Michael Russell, a Forest Management Specialist, as saying that fire has been and is still the worst threat to forests of Botswana particularly in the northern part of the country. This is corroborated by a joint scientific study between the University of Botswana and the Department of Wildlife and National Parks which found out that forest veld fires have a much larger share than previously thought in the causes of forest degradation (Schmidt, 1995). These frequent veld fires occur almost on an annual basis over the same areas and this is very detrimental to the conservation of forest resources because, according to Booth (1994), Savanna woodland may be able to withstand a fire every six years (or every 25) but not every year. This of course takes in to account that some tree species may adapt to fire depending on the size of the tree, bark thickness and fire intensity. But certainly fire damages and kills tree seedlings and saplings, depletes soil nitrogen and organic matter and decreases rainwater infiltration (Booth, 1994).

The rapid human expansion coupled with the related sectoral developments particularly in agricultural, industrial and housing sectors are also a threat to the existence of the forest resources. This is particularly so in major villages and urban areas where there are large human populations which subsequently lead to larger corresponding agricultural and infrastructural developments.

Subsistence use of forests and woodlands for household use did not, in the past contribute significantly to woodland clearance. But is it the commercial collection of fuelwood for urban customers and rural-based industries that largely contributes to the loss of forest genetic resources (Booth, 1994). However, it is only in the eastern part of the country, where 80 per cent of the population reside, where there is a shortage of wood (Otsyina and Walker, 1990). The shortage here does not necessarily imply the non-existence of woodlands but instead the inadequacy of preferred tree species e.g. for fencing poles or building. As a result, people have to travel long distances to find such tree species. Thus in the process of degrading woodlands, some genetic material is being depleted at a faster rate (Otsyina and Walker, 1990). The erosion of such genetic material is exacerbated by inconsistency in legislation to effectively safeguard forest resources in communal areas.

### **3.4. Links between the forestry sector and forest genetic resources**

The Division of Forestry and Range Ecology (DFRE) in the Ministry of Agriculture is the National Forest Authority and has to ensure effective and sustainable use of forest resources in the country. This is enshrined in the Forest Act Chapter 38:04 of 1968. Apart from powers vested in the Minister to declare a tree or classes of trees to be protected trees through the Forest Act in private or communal land, the DFRE does not have any wholesale supervisory powers over the management of forests and tree resources on communal and private land. Subsequently critical issues of the forest policy and legislation have been under comprehensive review to improve the economic as well as the environmental management of Botswana's forest resources by particularly encouraging and legalizing local institutional arrangement which promotes sustainable local level management of forest resources on communal and private land (NCSA, 1997).

The Agricultural Resources Board (ARB) in the Ministry of Agriculture as well, does have some supervisory powers over the conservation and management of non-woody forest resources such as *Harpagophytum procumbens* (grapple plant), in communal and private land. The powers are enshrined in the Agricultural Resources (Conservation) Act of 1974 and the Herbage Preservation (Prevention of fires) Act of 1977. The Department of Wildlife and National Parks (DWNP) in the Ministry of Commerce and Industry has authority over all flora and fauna within National Parks and Game Reserves.

### **3.5. Links between other activities**

#### **3.5.1. Agriculture**

The DFRE is in the Department of Crop Production and Forestry (DCPF) of the Ministry of Agriculture. Thus, DCPF combines the responsibilities of two competing and conflicting land use systems. Consequently, DCPF has to strike a balance between the two systems in pursuit of its mandate to ascertain food self-sufficiency and the conservation and sustainable utilization of forest resources. This in essence is not always easy. Food production is always a priority over conservation of forest resources. This is evidenced by certain government policies which encourage the clearing of land for arable agricultural purposes like the Accelerated Arable Rainfed Programme (ARAP) which rewarded in cash resource-poor farmers for among other things the destumping of their fields. The result of the programme was that large tracts of land were cleared through the sponsorship of government and yet only a small percentage of such land was placed under productive arable agriculture (Totolo, 1997). From its inception in 1979 until 1988, the programme enabled 74 000 hectares of woodland to be destumped for arable farming (Otsyina and Walker, 1990).

#### **3.5.2. Agroforestry**

Due primarily to institutional weakness in overall community forestry extension which is limited to non-governmental organisations and a few foresters in the Ministry of Agriculture, there are very few, if any, organised agroforestry systems in the country (Otsyina and Walker, 1990). That notwithstanding, Botswana have a good knowledge of local trees and their roles in the provision of fuelwood, poles, medicines, etc., and have always practised traditional agroforestry systems by often leaving trees in low densities on crop farms for shade, fruits and other products. Equally, trees are traditionally known to play an important part as livestock feed although this is only recognised in drought periods (Otsyina and Walker, 1990). However, for agroforestry to succeed, the integration of trees must aim at improving farming systems and the welfare of farmers, rather than the objective of growing trees.

#### **3.5.3. Animal husbandry**

Livestock production represents a major national resource and continues to be a cornerstone of the agricultural sector. Livestock contributes significantly to the national economy and beef exports to the European market account for about 20 per cent of the value of Botswana's total export commodities. It also provides employment, income and subsistence (milk, meat, etc.) to about 60 per cent of the rural households. It also serves as a source of status, security/insurance against droughts. In 1988, the cattle population was about 2.4 million together with 1.6 million goats, 258 900 sheep, 147 900 donkeys, 1,809 million chickens and 28 600 horses (Otsyina and Walker, 1990). However, the cattle population has been drastically reduced since then because of the decimation of close to 1 million cattle through the Contagious Bovine Pleuro Pneumonia (Cattle lung disease) eradication exercise. Communal forest resources provide the bulk of feed for all these livestock and overstocking and overgrazing have become a perennial problem. Overgrazing encourages forest invader species to take over, thus altering the botanical composition of forests (Ngakane, 1992). But with more than 85 per cent of these livestock managed under the traditional cattle post system in communal land with little or no supplementary feeding, animal husbandry will continue to pose a threat to forest resources.

### **3.5.4. Industry**

The Botswana Confederation of Commerce, Industry and Manpower (BOCCIM) is a private non-profit making organisation established in 1971. BOCCIM represents the interests of the private sector in total and is recognised by government as the main “voice” of the private sector. Its membership cuts across all the sectors of the economy and through all categories of the private sector including parastatal organisations. The World Conservation Union (IUCN), in collaboration with BOCCIM, have identified a lack of information regarding business and its environmental obligations. They therefore together conceived of a project that will aim at meaningful contribution of the industry to the conservation and sustainable management of the environment including forest genetic resources. By working together with government and non-governmental organisations and developing a Business and Environment Network, industry can commit itself to environmental excellence. Although some large corporations like Debswana, BCL Ltd., Botash Ltd., KSI Ltd., PCC Cement, etc., have made significant strides in creating their environmental management policies. It is the small and medium sized enterprises that BOCCIM still needs to sensitise about the need to take a broader interest in environmental and natural resource issues (Zhou and Landner, 1999). BOCCIM has actually established an Environmental Unit within its structures to encourage its members to actively participate in the conservation and sustainable management of natural resources.

## **4. PAST AND PRESENT ACTIVITIES IN CONSERVATION, UTILIZATION AND MANAGEMENT OF FOREST RESOURCES**

### **4.1. Demand and Supply of tree seed**

Although it is difficult to quantify the demand and supply of tree seed for both agroforestry and afforestation programmes because of poor records, the newly established Botswana National Tree Seed Centre (BNTSC) has some records of tree seed demanded by and supplied to twenty government tree nurseries. The BNTSC supplied these nurseries with 35 kg of both exotic and indigenous tree seed in 1996. In 1999, 75 kg of both exotic and indigenous tree seed were supplied to the same nurseries. It should be borne in mind that private nurseries and other non- governmental organisations do supply tree seed as well and the amount of seed demanded is much higher. The demand of tree seed in Botswana is very low when compared to other countries in the SADC region and this is so because apart from planting ornamental and fruit trees in homesteads, tree planting is not traditionally practised (Otsyina and Walker, 1990). This may be so because the country still has 93 per cent of its land covered with natural forests and woodlands and the people may not have actually felt the need to reforest the land. At 0.1 per cent per annum, Botswana also has the lowest annual deforestation rate in the SADC region (Totolo, 1997). Apart from the above, neither the government nor the private and non-governmental organisations do have massive planting programmes that could demand a lot of tree seed. Currently there are only 7 km<sup>2</sup> of plantations in the country, representing 0.0012 per cent of the total land area (Totolo, 1997).

#### **4.2. *In situ* conservation**

*In situ* or on site conservation refers to the preservation of whole organisms in their natural areas (Modise, 1992). Certain areas in the country have been set aside on state land for both flora and fauna conservation. These areas are owned by the state and comprise 23 per cent of the total land area of Botswana (NCSA, 1997). Most of it is used as National Parks, Forest and Game Reserves and no settlement is permitted. The National Museum has also set aside some areas and some individual trees as monuments. In all these cases, legislation provides for minimal interference on the state of the resources. With 93 per cent of the country still covered with natural forests, Botswana is in a better position to actively pursue *in situ* conservation.

#### **4.3. *Ex situ* conservation**

*Ex situ* or off site conservation refers to the storage of whole or parts of organisms outside their natural areas in botanical gardens, zoos, plantations, etc. (Modise, 1992). There are very few *ex situ* conservation areas in the country. The three herbaria at the Department of National Museum, the University of Botswana and Department of Integrated Agricultural Research do have pressed plant specimens with the one at the Department of National Museum having about 20 000 specimens (Hargreaves, 1992). But apart from these specimens which are mainly for historical value, these herbaria do not have any germplasm stored away for conservation purposes. Some City and Town Councils, e.g. Selibe-Phikwe Town Council, do have some parks that are mainly meant for aesthetical purposes but may as well serve as botanical gardens or arboreta because of the rich plant diversity. Apart from these initiatives, the country is not explored. The National Plant Genetic Resources Committee currently has not made any collections of forest tree germplasm. The newly established BNTSC has also not started any form of *ex situ* conservation but do have plans of establishing an arboretum before 2003.

#### **4.4. Tree Improvement**

There are tree improvement programmes that were initiated by either government or non-governmental organisations such as Forestry Association of Botswana (FAB), Veld Products Research and Thusano Lefatsheng. The government (mainly DFRE) and FAB have always concentrated on exotic tree species elimination and provenance trials of tree species such as *Eucalyptus* (gum trees), *Leuceana leucocephala*, *Atriplex nummularia* (old man's salt bush), etc. Veld Products Research continues to carry out tree improvement work on indigenous fruit trees such as *Sclerocarya birrea* subsp. *caffra* (Morula), *Strychnos cocculoides* (Monkey orange), *Azanza garckeana* (Snot apple), *Vangueria infausta* (wild medlar), etc. Thusano Lefatsheng does some improvement work on non-wood forest products such as *Harpagophytum procumbens* (grapple plant). Apart from the above programmes, very little tree improvement work is going on in the country even though a National Forestry Research Action Plan was drafted as back as 1992.

## **5. INSTITUTIONAL FRAMEWORK**

### **5.1. Institutions involved in forest resources conservation**

#### **5.1.1. Governmental agencies**

The Ministry of Agriculture, through the DFRE, is the major institution involved in conventional and community forestry work and is the overall national forest authority. It makes policies on forest genetic resources, utilization and management. It does this through gazettment of forest reserves, establishment of forest plantations to supply domestic needs for wood and other forest products, the establishment of forest nurseries that will provide disease free tree seedlings and carrying out of overall forestry research. However, it is incapacitated by its low key institutional set up within the Ministry. As a mere small division of the Department of Crop Production and Forestry, it is common knowledge that it cannot adequately and proactively handle the safeguarding of forest resources in the country. However, its human resource capability has considerably improved (qualitatively and quantitatively) in the past five years for effective management of the country's forest resources.

The Department of Agricultural Resources Board (ARB) is also in the Ministry of Agriculture and enjoys wide authority over non-woody forest products. Although the ARB's role has adapted in response to evolving natural resource conservation needs, ARB is not constructed to provide the necessary comprehensive natural resource management required to respond to expanding needs.

A National Plant Genetic Resources Committee was established in 1987 through the Department of Integrated Agricultural Research, also in the Ministry of Agriculture. It was set up to advise government on the formulation of guidelines for the collection and conservation of germplasm. One of the achievements of this committee is the establishment of a National Plant Genetic Resource Centre at Sebele (Gaborone).

The Department of Tourism in the Ministry of Commerce and Industry has the overall responsibility of promoting tourism in the country. The department has adopted a high cost-low volume kind of tourism, which is thought to have minimum impact on natural resources.

Also in the Ministry of Commerce and Industry is the Department of Wildlife and National Parks (DWNP). It has direct management authority over all natural resources within National Parks and Game Reserves. The European Union has significantly contributed to the strengthening of institutional capability of DWNP through staff training and infrastructural development. It is through this technical assistance that DWNP is in a better position to effectively manage National Parks and Game Reserves.

At the Ministry of Lands and Housing is the National Conservation Strategy (Coordinating) Agency (NCSA). Its responsibility is to coordinate environmental management in all governmental and non-governmental sectors. It also has to ensure that development and environmental programmes in line ministries are in conformity with the requirements of Agenda 21 of the United Nations conference on Environment and Development (UNCED).

The Ministry of Minerals, Energy and Water Affairs through its Energy Affairs Unit is responsible for energy activities. Its policy objectives among others include the maintenance of available fuel wood supplies. The Ministry, in collaboration with donors and other international organisations, has conducted several studies in the energy sector.

### **5.1.2. Private, Parastatal and NGOs**

There are several parastatal bodies and NGOs whose forestry activities and research complement those of government agencies. These are the University of Botswana (UB) through the National Institute of Research and Documentation (NIR&D) and the Harry Oppenheimer Okavango Research Centre (HOORC), the Botswana College of Agriculture (BCA), Veld Products Research (VPR), Serowe Forestry Brigade (SFB), Kgatleng Development Board (KDB), Kweneng Rural Development Association (KRDA), Palapye Development Trust (PDT), Thusano Lefatsheng and Permaculture Trust. While UB and BCA, which are parastatals and higher institutions of learning, have the expertise and the resources to carry out effective forest research programmes, the same cannot be said of the other agencies which are NGOs and rely heavily on funding from donors. Nevertheless, they also have meaningful and effective forest resource conservation and management programmes, particularly research of non-wood forest products.

