

ZIMBABWE FORESTRY CODE PROPOSAL

JUNE 2006

CHAPTER 1: PREAMBLE

1 THE INTERNATIONAL FOREST POLICY DIALOGUE

The international community has since 1992 been engaged in forest policy dialogue aimed at promoting sustainable management of all types of forests, in recognition of people's dependence on forests for socio-economic development and livelihoods. This international forestry dialogue was facilitated by the United Nations Commission on Sustainable Development (CSD) through the establishment of the Intergovernmental Panel on Forests (IPF) in 1995 and the Intergovernmental Forum on Forests (IFF) in 1997.

The IPF was given two 2 years (until 1997) to develop proposals for action and to build consensus within the international community on the need for a global forest convention. Many countries objected to the idea of a legally binding instrument until they had a better understanding of the financial mechanisms in place to facilitate national implementation particularly in the developing countries. The IFF was established at the 5th Session of the CSD in 1997 and given until 2000 to among other issues, promote and facilitate implementation of IPF proposals for action, report on progress towards sustainable forest management (SFM), identify possible elements and work towards a consensus on future international arrangements, including a legally binding instrument (LBI). After 3 years of deliberation more than 270 forest-related proposals for action and implementation at international, regional and national levels had been developed by IPF/IFF, but failed to agree on the question of a legal instrument. To end the stalemate, countries resolved to establish the United Nations Forum on Forests (UNFF) and the Collaborative Partnership on Forests (CPF) in 2000, to facilitate implementation of IPF/IFF proposals and to enhance co-operation among international organizations respectively.

2. UNFF GOALS

The UNFF was established initially for a period of 5 years (2000 – 2005) primarily with the following objectives:

- Facilitate and promote implementation of IPF/IFF proposals for action and foster a common understanding on SFM;
- Provide a forum for continued policy development and dialogue and to address emerging issues;
- Enhance co-operation and programme co-ordination on forest related issues;

- Foster international and cross-sectoral co-operation and monitor, assess and report progress in achieving SFM; and
- Strengthen political commitment to the management, conservation and sustainable development of all types of forests.

The Strategic objectives for UNFF were developed along four major challenges namely rapid loss of forest cover worldwide, the threat to protected forests, the need to enhance socio-economic and environmental benefits from forests and the urgent need to curtail the dwindling development assistance for SFM. The following broad goals provide strategic direction for UNFF.

- To reverse the loss of forest cover worldwide through SFM, including protection, restoration, afforestation and reforestation, and increased efforts to prevent forest degradation;
- Increase significantly the area of protected forests, the area of sustainably managed forests and the proportion of forest products from sustainably managed forests;
- Enhance forest based economic, social and environmental benefits and the contribution of forests to the achievement of the internationally agreed development goals including those in the Millennium Development Goals (MDGs), in particular with respect to poverty eradication, environmental sustainability and improvement of livelihoods of forest dependent people; and
- Reverse the decline in official development assistance and mobilize financial resources for the implementation of SFM.

3. IPF/IFF PROPOSALS FOR ACTION

The IPF/IFF proposals at national level focus on action to be undertaken by the government and stakeholders from the private sector and civil society in close cooperation with forest related international organizations such as CIFOR, IUCN, ICRAF, FAO etc. The proposals are meant to promote multi-disciplinary and cross-sectorial collaboration, strengthen forest-related policy processes like national forest programmes (nfps) and address national priorities in a holistic and cross sectorial approach to improve forest practice. Consensus should thus be built among all stakeholders on national forestry priorities and responsibilities for implementation. This should lead to enhanced coordination and efficient harnessing of assistance from international cooperating partners (ICPs), development partners and development banks.

THE IPF/IFF proposals for action were built along broad topics such as:

1. Formulation and implementation of nfps, including development of codes of conduct consistent with SFM and conducting national assessment of the IPF/IFF proposals for action and planning their implementation involving all stakeholders.

2. Promoting public participation in SFM and public awareness of the benefits from forests.
3. Combating deforestation and forest degradation including conducting studies on underlying causes of deforestation and creating awareness on the multiple values of forests.
4. Traditional forest-related knowledge, including protection of intellectual property rights and access and benefit sharing.
5. Forest-related scientific knowledge, including promotion of forestry research and mobilization of the required resources.
6. Forest health and productivity developing national assessment and monitoring methodologies to minimize air pollution and negative entomological and pathological impacts.
7. Development, field testing and promotion of use of criteria and indicators for SFM.
8. Investigation and valuation of economic, social and cultural aspects of forests, including security of land tenure.
9. Forest conservation and protection of unique types of forests and fragile ecosystems.
10. Monitoring, assessment and reporting progress on forest resources and maintenance of national forest statistics.
11. Rehabilitation and forest conservation in low forest cover countries.
12. Rehabilitation and restoration of degraded lands and the promotion of natural and planted forests.
13. Maintaining forest cover to meet present and future needs.
14. Promote and explore innovative financial resources for SFM.
15. Promote policies and actions to facilitate legal trade in forest products.
16. International cooperation in capacity building transfer of and access to environmentally sound technologies for SFM, including strengthening forest education and training for women.

The critical question is: *How can countries like Zimbabwe move towards implementation of the IPF/IFF proposals for actions?* Firstly, to promote cross sectorial collaboration, government institutions like Forestry Commission, Environmental Management Agency (EMA) and Parks and Wildlife Management Authority and civil society should regularly engage in forest policy deliberations. Secondly, the IPF/IFF proposals could be addressed in the development and implementation of Zimbabwe nfp (which is still outstanding) or other forestry policy processes such as National Forest Policy Reviews and National Biodiversity Strategy or Poverty Reduction Strategy.

4 UNFF SESSIONS

The six UNFF sessions held so far produced the outcomes summarized below.

UNFF1

- IPF/IFF produced more than 270 proposals for action towards SFM, known as the IPF/IFF proposals for action. These proposals form the basis for the UNFF Multi-Year Programme of Work (MYPOW) and Plan of Action.
- The meeting recommended establishing three *ad hoc* expert groups to provide technical advice to UNFF on approaches and mechanisms for monitoring, assessment and reporting, finance and transfer of environmentally sound technologies, and consideration for developing a legal framework on all types of forests.

UNFF2

- The meeting adopted a Ministerial Declaration and Message to the World Summit on Sustainable Development and 8 decision points were made:
 - a. Combating deforestation and forest degradation
 - b. Forest conservation and protection of unique types of forests and fragile ecosystems
 - c. Rehabilitation and conservation strategies for countries with low forest cover.
 - d. Rehabilitation and restoration of degraded lands and the promotion of natural and planted forests.
 - e. Concepts, terminology and definitions.
 - f. Specific criteria for review of the effectiveness of the IAF
 - g. Proposed revisions to the medium term plan 2002-2005.

UNFF3

The meeting adopted 6 resolutions, namely

- Enhanced cooperation and policy and programme coordination
- Forest health and productivity
- Economic aspects of forests
- Maintaining forest cover to meet present and future needs
- UNFF Trust Fund and
- Strengthening the Secretariat.

UNFF4

UNFF adopted 5 resolutions namely

- Forest-related scientific knowledge
- Social and cultural aspects of forests
- Monitoring, assessment and reporting and criteria and indicators for SFM
- Review of the effectiveness of IAF and
- Finance and transfer of environmentally sound technologies.

UNFF5

- This session was bogged down with intractable country positions and an ambitious negotiating agenda.
- European delegates were determined to get a set of policy commitments and insisted on quantifiable and time bound global goals and national targets.
- Financial resources for implementation of the proposals for action remained at the centre stage.

UNFF6

- A draft resolution for adoption by the Economic and Social Council (ECOSOC) of the United Nations was produced.
- Draft elements of the Voluntary Code/Guidelines/Understanding which must be submitted by member countries through the African Group before 30 June 2006.
- UNFF will conclude and adopt at its seventh session a non-legally binding instrument on all types of forests.

The following timelines regarding input into the UNFF process should be considered:

- (i) Some countries submitted their proposals at the UNFF6 meeting. These should serve as a guide to the development of Zimbabwe's proposals, which must be submitted by end of June 2006.
- (ii) UNFF6 will circulate a compilation of Draft Indicative Elements by end of July 2006, to which comments are required by 31 August 2006.
- (iii) An *ad hoc* working group meeting will be held during the last quarter of 2006 to develop the content of a NLBI.
- (iv) The effectiveness of the NLBI approach will be reviewed in 2015, at which options of a LBI shall be considered.

5 CHALLENGES IN THE IMPLEMENTATION OF THE IPF/IFF PROPOSALS IN AFRICA

Implementation of the IPF/IFF proposals particularly in the Southern African region has been hampered by 6 main factors:

- Lack of awareness of IPF/IFF and UNFF processes and outcomes.
- Lack of human and financial capacity to prioritise and implement them.
- Inadequate participation in international forestry dialogue due to lack of information on the issues at stake, resulting in junior staff being sent to participate.
- Lack of financial resources for the international trips to mostly Europe and America where the meetings are often held.

- Lack of backstopping from regional institutions like the SADC Secretariat to synthesize the proposals for action, prioritize them with Member States and facilitate their implementation.
- Inert involvement of the Forestry Authority in forest certification and forest regulation and law enforcement, which weakens its catalytic role and domestication of outcomes from international forestry dialogue.

