THE EFFECTS OF FORESTRY POLICY ON THE SUSTAINABILITY OF FOREST RESOURCES IN SOUTHERN AFRICA

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Dissertation presented for the Degree of Doctor of Philosophy at the University of Stellenbosch.

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March 2002

Declaration

I, the undersigned, hereby declare that the work contained in this dissertation is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

Signature: ..... Date: .....

Summary

This study aims to evaluate the effects of forestry policy on the sustainability of forest resources in Southern Africa. However, the study has confirmed that forestry policy does not operate independently of other policies. Its scope is defined by overarching framework legislation and policy, while it functions within a complex mesh of crosscutting and sectoral policies. Therefore, the implications of these external policies for forest conservation have also been assessed. The method used employs predominantly qualitative assessment of documentary data, which constitute the main contents of the three case studies: South Africa, Tanzania and Zambia. This qualitative information has been transformed into quantitative data, using a scoring scale of one to five for certain indicators of sustainable forest management (SFM). The average score for each country makes up a forest conservation index (FCI), which provides a comprehensive insight into the performance of a country's forestry and other resource conservation policies.

South Africa's FCI is estimated at 3, while Tanzania and Zambia's indices have been rounded to 2 each. As South Africa's forestry policy and other biological resource conservation policies came into existence as recent as the mid- and late 1990s, this index suggests that these policies will lead to SFM subject to satisfactory implementation. Indeed, South Africa has a congruous forestry legislation whose regulatory mechanisms are appropriately blended with financial and framework incentives. Its overarching framework legislation and policy define forestry policy, while the crosscutting policies reinforce it. However, the country's performance on intergovernmental and intersectoral policy co-ordination is poor, as well as on the economic valuation of its natural forest resources. Furthermore, the formulation of South Africa's forestry policy was not founded on up-to-date forest resource data.

Contrary to the South African case, Tanzania and Zambia's indices indicate the likelihood of unsustainable forest use and management. These countries' existing forestry and other resource conservation policy-making processes are narrow-based and gender-insensitive, rendering them unpopular among policy-affected and policy-connected stakeholders. These inappropriate policies and their blunt instruments distort markets for forest resources, i.e., create situations in which benefits are dissociated from costs, prices from scarcities, rights from responsibilities and actions from consequences. Both forestry policies and their governing tools were not founded on contemporary forest resource data, i.e., they are not issue centred. The countries' framework laws have also failed to institutionalise environmental impact assessment, monitoring and evaluation, intersectoral policy co-ordination, participatory approaches to natural resource management and ownership of environmental assets such as land and forest resources by local communities.

The administration of forestry policy requires competent professional and technical staff. South Africa has adequate human resources in the forestry sector, although the personnel appear to lack the necessary skills for participatory forest management for poverty reduction. Tanzania has adequate but ineffective forestry personnel, resulting in lack of law enforcement and corruption while Zambia lacks professional staff to interpret and implement the existing forestry policy. The ineffectiveness and the lack of professional and technical staff, *inter alia*, is reflected in the high rates of deforestation, which have been estimated at 91,000 ha/annum for Tanzania and 851,000 ha/annum for Zambia.

Unlike South Africa, both Tanzania and Zambia's sectoral policies fail to cultivate concerns for forest conservation. This situation is aggravated further by the pervasive lack of intra- and intersectoral policy co-ordination among biological resource conservation divisions and departments.

The coherence of South Africa's forestry and other resource conservation policies is attributable to the scarcity of natural forests in the country. Approximately, 7.0% of South Africa's landscape is under forest cover, while Tanzania and Zambia have 37% and 42%, respectively. Decreasing supplies of forest coupled with the increasing demands for forest resources causes the value of forest resources to appreciate. Naturally, there is a stronger need for the forest-scarce South Africa to pursue prudent conservation policies to protect its limited forest than Tanzania and Zambia whose governments treat their respective vast land and forest resources as a safety valve for economic hardship without adequate investment in SFM. In summary, forest resource use and management in Tanzania and Zambia are littered by market and policy failures. It is envisaged that the opportunities and constraints identified in each market and policy failure will inform future forestry and related policy-making process, not only in the concerned countries but also in other African countries experiencing similar forest conservation problems.

Abstract

Hierdie studie het ten doel om die effekte te evalueer wat bosboubeleid het op die volhoubaarheid van woudhulpbronne in Suidelike Afrika. Hierdie studie het egter bevestig dat bosboubeleid nie onafhanklik van ander beleidspunte funksioneer nie. Die omvang daarvan word gedefinieer deur oorkoepelende raamwerkwetgewing en beleid, terwyl dit binne 'n komplekse netwerk van oorkruisende en sektorale beleid funksioneer. Daarom is die implikasies van hierdie eksterne beleidspunte vir woudbewaring ook bepaal. Die metode gebruik, wend hoofsaaklik kwalitatiewe beraming van dokumentêre data aan, wat die hoofinhoud van die drie gevallestudies, nl. Suid-Afrika, Tanzanië en Zambië uitmaak. Hierdie kwalitatiewe informasie is omvorm na kwantitatiewe data, deur gebruik te maak van 'n skaal van een tot vyf vir sekere indikators van volhoubare bosbestuur (VBB). Die gemiddelde punt vir elke land vorm 'n woudbewaringsindeks (WBI), wat 'n omvattende insig verskaf van die land se uitvoering van die bosbou- en bewaringsbeleid van ander hulpbronne.

Suid-Afrika se WBI is beraam op 3, terwyl Tanzanië en Zambië se indekse elk tot 2 afgerond is. Siende dat Suid-Afrika se bosbou- en bewaringsbeleid van ander biologiese hulpbronne eers so onlangs as die middel- en laat 1990's in werking getree het, stel hierdie indeks voor dat die beleid sal lei tot VBB, onderhewig aan bevredigende uitvoering daarvan. Suid-Afrika het inderdaad 'n gepaste bosboubeleid, waarvan die regulerende meganismes toepaslik vermeng is met finansiële en raamwerk aansporings. Die oorkoepelende raamwerkwetgewing en beleid definieer bosboubeleid, terwyl oorkruisende beleidspunte dit versterk. Die land se uitvoering van interregerings- en intersektorale beleidkoördinasie, is egter swak, asook in die ekonomiese waardering van sy natuurlike woudhulpbronne. Verder, is die formulering van Suid-Afrika se bosboubeleid nie gegrond op woudhulpbrondata wat op hoogte was nie. In teenstelling met die Suid-Afrikaanse geval, toon die indekse van Tanzanië en Zambië die waarskynlikheid van onvolhoubare bosbenutting en –bestuur. Hierdie lande se bestaande beleidvormingsprosesse vir bosbou en bewaring van ander hulpbronne, is eng-gebaseer en geslags-onsensitief, wat dit onpopulêr maak onder beleidgeaffekteerde en beleidverbonde insethouers. Hierdie ontoepaslike beleidspunte en stomp instrumente verdraai markte vir woudhulpbronne, d.i. skep situasies waarin voordele gedissosieer is van kostes, pryse van skaarsheid, regte van verantwoordelikhede en aksies van nagevolge. Beide bosboubeleidspunte en die leidingsinstrumente is nie gegrond op kontemporêre woudhulpbrondata nie, d.w.s. hulle is nie rondom die kwessie gesentreer nie. Die lande se raamwerkwette het ook gefaal daarin om omgewingsimpakberamings, monitering en evaluering, intersektorale beleidkoördinering, deelnemende benaderings tot natuurlike hulpbronbestuur en plaaslike gemeenskappe se eienaarskap van omgewingsbates, soos grond en woudhulpbronne in te stel.

Die administrasie van bosboubeleid verg bevoegde professionele en tegniese personeel. Sui-Afrika het voldoende menslike hulpbronne in die bosbousektor, hoewel dit voorkom of die personeel nie die nodige vaardighede het vir deelnemende bosbestuur vir die veligting van armoede nie. Tanzanië het voldoende, maar oneffektiewe bosboupersoneel, wat 'n gebrek aan wetstoepassing en korrupsie tot gevolg het, terwyl Zambië 'n tekort het aan professionele personeel om die bestaande bosboubeleid te interpreteer en te implementeer. Die oneffektiwiteit en die gebrek aan professionele en tegniese personeel, onder andere, word gereflekteer in die hoë tempo van ontbossing, wat beraam is op 91,000 ha/jaar vir Tanzanië en 851,000 ha/jaar vir Zambië.

Anders as Suid-Afrika, faal beide Tanzanië en Zambië se sektorale beleidspunte daarin om belange vir woudbewaring te kweek. Hierdie situasie word verder vererger deur die deurdringende gebrek aan intra- en intersektorale beleidkoördinering onder afdelings en departemente van biologiese hulpbronbewaring.