## **5.2. Legislation, Policy and Strategy on forest genetic resources**

The government's strategy on forest genetic resources is to increase the effectiveness with which they are utilized and managed, so that beneficial interactions are optimised and deleterious side effects minimised. The strategy also seeks to integrate the many sectoral ministries and interest groups in the country, thereby enhancing the management of forest resources. Legislation related to environmental protection is found in many Acts of Parliament. Below are some of the main pieces of legislation.

### Legislation relating to conservation of forest genetic resources

- Plant Diseases and Pests Act (1959);
- Forest Act (1968);
- Agricultural Resources (Conservation) Act (1974);
- Seed Act (1976);
- Herbage Preservation (Prevention of fires) Act (1977);
- Tourism Act (1992);
- Wildlife Conservation and National Parks Act (1992).

### Policies

- Agricultural Resources Board Paper No. 1 (1975);
- Tribal Grazing Land Policy (1975);
- Wildlife Conservation Policy (1986);
- Tourism Policy (1990);
- National Conservation Strategy: National Policy on Natural Resources Conservation and Development (1990);
- Agricultural Development Policy (1991);
- National Development Plan 8.

### Regulations

- Agricultural Resources (Grapple Plant) 1977

### Pending Policies

- Community Based Natural Resources Management Policy;
- Botswana National Forest Policy;
- National Parks and Game Reserve Regulations.

Although some of the legislation is very old, the government is constantly reviewing all legislation to ensure its appropriateness and relevancy and plans are underway to draft the following:

1. Plant Genetic Resources Conservation Act, which will be based on the FAO International code of conduct for plant germplasm collection and transfer.
2. Environmental Impact Assessment legislation.

To reaffirm its commitment to conservation and sustainable management of natural resources, the government recognises Agenda 21 of UNCED and has subsequently ratified the following (NCSA, 1997):

- Convention on Climate Change;
- The Convention to combat drought and desertification;
- Biological diversity;
- Wetlands of International importance especially water fowl habitats;
- The Convention on the International Trade in Endangered Species;
- The Southern African Centre for Ivory Marketing.

## **6. IDENTIFICATION OF NATIONAL PRIORITIES**

A list of priority tree species is attached in appendices 2, 3, 4 and 5.



## **7. SIDE ACTIVITIES**

### **7.1. Training and Capacity Building**

The DFRE currently has a core of 12 professional foresters (4 with MSc). Three are still pursuing their BSc programmes outside the country. There also are 18 technical and 20 artisan foresters. Six are still pursuing their Forestry Diploma studies. Core Units of DFRE such as Agroforestry, Natural Woodland Management and Forest Extension are so understaffed that each one of them is manned by a professional forester who is responsible for the whole country. With such a small staff complement, it goes without saying that training is very essential at all levels (from short courses to PhD) to develop a cadre of appropriately trained foresters. The BNTSC is no better with only two professional and two technical foresters. The BCA has recently introduced a Diploma in Forestry and Range and it is hoped this will improve the critical shortage of technical foresters in the country. This critical shortage is having a deleterious effect on programmes aimed at reducing pressure on rapidly degrading woodlands. The DFRE also requires a lot of facilities and infrastructure for it to carry out its mandate effectively.

### **7.2. Research**

Pressure on forest resources augments the potential for over-exploitation and degradation of the resources also increases. At present, there is very little information on how best to conserve and manage trees and woodland types found in Botswana. A research programme is the only means by which such information can be obtained. To date, DFRE has conducted very insignificant research and has no facilities to conduct a rigorous research programme. Some forestry research continues to be carried out by NGOs and UB but on a limited scale (Ministry of Agriculture, 1992). The government however, has a National Forestry Research Action Plan which was put together in 1992. But up to now it has not been implemented chiefly because of institutional weaknesses and staff shortages at DFRE. Seven broad research areas have been identified in the plan as follows:

- natural woodland management;
- utilization of non wood forest products;
- ornamental plant development;
- basket making and thatching grass production;
- exotic tree and shrub species introduction;
- agroforestry;
- rehabilitation of degraded land.

## **8. REGIONAL AND INTERNATIONAL COLLABORATION**

### **8.1. Regional Cooperation**

Botswana is a member of SADC and is an active member of this organisation. Through this membership or by virtue of her location in the Southern African region, Botswana has links and cooperation with the following SADC agencies and projects:

- Forestry Sector Technical Coordination Unit;
- Tree Seed Centre Network;
- Southern African Regional Commission for the Conservation and Utilisation of the Soil;
- Southern African Botanical Diversity Network;
- Service for Environmental Conservation of Biodiversity and Sustainable Development;
- SADC Regional Gene Bank.

### **8.2. International Cooperation**

Various institutions from government and NGO sectors have forged links and cooperation with international agencies that have an interest in environmental conservation and management. The list of these agencies is not exhaustive and below are just some of the most common and prominent in the country:

- Canadian International Development Agency (CIDA);
- Swedish International Development Agency (SIDA);
- Norwegian Development Agency (NORAD);
- European Union/Community (EU/C);
- Danish Cooperation for Environment and Development (DANCED);
- International Union for the Conservation of Nature and Natural Resources (IUCN);
- Food and Agricultural Organisation (FAO);
- United Nations Environment Programme (UNEP);
- International Board for Plant Genetic Resources (IBPGR);
- Centre for International Forestry Research (CIFOR);
- German Development Service (DED);
- International Centre for Research in Agroforestry (ICRAF);
- Netherlands Development Service (SNV);
- United States of America Agency for International Development-Regional Centre for Southern Africa.

## **9. CONCLUSION**

Although it may be argued that the country is not experiencing deforestation at a national level, there are localised critical deforestation problems particularly in the densely populated southern and eastern parts of the country. This is evidenced by the critical shortages of fuelwood in those areas where they have to purchase fuelwood and the prices are rising sharply. This has provided a good market for alternative sources of fuel such as paraffin. But these substitutes turn out to be expensive for the poor households who continue to collect live wood by cutting and burning. Thus these deforestation problems may not be deliberate but actions of people in a desperate situation of poverty. It is as such very important that when institutional mechanisms for forest resource conservation and management involve community participation as much as possible. Policies should be formulated with the people and not for the people. Of course in Botswana, consultations occur with local communities and institutions such as Village Development Committees (VDCs). But as Magole (1997) puts it, the involvement of local communities and institutions is just to use them as vehicles of implementation of policies drawn from above and do not necessarily have power to influence decision making of forest resource conservation and management.

## **10. RECOMMENDATIONS**

1. It has long been agreed that legislation covering environmental protection in Botswana is adequate. However, this legislation falls under different ministries and authorities and this causes a lot of conflicts and overlaps. In that regard UNEP long recommended the collation, streamlining and updating of environmental legislation. This recommendation is hereby reiterated.
2. There is a need to strengthen the institutional capabilities of agencies that deal with forest resources. Most of them are low key institutions whose capabilities are currently over stretched. The government should actively give this aspect due attention by elevating the status of most of these institutions.
3. There has been very little research carried out on management of natural woodlands. Research is seriously needed to provide guidelines for the management of forest resources in the country. The Ministry of Agriculture should seriously consider implementing the National Forestry Research Action Plan of 1992.
4. There seems to be very minimal inter-departmental consultation and collaboration among and between government and NGOs on issues relating to conservation and management of forest resources. It is thereby recommended that inter-departmental collaboration should be promoted to enhance conservation and sustainable utilization of forest resources.

## **LITERATURE AND REFERENCES**

- Booth, A.** 1994. Woodlands and forests. In M. Chenje & P. Johnson, eds. *State of the Environment in Southern Africa*. Gland. SARDC, IUCN, SADC.
- Hobona, N.** 1995. Forestry Reserves are Diminshing. *Agrinews*, January 1995(4).
- IUCN.** 1992. *Protected Areas of the World. A Review of National Systems*. Vol.3: Afrotropical. Gland and Cambridge. IUCN Publication Service Unit.
- Magole, L.** 1997. Sustainability and natural resource management in Botswana. *Forestry Association of Botswana Journal*, 1(1): 12-18.
- Ministry of Agriculture.** 1992. *The National Forestry Research Action Plan*. Ministry of Agriculture. Gaborone.
- Modise, S.C.** 1992. The role of protected areas in *in situ* conservation of genetic resources. In S.M. Mathodi, L.M. Mazhani, D.K. Dipholo, M.N. Mbewe and B.J. Hargreaves, eds. *Proceedings of the First National Workshop on Plant Genetic Resources* (Proc. Gaborone, 24-26 June 1992), p.116-122. Gaborone, Ministry of Agriculture.
- National Conservation Strategy (Coordinating) Agency.** 1997. *Implementation of Agenda 21: Review of progress made since the United Nations Conference on Environment and Development, 1992*. Gaborone, Government Printer.
- Ngakane, S.R.** 1992. Range management and *in situ* conservation. In S.M. Mathodi, L.M. Mazhani, D.K. Dipholo, M.N. Mbewe and B.J. Hargreaves, eds. *Proceedings of the First National Workshop on Plant Genetic Resources* (Proc. Gaborone, 24-26 June 1992), p.109-115. Gaborone, Ministry of Agriculture.
- Norwegian Forestry Society.** 1992. *Chobe Forests Inventory and Management Plan*. Gaborone, Ministry of Agriculture.
- Ntogwa, C.V.** 1995. (BSc Hons Dissertation). *A Critical Review of Botswana Forest Policy*. University of Aberdeen, Aberdeen.
- Otsyina, R.M. and Walker, K.P.** 1990. *Agroforestry Development in Botswana*. Final Report. Ministry of Agriculture, Gaborone.
- Schmidt, D.** 1995. A donor's role in conservation. In K. Leggett, ed. *The Present Status of Wildlife and its Future in Botswana*. (Proc. KCS/CWT Seminar/Workshop, Botswana, 7-8 November 1995), p.33-44. Gaborone, KCS/CWT.
- Totolo, O.** 1997. Multiple use of indigenous forests and woodlands in the SADC region. *Forestry Association of Botswana Journal*, 1.1: 19-31.
- Zhou, P.P. and Landner, L.** 1999. *Business and environment in Botswana: An Assessment of Business Sector Interests in Environmental Resource Management*. Botswana, IUCN.

**LITERATURE CONSULTED BUT NOT CITED**

**Johnstad, M.** 1999. *National Policy on the Use of Natural Resources*. Final Draft Report. Gaborone. Ministry of Agriculture/USAID-NRMP.

**Keapoletswe, K.K.** 1999. *Non-Wood Forest Products in Botswana (traditional and commercial uses)*. Gaborone, Ministry of Agriculture.

**APPENDICES**

## Appendix 1: list of abbreviations

|        |  |
|--------|--|
| ARAP   | Accelerated Arable Rainfed Programme                         |
| ARB    | Agricultural Resources Board                                 |
| BCA    | Botswana College of Agriculture                              |
| BNTSC  | Botswana National Tree Seed Centre                           |
| BOCCIM | Botswana Confederation of Commerce, Industry and Manpower    |
| CIDA   | Canadian International Development Agency                    |
| CIFOR  | Centre for International Forestry Research                   |
| DANCED | Danish Cooperation for Environment and Development           |
| DED    | German Development Service                                   |
| DFRE   | Division of Forestry and Range Ecology                       |
| DWNP   | Department of Wildlife and National Parks                    |
| DWNP   | Department of Wildlife and National Parks                    |
| ERL    | Energy Resources Limited                                     |
| EU/C   | European Union/Community                                     |
| FAB    | Forestry Association of Botswana                             |
| FAO    | Food and Agriculture Organization of the United Nations      |
| HOORC  | Harry Oppenheimer Okavango Research Centre                   |
| IBPGR  | International Board for Plant Genetic Resources              |
| ICRAF  | International Centre for Research in Agroforestry            |
| IUCN   | World Conservation Union, Gland (Switzerland)                |
| KDB    | Kgatleng Development Board                                   |
| KRDA   | Kweneng Rural Development Association                        |
| NCSA   | National Conservation Strategy Agency                        |
| NGO    | Non-government organization                                  |
| NIR&D  | National Institute of Research and Documentation             |
| NORAD  | Norwegian Development Agency                                 |
| PDT    | Palapye Development Trust                                    |
| SFB    | Serowe Forestry Brigade                                      |
| SIDA   | Swedish International Development Agency                     |
| SNV    | Netherlands Development Service                              |
| UB     | University of Botswana                                       |
| UNCED  | United Nations Conference on the Environment and Development |
| UNEP   | United Nations Environment Programme                         |
| VDCs   | Village Development Committees                               |
| VPR    | Veld Products Research                                       |