6 RELEVANCE OF THE UNFF PROCESS TO ZIMBABWE

A brief reflection on Zimbabwe's forest resources and their significance to the national economy and community livelihoods is imperative in demonstrating the relevance of UNFF outcomes and their implications in Zimbabwe.

Natural forests

Natural woody vegetation from which the majority of communities derive their livelihoods covers approximately 65% of the land area (Nhira *et al*, 1998). These can be classified into 6 distinct categories based on the dominance of a few species (Bradley, 1992). **Miombo woodlands** are dominated by *Brachystegia* and *Julbernardia* species and are found mainly on the central plateau where annual rainfall ranges between 700 and 1000 mm. The **Zambezi teak forests** are confined to the Kalahari sand forests of north-western Zimbabwe where they occupy about 5% of the total land area. The dominant species, which are also commercially exploitable, are teak (*Baikiaea plurijuga*), mukwa (*Pterocarpus angolensis*), mchibi (*Guibourtia coleosperma*) and mkamba (*Azelia quanzensis*). **Mopane woodlands** dominated by *Colophospermum mopane* occur on heavy textured soils along major river catchments including the Zambezi and Limpopo valleys. These woodlands are a source of woodcraft, edible worms and offer nutritious browse to both domestic livestock and wildlife. **Acacia woodlands** are spread throughout the country, occurring in vleis areas and dominated by *Acacia* species. **Terminalia/Combretum woodlands** frequently found as a tree-shrub combination are dominated by silver terminalia (*Terminalia sericea*) and *Burkea africana* in association with *Combretum* species, *Lannea discolor*, *Peltophorum africanum* and *Schlerocarya caffra* in drier areas. **Closed montane forests** occur in small isolated parts of the eastern highlands.

Concern for natural forest depletion in volume and quality has increased dramatically over the past two decades. Deforestation is mostly attributed to land clearing for agricultural expansion, fuel wood collection, overgrazing and uncontrolled fires. Localised extensive tree cutting for tobacco curing has been problematic in most tobacco growing areas.

Plantation Forests

Exotic plantations cover about 120 000 hectares and are located mainly in the high rainfall eastern highlands. 75% of the planted area is under pines (*Pinus patula*, *P. elliotii* and *P. taeda*) with an annual increment of 8 – 12 m³/ha, 15% under eucalyptus (*Eucalyptus grandis*, *E. cloeziana* and *E. camaldulensis*) with mean annual increment of 15 – 18 m³/ha and 10% under wattle (*Acacia mearnsii*). The industry is heavily vertically integrated with a few prominent players in both the production and processing chain.

The sustainability of the industry is hinged on environmental excellence. Despite the economic and environmental considerations in forest practice by most timber organizations, there has been a general decline in the area under plantations from about 120 000ha in 1999 to about 108 000ha in 2003. This is attributed to failure by some companies to expand the area planted or failure to re-plant harvested areas. Over-harvesting and wasteful harvesting, including thinning to waste, have been reported in some cases. A number of timber companies have also lost vast timber resources to fire emanating from resettlements in timber plantations. While the fires have been widely blamed on arson, there are indications that some of the losses are attributed to among other things, the absence of comprehensive management plans, inadequate fire prevention measures and poor silvicultural practices.

Most of the problems faced by the forestry sector in Zimbabwe could be addressed through an internationally agreed voluntary Code which could be legally binding at national level. Such an arrangement can only be developed with the full participation of all key national stakeholders before it can be adopted as a binding regulatory framework. The proceeding sections of this document provide a basis upon which stakeholders could develop an appropriate Code to regulate forestry practice in Zimbabwe in order that forests meet the broad goals of socio-economic development, environmental sustainability, poverty reduction and livelihoods enhancement.

CHAPTER 2: ASSESSING AND MONITORING OF FOREST RESOURCES

Inventories provide static assessments of forest resources
Monitoring assesses changes in status and trends

Table 1: Indicators required to inventory and monitor forest and woodlands to meet national and international requirements

INDICATOR	UNIT OF MEASURE	FREQUENCY
Wood stocks/biomass	ton/ha	5 -10yrs
Biomass	ton/ha	5 -10yrs
Ecosystem and habitats	sq km	5-10yrs
Forest fragmentation	sq km or %	5-10yrs
Land cover	Sq km	5-10yrs
Fuelwood	Tons	5-10yrs
Land productivity	?	5-10yrs
Land use	sq km	5-10yrs
Non timber forest products & removals	Tons	5-10yrs
Plants & animals	Frequency	5-10yrs
Protection status	sq km	5-10yrs

Table 2: Information needs for forest inventory and monitoring

INDICATOR	UNIT OF MEASURE	FREQUENCY
Vegetation type	Ha	5 -10yrs
Canopy cover	sq km	5-10yrs
Tree diameter	centimetres	5-10yrs
Tree height	Metres	5-10yrs
Stand age	No of yrs	5-10yrs
Plant growth	cu.m ³ /ha/yr	5-10yrs
Crown ratio	%	5-10yrs
Soil type	Ha	5-10yrs

Table 3: Minimum data requirements for modeling the extent of forest resources

RESOURCE ATTRIBUTE	UNIT OF MEASURE
Vegetation type (over storey & under storey)	Ha
Tree diameter	Centimetres
Vegetation height	Metres
Stand age	No of years
Plant growth	Cu.m ³ /ha/yr
Percentage canopy cover	%
Topography (aspect, slope, elevation)	As appropriate
Climatic data	As appropriate
Geographic coordinates	As appropriate
Past treatment/uses	As appropriate
Planned treatment/uses	As appropriate

RECOMMENDED SAMPLING TECHNIQUES

- Multiphase/multistage inventories
- Linear and non linear regressions models
- Expert systems

CHAPTER 3: ASSESSING AND MONITORING OF FOREST RESOURCES FOREST BIOLOGICAL DIVERSITY

Forest biological diversity provides a wide array of goods and services from timber and non-timber forest resources to playing an important role in purifying, recycling and storing water and mitigating climate change. At the same time it provides livelihoods and jobs to millions of people. Forest biological diversity plays an economic, social and cultural role in the lives of many indigenous and local communities.

ELEMENT A: CONSERVATION, SUSTAINABLE USE AND BENEFIT SHARING

1. Apply the ecosystem approach to management of forests and woodlands
2. Reduce threats and mitigate the impact of threats on forest biological diversity
3. Protect, recover and restore forest biological diversity
4. Promote the sustainable use of forest biological diversity
5. Promote access and benefit-sharing of forest genetic resources

ELEMENT B: INSTITUTIONAL AND SOCIO ECONOMIC ENABLING ENVIRONMENT

1. Enhance the institutional enabling environment
2. Address socio-economic failures and distortions that lead to decisions that result in loss of biological diversity
3. Increase public education, participation and awareness

ELEMENT C: KNOWLEDGE, ASSESSMENT AND MONITORING

1. Develop classification of forest and woodlands on various scales to improve the assessment of status and trends of forest biological diversity
2. Improve methods for assessment of status and trends of forest biological diversity
3. Improve understanding of the role of forest biodiversity and ecosystem functioning
4. Improve infrastructure for data and information management for accurate assessment and monitoring forest biological diversity.)

CHAPTER 4: Forest Health and Vitality

Background

Forest ecosystem health and vitality is essential for the ongoing growth of our forests and to ensure they continue to deliver the full range of products and services and perform their important functions. Natural phenomena and human actions can dramatically affect the health of forest ecosystems. Traditionally we refer to these phenomena and actions as destructive agents because their effects on forest ecosystems are visibly devastating. The actions and interactions of these agents influence forest health and vitality.

Article 1.

Purposes and Tasks of Conservation and Protection of Gazetted Forests and of Forests outside Gazetted Forests.

Forests shall be subject to protection against fires, illegal logging, breaches of the established order of forest use, and other acts inflicting damage on the forest estate and on forests outside the forests estate, and also to protection against forest pests and diseases.

The conservation and protection of forests shall be effected with due consideration of their biological and other specifics, and shall include a set of organizational, legal and other measures for the rational use of the forest estate and of forests outside the forest estate, preservation of forests against destruction, injury, weakening, pollution, and other negative effects.

The conservation and protection of forests shall be effected using ground-based and aerial methods by Forestry Commission and by other organizations.

The prevention of forest fires and their sitting, limitation of spread and extinguishing thereof shall be the main tasks in the protection of forests against fires.

Article 2.

Rules of Effecting Measures in Conservation and Protection of Forests

The Forestry Commission shall ensure the implementation of measures in the conservation and protection of forests, and in combating forest pests, diseases and forest fires, and shall recruit for the extinguishing thereof employees, fire-prevention hardware and transport facilities for the gazetted forests. It shall have

powers to inspect and certify fire equipment and preparedness of private forest companies and Communities living around gazetted forest areas.

Article 3.

Forest Users' Duties in Protection of Forests against Fires

Forest users shall have the duty to work out and confirm, in agreement with the Forestry Commission, plans for fire-prevention measures, and also to implement these within the established periods. The Forestry Commission shall assist forest users in working out plans of fire-prevention measures. The schedule of fire-prevention measures and the requirements on plans for such measures shall be determined and approved by the Forestry Commission.

Communities in forest areas where traditional ceremonies, mass cultural and other functions are held shall have the duty to be in possession of fire-fighting facilities, in accordance with the norms approved by the Forestry Commission and the Ministry of Environment and Tourism and also to maintain the aforesaid facilities during fire-hazard periods in readiness for immediate use thereof. In the absence of approved norms for the aforesaid facilities, Communities shall have the duty to be in possession of primary fire-fighting facilities, the schedule and quantity whereof shall be determined and approved by the Forestry Commission.