Die verband tussen Suid-Afrika se bosbou- en bewaringsbeleid van ander hulpbronne word toegeskryf aan die skaarsheid van natuurlike woude in die land. Ongeveer 7.0% van die Suid-Afrikaanse landskap is bedek met woude, terwyl Tanzanië en Zambië onderskeidelik 37% en 42% bedek is. Verlaagde voorraad van woude, gepaard met die toenemende vraag na woudhulpbronne, het tot gevolg dat die waarde van woudhulpbronne styg. Natuurlik is daar 'n groter behoefte vir die woud-arm Suid-Afrika om verstandige bewaringsbeleid na te streef om sy beperkte woude te beskerm as Tanzanië en Zambië, waar hulle regerings hul onderskeie geweldige grond en woudhulpbronne behandel as 'n veiligheidsklep vir ekonomiese ontbering, sonder voldoende belegging in VBB. As opsomming, is die benutting en bestuur van woudhulpbronne in Tanzanië en Zambië met mark- en beleidsmislukking besaai. Dit word beoog dat die geleenthede en beperkinge wat met elke mark- en beleidsmislukking geïdentifiseer is, toekomstige bosbou en verwante beleidvormingsproses kan inlig, nie net in die betrokke lande nie, maar ook in ander Afrika lande wat soortgelyke woudbewarings probleme ondervind.

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Acknowledgement

I have had the interesting experience of working with four supervisors over the course of this study. Prof. Berty van Hensbergen initiated this work which has made me to see environmental policy as the foundation for environmental conservation. Many thanks to him for this important realisation — I will be better able now to influence environmental conservation whenever I have the opportunity.

I was delighted when Prof. Sue J. Milton took over the supervision of my project after the departure of Prof. Van Hensbergen but unfortunately, she inherited a financially poor student. This project would not have been accomplished without her active academic and financial intervention. Many thanks to Prof. Milton for all the invaluable guidance and assistance she rendered to me during the course of this study. Many thanks also to my third supervisor, Prof. Willie Breytenbach of Political Science Department. Prof. Breytenbach commenced supervision of this study midway but although he could not see it through to completion, he was key in maintaining the existing outline of the study. My fourth supervisor, Prof. David Ward's critical eye added an indispensable ingredient to this study. I am most grateful to Prof. Ward for his useful inputs and for having shared my financial burden with Prof. Sue J. Milton. His willingness to co-supervise this work was a great relief to me. Dr. Isla Grundy's valuable comments helped to define the scope of this study. I am grateful to her for that useful input and also for editorial comments. Furthermore, I thank Dr. Grundy for granting me access to her small, yet contemporary library that proved to be a key source of information for this study.

I would also like to express my utmost gratitude to the entire staff of Conservation Ecology Department for providing me with the excellent facilities and environment that made this project possible, especially Mr. Dave Pepler who also tendered useful information to this study. Mrs Jenny Channing, Ms Heidi Thünneman and Mrs Alta Lopez da Silva allowed me to use their office facilities and were patient with my constant interruptions. My fellow postgraduate students in the Conservation Ecology Department have been motivating; many thanks to them all. The Zambian Chapter was much enhanced by the contribution of the contingent of Zambian postgraduates in the University of Stellenbosch. I am particularly indebted to Mrs. Pamela Kasese-Bwalya, Mr. Jacob Mwitwa, Miss Gillian Kabwe, Mr. Kalla Moombe and my ex-flatmate, Mr. Justin Chanda Mubanga. Two other Zambians, Messrs Mutemwa Malimba and Steve Musuku have been my sources of strength and have assisted me in countless ways. My fellow Sudanese, John Wani de-Gita, also a PhD student but at the University of the Western Cape deserves a big 'thank you' for being so generous in supporting me when I needed it most. I will remain ever indebted to him. My special friend, Tania Holmes was motivational and a solid reason for the timely submission of this work.

My mother took me to school and the fervent hope of meeting her to tell her that "Mother, I have finished it!" after 15 years of absence from home, kept me burning. The news of her death in Southern Sudan nearly diverted me from this study. Naturally, I turned to God, asking Him to strengthen me and to provide me with sound health while leaving the rest of what needed to be done in this dissertation to me. He has done it! Blessings and praises be to our loving, merciful Lord Jesus Christ. Amen. Finally, there are many others who deserve credit but I hope that they will forgive me for not mentioning their names individually.

Dedication

This work is dedicated to the memory of my parents, Ruta and Kulanwa Watts who initiated this accomplishment during my childhood but could not live long enough to share the joy of its completion.

Acronyms

ADB	African Development Bank
ADMADE	Administrative Management Design for Game Management Areas.
ATO	African timber organisation
BBC	British Broadcasting Corporation
BOD	Biochemical oxygen demand
CBA	Cost-benefit analysis
CBD	Convention on biodiversity
CBNRM	Community-Based Natural Resource Management
CCC	Convention on Climate Change
CCD	Convention to Combat Desertification
CEC	Committee for Environmental Co-ordination
CEDAW	Committee on the Elimination of Discrimination against Women
CFA	Community Forestry Agreement
CITES	Convention on the International Trade in Endangered Species of Wild fauna and Flora
CIA	Central Intelligence Agency of the United States of America
CMA	Catchment Management Authority
CTE	Committee on trade and environment
DA	Department of Agriculture
DANCED	Danish Co-operation for Environment and Development
DEAT	Department of Environmental Affairs & Tourism
DFID	UK's Department for International Development
DLA	Department of land affairs
DME	Department of Minerals and Energy
DoE	Department of Energy
DPE	Department of Public Enterprises
DRC	Democratic Republic of Congo
DWAF	Department of Water Affairs and Forestry
EC	European Commission/Community
ECZ	Environmental Council of Zambia
EIA	Environmental impact assessment or study
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FCI	Forest conservation index
FINNIDA	Finnish International Development Agency
FMU	Forest management unit
GATT	General agreement on tariffs and trade
GDP	Gross Domestic Product
GHGs	Green house gases
GMA	Game Management Area
ha	hectare
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IDRC	International Development Research Council
i.e.	id est; that is
IMF	International Monitory Fund
IPRs	Intellectual property rights
ISO	International Standards Organisation
ITTO	International Tropical Timber Organisation
IUCN	International Union for Conservation of Nature and Natural resources
JFM	Joint Forest Management
km	kilometre
LAPC	Land and Agriculture Policy Centre

Acronyms	***(cont....)***
LIRDP	Luangwa Integrated Resource Development Project
MAFF	Ministry of Agriculture, Food and Fisheries
MAI	Mean annual increment
MCC	Medicines Control Council
MENR	Ministry of the Environment and Natural Resources
MFED	Ministry of Finance and Economic Development
MinMEC	Ministers and Members of Executive Council
mm	millimetre
MMD	Movement for Multi-party Democracy
MNRT	Ministry of Natural Resources and Tourism
MOT	Ministry of Tourism
NAPCOD	Namibian Programme to Combat Desertification
NCS	National Conservation Strategy
NEAP	National Environmental Action Plan
NEMA	National Environmental Management Act
NFA	National Forests Act
NFAP	National forestry action programme
NGO	Non-Governmental Organisation
No.	Number
RDP	Reconstruction and Development Programme
SACIM	Southern African Centre for Ivory Marketing
SADC	Southern African Development Community
SAFCOL	South African Forestry Company
SAP	Structural Adjustment Programme/Policy
SEI	Swedish Eco-Institute
SFM	Sustainable Forest Management
TPCILM	Tanzania Presidential Commission of Inquiry into Land Matters
UK	United Kingdom
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNIFEM	United Nations Development Fund for Women
UNIP	United National Independence Party
US	University of Stellenbosch
USA	United States of America
USAID	United States agency for international development
WCED	World Commission on Environment and Development or the Brundtland Commission
WCFSD	World Commission on Forestry and Sustainable Development
WRI	World Resources Institute
WTO	World Trade Organisation

Chapter One

Introduction

1.1 Introduction

The primary aim of this study is to evaluate the effects of forestry policy on the sustainability of forest resources in Southern Africa. However, forestry policy does not operate independently of other policies. On the contrary, its scope is defined by overarching framework legislation and policy, while it functions within a complex mesh of crosscutting and sectoral policies. The implications of these external policies for forest conservation have also been assessed in this work which is organised into six chapters.

The first chapter introduces the research problem that also defines the study area and the criteria used for selecting it. In addition, the aims and objectives of the study; its scope; and the methodology and its relevance have all been presented in this introductory chapter. The methodology employs predominantly qualitative assessment of documentary data which constitute the main contents of the three case studies: South Africa, Tanzania and Zambia. This approach is circumscribed by the objectives of the study; nonetheless, this qualitative information has been transformed into quantitative data, using a scoring scale of 1 to 5 for certain indicators of sustainable forest management. The essence of the quantitative scoring scheme is to help policymakers and other interest groups to focus their attention on central rather than tangential issues. A further merit of the scheme is the increased accessibility of the study to non-natural resource policy analysts.