## Appendix 2: value and utilization of important species at national level

| Species                                      | Value code | Present, future or potential use |    |    |    |    |    |    |    |    |    |    |   | xx                       |
|--|------------|----------------------------------|----|----|----|----|----|----|----|----|----|----|---|--------------------------|
|  |            | ti                               | po | wo | nw | pu | fo | fd | sh | ag | co | am |   |                          |
| <i>Acacia ataxacantha</i>                    | 2          |                                  |    |    |    |    |    |    |    |    |    |    |   | bee plant/basket weaving |
| <i>Acacia erioloba</i>                       | 1          |                                  | x  | x  | x  |    | x  | x  | x  |    |    | x  | x |                          |
| <i>Acacia erubescens</i>                     | 2          |                                  |    | x  | x  |    | x  | x  |    |    |    |    |   | brush fence              |
| <i>Acacia galpinii</i>                       | 2          | x                                |    | x  |    |    |    | x  |    |    |    |    |   | carvings                 |
| <i>Acacia haematoxylon</i>                   | 2          |                                  | x  |    | x  |    |    | x  | x  |    |    | x  | x |                          |
| <i>Acacia karroo</i>                         | 2          | x                                | x  | x  | x  |    |    | x  | x  |    |    |    | x | bee plant/ rope making   |
| <i>Acacia luederitzii</i>                    | 2          |                                  |    | x  | x  |    |    | x  | x  |    |    |    |   | bee plant                |
| <i>Acacia mellifera</i>                      | 2          |                                  | x  | x  |    |    |    | x  |    |    |    |    |   | bee plant/brush fence    |
| <i>Acacia nigrescens</i>                     | 2          | x                                | x  | x  | x  |    | x  |    |    |    |    |    |   |                          |
| <i>Acacia nilotica</i>                       | 2          | x                                | x  | x  | x  |    | x  | x  |    |    |    |    |   |                          |
| <i>Acacia tortilis</i>                       | 2          |                                  | x  | x  | x  |    | x  | x  |    |    |    |    |   | brush fence              |
| <i>Adansonia digitata</i>                    | 2          |                                  |    |    | x  | x  | x  |    | x  |    |    |    |   |                          |
| <i>Azelia quanzensis</i>                     | 2          | x                                |    |    | x  |    |    |    |    |    |    |    |   | ornaments/carvings       |
| <i>Amblygonocarpus andongensis</i>           | 2          | x                                |    |    |    |    |    |    |    |    |    |    |   |                          |
| <i>Atriplex nummularia</i> (introduced)      | 1          |                                  |    |    |    |    |    | x  |    |    |    | x  |   |                          |
| <i>Azanza garckeana</i>                      | 1          |                                  |    |    | x  |    | x  |    |    |    |    |    |   |                          |
| <i>Baikiaea plurijuga</i>                    | 1          | x                                |    | x  | x  |    |    |    |    |    |    |    |   |                          |
| <i>Bauhinia petersiana</i>                   | 2          |                                  |    |    | x  |    | x  |    |    |    |    |    |   |                          |
| <i>Berchemia discolor</i>                    | 2          |                                  |    |    |    |    | x  |    | x  |    |    |    |   |                          |
| <i>Bolusanthus speciosus</i>                 | 2          | x                                | x  |    | x  |    |    |    |    |    |    |    | x |                          |
| <i>Boscia albitrunca</i>                     | 2          |                                  |    |    | x  |    | x  | x  |    |    |    |    |   | carvings                 |
| <i>Brachystegia spiciformis</i>              | 2          | x                                |    |    |    |    |    |    |    |    |    |    |   | bee plant                |
| <i>Bridelia mollis</i>                       | 2          |                                  |    |    |    |    | x  |    |    |    |    |    |   |                          |
| <i>Burkea africana</i>                       | 2          | x                                |    |    | x  |    |    |    |    |    |    |    |   |                          |
| <i>Cassia abbreviata</i>                     | 2          |                                  |    |    | x  |    |    |    |    |    |    |    |   |                          |
| <i>Casuarina cunninghamiana</i> (introduced) | 1          | x                                | x  | x  |    |    |    |    | x  |    |    | x  | x |                          |
| <i>Colophospermum mopane</i>                 | 2          | x                                | x  | x  |    |    |    | x  | x  |    |    |    |   |                          |
| <i>Combretum apiculatum</i>                  | 2          |                                  | x  | x  | x  |    |    |    |    |    |    |    |   |                          |
| <i>Combretum collinum</i>                    | 2          |                                  |    |    |    |    |    |    | x  |    |    |    | x |                          |
| <i>Combretum erythrophyllum</i>              | 2          |                                  |    |    |    |    |    |    |    |    |    | x  |   | carvings                 |
| <i>Combretum hereroense</i>                  | 2          |                                  |    |    |    |    |    | x  |    |    |    |    |   |                          |
| <i>Combretum imberbe</i>                     | 2          | x                                | x  | x  | x  |    |    |    |    |    |    |    | x |                          |
| <i>Commiphora africana</i>                   | 2          |                                  |    |    | x  |    |    |    |    |    |    |    |   | live fences              |
| <i>Croton gratissimus</i>                    | 2          |                                  |    |    | x  |    |    | x  |    |    |    |    | x |                          |
| <i>Croton megalobotrys</i>                   | 2          | x                                |    |    | x  |    |    |    |    |    |    |    |   |                          |
| <i>Delonix regia</i> (introduced)            | 2          |                                  |    |    |    |    |    |    | x  |    |    |    | x |                          |
| <i>Dichrostachys cineria</i>                 | 2          |                                  | x  | x  | x  |    | x  |    |    |    |    |    |   | carvings                 |
| <i>Diospyros mespiliformis</i>               | 2          | x                                |    |    | x  |    | x  |    |    |    |    |    |   |                          |
| <i>Dodonaea angustifolia</i>                 | 2          |                                  |    |    | x  |    |    |    | x  |    |    | x  | x |                          |
| <i>Ekebergia capensis</i>                    | 2          | x                                |    |    | x  |    |    |    | x  |    |    |    |   |                          |
| <i>Englerophytum magalismsontanum</i>        | 2          |                                  |    |    | x  |    | x  |    |    |    |    |    | x |                          |
| <i>Erythrophleum africanum</i>               | 2          | x                                |    | x  |    |    |    |    |    |    |    |    |   |                          |
| <i>Eucalyptus camaldulensis</i> (introduced) | 1          | x                                | x  | x  | x  | x  |    |    |    |    |    | x  |   |                          |



| Species                                   | Value code | Present, future or potential use |    |    |    |    |    |    |    |    |    |    | xx                         |
|---|------------|----------------------------------|----|----|----|----|----|----|----|----|----|----|----------------------------|
|   |            | ti                               | po | wo | nw | pu | fo | fd | sh | ag | co | am |                            |
| <i>Euclea divinorum</i>                   | 2          |                                  |    |    | x  |    | x  |    |    |    |    |    | carvings                   |
| <i>Euclea undulata</i>                    | 2          |                                  | x  |    | x  |    | x  | x  |    |    |    |    |                            |
| <i>Faidherbia albida</i>                  | 1          |                                  |    | x  | x  |    | x  | x  | x  | x  |    |    |                            |
| <i>Faurea saligna</i>                     | 1          | x                                |    |    | x  |    |    |    |    |    |    |    | carvings                   |
| <i>Ficus abutilifolia</i>                 | 2          |                                  |    |    | x  |    | x  | x  |    |    |    |    |                            |
| <i>Ficus sur</i>                          | 2          |                                  |    |    | x  |    | x  |    | x  |    |    |    |                            |
| <i>Ficus sycomorus</i>                    | 2          |                                  |    |    | x  |    | x  | x  |    |    |    |    |                            |
| <i>Garcinia buchananii</i>                | 2          | x                                |    |    | x  |    | x  |    |    |    |    |    | carvings                   |
| <i>Gardenia volkensii</i>                 | 2          |                                  |    |    |    |    |    |    |    |    |    | x  | carvings                   |
| <i>Grewia bicolor</i>                     | 2          |                                  |    |    | x  |    | x  |    |    |    |    |    | rope making                |
| <i>Grewia flava</i>                       | 2          |                                  |    |    |    |    | x  | x  |    |    |    |    |                            |
| <i>Grewia flavescens</i>                  | 2          |                                  |    |    |    |    | x  |    |    |    |    |    |                            |
| <i>Grewia monticola</i>                   | 2          |                                  |    |    |    |    | x  |    |    |    |    |    | carvings                   |
| <i>Grewia retinervis</i>                  | 2          |                                  |    |    |    |    | x  |    |    |    |    |    |                            |
| <i>Guibortia coleosperma</i>              | 2          | x                                |    |    |    |    | x  |    |    |    |    |    |                            |
| <i>Hyphaene petersiana</i>                | 1          |                                  |    |    | x  |    | x  |    |    |    |    |    | beer making/basket weaving |
| <i>Julbernardia globiflora</i>            | 2          | x                                |    |    | x  |    |    |    |    |    |    |    | carvings                   |
| <i>Kigelia africana</i>                   | 2          |                                  |    |    | x  |    |    | x  |    |    |    |    | carvings                   |
| <i>Kirkia acuminata</i>                   | 2          | x                                |    |    |    |    |    |    | x  |    |    |    | carvings                   |
| <i>Lannea schweinfurthii</i>              | 2          | x                                |    |    | x  |    | x  | x  |    |    |    |    |                            |
| <i>Leucaena leucocephala (introduced)</i> | 1          |                                  |    |    |    |    |    | x  |    | x  | x  |    |                            |
| <i>Lonchocarpus capassa</i>               | 2          |                                  |    |    | x  |    |    | x  |    |    |    |    | carvings                   |
| <i>Lonchocarpus nelsii</i>                | 2          |                                  |    |    |    |    |    | x  |    |    |    |    | carvings                   |
| <i>Melia azedarach (introduced)</i>       | 2          |                                  |    |    | x  |    |    |    | x  |    |    | x  |                            |
| <i>Mimusops zeyheri</i>                   | 1          | x                                |    |    |    |    | x  |    |    |    |    | x  |                            |
| <i>Ochna pulchra</i>                      | 2          |                                  |    |    | x  |    |    | x  |    |    |    |    | soap making                |
| <i>Pappea capensis</i>                    | 2          |                                  |    |    | x  |    | x  | x  |    |    |    |    | beer and soap making       |
| <i>Peltoporum africanum</i>               | 2          |                                  |    |    | x  |    |    |    | x  |    |    | x  | carvings                   |
| <i>Phoenix reclinata</i>                  | 1          |                                  |    |    | x  |    | x  | x  |    |    |    |    | beer, broom and mat making |
| <i>Prosopis glandulosa (introduced)</i>   | 2          |                                  |    | x  |    |    |    | x  | x  |    |    |    | bee plant                  |
| <i>Pterocarpus angolensis</i>             | 1          | x                                |    | x  | x  |    |    |    |    |    |    |    | carvings                   |
| <i>Rhus lancea</i>                        | 2          |                                  | x  |    | x  |    |    |    |    |    |    | x  | carvings/beer making       |
| <i>Rhus pyroides</i>                      | 2          |                                  | x  |    | x  |    | x  |    |    |    |    |    | carvings                   |
| <i>Rhus tenuinervis</i>                   | 2          |                                  |    |    | x  |    | x  |    |    |    |    |    | carvings                   |
| <i>Schinus molle (introduced)</i>         | 2          |                                  |    |    |    |    |    |    | x  |    | x  | x  |                            |
| <i>Schinziophyton rautanenii</i>          | 2          | x                                |    |    |    |    | x  |    |    |    |    |    |                            |
| <i>Sclerocarya birrea</i>                 | 1          |                                  |    |    | x  |    | x  | x  | x  |    |    |    | beer making/carvings       |
| <i>Spirostachys africana</i>              | 1          |                                  |    |    | x  |    |    |    |    |    |    |    | carvings                   |
| <i>Strychnos cocculoides</i>              | 1          |                                  |    |    |    |    | x  |    |    |    |    |    | carvings                   |
| <i>Strychnos madagascariensis</i>         | 2          |                                  |    |    |    |    | x  |    |    |    |    |    |                            |
| <i>Strychnos potatorum</i>                | 2          |                                  |    |    | x  |    | x  |    |    |    |    |    |                            |
| <i>Strychnos pungens</i>                  | 2          |                                  |    |    | x  |    | x  |    |    |    |    |    |                            |
| <i>Strychnos spinosa</i>                  | 1          |                                  |    | x  | x  |    | x  |    |    |    |    |    | carvings                   |
| <i>Terminalia prunioides</i>              | 2          |                                  | x  | x  |    |    |    |    |    |    |    |    | carvings                   |
| <i>Terminalia sericea</i>                 | 2          | x                                | x  |    | x  |    |    |    |    |    |    |    | carvings                   |
| <i>Trichilia emetica</i>                  | 2          | x                                |    | x  |    |    |    |    |    |    |    |    | carvings                   |
| <i>Vangueria infausta</i>                 | 1          |                                  |    | x  |    |    | x  | x  |    |    |    |    |                            |

Appendices

| Species                         | Value code | Present, future or potential use |    |    |    |    |    |    |    |    |    |    |    |           |
|---------------------------------|------------|----------------------------------|----|----|----|----|----|----|----|----|----|----|----|-----------|
|                                 |            | ti                               | po | wo | nw | pu | fo | fd | sh | ag | co | am | xx |           |
| <i>Vangueriopsis lanciflora</i> | 2          |                                  | x  |    |    |    | x  |    |    |    |    |    |    |           |
| <i>Xanthocersis zambesiaca</i>  | 2          |                                  |    |    |    |    | x  | x  |    |    |    |    |    |           |
| <i>Ximenia americana</i>        | 2          |                                  |    |    | x  |    | x  |    |    |    |    |    |    | cosmetics |
| <i>Ximenia caffra</i>           | 2          |                                  |    |    | x  |    | x  |    |    |    |    |    |    | cosmetics |
| <i>Ziziphus mucronata</i>       | 2          | x                                |    |    | x  |    |    | x  |    |    |    |    |    |           |

Utilization

- ag agroforestry systems
- am amenity, aesthetic, ethical values
- co soil and water conservation
- nw non wood products (gums, resins, medicines, dyes, tannins,etc.)
- fo food
- fd fodder
- po posts, poles, roundwood
- pu pulp and paper
- sh shade, shelter
- ti timber production
- wo fuelwood, charcoal
- xx other

Value

1. Species of current socio-economic importance and already in breeding programmes or anticipated to be included in breeding programmes
2. Species with clear potential or future value
3. Species of unknown value given present knowledge and technology