Article 4.

State Fire Supervision in Gazetted Forests and in Forests outside Gazetted Forests.

State fire supervision in the gazetted forests and in forests outside the gazetted forests shall be effected by Forestry Commission Officers for the purposes of control of compliance by Communities with the requirements and rules of fire safety in the forest areas and in forests outside the gazetted forests, and also for the purposes of cutting short any breaches thereof.

Communities on lands bordering gazetted forests and in forests outside the gazetted forests shall bear criminal, administrative and other liability for breaches of the requirements and rules of fire safety, in conformity with the Forest Act.

Article 5.

Protection of Gazetted Forests and of Forests outside Gazetted Forests against Forest Pests and Diseases.

Protection of the gazetted forests and of forests not within the gazetted forests against forest pests and diseases shall be ensured by close surveillance on the condition of the gazetted forests and of forests outside the gazetted forests,

timely detection of forest pests and diseases, and prophylactic measures to prevent the origination of these, and for the localization and eradication thereof.

Protection of the gazetted forests and of forests outside the gazetted forests against forest pests and diseases shall include the following measures:

- current, expeditionary and other forest-pathology check-ups. There is need to invest in new technologies like aero visual assessments of forests;
- general, reconnoitering and detailed supervision of development of forest pests and diseases;
- elaboration of ground-based measures in combating forest pests and diseases. There is need to invest in other technologies like GIS and use of aerial techniques;
- research on prophylactics of forest diseases and for the eradication of forest pests and diseases;
- state control of the conduct of the aforesaid measures.

Measures in protecting the forest estate and forests outside the forest estate against forest pests and diseases shall be regulated by sanitation rules confirmed by the Forestry Commission.

Article 6.

Forest Users' Duties in Protection of Gazetted Forests and of Forests outside Gazetted Forests against Forest Pests and Diseases.

For the purposes of protection of the gazetted forests and of forests outside the gazetted forests against forest pests and diseases, forest users shall have the duty:

- to carry out works in ways and with observance of technologies which ensure an improvement of the sanitary condition of the forest estate and of forests outside the forest estate;
- not to allow the spread of forest pests and diseases in parcels of the forest estate and of forests outside the forest estate where they are engaged in forest use;
- to effect measures for protection of the forest estate and of forests outside the forest estate against forest pests and diseases, as specified by the contract of lease of a forest-estate parcel, the contract of concession of a forest-estate parcel, the logging permit, order or logging ticket;
- to assist Forestry Commission in effecting measures to protect the forest estate against forest pests and diseases;
- to provide timely information to the Forestry Commission on the outbreak of forest pests and diseases in the forest estate;
- to abide by the sanitation rules in the forest estate and in forests outside the forest estate.

Article 7.

Participation of Forestry Commission in Combating Forest Fires and Forest Pests and Diseases.

For the purposes of preventing forest fires, of fighting these, and also of combating forest pests and diseases, the Forestry Commission shall:

- arrange annual elaboration and fulfillment of plans of measures for the prevention of forest fires, for the anti-fire infrastructure of the forest estate and of forests outside the forest estate;
- ensure the readiness of organizations charged with the conservation and protection of forests, and also of forest users for the fire-hazard season;
- confirm annually, before the onset of the fire-hazard season, operative plans for combating forest fires;
- establish the rules for involving the Communities, employees of commercial and noncommercial organizations, and also fire-fighting hardware, transport and other facilities of the aforesaid organizations to put out forest fires;
- provide, for the period of high fire hazard in forests, for the formation of forest-fire units from among Communities recruited for putting out forest fires, and shall ensure the readiness of these units for immediate deployment in the event of forest fires;
- create a reserve of fuel and lubricating materials for the fire-hazard season;
- arrange the conduct of anti-fire programmes, regular publication in the mass media of items on the need to safeguard forests and to abide by the rules of fire safety in forests;
- ensure forest pests and diseases outbreaks are combated and sanitary state of forests is improved;
- prohibit the presence of citizens in forests and the use of forests when measures are taken to combat forest pests and diseases.

Article 8.

Duties of Citizens and Legal Persons in Preventing Negative Impact on Condition of Forests.

Citizens and legal persons, in the conduct of activity which may have or does have a negative impact on the condition of forests, shall have the duty to carry out technological, sanitary and other measures for conservation and protection of

forests, in coordination with the Forestry Officers of the Forestry Commission and with other Government agencies.

Article 9.

Participation of Citizens and Public Associations in Ensuring Rational Use, Conservation, Protection and Reproduction of Forests

Citizens and Public Associations may take part in ensuring the rational use, conservation, protection and reproduction of forests, in conformity with the Forest Act.

Article 10.

Updating and strengthening of the proposed Forest code on Forest Health and Vitality:

Since Forest health and vitality issues are changing from time to time there is need for FC to carry out research and monitoring of the state of our forests and to carry out educational campaigns for communities.

1. **Assess management activities that may influence forest health.**
 - ✓ Investigate prescribed burning as a legitimate management tool to maintain fire dependent communities.
 - ✓ Develop guidelines and safety procedures for the use of fire as a silvicultural tool
 - ✓ Investigate herbicide and pesticide effects on non-target species.
 - ✓ Seek information on the control of non-indigenous invasive species and imbalances in native species.
2. **Utilize ecologically sound integrated pest management techniques to assess and protect state forest ecosystems.**
 - ✓ Develop integrated pest management plans for significant forest damage causing agents.
 - ✓ Develop an early detection and rapid response program for non-indigenous invasive species.
 - ✓ Maintain accurate records of damaging forest agents and events.
 - ✓ Mitigate the effects of destructive forest agents on the health of state forests to reduce forest value losses.
 - ✓ Strive to maintain forest insects and diseases at ecologically acceptable levels.
3. **Ensure Forest Health activities are conducted in a safe manner.**
 - ✓ Train FC staff, forest fire wardens and forest companies on wildfire prevention and fire suppression techniques.

- ✓ Conduct appropriate safety training as related to Fire and Pest Management activities.
- ✓ Keep abreast to current technologies that improve safety and reduce health risks.
- ✓ Develop and implement “Forester Training Card”, an orientation checklist for new Foresters.

4. Educate state forest users on forest health and wildfire prevention.

- ✓ Provide forest users with readily available, easily understood and usable forest health information and training.
- ✓ Provide information and education on wildfire prevention.
- ✓ Keep the public informed of wildfire conditions.
- ✓ Use Forestry Extension Officers and Community Forestry Promoters as an important link in communicating this effort to the public.
- ✓ Set minimum widths for fireguards and fire traces as per the Forest Act.
- ✓ Monitor and approve the above for other Forest Owners and Users.

5. Minimize damage to forest ecosystems by wildfire.

- ✓ Suppress wildfires that occur on state forestland.
- ✓ Assist and monitor the suppression of wildfires in all other forests (e.g. private forest land).
- ✓ Utilize fire suppression methods appropriate to local resource conditions, characteristics and limitations.

CHAPTER 5: PRODUCTIVE AND PROTECTIVE FUNCTIONS OF FOREST RESOURCES

Introduction

The productive area (forestry) refers to the total area of a specific forest category, less any land used for roads, settlements, water bodies and other developments. This is defined by the ability of a particular forest to provide wood and non-wood products for their use and non-use values.

On the other hand protective functions of forest resources refer to services which are not consumables but are rendered by forests for various environmental safeguards.

Below is a list of Productive and Protective functions of forest resources:

Productive Function

1. Industrial Timber
2. General Purpose Timber
3. Grazing/Browsing
4. Habitat
5. Fruit/Food/Resin
6. Medicine
7. Wildlife
8. Fuel Wood

Protective Function

- Soil Conservation/Protection
- Catchments Protection
- Biodiversity
- Carbon Fixation
- Climate Regulation
- General – Protection of Life
- Support systems i.e. soil, air and water

Maintenance of Productive Capacity

Indicators

1. Area of Forestland and net area of Forestland available for timber production.
2. The area and growing stock of plantations.
3. Annual removal of wood products compared to volume determined to be sustainable.
4. Annual removal of NTFP compared to levels deemed sustainable.
5. Total growing stock for both merchantable and non-merchantable tree species on forestland available for timber production.

Protective and Productive Functions of Forests

Indicators

- Area and percent of forestland with significant soil erosion.
- Area and percent of forest managed primarily for protective function e.g. riparian zones, watersheds.
- Percentage of stream kilometres in a forested catchment in which stream flow and timing has significantly deviated from the historic variation.
- Area and percent of forestland with significantly diminished soil organic matter and/or changes in other soil chemical properties.
- Area and percent of forestland with significant compaction or change in soil physical properties.
- Percent of water bodies in forest areas with significant variation from the historic range of variability in pH, sedimentation etc.
- Area and percent of forestland experiencing an accumulation of toxic substances.

Challenges to Forest Productive and Protective Functions

The above relates mainly to many forest ecosystems especially fragile ecosystems. The most common challenges are listed below

1. Sustainable forest management within the FMUs.
2. damaging forest fires.
3. Land clearing and associated dysgenic effects.
4. Forest health problems – i.e. effects of processes and agents like competition, insects, pathogens, pollution.