The second chapter deals with the theory of forestry policy-making. It examines the various concepts of forestry policy and the different stages in policy-making. The first stage in the process is the 'agenda-setting', followed by 'policy formulation' which is the second stage in the policy-making process and consists of three categories of policy actors: the organisation of the state, the civil society and multilateral/bilateral institutions. This second chapter also introduces the miscellaneous concepts of 'implementation', as well as the implementers and the range of instruments available to them. These *intervention instruments* have been treated in an awareness-heightening manner, i.e., how they could and should be used in enhancing national forest resources. It is implied that Chapter 2 should be considered as a 'reference framework', rather than a 'conceptual framework' that should be applied strictly to the successive case studies. This is because a country's forestry policy and the range of instruments at its disposal are determined primarily by its political culture and socio-economic status. A considerable part of the second chapter dwells on these governing tools because they are capable of influencing human behaviour in an environmentally positive or negative fashion. Also, many governments are unaware that these instruments should be treated like pesticides: a correct combination yields good results, while excessive use or abuse is counter-productive. Finally, the second chapter ends with a framework for monitoring and evaluation.

Chapters 3, 4 and 5 constitute the heart of this study. It is in these chapters that the objectives of this study have been accomplished, i.e., the effects of forestry and external policies on the conservation of forests in the three target countries have been examined. Each case study portrays the extent and categories of forest resources; the utilisation of forests; and the rate of forestation and deforestation. The underlying, policy-related factors that influence forest conservation have been assessed. The most important policy in this regard has been the forestry-specific policy and its associated legislation. Thus, the forestry policy formulation process has been examined. With the exception of South Africa, where forestry policy-making has been broad-based, both Tanzania and Zambia's existing forestry policies indicated a unilateral approach, although the formulation of Zambia's new policy had been inclusive of major interest groups such as rural forest-dependent communities, forestry industry and environmentalists. Of note is the ability of the mode of policy formulation to spillover into the implementation stage, i.e., broad-based policies have broad-based instruments and *vice versa*. Furthermore, South Africa appears to be the only case study, where 'policy evaluation' has been institutionalised because the National Forests Act authorises development of principles, criteria and indicators for determining sustainable forest management.

The implications of external policies for forest conservation have been examined under three main headings: the overarching, crosscutting and sectoral policies. This classification is made with respect to the forestry sector. Thus, overarching framework legislation and policy relate to a country's overriding law such as the constitution which defines the situational context of the forestry sector. The environmental management policy is a framework policy because it informs the forestry policy. Crosscutting policies are those policies whose concerns for certain resource conservation issues cut across sectors. The biodiversity and land policies, and the international conventions, treaties, protocols and declarations are typical examples. The biodiversity policy stresses biodiversity conservation and this concern is reflected in the forestry, agricultural, land, water and population policies, *inter alia*. The land policy, especially the aspect that deals with land ownership and tenure security affects forest and wildlife conservation, determines investments in agricultural production, delimits the construction of transport and communication infrastructures and so on. Similarly, the concerns expressed in the multilateral environmental agreements such as the Convention on Biodiversity, Convention to Combat Desertification and the Convention on Climate Change cut across sectors. On the other hand, 'sectoral policies' refer to policies that originate from the other sectors of the economy such as water, energy, population, agriculture, tourism, wildlife, macroeconomic and transport, and are likely to yield outcomes that may have implications for forest conservation. It is noted that there is virtually no policy that does not have a bearing on forest and woodland conservation; those that may generally appear to be far detached have an implication for forests when scrutinised intimately.

With the above range of policies capable of influencing forest conservation in either a positive or negative manner, there is a strong case for 'intersectoral policy co-ordination' to optimise positive synergies and minimise negative effects. Accordingly, the cases have been assessed for their ability to effect intersectoral policy co-ordination. Finally, the study concludes with the sixth chapter, where an attempt has been made to summarise the key qualitative aspects of the analyses into a quantitative forest conservation index for each case study. Attention is drawn to the obstacles encountered during the study and the work terminates with recommendations for future forestry policy studies. It is worth mentioning that recommendations for improving the performance of forestry policy in the concerned countries have been made under each policy or market failure identified, based on the prevailing constraints and opportunities displayed by each case study. Consequently, the 'Conclusions' contain only the salient features of the study.

1.2 Problem statement

There has recently been a mounting concern at both policy and popular levels about the need for forestry strategies and activities to combine the economic importance of forests and trees with their roles in social equity and ecological integrity. An effective contribution of forestry to sustainable development therefore depends on the ability of the sector to reconcile tensions between environment and development, as the two are not conflicting elements in a zero sum game, in which progress in one is at the expense of the other; and to establish a real partnership with forest-dependent people who in many countries, or rather by definition are among the poorest and have been marginalised from the benefits of development. For example, the process of setting up state forest reserves and other resource conservation areas has too often been associated with the alienation of local people from their resources and the complete absence of public participation and control in conservation actions. Consequently, conservation actions are resented by inhabitants who see them as restrictions preventing them from attaining an acceptable standard of living and well-being. This policy bias against local people has turned them practically overnight from being hunters and traditional forest resources managers into poachers and squatters with adverse effects on forest resources.

The governments in sub-Saharan Africa have belatedly acknowledged that they have pursued wrong forestry policies which have, until today in many countries, been based on the concept that the forest is an ecosystem to be described, studied and situated in a specific ownership context. This traditional approach to forest management hardly takes social data and socio-economic role into account and foremost the impacts *of* and *for* the surrounding people are scarcely or too briefly considered. Therefore, there has been a need for a policy change that would promote managing forest resources in ways that will ensure resource integrity, productive capacity, resiliency, and biological diversity and satisfy society's economic, environmental, cultural and social values. It has been widely accepted that forestry policy should give much more emphasis than in the past to the

immediate needs and wishes of people. This means that forestry policy should become more outward looking without becoming less concerned with trees. Accordingly, this project aims to establish whether the forestry policies in the region have been adapted in the recent years to reflect the ethos of sustainable forestry management or the traditional, usually government-led, regulatory approach still persists. Either way, what are the implications for forest resources in a constantly evolving society? Answering this question is the theme of this investigation.

1.2.1 The study area

The study covers the following Southern African countries: South Africa, Tanzania and Zambia. Although each country in Southern Africa has its own forestry policy and legislation within the context of its development priorities, social and economic parameters and conservation strategies, certain aspects of forestry policy are common and valid for the whole region. For example, forestland rehabilitation, afforestation, forest protection, watershed management, amenity, environmental conservation, creation of public awareness, training, research and extension. Therefore, there is a need for a detailed forestry policy analyses for representative countries in the region. Moreover, an incorrect forestry policy in one country within the same region is bound to impinge on forest resources in other neighbouring countries through shifts in demand and creation of negative environmental externalities such as floods or reduction in riverbed flow regimes, among others.

1.2.1.1 Criteria for selecting the study area

The term Southern Africa has acquired much wider scope, covering countries further north in the south-central region of the continent. The Democratic Republic of Congo (DRC) marks the northernmost part of Southern Africa, while South Africa forms the southernmost end. Southern African countries in the south-central zone demonstrate some regional environmental similarity, particularly in the amount of rainfall which is comparatively higher than further south. This is reflected in the lush tropical vegetation in the DRC, Tanzania, Angola, Malawi, Mozambique and Zambia and to a lesser extent, in Zimbabwe. The decrease in rainfall towards the south affects forest production in Southern Africa proper that encompasses Botswana, Lesotho, Namibia, Swaziland and South Africa which are countries generally characterised by arid conditions. Therefore, these two extreme conditions: heavy rainfall which gives rise to extensive forest cover, and aridity which creates forest resources scarcity are the basis for selecting the case studies.

Tanzania and Zambia have vast natural forest estates; for example, the FAO's most recent global forest resources assessment indicates that Tanzania and Zambia have 37% and 42% of their landscapes under natural forest cover, respectively[1]. The essence of this extensive forest cover for this study is that governments of many developing countries with extensive forest cover do not often see an end to the exploitation of these resources.

They frequently perceive their extensive forest resources as a main source of revenue for achieving the development of sectors considered more important, with *little* to *no* investment in the forestry sector itself. Conversely, only 7.0% of South Africa's total land base is under forest cover[1] which explicitly indicates forest resource scarcity. Resource scarcity is expected to promote efficient resource allocation and hence sustainable forest management. Thus, it is appropriate to examine where the forestry sector fits in the economies of these nations. It is important to note that a wind of change has swept across Southern Africa, ushering in democratic institutions in South Africa, Tanzania and Zambia, unlike the DRC which has the largest tropical forest in the region but lacks democratic institutions. It is therefore appropriate to evaluate the effects of these democratic institutions on forestry policy-making process and hence on forest resources. For example, what is the forestry policy formulation and implementation process in South Africa, Tanzania and Zambia? Are they democratic or undemocratic and what are the consequences for forest conservation?

Finally, South Africa is assumed to have acquired a higher level of environmental awareness, especially at the policy-making level[2]. This is expected to translate into the greening of the country's framework legislation and policy, in addition to crosscutting and sectoral policies in order to promote synergy and minimise negative effects among biological resources conservation policies. Other less environmentally literate countries are expected to draw from the South African experience. However, does this scenario occur and are South Africa's natural resource use and management policies necessarily the best and under what conditions?