### Appendix 3: management and location of genetic resources by species and population

| Species                    | Zones | Number of trees by population |                        |                          |                          |                             |                             |
|----------------------------|-------|-------------------------------|------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|
|                            |       | Reserve, natural park         | Stands in-situ ex-situ | Protected natural stands | Protected planted stands | Villages fields, homesteads | Experimental fields, trials |
| <i>Acacia ataxacantha</i>  | A     |                               | >10K                   |                          |                          |                             | >100                        |
|                            | D     | >1K                           | >10K                   |                          |                          |                             |                             |
|                            | E     | >1K                           | >10K                   |                          |                          |                             |                             |
|                            | F     |                               | >10K                   |                          |                          |                             |                             |
|                            | G     | >10K                          |                        |                          |                          |                             |                             |
|                            | K     |                               | >10K                   |                          |                          |                             |                             |
| <i>Acacia erioloba</i>     | A     |                               | >1K                    |                          |                          |                             |                             |
|                            | C     | >10K                          | >10K                   |                          |                          |                             |                             |
|                            | D     | >1K                           | >10K                   |                          |                          |                             |                             |
|                            | E     | >1K                           | >10K                   |                          |                          |                             |                             |
|                            | F     |                               | >10K                   |                          |                          |                             |                             |
|                            | G     | >1K                           | >10K                   |                          |                          |                             |                             |
|                            | H     | >1K                           |                        |                          |                          |                             |                             |
|                            | J     |                               | >10K                   |                          |                          |                             |                             |
|                            | K     |                               | >1K                    |                          |                          |                             |                             |
| L                          |       | >1K                           |                        |                          |                          |                             |                             |
| <i>Acacia erubescens</i>   | A     |                               | >10K                   |                          |                          |                             |                             |
|                            | E     | >10K                          |                        |                          |                          |                             |                             |
|                            | H     | >10K                          |                        |                          |                          |                             |                             |
|                            | I     | >10K                          |                        |                          |                          |                             |                             |
|                            | J     |                               | >10K                   |                          |                          |                             |                             |
|                            | K     |                               | >10K                   |                          |                          |                             |                             |
| <i>Acacia galpinii</i>     | D     | >10K                          |                        |                          |                          |                             |                             |
|                            | J     |                               | >10K                   |                          |                          |                             |                             |
|                            | K     |                               | >10K                   |                          |                          |                             |                             |
|                            | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Acacia haematoxylon</i> | C     | >10K                          |                        |                          |                          |                             |                             |
| <i>Acacia karroo</i>       | D     | >1K                           |                        |                          |                          |                             |                             |
|                            | J     |                               | >1K                    |                          |                          |                             |                             |
|                            | K     |                               | >1K                    |                          |                          |                             |                             |
|                            | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Acacia luederitzii</i>  | A     |                               | >10K                   |                          |                          |                             |                             |
|                            | C     |                               | >10K                   |                          |                          |                             |                             |
|                            | D     | >10K                          |                        |                          |                          |                             |                             |
|                            | F     |                               | >10K                   |                          |                          |                             |                             |
|                            | I     |                               | >10K                   |                          |                          |                             |                             |
|                            | J     |                               | >1K                    |                          |                          |                             |                             |
| K                          |       | >1K                           |                        |                          |                          |                             |                             |

| Species                                 | Zones | Number of trees by population |                        |                          |                          |                             |                             |
|---|-------|-------------------------------|------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|
|   |       | Reserve, natural park         | Stands in-situ ex-situ | Protected natural stands | Protected planted stands | Villages fields, homesteads | Experimental fields, trials |
| <i>Acacia mellifera</i>                 | A     |                               | >10K                   |                          |                          |                             |                             |
|   | C     | >10K                          |                        |                          |                          |                             |                             |
|   | D     | >10K                          | >10K                   |                          |                          |                             |                             |
|   | F     |                               | >10K                   |                          |                          |                             |                             |
|   | G     | >1K                           |                        |                          |                          |                             |                             |
|   | H     | >1K                           |                        |                          |                          |                             |                             |
|   | I     |                               | >10K                   |                          |                          |                             |                             |
|   | J     |                               | >1K                    |                          |                          |                             |                             |
|   | K     |                               | >1K                    |                          |                          |                             |                             |
|   | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Acacia nigrescens</i>                | A     |                               | >1K                    |                          |                          |                             |                             |
|   | D     | >1K                           |                        |                          |                          |                             |                             |
|   | G     | >1K                           |                        |                          |                          |                             |                             |
|   | H     | >1K                           |                        |                          |                          |                             |                             |
|   | J     |                               | >1K                    |                          |                          |                             |                             |
|   | K     |                               | >1K                    |                          |                          |                             |                             |
|   | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Acacia nilotica</i>                  | D     | >1K                           |                        |                          |                          |                             |                             |
|   | G     | >1K                           |                        |                          |                          |                             |                             |
|   | H     | >1K                           |                        |                          |                          |                             |                             |
|   | I     |                               | >1K                    |                          |                          |                             |                             |
|   | J     |                               | >1K                    |                          |                          |                             |                             |
|   | K     |                               | >1K                    |                          |                          |                             |                             |
|   | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Acacia tortilis</i>                  | A     |                               | >1K                    |                          |                          |                             |                             |
|   | D     | >10K                          |                        |                          |                          |                             |                             |
|   | E     | >1K                           | >1K                    |                          |                          |                             |                             |
|   | G     | >1K                           |                        |                          |                          |                             |                             |
|   | H     | >1K                           |                        |                          |                          |                             |                             |
|   | J     |                               | >1K                    |                          |                          |                             |                             |
|   | K     |                               | >1K                    |                          |                          |                             |                             |
|   | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Adansonia digitata</i>               | H     | >500                          | >500                   |                          |                          |                             |                             |
|   | K     |                               | >1K                    |                          |                          |                             |                             |
|   | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Azelia quanzensis</i>                | G     | >10K                          |                        |                          |                          |                             |                             |
| <i>Amblygonocarpus andongensis</i>      | G     | >10K                          |                        |                          |                          |                             |                             |
| <i>Atriplex nummularia</i> (introduced) | C     |                               |                        |                          | >100                     | >100                        | <100                        |

| Species                         | Zones | Number of trees by population |                        |                          |                          |                             |                             |
|---------------------------------|-------|-------------------------------|------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|
|                                 |       | Reserve, natural park         | Stands in-situ ex-situ | Protected natural stands | Protected planted stands | Villages fields, homesteads | Experimental fields, trials |
| <i>Azanza garckeana</i>         | H     |                               | >10K                   |                          |                          | >100                        | <100                        |
|                                 | K     | >1K                           |                        |                          |                          |                             |                             |
| <i>Baikiaea plurijuga</i>       | A     |                               | >1K                    |                          |                          |                             |                             |
|                                 | D     | >10K                          |                        |                          |                          |                             |                             |
|                                 | G     | >10K                          |                        |                          |                          |                             | <100                        |
| <i>Bauhinia petersiana</i>      | A     |                               | >1K                    |                          |                          |                             |                             |
|                                 | C     |                               | >1K                    |                          |                          |                             |                             |
|                                 | D     |                               | >1K                    |                          |                          |                             |                             |
|                                 | E     |                               | >1K                    |                          |                          |                             |                             |
|                                 | F     |                               | >1K                    |                          |                          |                             |                             |
|                                 | G     | >1K                           |                        |                          |                          |                             |                             |
|                                 | H     | >1K                           |                        |                          |                          |                             |                             |
|                                 | I     | >1K                           |                        |                          |                          |                             |                             |
|                                 | J     |                               | >1K                    |                          |                          |                             |                             |
|                                 | K     |                               | >1K                    |                          |                          |                             |                             |
|                                 | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Berchemia discolor</i>       | A     |                               | >500                   |                          |                          |                             |                             |
|                                 | D     |                               | <500                   |                          |                          |                             |                             |
|                                 | G     |                               | <1K                    |                          |                          |                             |                             |
| <i>Bolusanthus speciosus</i>    | H     |                               | <1K                    |                          |                          |                             |                             |
|                                 | K     |                               | <1K                    |                          |                          |                             |                             |
| <i>Boscia albitrunca</i>        | A     |                               | <1K                    |                          |                          |                             |                             |
|                                 | D     |                               | <1K                    |                          |                          |                             |                             |
|                                 | E     |                               | <1K                    |                          |                          |                             |                             |
|                                 | F     |                               | <10K                   |                          |                          |                             |                             |
|                                 | G     | >500                          |                        |                          |                          |                             |                             |
|                                 | H     |                               | <1K                    |                          |                          |                             |                             |
|                                 | I     |                               | <1K                    |                          |                          |                             |                             |
|                                 | J     |                               | >1K                    |                          |                          |                             |                             |
| K                               |       | >1K                           |                        |                          |                          |                             |                             |
| <i>Brachystegia spiciformis</i> | G     | >500                          |                        |                          |                          |                             |                             |
| <i>Bridelia mollis</i>          | J     |                               | >1K                    |                          |                          |                             |                             |
|                                 | K     |                               | >1K                    |                          |                          |                             |                             |
| <i>Burkea africana</i>          | D     |                               | >1K                    |                          |                          |                             |                             |
|                                 | G     | >10K                          |                        |                          |                          |                             |                             |
|                                 | I     |                               | >1K                    |                          |                          |                             |                             |
|                                 | J     |                               | >1K                    |                          |                          |                             |                             |
|                                 | K     |                               | >1K                    |                          |                          |                             |                             |
| <i>Cassia abbreviata</i>        | G     | >10K                          |                        |                          |                          |                             |                             |
|                                 | L     |                               | >1K                    |                          |                          |                             |                             |

| Species                                      | Zones | Number of trees by population |                        |                          |                          |                             |                             |
|--|-------|-------------------------------|------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|
|  |       | Reserve, natural park         | Stands in-situ ex-situ | Protected natural stands | Protected planted stands | Villages fields, homesteads | Experimental fields, trials |
| <i>Casuarina cunninghamiana</i> (introduced) | A     |                               |                        |                          | >100                     | >100                        | <100                        |
|  | B     |                               |                        |                          | >100                     | >100                        | <100                        |
|  | C     |                               |                        |                          | >100                     | >100                        | <100                        |
|  | D     |                               |                        |                          | >100                     | >100                        | <100                        |
|  | E     |                               |                        |                          | >100                     | >100                        | <100                        |
|  | F     |                               |                        |                          | >100                     | >100                        | <100                        |
|  | G     |                               |                        |                          | >100                     | >100                        | <100                        |
|  | H     |                               |                        |                          | >100                     | >100                        | <100                        |
|  | I     |                               |                        |                          | >100                     | >100                        | <100                        |
|  | J     |                               |                        |                          | >100                     | >100                        | <100                        |
|  | K     |                               |                        |                          | >100                     | >100                        | <100                        |
|  | L     |                               |                        |                          | >100                     | >100                        | <100                        |
| <i>Colophospermum mopane</i>                 | D     | >10K                          | >10K                   |                          |                          |                             |                             |
|  | H     |                               | >10K                   |                          |                          |                             |                             |
|  | K     |                               | >10K                   |                          |                          |                             |                             |
|  | L     |                               | >10K                   |                          |                          |                             |                             |
| <i>Combretum apiculatum</i>                  | A     |                               | >1K                    |                          |                          |                             |                             |
|  | D     | >1K                           |                        |                          |                          |                             |                             |
|  | G     |                               | >1K                    |                          |                          |                             |                             |
|  | I     |                               | >1K                    |                          |                          |                             |                             |
|  | J     |                               | >1K                    |                          |                          |                             |                             |
|  | K     |                               | >1K                    |                          |                          |                             |                             |
|  | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Combretum collinum</i>                    | A     |                               | >1K                    |                          |                          |                             |                             |
|  | B     |                               | >1K                    |                          |                          |                             |                             |
|  | D     |                               | >1K                    |                          |                          |                             |                             |
|  | G     | >1K                           |                        |                          |                          |                             |                             |
|  | H     |                               | >1K                    |                          |                          |                             |                             |
| <i>Combretum erythrophyllum</i>              | G     | >1K                           |                        |                          |                          |                             |                             |
|  | J     |                               | >1K                    |                          |                          |                             |                             |
|  | K     |                               | >1K                    |                          |                          |                             |                             |
|  | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Combretum hereroense</i>                  | A     |                               | >1K                    |                          |                          |                             |                             |
|  | D     |                               | >1K                    |                          |                          |                             |                             |
|  | G     | >1K                           |                        |                          |                          |                             |                             |
|  | H     |                               | >1K                    |                          |                          |                             |                             |
|  | I     |                               | >1K                    |                          |                          |                             |                             |
|  | J     |                               | >1K                    |                          |                          |                             |                             |
|  | K     |                               | >1K                    |                          |                          |                             |                             |

| Species                           | Zones | Number of trees by population |                        |                          |                          |                             |                             |
|-----------------------------------|-------|-------------------------------|------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|
|                                   |       | Reserve, natural park         | Stands in-situ ex-situ | Protected natural stands | Protected planted stands | Villages fields, homesteads | Experimental fields, trials |
| <i>Combretum imberbe</i>          | A     |                               | >1K                    |                          |                          |                             |                             |
|                                   | D     | >10K                          |                        |                          |                          |                             |                             |
|                                   | H     |                               | >1K                    |                          |                          |                             |                             |
|                                   | I     |                               | >1K                    |                          |                          |                             |                             |
|                                   | J     |                               | >1K                    |                          |                          |                             |                             |
|                                   | K     |                               | >1K                    |                          |                          |                             |                             |
|                                   | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Commiphora africana</i>        | A     |                               | >1K                    |                          |                          |                             |                             |
|                                   | D     | >10K                          |                        |                          |                          |                             |                             |
|                                   | G     | >10K                          |                        |                          |                          |                             |                             |
|                                   | H     |                               | >1K                    |                          |                          |                             |                             |
|                                   | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Croton gratissimus</i>         | A     |                               | >1K                    |                          |                          |                             |                             |
|                                   | D     | >1K                           |                        |                          |                          |                             |                             |
|                                   | G     | >1K                           |                        |                          |                          |                             |                             |
|                                   | H     |                               | >1K                    |                          |                          |                             |                             |
|                                   | I     |                               | >1K                    |                          |                          |                             |                             |
|                                   | J     |                               | >1K                    |                          |                          |                             |                             |
|                                   | K     |                               | >1K                    |                          |                          |                             |                             |
| <i>Croton megalobotrys</i>        | D     | >10K                          |                        |                          |                          |                             |                             |
|                                   | G     | >10K                          |                        |                          |                          |                             |                             |
|                                   | K     |                               | >1K                    |                          |                          |                             |                             |
|                                   | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Delonix regia</i> (introduced) | A     |                               |                        |                          |                          | <100                        |                             |
|                                   | B     |                               |                        |                          |                          | <100                        |                             |
|                                   | C     |                               |                        |                          |                          | <100                        |                             |
|                                   | D     |                               |                        |                          |                          | <100                        |                             |
|                                   | E     |                               |                        |                          |                          | <100                        |                             |
|                                   | F     |                               |                        |                          |                          | <100                        |                             |
|                                   | G     |                               |                        |                          |                          | <100                        |                             |
|                                   | H     |                               |                        |                          |                          | <100                        |                             |
|                                   | I     |                               |                        |                          |                          | <100                        |                             |
|                                   | J     |                               |                        |                          |                          | <100                        |                             |
|                                   | K     |                               |                        |                          |                          | <100                        |                             |
|                                   | L     |                               |                        |                          |                          | <100                        |                             |
| <i>Dichrostachys cineria</i>      | A     |                               | >10K                   |                          |                          |                             |                             |
|                                   | D     | >10K                          |                        |                          |                          |                             |                             |
|                                   | G     | >10K                          |                        |                          |                          |                             |                             |
|                                   | H     |                               | >10K                   |                          |                          |                             |                             |
|                                   | I     |                               | >10K                   |                          |                          |                             |                             |
|                                   | J     |                               | >10K                   |                          |                          |                             |                             |
|                                   | K     |                               | >10K                   |                          |                          |                             |                             |