Issues for the Forest Code of Conduct to address Productive and Protective Functions – all types of forests

1. Develop and implement appropriate planning and management strategies for the representative protection and conservation of full range of forest values on an ecosystem basis within and outside protected areas.
2. Develop and implement **partnership mechanisms** to engage forest owners, private sector, indigenous people and local communities in the planning and management of forest conservation areas.

3. Develop and implement innovative mechanisms and improved coordination of **donor activity** for effectively financing, encouraging and implementing **integrated cross-sectorial policies to support forest conservation**.
4. Develop and implement **methodologies and criteria** to assess the adequacy, consistency, condition and effectiveness of protected areas and their **management** (monitoring and).
5. Establish joint protected areas and guidelines or unique transboundary forests/areas.
6. Encourage cooperation and coordination of activities concerning forests and trees in environmentally critical areas/sensitive areas including systematic data collection and **analysis** (forest inventory).
7. Give high priority in national forest programmes to the rehabilitation and sustainable management of forests and trees in environmentally sensitive areas.
8. Enshrine environmental audit tools in Forest Management Plans e.g. EIAs, Forest Certification.
9. With stakeholders review and develop a National Forest Action Programme (NFAP) and abide by same.
10. Productive area for every forest category should be defined in space and time strengthened by legislation.
11. Development of small growers under land reform to help set aside productive areas in these zones.
12. Absence of a policy on integrated resource development impacts negatively on protective functions of forests due to continued forest conversion into other uses without considering forest as a viable land use option e.g. land use plans and integrated catchment area management.
13. Economic forest valuation should be done with specific objectives in mind e.g. land use allocation based on suitability and advantages.

CHAPTER 6: SOCIO-ECONOMIC FUNCTIONS OF FORESTS

1. Background

Forests and woodlands provide a wide range of timber and non-timber products to both rural and urban dwelling people. They provide a wide range of foods such as fruits, mushrooms and honey; fire wood, which is a source of energy for over 80% of households; conserve the soil; preserve watersheds, sequester carbon; provide a habitat for a wide range of flora and fauna which play a vital role in activities such as tourism; and also provide medicines (SADC, IUCN and SARDC, 2000).

The concept of sustainable development suggests that environmental quality and economic growth are complementary objectives, particularly in developing countries where some development efforts have tended to produce short-term gains with the neglect of the environment. Thus, the Total Economic Value (TEV) concept allows the marketed and non-marketed benefits of an environmental resource to be aggregated according to direct use values, functional values, option values and existence values.

Forests and woodlands contribute in complex ways to the livelihoods of both urban and rural households. For instance, farming households often combine their agricultural production with collection and commercialization of forest products. Various studies on peoples' livelihoods elsewhere clearly show that harvesting of woodland products, especially non-timber forest products, is seldom sufficient to provide a living, hence its being combined with agricultural production (Ros-Tonen et. al., 1998). The extent to which households are dependent on forest products to improve their livelihoods is less quantifiably clear. This mainly because the impacts of woodland use at the household level in terms of risk spreading, poverty and food security are poorly understood (Deweese, 1994).

The extent to which households are dependent on forest products to improve their livelihoods is less quantifiably clear. However, in cases where agricultural productivity is low and or where market opportunities exist, households with the financial and human resources may use forest products to complement and improve their nutrition and income.

While the commercialization of forest and forest-based products is widespread in Zimbabwe, it is also important to note that it is but one of a wide range of livelihood strategies that households apply under varying circumstances such as a contingency in case of crop failure; to meet specific cash needs; or simply when an opportunity presents itself (Brigham et al., 1996). Thus, participants

move into and out of these activities as conditions change. Also, the process of commercialization is intricately related to issues which include among other things; the expansion of the labour economy, the emergence of markets in urban areas, and changes in market access due to infrastructural development, tourist season, or other factors (Ibid). Despite the prevalence of commercialization in Zimbabwe, the current legislation is not supportive of this activity. Many forest policies and legislative instruments are geared toward limiting commercialization of forest products through controls and regulations like licensing, permit systems, and royalty collection (Deweese, 1994).

2.0 The Socio-Economic Benefits of Forests and Woodlands

2.1 Background

The total land area of Zimbabwe is about 39 000km² and Kwesha and Dreiser, 1997 estimate that about 59% of the total land area is still wooded. FAO estimates indicate that in 1963 communal areas of Zimbabwe had 60% of their area under forests and woodlands, and by 1978 this area had been reduced to 30% (Bradley and Dewees 1993) and it can also be assumed that, as a result, the range of non-timber forest products experienced subsequent reduction.

Zimbabwe's forest resources contribute about 3-4% to the Gross Domestic Product (GDP) with the bulk coming from the conventional forestry plantation industry. This GDP figure grossly understates the many direct and indirect benefits derived from natural forests and woodlands for the sustenance of rural livelihoods. Apart from providing fuelwood and construction materials for over 80% of the rural households; natural forests and woodlands contribute to food security through the provision of other products such as fruit, honey, mushrooms, bushmeat and medicines; they enhance agricultural productivity through nutrient recycling; they preserve watersheds; they sequester carbon; and they also have biodiversity and aesthetic values. Thus, forests and woodlands clearly have a role in providing a platform for broad based economic activities for rural communities. They also help in alleviating rural poverty since it has been established that there is a strong association between rural poverty and food security (Deweese, 1994)

Indigenous forests and woodlands are very important in meeting household needs, especially in rural areas located in marginal agroecological zones of the country. Most of the woodlands in Zimbabwe are under threat of degradation due to among other things, the alienation of communal woodlands/forests by the state as well as the high population growth rate, which leads to high demand for land for both settlement and agricultural purposes. It is estimated that Zimbabwe loses about 1.5% of its forest area of about 23 million hectares with more than 100 000ha being lost to agricultural expansion each year. However, natural woodlands and forests appear to still have a niche in the farming and livelihood

systems of small holder farmers and there is potential for the domestication of some species.

The utilisation of forest products is often viewed as a way of increasing incomes and improving food security of households in communal areas, especially those located in marginal agroecological zones. Most of the forest products and their related by-products are available during the dry season and often act as a cushion during drought years when field crops have failed. Trade in these products around the country is prevalent and has potential for expansion with increased shelf life of the products through improved processing and packaging.

The commercial forest sector is dependent on about 156 000ha of plantations under exotic species mainly pines, eucalypts and wattle. Sawmills processing softwoods increased from 39 in 2001 to 46 in 2003 and production of rough sawn timber stood at about 390 000m³ while pole production stood at about 82 000m³ in 2004. The sector directly employs about 20 000 people while another 1 200 are indirectly employed in the sector. Of these, 60.4% are employed in the forestry and timber processing sector; 39.5% are employed by the furniture manufacturing sector; and the remaining 0.05% is in the ancillary and down stream employment such as the informal sector. These figures represent 5-6% of the total manufacturing workforce and 2.8% of the total manufacturing sector production. A further 34 000m³/year of commercial indigenous rough sawn timber comes from natural forests located in the north-western parts of the country and employs quite a sizeable number of people.

The social forestry sector is concerned with the utilisation and conservation of natural forests and woodlands, tree planting and management to meet the various needs of the people especially, those in the rural areas. Table 1 shows the value share of selected common forest products and services based on a case study from a communal woodland in Zimbabwe.

Table 1. Value share of common products and services based on a case study in a communal area in Zimbabwe

Product	% Value Share
Wild fruits	33
Woodfuel	21
Nutrient cycling	17
Construction wood	14
Wild foods (mushrooms, honey, vegetables, etc.)	8
Grazing	3
Wooden implements	2
Wooden crafts	2
Total	100

Source: Campbell et. al., 1993

2.2 Marketed Benefits

Apart from commercial timber obtained from exotic plantations and indigenous forests which contribute the bulk of the 3-4% to the GDP, forests and woodlands also provide an array of other products which include:

2.2.1 Wild Foods

Wild foods are particularly important for rural communities. The wild foods supplement and complement traditional agricultural food sources and contribute to household nutrition and food security. The foods include fruits, nuts, seeds, vegetables, bush meat (from large wild game to birds, reptiles, rodents, etc.), honey, mushrooms, edible insects, edible caterpillars, beetles, tubers and roots. These foods may be gathered and harvested throughout the year or seasonally and are used for subsistence purposes or sold to earn much needed income.

Forests and woodlands in Zimbabwe are rich in variety and quantity of fruit trees (Campbell 1987). Wild fruits are mostly consumed by children, but also eaten by adults when they are going about their businesses. Wild fruits can be consumed directly or traded to raise household income. The main wild fruits traded in both the rural and urban areas include *Strychnos spp.*, *Uapaca kirkiana*, *Azanza garckeana*, *Ziziphus mauritiana*, *Vitex payos* and *Berchemia discolor*. Generally, Miombo woodlands on sandy soils are reported to contain a much greater variety and quantity of fruits than all other woodland types in Zimbabwe (Bradely and Dewees, 1993). The fruits are especially important during times of famine (Campbell 1987; Coote et al. 1993b). In Zimbabwe, few examples are reported of fruit processing activities. Inadequate processing technology has prevented the value added commercialisation of many fruit types.

In a study in Shurugwi, 21 species of edible mushrooms have been documented (McGregor 1995a). It is estimated that there are many more species of edible mushrooms throughout Zimbabwe. Mushrooms are eaten fresh and also dried. They are also traded as fresh or dried. During the rainy season mushrooms are widely sold along roadsides particularly by women and children (Clarke et al. 1996).