1.3 Aims and objectives

The overall aim of this project is to induce discussions in the field of 'forestry policy research' to arrive at policies based on African experience, set in its reality and realised according to its own possibilities. Candidly, 'forestry policy research' is an area that has been neglected for too long throughout Africa. Robert Repetto and his colleagues at the World Resources Institute in Washington, D.C. have been in the forefront of making the connection between price incentives and environmental performance in West Africa (Convery, 1995:61). However, that is not enough as price incentives are only a part of the forestry policy. It is also important to note that findings in West Africa cannot be applied to Southern Africa without careful modification, as the two regions represent different political and socio-economic cultures. Therefore, a study which will facilitate the assessment of forestry policy on the conservation of forest resources, becomes imperative. This will form the bedrock for new forestry policies which will obviously arise from the adaptations of other institutional mechanisms such as legislation, education, training, research and others, in addition to highlighting priorities for future forestry policy research in Southern Africa. Specifically, this study aims:

A. *to assess the effects of forestry policy on the sustainability of forest resources.*

B. *to examine the effects of democratic or inclusive forestry policy-making process on the sustainability of forest resources in Southern Africa.*

C. *to feature deficient policy instruments that militate against socio-culturally disadvantaged individuals, particularly women and recommend legislation which gives more or equal opportunity for them to own and manage land and forest resources.* This is to overcome institutional barriers in many sub-Saharan countries, where the existing general legislation and forestry policy instruments, particularly those pertaining to land and tree tenure discriminate against women. Women hold land and forest resource rights only as their husbands' wives, although they are pioneers in tree-planting to reverse the endemic fuelwood shortages in many rural and suburban settings in Southern Africa.

D. *to identify and highlight opportunities for inclusion of all stakeholders, especially rural communities in forestry policy formulation and implementation processes to promote managing forests in ways that will ensure resource integrity, productive capacity, resiliency, and biological diversity and satisfy society's economic, environmental, cultural and social values.* This is necessary because many existing forestry policies in Southern Africa have been conceived to address simpler situations. However, today forests must be managed in a much more interdependent and complex context which requires a partnership among all major actors and beneficiaries, especially with forest-dependent people, who in many countries or rather by definition are among the poorest and have been marginalised from the benefits of forestry development.

E. *to assess the effects of overarching framework legislation and policy, and crosscutting and sectoral policies on the conservation of forest resources in the concerned South African countries.* This is necessary because forestry policy does not operate in a world of its own, but rather in a complex meshwork of other policies.

1.3.1 Delimitation

A project title alone does not always delineate the scope of a study, frequently leaving it open to interpretation. Therefore, it is necessary to define the limits of this study to avoid possible misinterpretations. Thus,

i. this project is designed to evaluate both qualitatively and quantitatively the effects of *forestry, overarching, crosscutting and sectoral policies* on the physical productivity of forest ecosystems in South Africa, Tanzania and Zambia. It is a strategic environmental assessment exercise;

ii. it does not attempt to assess the effects of forestry and these other policies on the economies of the countries included in this project. Nevertheless, economic reasoning is employed to justify why individual/community **A** is involved in forest conservation, while individual/community **B** is not; and

iii. the study of the effects of forestry and extra-sectoral policies on the civil society is not a theme of this project *per se*, although the policies or items of legislation that cause the civil society to conserve, degrade or deplete forest resources are examined.

1.4 Research methodology

This is predominantly qualitative research, centred on analysis of documentary materials. However, this qualitative information will be transfigured into a quantitative data, using a quantitative scoring scheme to provide an estimate of 'forest conservation' in the target countries. The choice for 'desktop research' is largely determined by the questions asked in this study and also by the pioneering nature of the investigation.

1.4.1 Type of data

The type of data to be used will consist mainly of official records such as the framework legislation and policy, crosscutting and sectoral policies. For example, framework legislation and policy refer to a country's constitution and environmental management policy, the crosscutting policies include multilateral environmental agreements and land policy while sectoral policies consist of policies that emanate from the other sectors of the economy. The latter category comprises government policies for water, energy, population, agriculture, wildlife, tourism, macroeconomy, transport and forestry. A tailored questionnaire will be employed to generate information, where documentary data demonstrate conflicts or where key information is missing. Published materials are also indispensable sources of information. The Internet is handy for certain types of data, especially government publications, policies and their implementation strategies and/or instruments. Such official documents are free of biases, as the primary objective of placing them on the Internet is to permit wide access by policy consumers. However, the reliability of similar information from other sources may be suspect because many individuals or organisations which display information on the Internet do not guarantee the accuracy of their information. Furthermore, web information may be fraudulent (Pimm & Harvey, 2000:210-211). Consequently, dependence on websites will only arise when the desired information exists in a published or official document format but is logistically difficult to procure. For example, the conservation status of a country's forests may be determined from the FAO's most recent book 'State of the world's forests 2001' or from http://www.fao.org/forestry/fo/sofo/sofo-e.stm(Accessed Nov 7th, 2001).

1.4.1.1 Justification of the data type

'Official records' are chosen because they are freer of selective recording and personal whim. This implies that producers of government documents have no interest in biasing reports and policies or their tendencies to do so are constrained by the large number of participants who draft and edit these official documents. Policy documents and legislation often pass through National Assemblies, where they are subjected to critical scrutiny before they are adopted as official working documents. This aspect also discourages biases. Thus, 'official records' provide more detail and less distortion than other sources of data.

1.4.1.2 Implications of the data type for this study

It is worth noting that 'official records' may not conform to the specifications of this project, as there is no control over their collection. The lack of influence on the kind of data to be gathered means that there will be items that are likely to be incomplete from the project's perspective. In addition, the tailored questionnaires designed for this study may not draw attention from forestry departments or may be filled in selectively. Implicitly, it would be inappropriate to assume that the analysis on Zambia should be a replica of South Africa or Tanzania. These anticipated disparities could be mitigated, if a 'face-to-face' data gathering technique was employed. Although this is still a common survey technique, it is likely to become too expensive for this study. 'Telephone surveys' are also unfeasible, as forest officers or bureaucrats often do not have the relevant data at hand.

1.4.2 The data acquisition technique

Qualitative researches use less standardised techniques of gathering data. However, the best and standard medium for assembling 'official records' is by *post*, as the University of Stellenbosch libraries are deficient in the relevant literature for this study. This is warranted further by the lack of online policy and other related documents for the United Republic of Tanzania and Zambia. The same technique will be employed for gathering primary data, using the tailored questionnaires.

1.4.3 Treatment of the data

This study entails in-depth analysis of documentary materials over a considerable time. *Prose text* and *complementary data* in form of tables, rather than statistics and graphs constitute the contents of each case study. Accordingly, 'official records' and 'published material' will be searched and analysed for *firstly*, the 'conservation status' of forest resources in the respective countries under evaluation. This includes the percentage of a country's land base under forest cover; size of protected areas; annual rates of forest loss and recruitment; where deforestation or reforestation occurs most; structure and security of forest resource ownership; position of forestry in the national economy and so forth. *Secondly*, policy documents and legislation with implications for forest conservation will be assessed. Typically, contents of the documents will be examined and links and overlaps

between the documents will be identified and highlighted. For example, are sectoral resource conservation policies such as those that inform wildlife and tourism and national parks in accord with forestry policy or is the forestry law sufficiently grounded in the forestry policy itself? *Thirdly*, particular conservation innovations, lessons, constraints, failures or missed opportunities in the documents will be identified. *Fourthly*, the extent to which international nature conservation policies, strategies and instruments have been incorporated in national resource conservation policies will be highlighted. This is primarily to determine conflicts, gaps and the opportunities for harmonising them. *Finally*, in case there is forest degradation and loss, policy-level opportunities for dialogue or reconciliation between stakeholders will be noted.

The merits of case studies in this project are that they prove exceedingly valuable to policy research at several points; provide the insights required to bring the problem into focus; and they are highly useful, particularly when policy-makers lack sufficient analytical statistical skills.

1.4.4 Operationalisation

The above qualitative analyses will be condensed into quantitative estimates, using a quantitative scoring scheme on a scale ranging from *one* to *five*. The ultimate goal of the system is to provide a tangible estimate of certain key indicators of forest conservation as a proxy for determining the performance of a country's forestry policy. For scenario building and adaptability of the *index* at a local, regional and national levels, the procedure for allocating the scores are explained below. It is noteworthy that the evaluation criteria/indicators and weight factors could be varied as the situation befits.

1.4.4.1 The scoring scale

i. a score of 1 on any indicator represents the lowest performance;

ii. a score of 2 on any indicator represents below average performance;

iii. a score of 3 on any indicator represents acceptable level of performance;

iv. a score of 4 on any indicator represents a particularly high level of performance for the indicator; and finally,

v. a score of 5 would be awarded for outstanding performance of a particular indicator.