| Species                                      | Zones | Number of trees by population |                        |                          |                          |                             |                             |
|--|-------|-------------------------------|------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|
|  |       | Reserve, natural park         | Stands in-situ ex-situ | Protected natural stands | Protected planted stands | Villages fields, homesteads | Experimental fields, trials |
| <i>Diospyros mespiliformis</i>               | D     | >1K                           |                        |                          |                          | <100                        |                             |
|  | G     | >1K                           |                        |                          |                          |                             |                             |
|  | H     |                               | >500                   |                          |                          |                             |                             |
| <i>Dodonaea angustifolia</i>                 | A     |                               |                        |                          |                          | >100                        |                             |
|  | B     |                               |                        |                          |                          | >100                        |                             |
|  | C     |                               |                        |                          |                          | >100                        |                             |
|  | D     |                               |                        |                          |                          | >1K                         |                             |
|  | E     |                               |                        |                          |                          | >100                        |                             |
|  | F     |                               |                        |                          |                          | >100                        |                             |
|  | G     |                               |                        |                          |                          | >1K                         |                             |
|  | H     |                               |                        |                          |                          | >1K                         |                             |
|  | I     |                               |                        |                          |                          | >500                        |                             |
|  | J     |                               |                        |                          |                          | >1K                         |                             |
|  | K     |                               |                        |                          |                          | >1K                         |                             |
| L  |       |                               |                        |                          | >1K                      |                             |                             |
| <i>Ekebergia capensis</i>                    | D     | >10K                          |                        |                          |                          |                             |                             |
|  | G     | >10K                          |                        |                          |                          |                             |                             |
| <i>Englerophytum magalimontanum</i>          | J     |                               | >1K                    |                          |                          |                             |                             |
| <i>Erythrophleum africanum</i>               | A     |                               | >1K                    |                          |                          |                             |                             |
|  | G     | >10K                          |                        |                          |                          |                             |                             |
| <i>Eucalyptus camaldulensis</i> (introduced) | A     |                               |                        |                          |                          | >100                        |                             |
|  | B     |                               |                        |                          |                          | <100                        |                             |
|  | C     |                               |                        |                          | >100                     | >100                        | >100                        |
|  | D     |                               |                        |                          | >100                     | >100                        | >100                        |
|  | E     |                               |                        |                          | <100                     | <100                        |                             |
|  | F     |                               |                        |                          | >100                     | >100                        | >100                        |
|  | G     |                               |                        |                          | >100                     | >100                        | >100                        |
|  | H     |                               |                        |                          | >100                     | >100                        | >100                        |
|  | I     |                               |                        |                          | >100                     | >100                        |                             |
|  | J     |                               |                        |                          | >100                     | >100                        | >100                        |
|  | K     |                               |                        |                          | >100                     | >100                        | >100                        |
|  | L     |                               |                        |                          | >100                     | >100                        | >100                        |
| <i>Euclea divinorum</i>                      | A     |                               | >1K                    |                          |                          |                             |                             |
|  | D     | >1K                           |                        |                          |                          |                             |                             |
|  | G     | >1K                           |                        |                          |                          |                             |                             |
|  | J     |                               | >1K                    |                          |                          |                             |                             |
|  | K     |                               | >1K                    |                          |                          |                             |                             |
|  | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Euclea undulata</i>                       | J     |                               | >1K                    |                          |                          |                             |                             |
|  | K     |                               | >1K                    |                          |                          |                             |                             |
|  | L     |                               | >1K                    |                          |                          |                             |                             |



| Species                    | Zones | Number of trees by population |                        |                          |                          |                             |                             |
|----------------------------|-------|-------------------------------|------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|
|                            |       | Reserve, natural park         | Stands in-situ ex-situ | Protected natural stands | Protected planted stands | Villages fields, homesteads | Experimental fields, trials |
| <i>Faidherbia albida</i>   | D     | >500                          |                        |                          |                          |                             |                             |
|                            | G     | >100                          | >1K                    |                          |                          |                             |                             |
|                            | J     |                               | >500                   |                          |                          |                             |                             |
|                            | L     |                               | >500                   |                          |                          |                             |                             |
| <i>Faurea saligna</i>      | J     |                               | >500                   |                          |                          |                             |                             |
| <i>Ficus abutilifolia</i>  | L     |                               | >500                   |                          |                          |                             |                             |
| <i>Ficus sur</i>           | K     |                               | >500                   |                          |                          |                             |                             |
| <i>Ficus sycomorus</i>     | D     | >1K                           |                        |                          |                          |                             |                             |
|                            | G     | >1K                           |                        |                          |                          |                             |                             |
|                            | K     |                               | >500                   |                          |                          |                             |                             |
| <i>Garcinia buchananii</i> | G     | >1K                           |                        |                          |                          |                             |                             |
| <i>Gardenia volkensii</i>  | C     |                               | >1K                    |                          |                          |                             |                             |
|                            | G     | >1K                           |                        |                          |                          |                             |                             |
|                            | H     |                               | >1K                    |                          |                          |                             |                             |
|                            | J     |                               | >1K                    |                          |                          |                             |                             |
|                            | K     |                               | >1K                    |                          |                          |                             |                             |
| <i>Grewia bicolor</i>      | A     |                               | >10K                   |                          |                          |                             |                             |
|                            | D     | >10K                          |                        |                          |                          |                             |                             |
|                            | E     |                               | >10K                   |                          |                          |                             |                             |
|                            | H     |                               | >10K                   |                          |                          |                             |                             |
|                            | J     |                               | >10K                   |                          |                          |                             |                             |
|                            | K     |                               | >10K                   |                          |                          |                             |                             |
|                            | L     |                               | >10K                   |                          |                          |                             |                             |
| <i>Grewia flava</i>        | B     |                               | >10K                   |                          |                          |                             |                             |
|                            | D     | >10K                          |                        |                          |                          |                             |                             |
|                            | E     |                               | >10K                   |                          |                          |                             |                             |
|                            | F     |                               | >10K                   |                          |                          |                             |                             |
|                            | G     | >10K                          |                        |                          |                          |                             |                             |
|                            | H     |                               | >10K                   |                          |                          |                             |                             |
|                            | I     |                               | >10K                   |                          |                          |                             |                             |
|                            | J     |                               | >10K                   |                          |                          |                             |                             |
|                            | K     |                               | >10K                   |                          |                          |                             |                             |
| <i>Grewia flavescens</i>   | A     |                               | >10K                   |                          |                          |                             |                             |
|                            | D     | >10K                          |                        |                          |                          |                             |                             |
|                            | E     |                               | >10K                   |                          |                          |                             |                             |
|                            | G     | >10K                          |                        |                          |                          |                             |                             |
|                            | H     |                               | >10K                   |                          |                          |                             |                             |
|                            | I     |                               | >10K                   |                          |                          |                             |                             |
|                            | J     |                               | >10K                   |                          |                          |                             |                             |
|                            | K     |                               | >10K                   |                          |                          |                             |                             |

| Species                                   | Zones | Number of trees by population |                        |                          |                          |                             |                             |
|---|-------|-------------------------------|------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|
|   |       | Reserve, natural park         | Stands in-situ ex-situ | Protected natural stands | Protected planted stands | Villages fields, homesteads | Experimental fields, trials |
| <i>Grewia monticola</i>                   | E     |                               | >10K                   |                          |                          |                             |                             |
|   | G     | >10K                          |                        |                          |                          |                             |                             |
|   | J     |                               | >10K                   |                          |                          |                             |                             |
|   | K     |                               | >10K                   |                          |                          |                             |                             |
|   | L     |                               | >10K                   |                          |                          |                             |                             |
| <i>Grewia retinervis</i>                  | A     |                               | >10K                   |                          |                          |                             |                             |
|   | D     | >10K                          |                        |                          |                          |                             |                             |
|   | F     |                               | >10K                   |                          |                          |                             |                             |
|   | G     | >10K                          |                        |                          |                          |                             |                             |
|   | I     |                               | >10K                   |                          |                          |                             |                             |
|   | J     |                               | >10K                   |                          |                          |                             |                             |
|   | K     |                               | >10K                   |                          |                          |                             |                             |
| <i>Guibortia coleosperma</i>              | A     |                               | >1K                    |                          |                          |                             |                             |
|   | D     | >10K                          |                        |                          |                          |                             |                             |
|   | G     | >10K                          |                        |                          |                          |                             |                             |
| <i>Hyphaene petersiana</i>                | D     | >10K                          |                        |                          |                          | >100                        | >100                        |
|   | G     | >10K                          |                        |                          |                          |                             |                             |
| <i>Julbernardia globiflora</i>            | G     | >10K                          |                        |                          |                          |                             |                             |
| <i>Kigelia africana</i>                   | D     | >10K                          |                        |                          |                          |                             |                             |
|   | G     | >10K                          |                        |                          |                          |                             |                             |
|   | K     |                               | >1K                    |                          |                          |                             |                             |
|   | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Kirkia acuminata</i>                   | D     | >10K                          |                        |                          |                          |                             |                             |
|   | G     | >10K                          |                        |                          |                          |                             |                             |
|   | H     |                               | >10K                   |                          |                          |                             |                             |
|   | I     |                               | >10K                   |                          |                          |                             |                             |
|   | K     |                               | >10K                   |                          |                          |                             |                             |
|   | L     |                               | >10K                   |                          |                          |                             |                             |
| <i>Lanea schweinfurthii</i>               | G     | >1K                           |                        |                          |                          |                             |                             |
|   | H     | >1K                           |                        |                          |                          |                             |                             |
|   | K     |                               | >1K                    |                          |                          |                             |                             |
| <i>Leucaena leucocephala</i> (introduced) | A     |                               |                        |                          |                          |                             | <100                        |
|   | B     |                               |                        |                          |                          | <100                        |                             |
|   | C     |                               |                        |                          |                          | <100                        | <100                        |
|   | D     |                               |                        |                          |                          | <100                        | <100                        |
|   | E     |                               |                        |                          |                          | <100                        | <100                        |
|   | F     |                               |                        |                          |                          | <100                        | <100                        |
|   | G     |                               |                        |                          |                          | <100                        | <100                        |
|   | H     |                               |                        |                          |                          | <100                        | <100                        |
|   | I     |                               |                        |                          |                          | <100                        | <100                        |
|   | J     |                               |                        |                          |                          | <100                        | <100                        |
|   | K     |                               |                        |                          |                          | <100                        | <100                        |
|   | L     |                               |                        |                          |                          | <100                        | <100                        |

| Species                             | Zones | Number of trees by population |                        |                          |                          |                             |                             |
|-------------------------------------|-------|-------------------------------|------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|
|                                     |       | Reserve, natural park         | Stands in-situ ex-situ | Protected natural stands | Protected planted stands | Villages fields, homesteads | Experimental fields, trials |
| <i>Lonchocarpus capassa</i>         | A     |                               | >10K                   |                          |                          |                             |                             |
|                                     | D     | >10K                          |                        |                          |                          |                             |                             |
|                                     | G     | >10K                          |                        |                          |                          |                             |                             |
|                                     | K     |                               | >10K                   |                          |                          |                             |                             |
|                                     | L     |                               | >10K                   |                          |                          |                             |                             |
| <i>Lonchocarpus nelsii</i>          | A     |                               | >10K                   |                          |                          |                             |                             |
|                                     | B     |                               | >10K                   |                          |                          |                             |                             |
|                                     | D     | >10K                          |                        |                          |                          |                             |                             |
|                                     | F     |                               | >10K                   |                          |                          |                             |                             |
|                                     | G     | >10K                          |                        |                          |                          |                             |                             |
|                                     | I     |                               | >10K                   |                          |                          |                             |                             |
|                                     | J     |                               | >10K                   |                          |                          |                             |                             |
| <i>Melia azedarach</i> (introduced) | A     |                               |                        |                          |                          | <100                        |                             |
|                                     | B     |                               |                        |                          |                          | <100                        |                             |
|                                     | C     |                               |                        |                          |                          | <100                        |                             |
|                                     | D     |                               |                        |                          |                          | <100                        |                             |
|                                     | E     |                               |                        |                          |                          | <100                        |                             |
|                                     | F     |                               |                        |                          |                          | <100                        |                             |
|                                     | G     |                               |                        |                          |                          | <100                        |                             |
|                                     | H     |                               |                        |                          |                          | <100                        |                             |
|                                     | I     |                               |                        |                          |                          | <100                        |                             |
|                                     | J     |                               |                        |                          |                          | >100                        |                             |
|                                     | K     |                               |                        |                          |                          | >100                        |                             |
|                                     | L     |                               |                        |                          |                          | <100                        |                             |
| <i>Mimusops zeyheri</i>             | G     | >1K                           |                        |                          |                          |                             |                             |
|                                     | J     |                               | >10K                   |                          |                          |                             |                             |
|                                     | K     |                               | >10K                   |                          |                          |                             |                             |
| <i>Ochna pulchra</i>                | A     |                               | >1K                    |                          |                          |                             |                             |
|                                     | B     |                               | >1K                    |                          |                          |                             |                             |
|                                     | D     | >1K                           |                        |                          |                          |                             |                             |
|                                     | E     |                               | >1K                    |                          |                          |                             |                             |
|                                     | G     | >1K                           |                        |                          |                          |                             |                             |
|                                     | I     |                               | >1K                    |                          |                          |                             |                             |
|                                     | J     |                               | >1K                    |                          |                          |                             |                             |
|                                     | K     |                               | >1K                    |                          |                          |                             |                             |
| <i>Pappea capensis</i>              | I     |                               | >1K                    |                          |                          |                             |                             |
|                                     | J     |                               | >1K                    |                          |                          |                             |                             |
|                                     | K     |                               | >1K                    |                          |                          |                             |                             |
| <i>Peltophorum africanum</i>        | A     |                               | >10K                   |                          |                          |                             |                             |
|                                     | D     | >10K                          |                        |                          |                          |                             |                             |
|                                     | G     | >10K                          |                        |                          |                          |                             |                             |
|                                     | I     |                               | >10K                   |                          |                          |                             |                             |
|                                     | J     |                               | >10K                   |                          |                          |                             |                             |
| K                                   |       | >10K                          |                        |                          |                          |                             |                             |