Edible insects harvested from forests and woodlands are an important source of protein, vitamins and energy for local people. In Zimbabwe, the diversity of caterpillar species is reported to have diminished markedly. McGregor (1995a) recorded a total of 14 species of caterpillars that have been consumed in the past. Caterpillars are widely consumed throughout the country and are also exported within the region. The major caterpillar species that is extracted and traded is *Imbrasia belina* which is found in Mopane woodlands on clayveld areas in natural regions iv and v (Bradely and Dewees, 1993).

Termites are another important source of relish in rural and urban areas particularly for the poor households. There is significant trade in woodland insects in Zimbabwe.

Leaves and roots of wild plants and herbs are other important sources of food derived from forests and woodland. McGregor (1995a) found out that many of the wild vegetables came from disturbed areas growing as weeds. A total of 39 wild vegetables were gathered from the woodland in Shurugwi (McGregor 1995a).

Meat from wild animals has been a source of protein for rural households since time immemorial. The meat comes from both large and small wild animals such as kudu, eland, buffalo, bush pigs, impala, hares, birds and mice for example. Populations of game animals have become depleted in most areas with dense human settlement as a result of hunting and habitat destruction.

Apiculture is a traditional occupation throughout the forests and woodlands in Zimbabwe. Productive woodlands are those dominated by nectar producing genera such as *Acacia*, *Brachystegia*, *Julbernardia*, *Syzygium* and *Combretum* tree species. Although there are various species of both stinging and stingless bees in Zimbabwe, the honey producing African stinging bee (*Apis mellifera scutellata*) is the main species being managed by people for commercial honey production (Hepburn and Radlof, 1998). Forests and woodland destruction has increasingly led to the decline in honey and beeswax production in some areas of the country. Export of honey and beeswax is an important foreign currency earner (Chihongo 1995).

2.2.2 Construction Materials

The forests and woodlands in Zimbabwe are an important supply of construction material though in some areas the resources have become degraded, particularly the large diameter posts of durable timber. House construction in communal and resettlement areas requires many poles of different dimensions, durability, as well as thatch grass and rope fibre for tying. These materials have to be replaced at frequent intervals (Grundy et al. 1993; Vermeulen 1993). There are high levels of selection for preferred species and sizes when people are harvesting and buying these materials (Shackleton 1993). In the last few decades there has been increased commercialisation of thatch grass (*Hyparrhenia spp.*) but less so of poles, except in areas of high scarcity.

2.2.3 Curios, Artefacts and Household Implements

Wood that is not normally used for industrial timber is the principal material for making domestic implements (plates, cooking sticks, bowls, hoe and axe handles, pestles and mortars, bows and arrows, drums, ox harnesses and walking sticks). Such wood is also used for curio carving. These artefacts can be important income earners, locally and in urban markets. Curios are an important source of foreign exchange. For these items specific attributes such as wood density, lightness, durability, flexibility, resistance to splitting and grain pattern are required for each specific purpose (Grundy et al. 1993; Vermeulen 1993).

2.2.4 Wood Fuel

Over 80% of rural households are dependent on fuelwood for energy. While firewood has traditionally been collected and harvested for domestic use, it has increasingly become a commercial commodity mainly destined for urban areas. Transportation of firewood to urban areas, where there is a growing demand, is of great concern and jeopardises the sustainable management of forests and woodlands (Bradely and Dewees, 1993). Women are the principal collectors of firewood for domestic use. Domestic fuelwood consumption varies between 2.7–6.5 t/household/year (McGregor 1991; Grundy 1995). Men are generally responsible for harvesting of firewood in large quantities and diameters mainly for commercialisation, brick burning, beer brewing, fish smoking and tobacco curing (Campbell and Mangono 1994). Generally firewood is becoming scarce resulting in people having to travel long distances to find the commodity and causing them to be less specific in terms of the species they use.

2.2.5 Tannins, Dyes, Oils, Resins, Fibre and Gums

There are a wide range of other useful products from trees in forests and woodlands, for example, tannins, oils, resins, dyes, fibre and gums. Fibre from Baobab (*Adansonia digitata*) bark is used in the Manicaland province to make mats, rugs, hats and hand bags most of which are sold mainly to foreign tourists. However, many of these products are unknown outside of the area in which they occur and are used. There is great potential for added value and commercialisation of these products. In Zimbabwe, there is great potential for commercialising gum Arabic from *Acacia senegal*, especially in the drier parts of the country (Maruzane et al. 1998).

2.2.6 Tourism

Zimbabwe's tourism sector is mainly based on wildlife. Forests and woodlands provide habitats for a great diversity of flora and fauna. With the increase in tourist operations, locals often benefit by providing goods and services associated with the industry. For instance, the woodcraft industry in Zimbabwe is thriving along major highways primarily due to the market provided by tourists, especially foreign tourists (Mukwekwerere, *et al.*, 1998).

2.2.7 Medicinal Plants

Medicinal plants are important for health care in the rural areas. The roots, leaves, bark, flowers and seed of many different species are used in health care both as medicine and for magic and religion. Magic and religion, and medicine cannot be separated from many Africans' point of view. Many believe that good health, disease, success or misfortune are not chance occurrences but are due to the action of individuals or ancestral spirits (Gelfand 1985; Coote et al. 1993a).

It is known that indigenous people have developed complex and sophisticated knowledge systems about the use of a vast diversity of plants for medicinal purposes for a variety of ailments.

About 500 species, 10% of Zimbabwe's flora, are used medicinally by traditional healers (Gelfand *et al.* 1985). Traditional healers have an important role in both rural and urban communities. They provide advice, divination and herbal prescriptions for physical and psychological complaints. Traditional healers and herbalists in relation to population figures in Zimbabwe are estimated to be 1:234 in urban areas and 1:956 in rural areas (Gelfand *et al.* 1985). Traditional medical practitioners together with traditional birth attendants out-number conventional doctors by far hence their important role in the delivery of primary health care. Apart from traditional healers who are involved in the treatment of more complicated illnesses, herbalists and some local villagers treat the more common ailments based on their knowledge of local plants. Unfortunately, there are no quantitative data on volumes and value of trade and consumption of medicinal plants in Zimbabwe. Cunningham (1990) gives some indication of the transportation of medicinal plants over distances of 200 km. The high demand for traditional medicines has been manifested by the launching of clinics and pharmacies specializing in traditional medicines in urban areas, and the selling of herbal medicines in many informal markets.

It is estimated that 70-80% of the population in developing countries rely on traditional plant medicines and about 20% of the drugs in modern allopathic medicine are derived from wild plant sources (SADC, IUCN, SARDC 2000). The high cost of the formal health delivery system has resulted in a large number of people turning to traditional medicines (MET, 2003).

Medicinal plants can support economic growth through activities related to growing, harvesting, processing and marketing of products. Given its direct relevance to health, social well-being and economic performance, the manufacture of products from medicinal and herbal plants is one of the most sectors that have potential for rural development. There are some constraints, however, related to such an activity. These include inadequate policy measures and support infrastructure, restricted access to technology, lack of systematic research, scarcity of production units of scientific and commercial scale, lack of proper quality control and regulatory arrangements.

2.3 Non-Marketed Benefits

2.3.1 Social value

Local myths and legends abound in many sacred forests and woodlands scattered throughout the country. The social value of forests and woodlands range from sacred sites, ceremonial sites to sacred tree species. For instance

some tree species which are not supposed to be cut (e.g. *Parinari curetilifolia*) are associated with sacred religious rites such as rain-making and resting places for the spirit mediums. For instance, in Chirinda Rain Forest (the most southerly tropical rainforest located in the south-east of the country) whose English translation is "a place for keeping watch", it is believed that the local Ndau people used to seek refuge in the forest from Shangani raids and due to superstitions surrounding the forest, the Shangani could not pursue the Ndau in the forest for fear of being decimated. The Ndau finally moved out of Chirinda and settled in adjacent areas when the Europeans settled in and around the forest under the pioneer title. Despite moving out, the forest has, over the years, remained an important site for traditional ceremonies and provision of other products, especially medicines for the Ndau. Thus, from the local people's perspective, Chirinda can be considered a cultural landscape (Timberlake and Shaw, 1994).

Table 2 shows the traditional or social values of forests and woodlands in the Zimbabwean context.

Table 2: Socially valuable woodland sites and tree species in Zimbabwe

Sites	Species	Function
Sacred hills and forests, formerly ancient burial grounds	A variety of indigenous species depending on woodland type. Muzhanje (<i>Uapaca kirkiana</i>) groves are frequently sacred.	Place of respect for the ancestors to prevent epidemics, famines, drought. Shade, fruits, edible insects, mushrooms, dry firewood.
Graveyards (family or communal)	Certain trees planted e.g. muchecheni (<i>Ziziphus mucronata</i>) and munhanzva (<i>Pouzolzia hypoleuca</i>) Others not cut e.g. mushuma (<i>Diospyros mespiliformis</i>)	Associations with spirits of the ancestors. Respect for the ancestors and shade.
Riverine valleys (can be sacred), springs, vleis, wells/sacred ponds, sponges	Certain species found growing in wet places are protected e.g. <i>Syzygium</i> spp. and <i>Ficus</i> spp.	These species are said to draw water and are associated with water spirits who prevent water from drying up. Fruit, shade.
Traditional court sites	Individual very large old trees, particularly muhacha (<i>Parinari curaterifolia</i>), Umganu (<i>Sclerocarya birrea</i>), Muonde (<i>Ficus sur</i>).	Shade and the giving of high esteem to the sites (so that they can be distinctive).
Ceremonial sites	Similar species to court sites	Rain-making ceremonies, other rituals and shade.
Taboo trees	Ichithamuzi (<i>Lonchocarpus capasa</i>), Muzeze (<i>Peltophorum</i> sp.), Chizhuzhu	Traditionally associated with bad luck, death or witchcraft if utilised.