1.4.4.2 Indicators and weight factors

There are three main categories of indicators for evaluating the effects of forestry policy on forest conservation. The first category consists of ecological indicators such as the size of protected areas; forestation/deforestation ration; and timeliness of forest resource data. The second category comprises social indicators in the likes of democracy in forestry policy formulation; security of tenure; and gender equity, while the third set incorporates

economic indicators such as contribution to the GDP; employment; and investment in forestry development. Monitoring and evaluation; adequacy of external policies; institutional capacity; and intersectoral policy co-ordination cannot be ascribed to any particular category, as they tend to lie at the ecological-social-economic confluence. Accordingly, there are 13 indicators at a coarse scale that will be used as a proxy for forest conservation.

Indicator 1: Protected forests

1. Less than 4.0% of the country is under forest cover.
2. 4.0 - 5.99% of the country is under forest cover.
3. 6.0 - 7.99% of the country is under forest cover.
4. 8.0 - 9.99% of the country is under forest cover.
5. At least 10% of the country is under forest cover.

Indicator 2: Forestation/deforestation ratio

1. Afforestation is conducted haphazardly without EIA as a planning tool.
2. Afforestation threatens indigenous forests, grasslands and/or wetlands despite the use of EIA.
3. Afforestation is applied on abandoned, degraded land to relieve pressure on natural forests and is well regulated.
4. Deforested areas are compensated by creation of equivalent ecosystems elsewhere.
5. There is zero deforestation.

Indicator 3: Forest resource data

1. There has not been any forest resources survey in the last 10+ years.
2. There was a forest resources survey in the last 5-10 years.
3. There was a forest resources survey in the last 1-4 years and an updated socio-economic study highlighting a country's environmental problems, for example, the NEAP.
4. The most recent forestry policy was founded on a sound forest resource data.
5. Gathering of forest resource data is an ongoing process informing day-to-day forest conservation activities.

Indicator 4: Monitoring and evaluation

1. There is no statement on monitoring and comprehensive evaluation of forestry policy.
2. Monitoring and evaluation are defined by forestry legislation.
3. There are sustainability indicators which can be monitored and evaluated over time.

4. (3), monitoring and evaluation have been well institutionalised.
5. (4), monitoring and evaluation have incorporated participatory approach.

Indicator 5: Adequacy of external policies

1. Forest conservation is a departmental responsibility.
2. Forest conservation is reinforced by sectoral policies, especially by traditional foes such as land, agricultural and energy policies.
3. Forest conservation is reinforced by five sectoral policies, including the traditional foes.
4. Forest conservation is supported by at least five sectoral policies and a framework policy such as the environmental management policy.
5. Forest conservation is supported by at least five sectoral policies, an overarching framework policy and legislation.

Indicator 6: Institutional capacity

1. There is/are no forestry education and training institution(s) in the country.
2. There is/are forestry education and training institution(s) in the country.
3. (2) and adequate professional and technical staff.
4. (3) and appropriate working conditions.
5. (4) and good institutional disposition, i.e., the Forestry Department is not undermined or overshadowed by other natural resource management departments.

Indicator 7: Intersectoral policy co-ordination

1. There are no formal institutions for intersectoral policy co-ordination.
2. There are formal institutions for intersectoral policy co-ordination; however, they are generally ineffectual.
3. There are effective institutions for intersectoral policy co-ordination at local, regional and national levels which are hierarchically linked to each other.
4. Intersectoral policy co-ordination commences at policy formulation stage, where positive synergies between policies are enhanced and negative effects are minimised.
4. Intersectoral policy co-ordination has eliminated conflicts between natural resource use and management policies.

Indicator 8: Democracy in policy formulation

1. The government forms the policy.
2. The government, business, environmentalists, peasants and herders were represented.

3. (2) and women's groups were represented.
5. (3) and pre-policy conference meetings were conducted to prepare peasants, herders and women to participate more interactively.
5. (3), (4) and representatives of international/bilateral organisations.

Indicator 9: Gender equity

1. Men/women ratio in forestry decision-making =1:5+
2. Men/women ratio in forestry decision-making =1:4
3. Men/women ratio in forestry decision-making =1:3
4. Men/women ratio in forestry decision-making =1:2
5. Men/women ratio in forestry decision-making =1:1

Indicator 10: Security of land tenure and ownership

1. There is a general insecurity of tenure for all parties, and excludability is extremely difficult.
2. The security of tenure for the majority of rural stakeholders is perpetuated only by cultivation and the land shifts back to the common pool, immediately after crop harvests.
3. Rural stakeholders have secure ownership of parcels of land for self-provisioning, although there are no individual title deeds.
4. Rural stakeholders have secure ownership of parcels of land over which there are individual title deeds.
5. (4), and construction and other types of timber, fodder and fuelwood are supplied from private, non-industrial land, thereby relieving pressure on natural forests.

Indicator 11: GDP

The contribution of the forestry sector to the GDP

Indicator 12: Employment

The number of people employed as a proportion of the overall active labour force

Indicator 13: Investment in forestry development

1. The government ploughs back less than a quarter of forest revenues.
2. The government ploughs back a quarter of forest revenues.
3. The government ploughs back a half of forest revenues.
4. The government ploughs back three-quarters of forest revenues.
5. The government ploughs back nearly the same amount that the sector generates in terms of tangibles for developing both the tangibles and intangible functions.

The scores for each country will be summed and averaged to constitute the forest conservation index which is presented at the end of each case study. A mean score of less than 3 means that forest management in that particular country is unsustainable; an average score of 3 indicates sustainable forest management; an average score of 4 means highly sustainable forest management; and a mean score of 5 means a country has a long history of exceedingly sustainable forest management. Here, the 'mean score' is more important than individual scores because 'sustainability' is not a sectoral or indicator phenomenon, but encompasses the environment, economy and society. If a country, for example, has more than 50% of its land base under forest cover, but the rural stakeholders, including women do not partake in resource allocation or the resource does not contribute sufficiently to the national economy, then, sustainability of forest resources is greatly nullified.

Chapter two

The theory of forestry policy-making

2.1 Executive summary

This second chapter is a reference framework for the successive case studies and for all the concepts used in this study. Consequently, the term *forest* is conceptualised as both closed and open canopy forests and wooded landscapes, such as mopane woodlands and acacia savannas. This is premised on FAO's definition whose forest resource data are used in the following case studies. The term *sustainable forest management* (SFM) like the parent concept on which it is founded (sustainable development) has been subjected to a wide variety of interpretations, especially concerning its meaning and policy relevance. It appears that the definition of sustainable development as the development that meets the needs of the present without compromising the ability of future generations to meet their own needs was deliberately chosen to be vague to receive unanimous political support. However, this definition is not very helpful to the forestry sector because it provides no guidance as to what is to be sustained and how sustainable development is to be operationalised or implemented. This is manifested in the diversity of criteria and indicators for SFM both at national and regional levels. However, in this report, the term *sustainability* refers to strong sustainability. This concept argues that there is no perfect substitution between the natural capital and human-made capital, i.e., an intervention that results in the substitution of natural forest for plantation forest, agriculture or any non-forest use without compensating for the lost biota does not constitute SFM.

There are as many definitions of forestry policy as there are people who have attempted to define the concept. Nevertheless, in this study, forestry policy has been perceived as the government's decision on forestry. It is considered both as a direction and as a very specific and concrete decision or action. Forestry policy-making process commences with agenda-setting which is the process by which demands of various groups are translated into items vying for the serious attention of public officials. This is followed by policy formulation which involves the development of pertinent and acceptable proposed courses of action for dealing with identified forestry problems. Several competing proposals for dealing with a problem may be presented during policy formulation. Although policy formulation is a preserve of the government, the realities of the modern politics require the participation of other interest groups, such as forestry industry, environmentalists, rural forest-dependent people, the communications media, and individual citizens. The same actors in the policy formulation stage are represented in policy implementation which is conceived as the procedure for giving practical effect to an accepted policy. However, courts and legislature also exert some control on policy implementation process.

Policy implementation is executed through policy instruments. This study recognises three types of instruments: voluntary, mixed and compulsory. Voluntary tools are founded on people's free will to do things for others or for the common good, mixed instruments are assortments of incentives and disincentives aimed mainly at non-state stakeholders to encourage compliance with the goals of biological resource conservation, while compulsory tools refer to commands requiring adherence to certain standards necessary for achieving desired environmental goals. Furthermore, the factors that define the choice of these tools have been described. These include the characteristic of the instrument, the nature of the problem at hand, previous experience with the instrument, the subjective preference of decision-makers, and the perceived reaction of policy consumers. Finally, the chapter ends with a framework for monitoring and evaluation which is necessary for ensuring that the policy is on the right course.

2.2 Introduction

This chapter should be considered as a reference framework for the successive case studies and for all the relevant concepts used in this study. In accord with its purpose, the chapter defines the terms *forest* and *sustainability*, as they apply to this study and examines the various concepts of *forestry policy*. The need for forestry policy, its formulation and implementation have been examined. Accordingly, there are many definitions, as there are people who have attempted to define forestry policy; and the need for forestry policy is dictated upon by the inherent market failures that characterise the forestry sector. The improper valuation of forest ecosystems which results in undervaluation of forest resources and overvaluation of the uses to which forestlands are put; and poorly defined property rights are two examples of environmentally related market failures that pervade forest-rich African countries.