Appendices

|  |   |      |      |  |  |      |      |
|--|---|------|------|--|--|------|------|
| <i>Phoenix reclinata</i>                   | D | >10K |      |  |  | <100 | <100 |
|  | G | >10K |      |  |  | <100 | <100 |
|  | I |      | >1K  |  |  |      |      |
| <i>Prosopis glandulosa</i><br>(introduced) | A |      | >1K  |  |  |      |      |
|  | C |      | >1K  |  |  |      |      |
| <i>Pterocarpus angolensis</i>              | D | >10K |      |  |  |      |      |
|  | G | >10K |      |  |  |      | <100 |
| <i>Rhus lancea</i>                         | A |      | >10K |  |  |      |      |
|  | J |      | >10K |  |  |      |      |
| <i>Rhus pyroides</i>                       | D | >1K  |      |  |  |      |      |
|  | H |      | >1K  |  |  |      |      |
|  | I |      | >1K  |  |  |      |      |
|  | J |      | >1K  |  |  |      |      |
|  | K |      | >1K  |  |  |      |      |
| <i>Rhus tenuinervis</i>                    | A |      | >1K  |  |  |      |      |
|  | D | >1K  |      |  |  |      |      |
|  | F |      | >1K  |  |  |      |      |
|  | G | >1K  |      |  |  |      |      |
|  | H |      | >1K  |  |  |      |      |
|  | I |      | >1K  |  |  |      |      |
|  | J |      | >1K  |  |  |      |      |
|  | K |      | >1K  |  |  |      |      |
| <i>Schinus molle</i><br>(introduced)       | A |      |      |  |  | >100 |      |
|  | B |      |      |  |  | >100 |      |
|  | C |      |      |  |  | >100 |      |
|  | D |      |      |  |  | >100 |      |
|  | E |      |      |  |  | >100 |      |
|  | F |      |      |  |  | >100 |      |
|  | G |      |      |  |  | >100 |      |
|  | H |      |      |  |  | >100 |      |
|  | I |      |      |  |  | >100 |      |
|  | J |      |      |  |  | >100 |      |
|  | K |      |      |  |  | >100 |      |
|  | L |      |      |  |  | >100 |      |
| <i>Schinziophyton rautanenii</i>           | A |      | >10K |  |  |      |      |
|  | D | >10K |      |  |  |      |      |
|  | G | >10K |      |  |  |      |      |
|  | K |      | >10K |  |  |      |      |
| <i>Sclerocarya birrea</i>                  | G | >500 |      |  |  |      | <100 |
|  | H |      | >10K |  |  |      |      |
|  | J |      | >10K |  |  |      | <100 |
|  | K |      | >10K |  |  |      |      |
|  | L |      | >10K |  |  |      |      |

| Species                           | Zones | Number of trees by population |                        |                          |                          |                             |                             |
|-----------------------------------|-------|-------------------------------|------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|
|                                   |       | Reserve, natural park         | Stands in-situ ex-situ | Protected natural stands | Protected planted stands | Villages fields, homesteads | Experimental fields, trials |
| <i>Spirostachys africana</i>      | J     |                               | >1K                    |                          |                          |                             | <100                        |
|                                   | K     |                               | >10K                   |                          |                          |                             | <100                        |
|                                   | L     |                               | >10K                   |                          |                          |                             |                             |
| <i>Strychnos cocculoides</i>      | A     |                               | >1K                    |                          |                          |                             |                             |
|                                   | D     | >10K                          |                        |                          |                          |                             |                             |
|                                   | E     |                               | >10K                   |                          |                          |                             |                             |
|                                   | I     |                               | >10K                   |                          |                          |                             |                             |
| <i>Strychnos madagascariensis</i> | K     |                               | >10K                   |                          |                          |                             | <100                        |
|                                   | G     | >1K                           |                        |                          |                          |                             |                             |
| <i>Strychnos potatorum</i>        | H     | >1K                           |                        |                          |                          |                             |                             |
|                                   | G     | >1K                           |                        |                          |                          |                             |                             |
| <i>Strychnos pungens</i>          | A     |                               | >10K                   |                          |                          |                             |                             |
|                                   | D     | >1K                           |                        |                          |                          |                             |                             |
|                                   | G     | >10K                          |                        |                          |                          |                             |                             |
|                                   | I     |                               | >10K                   |                          |                          |                             |                             |
|                                   | J     |                               | >10K                   |                          |                          |                             |                             |
|                                   | K     |                               | >10K                   |                          |                          |                             | <100                        |
| <i>Strychnos spinosa</i>          | K     |                               | >10K                   |                          |                          |                             |                             |
| <i>Terminalia prunioides</i>      | D     | >10K                          |                        |                          |                          |                             |                             |
|                                   | E     |                               | >10K                   |                          |                          |                             |                             |
|                                   | G     | >10K                          |                        |                          |                          |                             |                             |
|                                   | H     |                               | >10K                   |                          |                          |                             |                             |
|                                   | J     |                               | >10K                   |                          |                          |                             |                             |
|                                   | K     |                               | >10K                   |                          |                          |                             |                             |
|                                   | L     |                               | >10K                   |                          |                          |                             |                             |
| <i>Terminalia sericea</i>         | A     |                               | >10K                   |                          |                          |                             |                             |
|                                   | C     |                               | >10K                   |                          |                          |                             |                             |
|                                   | D     |                               | >10K                   |                          |                          |                             |                             |
|                                   | E     |                               | >10K                   |                          |                          |                             |                             |
|                                   | F     |                               | >10K                   |                          |                          |                             |                             |
|                                   | G     |                               | >1K                    |                          |                          |                             |                             |
|                                   | I     |                               | >10K                   |                          |                          |                             |                             |
|                                   | J     |                               | >10K                   |                          |                          |                             |                             |
|                                   | K     |                               | >10K                   |                          |                          |                             |                             |
| <i>Trichilia emetica</i>          | G     | >1K                           |                        |                          |                          |                             |                             |
| <i>Vangueria infausta</i>         | D     | >1K                           |                        |                          |                          |                             |                             |
|                                   | I     |                               | >1K                    |                          |                          |                             |                             |
|                                   | J     |                               | >1K                    |                          |                          |                             | <100                        |
|                                   | K     |                               | >1K                    |                          |                          |                             |                             |

Appendices

| Species                         | Zones | Number of trees by population |                        |                          |                          |                             |                             |
|---------------------------------|-------|-------------------------------|------------------------|--------------------------|--------------------------|-----------------------------|-----------------------------|
|                                 |       | Reserve, natural park         | Stands in-situ ex-situ | Protected natural stands | Protected planted stands | Villages fields, homesteads | Experimental fields, trials |
| <i>Vangueriopsis lanciflora</i> | D     | >1K                           |                        |                          |                          |                             |                             |
|                                 | G     | >1K                           |                        |                          |                          |                             |                             |
| <i>Xanthocersis zambesiaca</i>  | K     |                               | >1K                    |                          |                          |                             |                             |
|                                 | L     |                               | >1K                    |                          |                          |                             |                             |
| <i>Ximenia americana</i>        | A     |                               | >10K                   |                          |                          |                             |                             |
|                                 | D     | >10K                          |                        |                          |                          |                             |                             |
|                                 | E     |                               | >10K                   |                          |                          |                             |                             |
|                                 | J     |                               | >10K                   |                          |                          |                             |                             |
| <i>Ximenia caffra</i>           | A     |                               | >10K                   |                          |                          |                             |                             |
|                                 | D     | >10K                          |                        |                          |                          |                             |                             |
|                                 | E     |                               | >10K                   |                          |                          |                             |                             |
|                                 | I     |                               | >10K                   |                          |                          |                             |                             |
|                                 | J     |                               | >10K                   |                          |                          |                             |                             |
|                                 | K     |                               | >10K                   |                          |                          |                             |                             |
| <i>Ziziphus mucronata</i>       | A     |                               | >10K                   |                          |                          |                             |                             |
|                                 | D     | >1K                           |                        |                          |                          |                             |                             |
|                                 | G     | >1K                           |                        |                          |                          |                             |                             |
|                                 | H     |                               | >1K                    |                          |                          |                             |                             |
|                                 | I     |                               | >1K                    |                          |                          |                             |                             |
|                                 | J     |                               | >1K                    |                          |                          |                             |                             |
|                                 | K     |                               | >1K                    |                          |                          |                             |                             |
|                                 | L     |                               | >1K                    |                          |                          |                             |                             |

- <100 Less than 100 individual trees per zone
- >100 More than 100 individual trees per zone
- >500 More than 500 individual trees per zone
- >1K More than 1 000 individual trees per zone
- >10K More than 10 000 individual trees per zone

**Appendix 4: level of security and nature of threats to the integrity of genetic resources of priority species**

| Species                   | Zones | Protected in parks | Managed for            |                     |                | Unmanaged          |                 | Threats and causes    |               |                    |                         |               | Degree of security |   |
|---------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|---------------|--------------------|-------------------------|---------------|--------------------|---|
|                           |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling | Overgrazing cattle | Development infrastruc. | Other reasons |                    |   |
| <i>Acacia ataxacantha</i> | A     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 1 |
|                           | D>1K  |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 1 |
|                           | E>1K  |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 1 |
|                           | F     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 1 |
|                           | G     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 1 |
|                           | K     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 1 |
|                           | A     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | C>10K |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | D>1K  |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | E>1K  |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
| <i>Acacia erioloba</i>    | F     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | G>1K  |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | H>1K  |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | J     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | K     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | L     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | A     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | E>10K |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | H>10K |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | I>10K |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
| <i>Acacia erubescens</i>  | J     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | K     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | D>10K |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | J     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
| <i>Acacia galpinii</i>    | D>10K |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | J     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | K     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
|                           | L     |                    |                        |                     |                | <100               |                 | <100                  |               |                    |                         |               |                    | 2 |
| <i>Acacia</i>             | C>10K |                    |                        |                     |                | <100               |                 | <100                  |               | <100               |                         | >500          |                    | 2 |

| Species                   | Zones | Protected in parks | Managed for            |                     |                | Unmanaged          |                 | Threats and causes    |               |                    |                         |               | Degree of security |   |
|---------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|---------------|--------------------|-------------------------|---------------|--------------------|---|
|                           |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling | Overgrazing cattle | Development infrastruc. | Other reasons |                    |   |
| <i>haematoxylon</i>       |       |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    |   |
|                           | D>1K  |                    |                        |                     |                | >500               | <100            | <100                  |               |                    |                         |               |                    | 2 |
|                           | J     |                    |                        |                     |                | >500               | <100            | <100                  |               |                    |                         |               |                    | 2 |
|                           | K     |                    |                        |                     |                | >500               | <100            | <100                  |               |                    |                         |               |                    | 2 |
| <i>Acacia karroo</i>      | L     |                    |                        |                     |                | >500               | <100            | <100                  |               |                    |                         |               |                    | 2 |
|                           | A     |                    |                        |                     |                | >500               | <100            | <100                  |               |                    |                         |               |                    | 2 |
|                           | C     |                    |                        |                     |                | >500               | <100            | <100                  |               |                    |                         |               |                    | 2 |
|                           | D>10K |                    |                        |                     |                | >500               | <100            | <100                  |               |                    |                         |               |                    | 2 |
| <i>Acacia luederitzii</i> | F     |                    |                        |                     |                | >500               | <100            | <100                  |               |                    |                         |               |                    | 2 |
|                           | I     |                    |                        |                     |                | >500               | <100            | <100                  |               |                    |                         |               |                    | 2 |
|                           | J     |                    |                        |                     |                | >500               | <100            | <100                  |               |                    |                         |               |                    | 2 |
|                           | K     |                    |                        |                     |                | >500               | <100            | <100                  |               |                    |                         |               |                    | 2 |
| <i>Acacia mellifera</i>   | A     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |
|                           | C>10K |                    |                        |                     |                |                    | <100            |                       |               |                    |                         |               |                    | 1 |
|                           | D>10K |                    |                        |                     |                |                    | <100            |                       |               |                    |                         |               |                    | 1 |
|                           | F     |                    |                        |                     |                |                    | <100            |                       |               |                    |                         |               |                    | 1 |
|                           | G>1K  |                    |                        |                     |                |                    | <100            |                       |               |                    |                         |               |                    | 1 |
|                           | H>1K  |                    |                        |                     |                |                    | <100            |                       |               |                    |                         |               |                    | 1 |
|                           | I     |                    |                        |                     |                |                    | <100            |                       |               |                    |                         |               |                    | 1 |
|                           | J     |                    |                        |                     |                |                    | <100            |                       |               |                    |                         |               |                    | 1 |
|                           | K     |                    |                        |                     |                |                    | <100            |                       |               |                    |                         |               |                    | 1 |
|                           | L     |                    |                        |                     |                |                    | <100            |                       |               |                    |                         |               |                    | 1 |



| Species                   | Zones | Protected in parks | Managed for            |                     |                |                    | Unmanaged       |                       | Threats and causes |                    |                         |               |  | Degree of security |
|---------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|--|--------------------|
|                           |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling      | Overgrazing cattle | Development infrastruc. | Other reasons |  |                    |
| <i>Acacia nigrescens</i>  | A     |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | D>1K  |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | G>1K  |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | H>1K  |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | J     |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | K     |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Acacia nilotica</i>    | L     |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | D>1K  |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | G>1K  |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | H>1K  |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | I     |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | J     |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Acacia tortilis</i>    | K     |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | L     |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 1                  |
|                           | A     |                    |                        |                     |                | >1K                |                 |                       |                    | >500               |                         |               |  | 3                  |
|                           | D>10K |                    |                        |                     |                | >1K                |                 |                       |                    | >500               |                         |               |  | 3                  |
|                           | E>1K  |                    |                        |                     |                | >1K                |                 |                       |                    | >500               |                         |               |  | 3                  |
|                           | G>1K  |                    |                        |                     |                | >1K                |                 |                       |                    | >500               |                         |               |  | 3                  |
| <i>Adansonia digitata</i> | H>1K  |                    |                        |                     |                | >1K                |                 |                       |                    | >500               |                         |               |  | 3                  |
|                           | J     |                    |                        |                     |                | >1K                |                 |                       |                    | >500               |                         |               |  | 3                  |
|                           | K     |                    |                        |                     |                | >1K                |                 |                       |                    | >500               |                         |               |  | 3                  |
|                           | L     |                    |                        |                     |                | >1K                |                 |                       |                    | >500               |                         |               |  | 3                  |
|                           | H>500 |                    |                        |                     |                |                    |                 |                       |                    | <100               |                         |               |  | 2                  |
|                           | K     |                    |                        |                     |                |                    |                 |                       |                    | <100               |                         |               |  | 2                  |
| <i>Adansonia digitata</i> | L     |                    |                        |                     |                |                    |                 |                       |                    | <100               |                         |               |  | 2                  |