	(<i>Maytenus</i> spp.)	
--	-------------------------	--

Source: Adapted from Clarke (1994)

2.3.2 Hydrological value

Most of the streams and rivers on which local communities depend, have their source in forests and woodlands. A number of boreholes and dams also depend on the aquifers located under forests and woodlands. In the case of the Eastern Highlands, the moisture captured by the tall trees from the low cloud moving in from the Mozambique coast results in orographic rainfall on meeting the high ground of the Highlands. This enhances the perennial supply of water to the rivers/streams and aquifers since the forests and woodlands act as a sponge which slowly releases the water into the rivers and streams. The Kalahari Sands forests located in the north-western parts of the country also form part of the catchments of the Zambezi basin.

2.3.3 Aesthetic and Scientific/Educational Benefits

Again using Chirinda Rain Forest as an example, the forest forms part of the last remnants of a particular part of our natural heritage. It is therefore an ideal locality for visitors interested in experiencing a rainforest, for educational excursions, or for learning about the interesting diversity of fauna and flora, and their interaction. Chirinda is quite unique in terms of its fauna and flora in Southern Africa and is therefore ideally suited to studying moist forest ecology and dynamics. It is the only area in the country where certain species can be found. One interesting question on Chirinda forest dynamics is whether it is a progenitor of larger forests-to-be or whether it is a relic of what were once larger forests that have been reduced through the individual or combined effects of climate change, fire, frost and human activities. Some ecologists and botanists contend that Chirinda forest is a small relic of a much larger forested area reduced within the last few hundred years by gradual climatic changes whilst others maintain that the forest has been influenced by soils (Timberlake and Shaw, 1994). Thus, the forest's biological diversity and the presence of potentially exploitable plants places the forest high on the conservation agenda.

2.3.4 Nutrient Cycling

Forests and woodlands are very important as a source of vegetative manure which is either directly applied to the field or is mixed with cow manure before application. Nyathi (1991) found out that user households in Masvingo gathered on average of 0.4 tones of litter per year from woodlands and forests for use in the forests. While Campbell et. al. (1993) report that in Lower Gweru, farmers used to gather five to fifteen scotchcarts of litter per year for use in the fields before most of the woodlands and forests were destroyed. The litter collected from the woodlands lead to better crop yields from the fields and are an important source of fertiliser for poor households who cannot afford the artificial fertilisers.

2.3.5 Grazing

Trees, bushes and shrubs in woodlands provide high quality food and browse for animals in the late dry season when grass is scarce. Wilson (1989a) and Scoones (1990) report that use of leaf litter and pods as feed with higher protein than grass for domestic animals is a prevalent practice in Southern Zimbabwe. This ensures that domestic animals are strong and are able to provide with products like milk and meat and draught power.

3.0 Discussion

The concept of sustainable development suggests that environmental quality and economic growth are complementary objectives, particularly in developing countries where some development efforts have tended to produce short-term gains with the neglect of the environment. Thus, the Total Economic Value (TEV) concept allows the marketed and non-marketed benefits of an environmental resource to be aggregated according to direct use values, functional values, option values and existence values.

The commercialisation of forest and woodland resources often leads to overexploitation of the resource and there is therefore a need to explore the potential for the domestication of some selected tree species. It is envisaged that domestication, accompanied by improved germplasm, will improve quality, increase quantity and provide a reliable and steady source of income to many rural households. For instance, the Zimbabwe Forestry Commission together with the World Agroforestry Centre embarked on a project to improve selected indigenous fruit trees in the late 1990s. Range wide provenance trials of *Sclerocarya birrea* and *Uapaca kirkiana* were established and assessments are currently underway.

The development of non-timber forest products can go a long way in providing additional rural employment and household income, and thus contribute to better livelihoods to the rural people. Apart from their traditional, cultural and socio-economic importance locally, forest and woodland products are also an important source of export earnings. Information available is limited. However, it is sufficiently indicative of the vast potential of commercialisation of forest and woodland products.

The full potential of forest and woodland resources to provide a solid foundation for broad based economic activities in communal areas is quiet vast. However, it is hindered by a number of factors which include among others; restrictive policy and legislative frameworks, insecure land and tree resources tenure, inappropriate institutional frameworks, lack of technologies, appropriation of resources and forest-based benefits by outsiders, and the absence of equitable

benefit sharing mechanisms among the custodians of the forest/woodland resources.

While forest policies and legislative instruments recognise the rights of local people to use woodlands products in their local areas, the same however prohibits the selling of such products, restricts the use of products where someone has been given a right over those products and also restricts the cutting of certain 'reserved' or 'protected' tree species. As Dewees (1994) explains, such restrictions are designed to give rights to concessions to exploit commercial timber species and to councils to collect revenue from exploitation of these timber species. Such policy and legislative instruments focus on regulating woodland use rather than creating an enabling environment for commercial management of the same woodlands by locals. Dewees (1994) noted that much forest legislation in southern Africa, Zimbabwe included, restricts the rights to benefit from woodlands by local inhabitants to subsistence use. There is need therefore to revise most of the forest policies and legislation to create an enabling environment for sustainable management of woodlands for the economic benefit of locals.

Due to the high populations in the rural areas which has resulted in the decimation of most forests and woodlands, most tenure over wooded or forest areas is held by the state or private owners. This therefore limits the access to woodland and forest resources in these areas by many ordinary citizens. The state restricts the use of forest resources in state lands and demarcated forests and has delegated the management of the forests in these areas to institutions like the Forestry Commission and local councils. The councils, for example, retain the rights to revenue from trees in areas under their jurisdiction even when such trees are growing on land legally allocated to individual households by the same councils (Dewees, 1994). This has resulted in locals being alienated from the benefits deriving from woodlands that they protect resulting in illegal timber dealing. Private owners, on the other hand, restrict access to products in their lands through enforcement of trespass laws and criminalization of unsanctioned access by the local communities. There is therefore need for development of resources sharing mechanisms to ensure that locals benefit more from woodlands and forests in their vicinities. The current resources sharing mechanisms/initiatives, for example for people around state forests like the Mafungabusi initiative in Gokwe, are limited to non-destructive extraction of woodland resources and do not allow for exploitation of commercial species.

The state's or councils claim to woodland resources has resulted in the creation of large and expensive bureaucracies charged with the management of these woodlands and forests. These however, are not effective as they are far removed from the ground where activities happen. There is therefore need to devolve management responsibilities to local communities. Dewees (1994) argues that sustainable management of woodlands or forests can only be assured only when local communities are brought into the management process. The challenge is

therefore to create an institutional framework that ensures that local communities share equitably in the management responsibilities and benefits from woodlands. There is also need to capacitate these locals to the level of competent managers and decision makers.

CHAPTER 7: Policy, Legal and Utilization Framework

Policy

Forest policy in Zimbabwe can be divided into two broad sections, policy on Commercial Forestry and policy on Social Forestry. The policy on Commercial Forestry aim at promoting Industrial forestry (plantation development, saw milling and marketing of timber and timber products) whilst the policy on social forestry aims at supporting Conservation and protection of forests so that they can continue fulfilling their ecosystem functions.

Forest policy is guided primarily by the Forest Act (Chapter 19: 05 as amended in 1999) and the Communal Lands Forest Produce Act (No. 20 of 1987). It is also guided by other pieces of legislation that deal with the environment, customary practices as well as international Conventions.

The Forest Commission is the state forestry authority in Zimbabwe. It has the mandate to oversee implementation of the forest policy. Its function include regulation of the forestry sector, forestry extension, Management of gazetted forests, forest research and forestry training.

Legal Instruments

The following are pieces of legislation that influence the management of forest/woodland resources in Zimbabwe.

TABLE 1: LEGISLATION INFLUENCING FOREST MANAGEMENT

ACT	Major provisions on FORESTS
Land Apportionment Act	The law under which Native reserves (now renamed Communal lands) were created and most commercial farming area and other land tenure categories were established.
Native Land Husbandry Act 1952	Enforced natural resources management and land use planning in the then Native reserves (later also named Tribal Trust Lands). It provided for establishment of clear village areas, grazing areas and arable areas with individual tenure. The enforced land use planning natural resources management regulations were rejected by the local communities and later abandoned in the 1960s at the rise of nationalism.