Furthermore, forestry policy formulation process has been described and the actors and institutions identified. Three main groups of participants in policy formulation have been identified and these include the organisations of the state or simply the government, the civil society and the organisations of the 'international system'. Policy formulation spills into policy implementation. The actors in policy implementation, the choice of policy instruments and the forest conservation characteristics of the different categories of governing tools have been assessed. This is certainly the core part of this chapter, and the approach adopted is that of awareness-awakening i.e., how these interventions tools could and should be used to promote forest conservation. Finally, the importance of monitoring and evaluation in measuring the performance of forestry policy and in policy-making has been stressed.

2.3 The concept of forest

The term *forest,* as defined here, includes both closed and open canopy forests and wooded landscapes such as mopane woodlands and *Acacia* savannas. This definition accords with the one advanced by FAO which portrays *forests* as terrestrial ecosystems with at least 10% tree-crown coverage of a given land surface and are generally associated with wild fauna, flora and natural soil conditions. It is important to note that the main component of forest ecosystem is the *tree* which can be defined as a woody perennial with a single main stem, a more or less definite crown and a minimum height of more than five metres on maturity. However, coppice systems have multiple stems (FAO, 1995a:42). This concept is adopted because the forest resource data for this study are drawn from the FAO. Thus, southern and east Africa's miombo woodlands largely characterised by the three closely related genera of *Brachystegia, Julbernadia* and/or *Isoberlinia* from the family of *Caesalpinaceae* qualify as forests.

However, forest resource estimates based on FAO's definition of *forest* are upwardly biased due to the inclusion of woodlands as forests. For example, in its most recent global forest resources assessment, FAO states that

approximately 7.0% of South Africa's landscape is under forest cover.[3] This estimate is therefore likely to differ from internal or country estimates, particularly for South Africa where Rutherford and Westfall (1986:48) define the term *forest* as "woody vegetation with continuous canopy". Low and Rebelo (1996:10) consider *forest* as having continuous canopy cover, comprising mostly evergreen trees with a multi-layered vegetation beneath it. Midgley *et al.* (1997:278) further contradict FAO's definition by conceptualising "forests as being closed-canopy plant communities comprising mainly woody plants more than 5 m tall". Apparently, estimates of forest resources according to these latter definitions are downwardly biased. For example, Low and Rebelo (1996:4-7) indicate that only 0.5% of South Africa's landscape is under indigenous forest cover. Such an internal estimate may arguably be more credible than FAO's data sourced from extrapolations of old inventories, case studies, national statistics and remote sensing data (Watts, 1996:11). However, it is difficult to use internal estimates for assessing the effects of forestry policy on the sustainability of forest resources because they cover only one aspect of the forest resource, i.e., extent of forests. There are no data for annual changes in forest cover. Therefore, substituting one aspect of the FAO data for locally generated data is problematic because the underlying assumptions of the two data sets are fundamentally dissimilar.

Finally, the term *forest resource* refers to anything which appears or grows in a forest, including living organisms and any product of it; and inanimate objects capable of satisfying *economic want*.

2.3.1 The concept of forest sustainability

The term *sustainable forest management* (SFM) like the parent concept on which it is founded (sustainable development) has been subjected to a wide variety of interpretations, especially concerning its meaning and policy relevance (Gupta & Asher, 1998:287). Apparently, the definition of sustainable development as the development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission, 1987:8) was deliberately chosen to be vague to receive unanimous political support. Van Kooten and Vertinsky (1999:5) maintain that this definition is not very helpful to the forestry sector because it provides no guidance as to what is to be sustained and how sustainable development is to be operationalised or implemented. For the forestry sector, the vagueness of the concept is reflected in the variety of existing perspectives about what constitutes SFM. The World Commission on Forests and Sustainable Development (WCFSD)(1999:81) concedes that "some view SFM as production of a continuous flow of desired forest products without loss in inherent productivity; others say that SFM does not entail production or extraction, but is all about maintaining and enhancing ecosystem functions; some say SFM is nothing but wise management". The meaning of the term varies according to the context in which it is used: political, scientific, environmental or public relations. For example, defining *sustainability* in the environmental context, Upton and Bass (1997:14) note that "it requires that forest management respects, and builds on, natural processes". According to this ecological

perspective, conversion of a natural forest to non-natural forest use without compensating for the lost biota is unsustainable forest management. Ironically, Lanly (cited in Dembner, 1992:2) argues that "utilisation of a given forest ecosystem implies some change in its structure and composition, and that sustainability cannot mean the identical reproduction of the ecosystem in its original state". This type of *sustainability* explicitly provides for lose of certain species, and hence is not helpful to forest biodiversity conservation. Furthermore, it has been stated that "the term sustainability has served as an ideological decoy for governments in many countries wishing to appropriate forest resources and extinguish local people's customary rights to use them" (Rietbergen, 1993:4). Indeed, there are as many definitions of SFM as there are people who have attempted to define the concept. This is manifested in the diversity of criteria and indicators for SFM, such as those developed by the International Tropical Timber Organisation, the Helsinki Process, the Montreal Process, the Tarapoto Proposal, Lepateriqui, sub-Sahel Dry Zone Africa, North Africa and Near East, and Central Africa (WCFSD, 1998:90). Furthermore, the non-binding nature of these criteria and indicators like the concept of SFM has led many countries to develop their own sets of criteria and indicators for SFM.

Therefore, it would suffice to indicate that the term *sustainability* has been used loosely, meaning different things to different people. However, in this report, the term *sustainability* refers to strong sustainability. This concept (to which this study subscribes) argues that there is no perfect substitution between the natural capital and human-made capital, i.e., an intervention that results in the substitution of natural forest for plantation forest, agriculture or any non-forest use does not constitute SFM. This is because some elements of the natural capital stock cannot be substituted except on a limited basis by human-made capital. For example, in a mixed, uneven-aged stand of indigenous forest, the leaf litter, herbs, shrubs, co-dominants and dominants provide a multiple storey habitat. Each storey or tree has its own range of insects; each insect has its own parasite and specialised vertebrate predators (Harrison, 1992:59). Replacing this complex natural capital with a simplified monoculture of exotics imposes social costs. Turner *et al.* (1993:56) confirm that some functions of natural forest ecosystems cannot be replaced. Moreover, Van Kooten and Vertinsky (1999:6) counter that there are limits to substitutability between natural and reproducible capital. Similarly, Ortolano (1997:33) notes that many ecologists and some economists disagree with the notion of lumping natural capital together with human-made capital in tallying up total capital at any particular time. He contends that there are no human-made substitutes for used up natural capital such as species that go extinct. Similarly, Goodstein (1999:81) reports that natural and human-made capitals are fundamentally complements, i.e., they are used together in production and have low substitutability. As a result, ecologists see a largely expanded role for government in aggressively protecting dwindling stock of natural capital. The protectionist approach to South Africa's natural or indigenous forests demonstrates this ecological perspective about *forest sustainability*. These arguments invalidate the assumption of perfect substitution between natural capital and human-made capital.

It is thus indisputable that *sustainability* in the forestry sector requires the implementation of the principles of ecosystem management. In practice, the volume of timber to be extracted from a natural forest should be equivalent to the 'mean annual increment', or where approximations of mean annual increments are rather cumbersome, 'harvest one, plant one of the same species principle' should be implemented. This means that annual rates of reforestation, using natural regeneration or artificial propagation must cancel out the annual rates of deforestation. This is a basic indicator of SFM which can simply be defined as a "forest management practice that encourages meeting society's economic, environmental and social needs without diminishing the capacity of the natural resource base to do so indefinitely". For example, forests can be put to any other use or logged to satisfy society's economic *wants*, but such uses must not threaten biological diversity, the sustainability of other forest commodities and the inherent ecological functions. Accordingly, the basic precondition for SFM in South Africa, Tanzania, Zambia and other sub-Saharan African countries is that the annual rate of forest depletion must be closely related to the annual rate of reforestation *using the same indigenous species* so that the different components of the forest ecosystem are represented in the future.

Implicitly, strong sustainability can be viewed as a concern for inequality in forest resources over a period of time. It is in accord with this concern that Common (1995:31) conceptualises *sustainability* as how to address problems of inequality and poverty using environmental assets, such as forest resources in ways that do not affect the forest environment so as not to minimise humanity's future prospects. Similarly, Solow (1996:16) emphasises that "it would be unfair or unsound to use limited resources for current benefit, in a way that will impoverish future generations". Solow's definition reflects the same concern when applied to the forestry sector, i.e., the need to maintain an adequate size and integrity of natural forests to supply desired products and services.