| Species                                 | Zones | Protected in parks | Managed for            |                     |                | Unmanaged          |                 | Threats and causes    |               |                    |                         | Degree of security |               |
|---|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|---------------|--------------------|-------------------------|--------------------|---------------|
|   |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling | Overgrazing cattle | Development infrastruc. |                    | Other reasons |
| <i>Afzelta guanzensis</i>               |       | G>10K              |                        |                     |                |                    |                 | >1K                   |               |                    | <100                    |                    | 2             |
| <i>Amblygonocarpus andongensis</i>      |       | G>10K              |                        |                     |                | >500               |                 |                       |               |                    |                         |                    | 2             |
| <i>Atriplex nummularia</i> (introduced) |       | C                  | >100                   |                     | >100           |                    |                 |                       |               | >100               |                         |                    | 3             |
| <i>Azanza garckana</i>                  |       | H                  |                        |                     |                |                    |                 |                       |               |                    | <100                    |                    | 1             |
|   |       | K                  |                        |                     |                |                    |                 |                       |               |                    | <100                    |                    | 1             |
| <i>Baikiaea plurijuga</i>               |       | A                  |                        |                     |                | >100               |                 |                       | >100          |                    |                         |                    | 4             |
|   |       | D>10K              |                        |                     |                | >100               |                 | >1K                   | >100          |                    |                         |                    | 4             |
|   |       | G>10K              |                        |                     |                | >100               |                 | >1K                   | >100          |                    |                         |                    | 4             |
|   |       | A                  |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 1             |
|   |       | C                  |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 1             |
|   |       | D                  |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 1             |
|   |       | E                  |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 1             |
|   |       | F                  |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 1             |
| <i>Bauhinia petersiana</i>              |       | G>1K               |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 1             |
|   |       | H>1K               |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 1             |
|   |       | I>1K               |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 1             |
|   |       | J                  |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 1             |
|   |       | K                  |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 1             |
|   |       | L                  |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 1             |
|   |       | A                  |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 2             |
| <i>Berchemia discolor</i>               |       | D                  |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 2             |
|   |       | G                  |                        |                     |                |                    |                 |                       |               |                    |                         |                    | 2             |

| Species                         | Zones | Protected in parks | Managed for            |                     |                | Unmanaged          |                 |                       | Threats and causes |                    |                         |               |  | Degree of security |
|---------------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|--|--------------------|
|                                 |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling      | Overgrazing cattle | Development infrastruc. | Other reasons |  |                    |
| <i>Bolusanthus speciosus</i>    | H     |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 2                  |
|                                 | K     |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 2                  |
|                                 | A     |                    |                        |                     |                | <100               | <100            |                       |                    |                    |                         |               |  | 1                  |
| <i>Boscia albitrunca</i>        | D     |                    |                        |                     |                | <100               | <100            |                       |                    |                    |                         |               |  | 1                  |
|                                 | E     |                    |                        |                     |                | <100               | <100            |                       |                    |                    |                         |               |  | 1                  |
|                                 | F     |                    |                        |                     |                | <100               | <100            |                       |                    |                    |                         |               |  | 1                  |
|                                 | G<1K  |                    |                        |                     |                | <100               | <100            |                       |                    |                    |                         |               |  | 1                  |
|                                 | H     |                    |                        |                     |                | <100               | <100            |                       |                    |                    |                         |               |  | 1                  |
|                                 | I     |                    |                        |                     |                | <100               | <100            |                       |                    |                    |                         |               |  | 1                  |
|                                 | J     |                    |                        |                     |                | <100               | <100            |                       |                    |                    |                         |               |  | 1                  |
| <i>Brachystegia spiciformis</i> | K     |                    |                        |                     |                | <100               | <100            |                       |                    |                    |                         |               |  | 1                  |
|                                 | G>500 |                    |                        |                     |                | >500               |                 |                       |                    |                    |                         |               |  | 4                  |
|                                 | J     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Bridelia mollis</i>          | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                 | D     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 2                  |
|                                 | G>10K |                    |                        |                     |                |                    |                 |                       | >100               |                    |                         |               |  | 2                  |
| <i>Burkea africana</i>          | I     |                    |                        |                     |                |                    |                 |                       | >100               |                    |                         |               |  | 2                  |
|                                 | J     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 2                  |
|                                 | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 2                  |
|                                 | G     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 2                  |
| <i>Cassia abbreviata</i>        | L     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 2                  |

| Species                                      | Zones                        | Protected in parks | Managed for            |                     |                | Unmanaged          |                 | Threats and causes    |               |                    |                         |               | Degree of security |   |   |
|--|------------------------------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|---------------|--------------------|-------------------------|---------------|--------------------|---|---|
|  |                              |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling | Overgrazing cattle | Development infrastruc. | Other reasons |                    |   |   |
| <i>Casuarina cunninghamiana</i> (introduced) | A                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  | B                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  | C                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  | D                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  | E                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  | F                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  | G                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  | H                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  | I                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  | J                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  | K                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  | L                            |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 2 |   |
|  |                              | D>10K              |                        |                     |                |                    |                 | >1K                   |               |                    | >100                    |               |                    |   | 4 |
|  | <i>Colophospermum mopane</i> | H                  |                        |                     |                |                    |                 | >1K                   |               |                    | >100                    |               |                    |   | 4 |
| K  |                              |                    |                        |                     |                |                    | >1K             |                       |               | >100               |                         |               |                    | 4 |   |
| L  |                              |                    |                        |                     |                |                    | >1K             |                       |               | >100               |                         |               |                    | 4 |   |
| A  |                              |                    |                        |                     |                |                    | >100            |                       |               |                    |                         |               |                    | 2 |   |
| <i>Combretum apiculatum</i>                  |                              | D>1K               |                        |                     |                |                    | >100            |                       |               |                    |                         |               |                    | 2 |   |
|  | G                            |                    |                        |                     |                |                    | >100            |                       |               |                    |                         |               |                    | 2 |   |
|  | I                            |                    |                        |                     |                |                    | >100            |                       |               |                    |                         |               |                    | 2 |   |
|  | J                            |                    |                        |                     |                |                    | >100            |                       |               |                    |                         |               |                    | 2 |   |
|  | K                            |                    |                        |                     |                |                    | >100            |                       |               |                    |                         |               |                    | 2 |   |
|  |                              |                    |                        |                     |                |                    |                 | >100                  |               |                    |                         |               |                    | 2 |   |
|  | L                            |                    |                        |                     |                |                    | >100            |                       |               |                    |                         |               |                    | 2 |   |

| Species                          | Zones | Protected in parks | Managed for            |                     |                |                    | Unmanaged       |                       | Threats and causes |                    |                         |               |  | Degree of security |
|----------------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|--|--------------------|
|                                  |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear falling      | Overgrazing cattle | Development infrastruc. | Other reasons |  |                    |
| <i>Combrethum collinum</i>       | A     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | B     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | D     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | G>1K  |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Combrethum erythrophyllum</i> | H     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | G>1K  |                    |                        |                     | <100           |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | J     |                    |                        |                     | <100           |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | K     |                    |                        |                     | <100           |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Combrethum hereoense</i>      | L     |                    |                        |                     | <100           |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | A     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | D>1K  |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | G     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | H     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | I     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | J     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Combrethum imberbe</i>        | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                  | A     |                    |                        |                     | >500           |                    |                 |                       |                    |                    |                         |               |  | 3                  |
|                                  | D>10K |                    |                        |                     | >500           |                    |                 |                       |                    |                    |                         |               |  | 3                  |
|                                  | H     |                    |                        |                     | >500           |                    |                 |                       |                    |                    |                         |               |  | 3                  |
|                                  | I     |                    |                        |                     | >500           |                    |                 |                       |                    |                    |                         |               |  | 3                  |
|                                  | J     |                    |                        |                     | >500           |                    |                 |                       |                    |                    |                         |               |  | 3                  |
|                                  | K     |                    |                        |                     | >500           |                    |                 |                       |                    |                    |                         |               |  | 3                  |
|                                  | L     |                    |                        |                     | >500           |                    |                 |                       |                    |                    |                         |               |  | 3                  |

| Species                    | Zones | Protected in parks | Managed for            |                     |                | Unmanaged          |                 | Threats and causes    |               |                    |                         |               | Degree of security |
|----------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|---------------|--------------------|-------------------------|---------------|--------------------|
|                            |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling | Overgrazing cattle | Development infrastruc. | Other reasons |                    |
| <i>Commiphora africana</i> | A     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 2                  |
|                            | D>1K  |                    |                        |                     | >100           |                    |                 |                       |               |                    |                         |               | 2                  |
|                            | G>1K  |                    |                        |                     | >100           |                    |                 |                       |               |                    |                         |               | 2                  |
|                            | H     |                    |                        |                     | >100           |                    |                 |                       |               |                    |                         |               | 2                  |
|                            | L     |                    |                        |                     | >100           |                    |                 |                       |               |                    |                         |               | 2                  |
| <i>Croton gratissimus</i>  | A     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 2                  |
|                            | D>1K  |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 2                  |
|                            | G>1K  |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 2                  |
|                            | H     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 2                  |
|                            | I     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 2                  |
| <i>Croton megalobotrys</i> | J     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 2                  |
|                            | K     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 2                  |
|                            | D>10K |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
| <i>Croton megalobotrys</i> | G>10K |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                            | K     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                            | L     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |

| Species                              | Zones                         | Protected in parks | Managed for            |                     |                |                    | Unmanaged       |                       | Threats and causes |                    |                         |               |  | Degree of security |   |
|--------------------------------------|-------------------------------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|--|--------------------|---|
|                                      |                               |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear falling      | Overgrazing cattle | Development infrastruc. | Other reasons |  |                    |   |
| <i>Delonix regia</i><br>(introduced) | A                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | B                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | C                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | D                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | E                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | F                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | G                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | H                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | I                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | J                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | K                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | L                             |                    | <100                   |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | <i>Dichrostachys cinerita</i> | A                  |                        |                     |                |                    | >100            |                       |                    |                    |                         |               |  |                    | 1 |
|                                      |                               | D>10K              |                        |                     |                |                    | >100            |                       |                    |                    |                         |               |  |                    | 1 |
| G>10K                                |                               |                    |                        |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 1                  |   |
| H                                    |                               |                    |                        |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 1                  |   |
| I                                    |                               |                    |                        |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 1                  |   |
| J                                    |                               |                    |                        |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 1                  |   |
| K                                    |                               |                    |                        |                     |                | >100               |                 |                       |                    |                    |                         |               |  | 1                  |   |
| <i>Diospyros mespiliformis</i>       | D>1K                          |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      | G>1K                          |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 2                  |   |
|                                      |                               |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    |   |
|                                      | H                             |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 2                  |   |

| Species                              | Zones | Protected in parks | Managed for            |                     |                |                    | Unmanaged       |                       | Threats and causes |                    |                         |               |  | Degree of security |
|--------------------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|--|--------------------|
|                                      |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling      | Overgrazing cattle | Development infrastruc. | Other reasons |  |                    |
| <i>Dodonaea angustifolia</i>         | A     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | B     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | C     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | D     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | E     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | F     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | G     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | H     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | I     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | J     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | L     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Ekebergia capensis</i>            |       | D>10K<br>G>10K     |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Englerophytum magalismontanum</i> |       | J                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Erythrophloeum africanum</i>      | A     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                      | G>10K |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |



| Species                                      | Zones | Protected in parks | Managed for            |                     |                |                    | Unmanaged       |                       | Threats and causes |                    |                         |               |  | Degree of security |
|--|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|--|--------------------|
|  |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling      | Overgrazing cattle | Development infrastruc. | Other reasons |  |                    |
| <i>Eucalyptus camaldulensis</i> (introduced) | A     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | B     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | C     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | D     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | E     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | F     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | G     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | H     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | I     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | J     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | L     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Euclea divinatorum</i>                    | A     |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 1                  |
|  | D>1K  |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 1                  |
|  | G>1K  |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 1                  |
|  | J     |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Euclea undulata</i>                       | K     |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 1                  |
|  | L     |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 1                  |
|  | J     |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 1                  |
|  | K     |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Faidherbia albida</i>                     | D>500 |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 3                  |
|  | G>100 |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 3                  |
|  | J     |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 3                  |
| <i>Fairea saligna</i>                        | L     |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 3                  |
|  | J     |                    |                        |                     |                | <100               |                 |                       |                    |                    |                         |               |  | 3                  |
| <i>Ficus abutilifolia</i>                    | L     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|  | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |

| Species                    | Zones | Protected in parks | Managed for            |                     |                |                    | Unmanaged       |                       | Threats and causes |                    |                         |               |  |  | Degree of security |
|----------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|--|--|--------------------|
|                            |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling      | Overgrazing cattle | Development infrastruc. | Other reasons |  |  |                    |
| <i>Ficus sycamor</i>       |       | D>1K               |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | G>1K               |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | K                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
| <i>Garcinia buchananii</i> |       | G>1K               |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | C                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
| <i>Gardenia volkensii</i>  |       | G>1K               |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | H                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | J                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | K                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | A                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
| <i>Grewia bicolor</i>      |       | D>10K              |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | E                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | H                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | J                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | K                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |
|                            |       | L                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |  | 1                  |

| Species                 | Zones                    | Protected in parks | Managed for            |                     |                | Unmanaged          |                 | Threats and causes    |               |                    |                         |               | Degree of security |
|-------------------------|--------------------------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|---------------|--------------------|-------------------------|---------------|--------------------|
|                         |                          |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear falling | Overgrazing cattle | Development infrastruc. | Other reasons |                    |
| <i>Grewia flava</i>     | B                        |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         | D>10K                    |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         | E                        |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         | F                        |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         | G>10K                    |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         | H                        |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         | I                        |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         | J                        |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         | K                        |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         | A                        |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         | D>10K                    |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         | <i>Grewia flavescens</i> | E                  |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    |
| G>10K                   |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
| H                       |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
| I                       |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
| J                       |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
| K                       |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
| E                       |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
| G>10K                   |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
| J                       |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
| K                       |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
| L                       |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
| <i>Grewia monticola</i> |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    |
|                         |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                         |                          |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |

| Species                       | Zones | Protected in parks | Managed for            |                     |                |                    | Unmanaged       |                       | Threats and causes |                    |                         |               |  | Degree of security |
|-------------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|--|--------------------|
|                               |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling      | Overgrazing cattle | Development infrastruc. | Other reasons |  |                    |
| <i>Grewia retinervis</i>      | A     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                               | D>10K |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                               | F     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Grewia retinervis</i>      | G>10K |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                               | I     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                               | J     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                               | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Guibortia colesperma</i>   | A     |                    |                        |                     | <100           |                    |                 |                       |                    |                    |                         |               |  | 2                  |
|                               | D>10K |                    |                        |                     | <100           |                    |                 |                       |                    |                    |                         |               |  | 2                  |
| <i>Hyphaene petersiana</i>    | G>10K |                    |                        |                     | <100           |                    |                 |                       |                    |                    |                         |               |  | 2                  |
|                               | D>10K |                    |                        |                     | <500           |                    |                 |                       | >100               |                    |                         |               |  | 4                  |
| <i>Hyphaene petersiana</i>    | G>10K |                    |                        |                     | <500           |                    |                 |                       | >100               |                    |                         |               |  | 4                  |
|                               | D>10K |                    |                        |                     | <100           |                    |                 |                       |                    |                    |                         |               |  | 2                  |
| <i>Jubberardia globiflora</i> | G>10K |                    |                        |                     | <100           |                    |                 |                       |                    |                    |                         |               |  | 2                  |
|                               | D10K  |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Kigelia africana</i>       | G>10K |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                               | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                               | L     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                               | D>10K |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Kirkia acuminata</i>       | G>10K |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                               | H     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                               | I     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                               | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Kirkia acuminata</i>       | L     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |

| Species                      | Zones                                     | Protected in parks | Managed for            |                     |                |                    | Unmanaged       |                       | Threats and causes |                    |                         |               |  | Degree of security |   |
|------------------------------|---|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|--|--------------------|---|
|                              |   |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear falling      | Overgrazing cattle | Development infrastruc. | Other reasons |  |                    |   |
| <i>Lannea schweinfurthii</i> | G>1K                                      |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | H>1K                                      |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | K   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | A   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | B   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | C   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | D   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | E   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | F   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | G   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | H   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | I   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | <i>Leucaena leucocephala</i> (introduced) | J                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    |   |
| K                            |   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
| L                            |   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
| A                            |   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
| D>10K                        |   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
| <i>Lonchocarpus capassa</i>  | G>10K                                     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | K   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | L   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |
|                              | L   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    | 1 |

| Species                    | Zones                               | Protected in parks | Managed for            |                     |                |                    | Unmanaged       |                       | Threats and causes |                    |                         |               |  | Degree of security |
|----------------------------|-------------------------------------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|--|--------------------|
|                            |                                     |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear falling      | Overgrazing cattle | Development infrastruc. | Other reasons |  |                    |
| <i>Lonchocarpus nelsii</i> | A                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | B                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | D>10K                               |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | F                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | G                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | I                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | J                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | A                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | B                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | C                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | D                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | <i>Melia azedarach</i> (introduced) | E                  |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  |                    |
| F                          |                                     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| G                          |                                     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| H                          |                                     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| I                          |                                     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| J                          |                                     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| K                          |                                     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| L                          |                                     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Mimusops zeyheri</i>    | G>1K                                |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | J                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                            | K                                   |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |

| Species                                 | Zones | Protected in parks | Managed for            |                     |                | Unmanaged          |                 | Threats and causes    |               |                    |                         | Degree of security |
|---|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|---------------|--------------------|-------------------------|--------------------|
|   |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear felling | Overgrazing cattle | Development infrastruc. |                    |
| <i>Ochna pulchra</i>                    | A     |                    |                        |                     |                |                    |                 |                       |               |                    |                         | 1                  |
|   | B     |                    |                        |                     |                |                    |                 |                       |               |                    |                         | 1                  |
|   | D>1K  |                    |                        |                     |                |                    |                 |                       |               |                    |                         | 1                  |
|   | E     |                    |                        |                     |                |                    |                 |                       |               |                    |                         | 1                  |
|   | G>1K  |                    |                        |                     |                |                    |                 |                       |               |                    |                         | 1                  |
|   | I     |                    |                        |                     |                |                    |                 |                       |               |                    |                         | 1                  |
|   | J     |                    |                        |                     |                |                    |                 |                       |               |                    |                         | 1                  |
|   | K     |                    |                        |                     |                |                    |                 |                       |               |                    |                         | 1                  |
| <i>Pappea capensis</i>                  | I     |                    |                        |                     |                |                    |                 |                       |               |                    |                         | 1                  |
|   | J     |                    |                        |                     |                |                    |                 |                       |               |                    |                         | 1                  |
|   | K     |                    |                        |                     |                |                    |                 |                       |               |                    |                         | 1                  |
| <i>Peltophorum africanum</i>            | A     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         | 1                  |
|   | D     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         | 1                  |
|   | G     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         | 1                  |
|   | I     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         | 1                  |
|   | J     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         | 1                  |
| <i>Phoenix reclinata</i>                | K     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         | 1                  |
|   | D>10K |                    |                        |                     | >500           |                    |                 | >100                  |               |                    |                         | 4                  |
|   | G>10K |                    |                        |                     | >500           |                    |                 | >100                  |               |                    |                         | 4                  |
| <i>Prosopis glandulosa</i> (introduced) | I     |                    |                        |                     | >500           |                    |                 | >100                  |               |                    |                         | 4                  |
|   | A     |                    |                        |                     | >100           |                    |                 |                       |               |                    |                         | 1                  |
| <i>Pterocarpus angolensis</i>           | C     |                    |                        |                     | >100           |                    |                 |                       |               |                    |                         | 1                  |
|   | D>10K |                    |                        |                     | >100           |                    |                 | >100                  |               | >500               |                         | 3                  |
|   | G>10K |                    |                        |                     | >100           |                    |                 | >100                  |               | >500               |                         | 3                  |

| Species                 | Zones | Protected in parks | Managed for            |                     |                | Unmanaged          |                 |                       | Threats and causes |                    |                         |               |   | Degree of security |
|-------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|---|--------------------|
|                         |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear falling      | Overgrazing cattle | Development infrastruc. | Other reasons |   |                    |
| <i>Rhus lancea</i>      | A     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
|                         | J     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
| <i>Rhus pyroides</i>    | D     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
|                         | H     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
|                         | I     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
|                         | J     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
|                         | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
|                         | A     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
|                         | D>IK  |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
| <i>Rhus tenuinervis</i> | F>IK  |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
|                         | G     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
|                         | H     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
|                         | I     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
|                         | J     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |   | 1                  |
| K                       |       |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               | 1 |                    |



| Species                              | Zones                            | Protected in parks | Managed for            |                     |                | Unmanaged          |                 | Threats and causes    |               |                    |                         |               | Degree of security |   |   |
|--------------------------------------|----------------------------------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|---------------|--------------------|-------------------------|---------------|--------------------|---|---|
|                                      |                                  |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear falling | Overgrazing cattle | Development infrastruc. | Other reasons |                    |   |   |
| <i>Schinus molle</i><br>(introduced) | A                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | B                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | C                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | D                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | E                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | F                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | G                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | H                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | I                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | J                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | K                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | L                                |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |   |
|                                      | <i>Schinziophyton rautanenii</i> | A                  |                        |                     |                |                    | <100            |                       |               |                    |                         |               |                    |   | 1 |
|                                      |                                  | D>10K              |                        |                     |                |                    | <100            |                       |               |                    |                         |               |                    |   | 1 |
| G>10K                                |                                  |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 1 |   |
| K                                    |                                  |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 1 |   |
| <i>Sclerocarya birrea</i>            | G>500                            |                    |                        |                     |                | >500               |                 |                       |               |                    |                         |               |                    | 3 |   |
|                                      | H                                |                    |                        |                     |                | >500               |                 |                       |               |                    |                         |               |                    | 3 |   |
|                                      | J                                |                    |                        |                     |                | >500               |                 |                       |               |                    |                         |               |                    | 3 |   |
|                                      | K                                |                    |                        |                     |                | >500               |                 |                       |               |                    |                         |               |                    | 3 |   |
|                                      | L                                |                    |                        |                     |                | >500               |                 |                       |               |                    |                         |               |                    | 3 |   |
|                                      | J                                |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |   |
| <i>Spirostachys africana</i>         | K                                |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |   |
|                                      | L                                |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |   |

| Species                           | Zones | Protected in parks | Managed for            |                     |                |                    | Unmanaged       |                       | Threats and causes |                    |                         |               |  | Degree of security |
|-----------------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|--------------------|--------------------|-------------------------|---------------|--|--------------------|
|                                   |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear falling      | Overgrazing cattle | Development infrastruc. | Other reasons |  |                    |
| <i>Strychnos cocculoides</i>      | A     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | D>10K |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | E     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | I     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Strychnos madagascariensis</i> | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | G>1K  |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | H>1K  |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Strychnos potatorum</i>        | G>1K  |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | A     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Strychnos pungens</i>          | D>1K  |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | G>10K |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | I     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Strychnos spinosa</i>          | J     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Terminalia prunoides</i>       | D>10K |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | E     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | G>10K |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | H     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
| <i>Terminalia prunoides</i>       | J     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | K     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |
|                                   | L     |                    |                        |                     |                |                    |                 |                       |                    |                    |                         |               |  | 1                  |

| Species                         | Zones | Protected in parks | Managed for            |                     |                | Unmanaged          |                 | Threats and causes    |               |                    |                         |               | Degree of security |   |
|---------------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|---------------|--------------------|-------------------------|---------------|--------------------|---|
|                                 |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear falling | Overgrazing cattle | Development infrastruc. | Other reasons |                    |   |
| <i>Terminalia sericea</i>       | A     |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |
|                                 | C     |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |
|                                 | D     |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |
|                                 | E     |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |
|                                 | F     |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |
|                                 | G     |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |
| <i>Trichilia emetica</i>        | I     |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |
|                                 | J     |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |
|                                 | K     |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 2 |
| <i>Vangueria infusta</i>        | G>1K  |                    |                        |                     |                | <100               |                 |                       |               |                    |                         |               |                    | 1 |
|                                 | D>1K  |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |
|                                 | I     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |
| <i>Vangueriopsis lanciflora</i> | J     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |
|                                 | K     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |
|                                 | K     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |
| <i>Xanthocercis zambesiaca</i>  | L     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |
|                                 | A     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |
|                                 | D>10K |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |
| <i>Ximemia americana</i>        | E     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |
|                                 | J     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               |                    | 1 |

| Species                   | Zones | Protected in parks | Managed for            |                     |                | Unmanaged          |                 | Threats and causes    |               |                    |                         |               | Degree of security |
|---------------------------|-------|--------------------|------------------------|---------------------|----------------|--------------------|-----------------|-----------------------|---------------|--------------------|-------------------------|---------------|--------------------|
|                           |       |                    | Soil, water protection | Wood, nw production | animal grazing | used and harvested | used and grazed | Environmental factors | Clear falling | Overgrazing cattle | Development infrastruc. | Other reasons |                    |
| <i>Ximenia caffra</i>     | A     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | D>10K |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | E     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | I     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | J     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | K     |                    |                        |                     |                |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | A     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | D>1K  |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | G>1K  |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | H     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         |               | 1                  |
| <i>Ziziphus mucronata</i> | I     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | J     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | K     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         |               | 1                  |
|                           | L     |                    |                        |                     | <100           |                    |                 |                       |               |                    |                         |               | 1                  |

- <100 Less than 100 individual trees per zone
  - >100 More than 100 individual trees per zone
  - >500 More than 500 individual trees per zone
  - >1K More than 1 000 individual trees per zone
  - >10K More than 10 000 individual trees per zone
- Level of security
- 1 implementation / enforcement of regulations probable, and regulations scientifically sound or threat mild/occasional
  - 2, 3, 4 intermediate between 1 and 5.
  - 5 implementation/ enforcement of regulations unlikely or threat severe with high probability of genetic degradation or loss

### Appendix 5: list of priority species

| Species                         | End use |    |    |   | Operations/activities |   |                |   |                  |    |                      |    | Remarks |
|---------------------------------|---------|----|----|---|-----------------------|---|----------------|---|------------------|----|----------------------|----|---------|
|                                 | N       | NW | FW | O | Explorati<br>on       |   | Evaluati<br>on |   | Conserv<br>ation |    | Reprodu<br>ctive Use |    |         |
|                                 | 1       | 2  | 3  | 4 | 5                     | 6 | 7              | 8 | 9                | 10 | 11                   | 12 |         |
| <i>Acacia tortilis</i>          | x       |    | x  | x | 2                     | 2 | 2              | 2 | 2                | 2  | 2                    | 2  |         |
| <i>Baikiaea plurijuga</i>       | x       |    | x  | x | 2                     | 2 | 2              | 2 | 2                | 2  | 2                    | 2  |         |
| <i>Brachystegia spiciformis</i> | x       |    |    |   | 2                     | 2 | 1              | 2 | 1                | 1  | 1                    | 1  |         |
| <i>Colophospermum mopane</i>    | x       |    | x  | x | 2                     | 2 | 2              | 2 | 2                | 2  | 2                    | 2  |         |
| <i>Combretum imberbe</i>        | x       |    | x  | x | 2                     | 2 | 2              | 2 | 2                | 2  | 2                    | 2  |         |
| <i>Faidherbia albida</i>        |         |    | x  | x | 2                     | 2 | 2              | 2 | 2                | 2  | 2                    | 2  | MPTS    |
| <i>Faurea saligna</i>           | x       |    |    |   | 1                     | 1 | 1              | 1 | 1                | 1  | 1                    | 1  | E       |
| <i>Hyphaene petersiana</i>      |         |    |    | x | 2                     | 2 | 2              | 2 | 2                | 2  | 2                    | 2  |         |
| <i>Phoenix reclinata</i>        |         |    |    | x | 2                     | 2 | 2              | 2 | 2                | 2  | 2                    | 2  |         |
| <i>Pterocarpus angolensis</i>   | x       |    | x  | x | 1                     | 1 | 1              | 1 | 1                | 1  | 1                    | 1  |         |
| <i>Sclerocarya birrea</i>       | x       |    |    | x | 1                     | 1 | 1              | 1 | 1                | 1  | 1                    | 1  | PVT/PGT |

#### End uses

1. Industrial wood (logs, sawtimber, construction wood, plywood, chip and particle board, wood pulp, etc.)
2. Industrial non-wood products (gums, resins, oils, tannins)
3. Fuelwood, posts, poles (fierwood, charcoal, roundwood used on-farm, wood for carving)
4. Other uses, goods and services (food, medicinal use, fodder, land stabilization/amelioration, shade, shelter, environmental values)

#### Exploration and collection

5. Biological information (natural distribution, taxonomy, genecology, phenology etc.)
6. Collection of germplasm for evaluation

#### Evaluation

7. *In situ* (population studies)
8. *Ex situ* (provenance and progeny studies)

#### Conservation

9. *In situ*
10. *Ex situ*

#### Reproductive use

11. Semi-bulk/bulk seedlots, reproductive materials
12. Selection and improvement

#### Remarks

PVT = Provenance trials

PGT = Progeny trials

CLT = Clonal trials

SO = Seed orchard

E = endangered at species or provenance level

MPTS = Multi purpose tree species

#### Rating

For columns 1-4: as appropriate

For columns 5-11:

1. Highest priority, action should start, or be continued, with immediate effect
2. Prompt action recommended, action should start within next two biennia
3. Action required in quinquennium 1996-2000