Forest Act	Provides for the establishment of the Forestry Commission with the mandate to protect and conserve forests for the benefit of the nation as the forest authority, and as forest enterprise to set aside and manage land for production/industrial forestry. It also provides for the regulation and supervision of timber extraction by private land holders and concessionaires
Communal Lands Forest Produce Act	Restricts use of forest produce in communal areas to 'own use'. It also empowers RDCs to grant licences to concessionaires for commercial timber harvesting and prohibits use of reserved tree species and harvesting from reserved forests.
Communal Lands Act (1985)	Transferred control of communal lands traditional leaders and placed them under the President through RDCs. RDCs allowed to develop land use plans that override customary land claims and are empowered to issue licenses for commercial extraction of natural resources. The Act provides model by laws for the development and conservation of natural resources.
Rural District Councils Act 1988	Bestoes the responsibility for long term planning and development of natural resources on RDCs. It also provides for RDCs to enact bu-laws to regulate natural resource use, issue licences for commercial extraction of natural products and powers to establish Natural resources management committees
Land Acquisition Act 1993	Provides for expropriation of commercial farmland under a system of designation of under-utilised land for the purposes of land redistribution and resettlement. It provides a framework for acquiring selected lands, with minimal legal contest by clearly articulating reasons for land designation.
National Parks and Wildlife Management Act (1975 and amended 1982)	Bestows proprietorship of wildlife to owners and occupiers of land. Designates these owners and RDCs 'appropriate authorities' for wildlife with rights to decide how to use the wildlife resources and benefit from the revenue generated. Has been the legal basis for CAMPFIRE (Communal Areas Management Programme for Indigenous Resources). The term indigenous resources is not limited to wild animals but includes trees, forests, water bodies and other resources.
Environmental Management Act Cap 20:27	Environmental management places people and their needs at the center and calls for promotion of effective participation of all interested parties in environmental governance (see appendix 1. Under the act every person has the right to protect the environment for the benefit of present and future generations. Under section 69b The standards and enforcement committee shall recommend the issuance of guidelines and the prescribing of measures for the management of material and processes. As a specialist agency of government the Forestry Commission may be designated a specified authority to prepare an environmental management plan that specifies among other things a description of the policies, plans and programmes and the environmental plan for the area under its jurisdiction. The act also places all the responsibility of regulation of biological and genetic resources under the Minister responsible for the environment. Since this is a framework Act all other acts that influence natural resources

	management must be aligned to it. It has repealed the Natural Resources Act and requires other environmentally related Acts including the Forest and Communal Lands Forest Produce Act to realign themselves to this framework Act as outlined under schedule 6.
Traditional leaders Act, 2000	Combines the WARDCO and VIDCO with the traditional leadership by placing the WARDCO and its chair under the ward assembly under the chairmanship of the headman. The village development committee is now under the village head. Thus the Act places state created local institutions under the traditional leadership which effectively removes the overlap and duplication of mandates that existed before.

Customary Management

Customary Management of forests and woodlands is expressed in the Communal lands Act and the Traditional leader Act stated above. Traditional leaders are the Custodians of Customary Management.

2.0 Institutional framework

A wide range of institutions are involved in the Management of trees and forest resources in Zimbabwe. The distribution of these utilization across the country is largely determined by the land tenure system in operation at any location.

There are four main categories of land tenure in the country. These are:

1. State land which consists national parks and wildlife areas, forest areas, botanical reserves, state farms and rural and urban centers.
2. Communal lands which consists land that belongs to the state for which committees have user rights.
3. Resettlement area which consists of land that was acquired after independence (Commercial farms) and used for resettlement purposes.
4. Commercial land which consists of Commercial farms which are based on free hold tenure.

2.1 Management of forests on freehold land (producing timber plantations)

Forests and woodlands on freehold land are managed by the respective land owner. The activities of the owner are governed accordingly by the pieces of legislation mentioned in above.

2.2 Management of forests on state land Communal and Resettlement areas

The management of forests and woodlands on state land is undertaken either directly or indirectly by the forestry Commission. In communal and resettlement areas, the Forestry Commission advises local authorities and communities on forestry and forestry related matters. The forestry Commission directly manages gazetted forests. Initiatives to involve communities in the management of forests on gazetted forests are currently underway. The Parks and Wildlife Management Authorities manages forests in the Parks instate.

CHAPTER 8: FORESTRY RESEARCH

Introduction.

Forestry research in Zimbabwe dates back to 1948. Currently the Research and Training Division of the Forestry Commission is conducting relevant cost-effective forestry research for the entire forestry sector in Zimbabwe that is responsive to user needs. Apart from the Forest Act forestry research is being conducted without a code of conduct and this is what this short papers is trying to address.

Article 1.

Guidelines governing conducting of forest research and investigation in Zimbabwe.

- Conducting forest research in state forests and privately owned forests by respective organizations shall be done without any payment for the use of land by the research Institution (Must use suitable land free of charge). FC personnel shall also be accorded free access to any land for the purposes of trial establishment and assessment of forestry research.
- Where there is need for land to set up trials on privately owned land, land shall be ceded for that purpose. Ceded land shall not be used for any other purpose until the research is concluded.
- FC's Research and Training Division shall be given the prerogative to select areas wherever in Zimbabwe it feels is suitable for forestry research.
- FC's Research and Training Division must be given a prerogative to protect certain forest areas because of their scientific value e.g Chirinda rain forest .
- FC may restrict or prohibit people in the use of forest estate areas where the given forest use is incompatible with the purposes of research that will be conducted in that area.
- No active research trials will be harvested or interfered with in any way by anyone without the approval of FC's Research and Training Division despite the age of the trials.
- FC's Research and Training Division must make available forestry research findings to its Stakeholders timeously.

Article 2.

Guidelines on Silvicultural Management in Zimbabwe.

- A silvicultural zone map will be developed by FC's R&T Division to guide the Forestry Industry on which tree species to plant where. This map will be drawn on the basis of the different climatic requirements of the different species.
- Clear felling will only be allowed in pure stands of exotic tree species and not in indigenous forests and woodlands. Clear felled areas must be replanted within a maximum of two years. FC will monitor that Industry is abiding with this guideline.
- Allowable cut will also be established and monitored by FC. Allowable cut will be based on the sustained yield approach.
- Pruning regimes for different pine species will be developed by FC's R&T Division for use by industry. This will be developed according to end product.
- Thinning regimes for different pine species will be developed by FC's R&T Division for use by industry. This will be developed according to end product.
- Rotation length will be established for the different tree species including coppice management for eucalyptus species.

Article 3.

Guidelines on harvesting.

Forest harvesting operations are most likely to meet economic, silvicultural, environmental and social objectives if they are carried out as outlined below. In general, four ingredients can be identified as essential in relation to forest harvesting operations if forests are to be managed on a sustainable basis:

- comprehensive harvest planning;
- effective implementation and control of harvesting operations;
- thorough harvesting assessment and communication of results to the planning team and to harvesting personnel;
- development of a competent and properly motivated workforce.

1. Before harvest planning is initiated, a comprehensive land-use plan should be completed to identify the permanent forest estate and the portions of

- this estate on which timber harvesting will be permitted. The land-use plan should also show areas of forest, if any, from which the trees are to be removed so that the land can be used for other purposes such as agriculture.
2. A comprehensive forest management plan should be developed before a harvesting plan is developed.
 3. Comprehensive harvest planning is essential in order to set the stage properly to enable sustainable harvesting practices to be followed, and also to reconcile the need for greater technical control during harvesting with the need to reduce harvesting costs simultaneously. It should be undertaken by an interdisciplinary planning team, that includes foresters, ecologists, logging specialists, engineers, wildlife biologists and other individuals representing specialities in the social sciences.
- A. A map and a written plan are elements of a good harvesting plan. The map, typically drawn to a scale between 1:10 000 and 1:50000, should show the following features as identified in the forest management plan:
- forest cover types, important topographic features (preferably with elevation contour lines), streams and both existing and planned infrastructure or other artificial features;
 - protection areas such as biological reserves, religious or cultural sites or areas near population centres;
 - areas where harvesting is to be carried out, divided into annual coupes or similar areas that can be conveniently referenced on the ground;
 - areas where major problems exist that must be overcome when developing the transportation system or in carrying out the harvesting operations. These would include rock outcrops, swamps or other areas of wet soils, important stream crossings and other features;
 - areas of non-forest land uses;
 - locations of communities or indigenous populations that could be affected by harvesting or transport operations.
- B. A topographic survey should also be conducted as part of the harvesting plan and should come up with:**
- A large-scale topographic map. The best maps for detailed harvest planning are usually drawn at scales between 1:2 000 and 1:10 000, depending upon the topographical irregularities and the types of harvesting equipment to be used. In some areas, maps with scales as small as 1:20 000 are used for tactical harvest planning, but this scale provides less detail than is desirable for satisfactory planning.

- A topographic map accurately showing the boundaries of the harvest area and the location of water courses, swamps or other areas of wet soils, gullies, rock outcrops, sites of religious or cultural significance and any other feature that may influence harvest planning.
- Streamside buffer zones delineated on the map as well as other special management areas in which cutting is either to be prohibited altogether or will be subject to special restrictions. These might include areas of significant scientific, recreational, cultural or aesthetic value, special reserves for wildlife or for the production of non-timber forest products, water catchments, areas of saturated soils and erosion-prone sites.
- An inventory of the trees in the operating area so as to estimate the timber volume and its distribution over the cutting unit, as well as the number and condition of potential crop trees that are currently immature and should be protected to form a future crop. The kind of inventory needed for this purpose will depend upon the type of forest and the cost of carrying out the inventory. The inventory data for the operating area should be tallied, and, for selection harvesting, the trees to be harvested must be determined. This will depend on such considerations as management goals, market acceptance, diameter limits, silvicultural guidelines, operating constraints and estimated harvesting cost.