In contrast to strong sustainability, weak sustainability does not make a significant distinction between human-made capital and natural capital (Ortolano, 1997:33). "As long as the natural capital that is being depleted is replaced with...human-made capital, then the value of the aggregate stock — comprising both human-made and the remaining natural capital — is increasing over time" (Barbier *et al.*, 1994:54). Weak sustainability is centred on the *value principle*; it is based on a very strong assumption of perfect substitutability between the natural capital which in this case are the indigenous forest resources and the human-made plantations. It is therefore wholly consistent with 'running down' the stock of natural capital provided that the proceeds accruing from the run down are reinvested (Pearce & Atkinson, 1995:168). This viewpoint concedes that natural and created capital are substitutes in production — as natural resources become scarce, technology will yield high-quality substitutes (Goodstein, 1999:81).

It is important to distinguish between afforestation in the northern and southern hemispheres (for example, between Europe and Africa). Generally, indigenous plant resources are used in European afforestation programmes, posing no serious danger to biodiversity, except where afforestation is inappropriately sited in wetlands. In this context, deforestation/afforestation ratio can be assessed objectively to determine SFM if afforestation does not result in the drainage of bogs. However, in sub-Saharan Africa where opportune conditions for natural vegetation, including forest exist, afforestation with softwoods has invariably resulted in vegetation clearing, threatening the native biota of a country. Although eucalyptus originates from the southern hemisphere, by virtue of being non-native in African countries where it is widely used in plantation forestry, it is not suitable as a candidate for afforestation from the standpoint of local biodiversity conservation.

2.3.2 The concept of policy

To adopt a common approach towards a problem requires a universally accepted concept of the problem at hand. However, this is not the case for the term *policy* which although it is frequently used, means many things to many people. For instance, Peter (1988:204)[a] defines *policy* as "a process of public decision-making leading to actions outside the political system". It is implied in this definition that the executive and the legislature make public decisions at the political level, but their implementation tends to fall outside that arena of political authority. However, it merits mention that it is incorrect to assume a *divide* between politicians and bureaucrats and between the latter and the policy consumers at the street level. In reality, there is no particular point where the influence of bureaucrats starts and ends. Their pool of knowledge causes them to define situational context constraining the views of other stakeholders, including politicians, and in the process, implant their professional and personal preferences on a particular policy subsystem. The same holds for dictatorial institutions that although appear ostensibly as a one-man show involves a great deal of manipulation by bureaucrats.

Dye (1972:2)[b] defines *public policy* as "anything a government chooses to do or not to do". Indeed, 'wait-and-see' or 'inaction' is a policy option. However, government institutions can legitimately be driven by lack of financial resources to seem to adopt this position, although they do not deliberately pursue it. Inaction in the provision of basic developmental infrastructures such as roads, hospitals, schools and electricity in rural areas is not a policy that African governments pursue. Dye's definition has no means for differentiating between such phenomena. Thus, Howlett and Ramesh (1995:4-5) point out that this definition "would include as public policy every aspect of governmental behaviour from purchasing or failing to purchase paper clips to waging or failing to wage nuclear war...". It has no mechanism for separating the trivial from the significant aspects of government activities. Dye also poses *government* as the sole agent in public decision-making which might be understood as understating the significance of other role-players. However, the centrality of government in this concept is due to the universal

[a, b and c] cited in Howlett and Ramesh (1995:4-5)

acceptance of public policy as a measure that a government actually takes. If all other stakeholders with the exception of the government agree to formulate a policy, that policy would not constitute a public policy. This has been exemplified by Mozambique and Zambia's forestry policies that suffer from some degree of unpopularity because they have respectively been termed Frelimo and UNIP Manifestos. President Julius Nyerere's land tenure policy did not promote the sustainability of land resources because the policy was wholesomely imported from Tanganyika African National Union which, although it unified Tanzanians in their quest for independence fell out of grace in the intervening years.

Anderson (1990:3) defines *policy* as "a purposive course of action followed by an actor or a set of actors in dealing with a problem or matter of concern". This definition notes the paramountcy of democracy in policy-making. It goes further to justify the formulation of public policy: the existence of a *problem* or a *concern* that needs attention or action. This consolidates the below argument in the section that deals with 'agenda-setting'.

Ham and Hill (1993:11) have also cited some vaguer concepts of policy, including Heclo (1972:84-5), who conceives *policy* not to be a self-evident term and suggests that "a policy may usefully be considered as a course of action or inaction rather than specific decisions or actions". Realistically, specific decisions or actions can constitute policy, although more frequently people are not aware that they are working with an entity called policy. For example, a Cape Town pupil who is planting trees on a 'school tree-planting day' is unaware of how much he/she is implementing multilateral environmental agreements such as the Conventions on Biodiversity, Climate Change and to Combat Desertification and the Kyoto Protocol. In the same vein, a rural African grandmother who is gathering mushrooms, dead wood and other non-timber forest products may be unaware of the fact that her actions add more value to forests and are in line with the ethos of sustainable forest management which is the ultimate goal of any national forestry policy.

The perception of *policy* as a direction rather than as a specific decision or action has also led Friend *et al.* (1974:40)[d] to state that "policy is essentially a *stance* which, once articulated, contributes to the context within which a succession of future decisions will be made". Dana (1956:vii) also defines *policy* along the same line when he states that, *policy* is "a settled or definite course or method adopted and followed by the government, institution, body or individual". Cunningham (1963:229)[e] perceives *policy* as indescribable by stressing that "policy is rather like the elephant — you recognise it when you see it but cannot easily define it".

It is clear that public policy poses a great deal of definitional problems because it is likely to be perceived as a very specific and concrete phenomenon and merely as an orientation or thrust. At policy subsystem level, forest

[d and e] Cited in Ham and Hill (1993:11)

economists have not even escaped the inherent difficulties in the conceptualisation of the term *forestry policy*. For instance, Clawson (1975:149), defines *policy* as "all public actions (generally this means actions by government at some level) which significantly affect the use and management of forests, both publicly and privately owned". While this definition may be true, it is capable of applying to a policy that partly or wholly need not exist. Grayson (1993:5) asserts that a *policy* has a definite purpose and defines it as procedures that aim "to facilitate and encourage practices which have as their effect the creation and maintenance of such forests as satisfy national wants". This definition has the implication that actions which do not result in 'the creation and maintenance' of forests do not quality to be a policy. Holmes (1985:1) defines *forestry policy* as "the government's 'line' on forestry". 'Line' refers to any direction, sanction or interference with market forces that government as a political actor decides upon to achieve what the policy requires. Clawson and Holmes clearly appreciate the relationship between forestry policy and government. Perhaps the best functional definition of forestry policy have been attempted by de Montalembert and Schmithüsen (1991:9), who define forestry policy according to the social, economic and environmental functions of forest. They define *forestry policy* "as an economic policy to foster the development of forest sector, as an important and integral part of land use and rural development policies and as an indispensable element of environmental protection and nature conservation policies".

There seems to be major differences in what the term *policy* means and the force or authority that it bears. To some, policy means a declaration of intent or broad, general statement of overall planning and programming goals. To others, it means specific objectives or procedures; and yet others use it to describe legal, regulatory restrictions or functions (FAO, 1993:48). However, for the purposes of this study, *forestry policy* is perceived both as a direction and as a very specific and concrete decision or action. The policy 'direction', like the direction of the flow of a river will remain fairly constant, unless a deliberate attempt is made to alter it. On the other hand, the 'specific decisions or actions' are comparable to the riverbed and bank that undergo constant evolutionary process. It is implied that policy decisions or actions often continue to evolve, particularly at the street-level; nonetheless, this occurs in a predetermined direction. Thus, policy-making is a continuous, non-linear process.

2.4 Agenda-setting

Agenda-setting is "the process by which demands of various groups in the population are translated into items vying for the serious attention of public officials" (Cobb *et al.*, 1976:126).[f] This definition emphasises the centrality of the civil society in public policy-making, although policy is not shaped by the civil society alone. In the forestry sector, agenda-setting is also the prerogative of government and outside events or stakeholders. This is because forests are important for many interest groups within a society. For example, the state wishes to mobilise the

[f] Cobb, R., Ross, J. K. and Ross, M. H. (1976). Agenda Building as a Comparative Political Process. American Political Science Review Number 70, Volume 1; Cited in Howlett and Ramesh (1995:105).

economic potential of a renewable resource to generate revenues and employment; the forestry industry seeks to increase its profitability and competitiveness in the national and global economies; rural people rely on forests for agricultural land, food, fodder, fuel, cash income and cultural utility; the public considers the forest as a major component of a stable and amenable environment; and the recent concerns emphasise the global role of forests in relation to 'climate change' and 'biodiversity conservation' (de Montalembert and Schmithüsen, 1994:154). The inability of forest resources to meet the increasingly complex demands from a growing number of users reflects market failure. 'Market failure' is what causes forestry issues to get on political agenda for discussion and action. Alternatively, "it is not necessary to have a policy if the industry concerned is behaving to the satisfaction both of those engaged in the industry and of society" (Grayson, 1993:5).