C. The written plan should describe in detail the items shown on the map. This plan would typically include the following:

- a description of the planned silvicultural treatment (e.g. individual-tree and group selection, shelterwood and clear-felling) for each harvesting coupe and an explanation as to why each treatment has been selected, including an analysis of the degree to which harvesting is expected to contribute to the attainment of management objectives for the forest;
- a description of the types of harvesting equipment to be used in each coupe (for example, 20 percent of the area to be extracted with cable systems, 60 percent with rubber-tyred skidders and 5 percent with draught animals), with an explanation of the selection criteria employed;
- an estimate, based on a proper inventory, of the volume of timber to be removed from each coupe, preferably divided into species or groups of similar species;
- a schedule showing the year in which each coupe is to be harvested;
- descriptions of any special problem areas noted on the map, with suggestions for overcoming the problems;
- a discussion of potential problems relating to local communities or indigenous populations and the way these problems have been

addressed in formulating the plan;

- detailed information concerning the forest transportation system, such as road design parameters for different conditions (valley bottoms, ridgetops and climbing roads), locations and specifications for major stream crossings, typical spacing and design specifications for drainage structures and other similar information;
- annual labour requirements for harvesting operations and for construction and maintenance of the forest transportation system;
- provisions for living quarters and other facilities needed to accommodate forest workers, together with general information on health and safety provisions;
- the estimated cost of harvesting operations in each coupe and of construction and annual maintenance of the forest transportation system.

- D. A harvest plan should specify ways of:
- **optimizing harvesting production rates;**
 - **minimizing environmental and other impacts associated with harvesting operations;**
 - **accommodating the needs and wishes of local communities and indigenous peoples and making provisions for their participation in making decisions about harvesting operations and in benefiting financially and economically from those operations;**
 - **minimizing harvesting and transport costs, subject to constraints imposed by environmental, ecological and social considerations;**
 - **identifying opportunities to coordinate timber harvesting with the collection of non-timber forest products;**
 - **avoiding scheduling problems;**
 - **providing for flexibility so that the plans can be changed to take advantage of new information or changing situations;**
 - **protecting the health and safety of workers and the public.**

4. Before finalizing the harvesting plan, loggers should be consulted to ensure that the plan is feasible and that the operation can be undertaken safely, efficiently and economically.
5. Copies of the harvesting plan and the accompanying topographic map showing the trees to be harvested and the transportation system must be given to the supervisor of the harvesting crew, who will be responsible for ensuring that the plan is carried out and that every member of the crew is familiar with the requirements and working procedures. A thorough understanding of what is to be done and the standard of work expected is perhaps the single most important requirement for a successful operation.

Article 4.

Financial and Material support to forestry research in Zimbabwe.

- **Forestry research in Zimbabwe must not be, supported solely by Government as beneficiation from that research cuts across many facets of the Zimbabwean society. The Forestry sector and various other sectors must support forestry research to reduce burden on the fiscus.**
- **Research is associated with long term investments especially in areas of human development and equipment. There is therefore a need for Private Sector to invest in training of research personnel especially on job short training courses.**

Article 5.

Guidance of Forestry Research in Zimbabwe.

- Forestry Research in Zimbabwe will be guided by a formally constituted Forest Research Board.
- **Composition of the Board will be in such a way that both plantation and indigenous social forestry research will be catered for. The Board will draw members from: NGOs community, Agricultural Sector (Tobacco Wood Energy), Government (MET), Universities, Timber Producers Federation, Forestry Sector and Independent forest Experts.**

9.0 REFERENCES

Bradley, P and Dewees, P. 1993. Indigenous Woodlands, Agricultural Production and Household Economy in the Communal Areas. *In:* Bradley, P.N. and McNamara, K. (eds.) Living with Trees: Policies for Forestry Management in Zimbabwe. World Bank Technical Paper No. 210. World Bank, Washington, p. 63-137).

Brigham, T., Chihongo, A., and Chidumayo, E. 1996. Trade in Woodland Products from the Miombo Region. *In:* Campbell, B. M (ed.) 1996. The Miombo in Transition: Woodlands and Welfare in Africa. CIFOR, Bogor, Indonesia.

Campbell, B.M. 1987. The Use of Wild Fruits in Zimbabwe. *Economic Botany* 41: 375-385.

Campbell, B. and Brigham, T. 1993. Non-wood Forest Products – Zimbabwe. Paper Prepared for the FAO Expert Consultation on Non-Wood Forest Products (Anglophone Africa). Arusha, Tanzania.

Campbell, B.M. and Mangono, J.J. 1994. Working Towards a Biomass Energy

Strategy for Zimbabwe. Department of Biological Sciences, University of Zimbabwe, Harare.

Campbell, B. M., Jeffrey, S., Kozanayi, W., Luckert, M., Mutamba, M., and Zindi, C. 2002 Household Livelihoods in Semi-Arid Regions: Options and Constraints. CIFOR, Bogor, Indonesia.

Clarke, J. 1994. Building on Indigenous Natural Resource Management: Forestry Practices in Zimbabwe's Communal Lands. Forestry Commission. Harare, Zimbabwe.

Clarke, J., Cavendish, W. and Coote, C. 1996. Rural Households and Miombo Woodlands: Use Value and Management. In: B. Campbell (ed.) The Miombo in Transition: Woodlands and Welfare in Africa. CIFOR, Bogor, Indonesia.

Chihongo, A.W. 1995. Tanzanian Perspective Towards Non-Wood Forest Products for Tanzania. Paper Presented to the African Academy of Sciences, 2nd Roundtable Discussion, Pretoria, November, 1995.

Cunningham, A.B. 1990. African Medicinal Plants: Setting Priorities at the Interface Between Conservation and Primary Health Care. Report for the WWF Project 3331. Institute of Natural Resources. Pietermaritzburg, RSA.

Coote, H.C., Lowore, J., Luhanga, J. and Abbot, P.G. 1993b. Community Use and Management of Indigenous Forests of Malawi: The Case of Three Villages in the Blantyre City Fuelwood Project Area. Frim Report 93007, Forestry Research Institute of Malawi, Zomba.

Deweese, P. A. 1994. Social and Economical Aspects of Miombo Woodland Management in Southern Africa: Options and Opportunities for Research. CIFOR Occasional Paper No. 2. CIFOR, Bogor, Indonesia.

FAO. 1991. Non-wood forest products: The way ahead. Forestry Paper 97. FAO, Rome.

Gelfand, M., Mavi, S., Drummond, R.B. and Nderema, E.B. 1985. The traditional medical practitioner in Zimbabwe. Mambo Press, Zimbabwe.

Grundy, I.M. 1995. Regeneration and Management of *Brachystegia spiciformis* Benth. and *Julbernardia globiflora* (Benth.) Troupin in Miombo Woodland, Zimbabwe. Unpublished DPhil Thesis. University of Oxford, UK.

Hepburn, H. R. and Radlof, S. E. 1998. Honeybees of Africa. Springer-Verlag, Berlin. Pp 63 – 66.

Kwasha, D. and Dreiser, D. 1998. Vegetation Mapping in Zimbabwe Using Satellite Remote Sensing and GIS. FORMAT. Newsletter of the Research and Development Division. Forest Forestry Commission, Harare.

McGregor, J. 1995. Woodland Resources: Ecology, Policy and Ideology. An Historical Case Study of Woodland Use in Shurugwi Communal Area, Zimbabwe. Unpublished DPhil Thesis. Loughborough University of Technology, UK.
McGregor, J. 1995a.

Maruzane, D., McGregor, J. and Mukwekwerere, M.C. 1998. The Role of African Acacias in Communal Area Farming Systems in Zimbabwe. DFID-FRP-OFI Project R6550/Forest Research Centre, Harare.

MET, 2003. The Conservation and Sustainable Use of Traditional Medicinal Plants in Five Districts of Zimbabwe. Ministry of Environment and Tourism Project No. ZIM/01/G35/A/1G/99, Harare.

Mukwekwerere, M., Chikomo, F., Nyirenda, R., and Muchichwa, J. 1998. The Woodcraft Industry of the Ngundu-Beitbridge and Kamativi-Binga Roads: A Socio-Economic Perspective. Forestry Commission, Harare.

Nyathi, P. 1991. The Use of Woodland Litter by Small-Scale Farmers in Masvingo Province, Zimbabwe. Unpublished Manuscript, University of Zimbabwe.

Ros-Tonen, M. A. F.; van Andel, T.; Assies, W.; van Dijk, J. F. W.; Duivenvoorden, J. F.; van der Hammen, M. C.; de Jong, W.; Reinder, M.; Rodriguez Fernandez, C. A. and van Valkenburg, J. L. C. H. 1993. Methods for Non-Timber Forest Products Research. The Tropenbos Experience. Tropenbos Documents 14. The Tropenbos Foundation. Wageningen, Netherlands.

SADC, IUCN, SARDC. 2000. **Biodiversity of Indigenous Forests and Woodlands in Southern Africa. Maseru and Harare.**

Scoones, I. C. 1990. Livestock Populations and the Household Economy: A Case Study from Southern Zimbabwe. Ph.D. Theses, University of London.

Timberlake, J and Shaw, P., 1994 (eds.). Chirinda Forest: A Visitors' Guide. Forestry Commission, Harare.

Vermeluen, S. 1993. Consumption, Harvesting and Abundance of Wood Along the Boundary Between Mafungautsi State Forest and Gokwe Communal Area, Zimbabwe. M.Sc Thesis, University of Zimbabwe, Harare.

Wilson, K. B. 1989a. Trees in Fields in Southern Zimbabwe. *Journal of Southern African Studies* 15: 369 – 383.