A 'market failure' results when markets do not reflect the full costs and benefits of production in the price of traded products and inputs. The lack of markets for forest products and services is also classed as a market failure. The improper valuation of ecosystems and poorly defined property rights are two examples of environmentally related market failures. The lack of active government intervention in helping markets to function properly is also termed as market failure. Many people tend to use the concept of market failure to mean policy failure and *vice versa*, however, a 'policy failure' refers to the distortionary effects of active government intervention and can arise from sectoral subsidies, inappropriate pricing, taxation policies, price controls, regulations and so forth. What is common between the two concepts is their ability to cause externalities[3]. An externality can be defined as an activity, most of whose fruits are not captured by the provider (external benefits) or most of whose costs are not borne directly by the perpetrator (external costs)(Convery, 1995:15). Therefore, it is unequivocal that market failures and their attendant social consequence merit the formation of a policy that would safeguard managing forest resources in ways that will ensure resource sustainability.

In recognising the market failure in forestry, the South African Minister of Water Affairs and Forestry, responds that "a new forestry policy must address the needs of South Africa for the benefits coming from forestry, tangible and intangible, while also helping to resolve these conflicts, and meeting the needs of communities, workers and businesses involved in forestry" (DWAF, 1995:1). Although forestry policy and legislation evolve in response to popular views, it is important to note that forestry policy or legislation is sometimes devised unilaterally rapidly by government in the face of a particular crisis. For example, Namibia's first forestry legislation was enacted in 1894 to restrict excessive cutting in the District of Windhoek (Kojwang & Erkillä, 1996:106); Tanzania's forestry policy of 1953 was to set aside and demarcate forest reserves in the face of receding forest resources (Mtuy, 1996:498); and Sudan's forestry policy of 1932 was meant to solve conflict which arose between the forestry division and the provincial governors over the ownership of forests and the revenues derived from them (Bayoumi, 1996:476).

In the global context, the call for each country to have its own forestry policy reached international status during the 1970s when the Seventh and Eighth World Forestry Congresses urged all countries to develop and declare their forestry policies and revise, amend or update existing national policies. Thus, governments had been argued to place forestry high on their political agendas. However, until today, a number of countries has no forestry policies and others may not know whether they have one. For example, in relation to Australian national forestry policy, Carron (1983:261) comments:

> Anyone reading the mass of material on and around the subject might well be pardoned for not being sure whether we have one: whether we had one but don't have it any longer; whether we think it would be nice to have one but it isn't practicable.

If forestry policies can be defined as "a set of unwritten procedures accepted and followed by a nation on the use and management of forest resources", a few other countries like Yemen and Oman may consider that they have a forestry policy (FAO, 1993:48). This has not escaped Westoby's (1989:215) notice when he stated that "there is scarcely a country which has a formal thought-out and declared forest policy". His statement draws attention to the existence of two types of forestry policy: the 'effective policy' and the 'stated policy'. An effective policy, is a formal, thought-out policy with well-defined goals and mechanisms for attaining those goals. It is easy to implement because its plans, strategies or actions are founded on a country's forestry sector problems — the policy evolves from the agenda-setting stage. Conversely, the stated policy is not easy to implement, as it has become more complex through time and has often become less precise and specific. A vague policy creates negative effects within the government agency charged with the responsibility for executing it, as it has no sense of direction, resulting in implementation deficit.

2.5 Policy formulation

It is necessary to distinguish between *policy formation* and *formulation* which many people use incorrectly as synonyms. "*Policy formation* denotes the total process of creating or forming a policy" (Anderson, 1990:78). In the forestry sector, policy formation starts with the expression of dissatisfaction by stakeholders that could be government due to lost revenues; international stakeholders who are wary about certain externalities such as loss of biological diversity and lost opportunities to view mountain gorillas in the wild; or the expression of dissent by rural people or the public, who no longer have access to certain forest products and services. In reality, policy formation commences with issue identification that leads to agenda-setting and ends with the development of a comprehensive policy document capable of addressing the defined problems. On the other hand, "*policy formulation* refers more narrowly to the development of a proposed course of action for handling a problem" (Anderson, 1990:78). Many authors have attempted to define policy formulation in this context. Dunn (1994:85) defines *policy formulation* as "the development and synthesis of alternative solutions for policy problems". John

(1998:204) has not diverted from this view when he states that *policy formulation* is "the setting of objectives and the means to achieve them". Jones (1984:77)[g] pointed out that "the distinguishing characteristic of policy formulation is simply that *means* are proposed to resolve somebody's perception of the needs that exist in society". Anderson (1990:93) has summed that "*policy formulation* involves the development of pertinent and acceptable proposed courses of action for dealing with problems. Several competing proposals for dealing with a problem may be presented". It is therefore appropriate to state that policy formulation is a subset of policy formation.

2.5.1 Actors in policy formulation

There is almost an infinite number of actors that participate in the policy process; thus making the task of preparing a comprehensive catalogue of participants virtually impossible. The task of developing a comprehensive list of participants is constrained further by a country's political culture that can encourage or discourage other actors from participating in policy formulation. Therefore, the discussion that follows is intended to convey a sense of *who* the primary actors usually are, and how they influence forestry policy. What should be said with the highest degree of certainty is that the policy actors and institutions involved come both from within the state and the society at large (Howlett & Ramesh, 1995:52). Participants from the state are often termed 'official policy-makers', while others are called 'unofficial policy-makers'. Official policy-makers are those who possess the legal authority to engage in the formation of public policy, and these include legislators, executives, administrators and judges. However, it is worth noting that most of the policy-making and implementation functions once performed by legislatures and the political executives are now performed by bureaucrats, whose roles are likely to dominate sectoral policy formulation process such as forestry. Although policy formulation is a preserve of the government, the realities of the modern politics enable many others, such as forestry industry; environmentalists; local people; the communications media; and individual citizens to participate in the policy process. These interest groups are designated as 'unofficial participants' because, although they dominate the policy scene due to their knowledge, they lack legal authority to make binding policy decisions (Anderson, 1990:51&60). To this group should be added the multilateral development/donor organisations whose influences are felt through expert advice and financial support subject to meeting of certain conditions by the host government.

The effectiveness of any interest group to influence policy-making process depends on three main factors. *Firstly*, the group's interest — the group will have greater influence if all of its members have the same interest and share similar opinions. Governments would yield to rural people's demands, if they insist in one voice on sharing benefits that accrue from the exploitation of surrounding forest and wildlife resources. *Secondly*, the effectiveness of a group to influence policy-making process is also dependent on the group's power — the size of the group and

[g] Jones, C. O. (1984). An Introduction to the Study of Public Policy; cited in Howlett and Ramesh (1995:122).

financial resources at its disposal. Governments feel obliged to listen to local people and accommodate their demands when they are more numerous, as their votes may be critical for retaining power. This is particularly important in Southern Africa where democracy is taking root. Financial resources also function in a similar manner. It would be fair to state that the former reflects how the public influences policy development process, while the latter is typical of the business sector. *Finally*, the effectiveness of a group is also governed by the group's access to official policy-makers.

However, the *influence* which every interest group seeks appears to be widely distributed among different interest groups. There is no group without power to influence decision-making and equally no group is dominant (Ham & Hill, 1993:28). This viewpoint would hold, if different interest groups wanted different things, or if there were no interconnectedness among the different components of forest ecosystems. But, rural people need forests for one use, for example, food, fuelwood and construction timber. Timber firms value forests for their timber resources; governments are under international obligations to maintain forests for biodiversity, to sequester CO_2 and to retard desertification, while environmentally literate members of the public need forests for their intangibles. There is a war of interests; and this is where government intervenes, as a regulator to balance the needs of vested interests. Although all groups do not have the same degree of influence in decision-making process, by virtue of being selected as a stakeholder qualifies the least powerful to be heard and taken seriously. Nonetheless, it is pre-empted that *environment* plays a key role in forestry policy decision-making process.

2.6 Policy implementation

Generally, *policy implementation* can be defined as "the process whereby programmes or policies are carried out; it denotes the translation of actions into practice" (Howlett & Ramesh, 1995:153). *Implementation* can also be defined as "those actions by public or private individuals (or groups) that are directed at the achievement of objectives set forth in prior policy decisions" (Van Meter & Van Horn, 1975)[h]. Dunn (1994:85) conceptualises *policy implementation* as "the execution and steering of policy actions over time". On the other hand, Edwards (1984:ix) defines *policy implementation* as "the stage of policy-making between the establishment of a policy, such as the passage of a legislative act...and the consequences of the policy for the people whom it affects". Rushefsky (1984:207) considers implementation, administration or execution to mean, "the carrying out of a policy or programme". Furthermore, John (1998:204) defines *implementation* as "the stage in the policy process concerned with turning policy intentions into action". Thus, *policy implementation* can be summarised as "the procedure for giving practical effect to an accepted policy".

[h] Cited in Ham and Hill (1993:98)

It is noteworthy that *policy implementation* is a critical stage in policy-making, as it feeds back into the initial stages of policy-making, thereby improving the output of a given policy. As Hogwood and Gunn (1991:198) point out: "There is no sharp divide between formulating a policy and implementing that policy. What happens at the so-called 'implementation' stage will influence the actual policy outcome. Conversely, the probability of a successful outcome will be increased if thought is given at the policy design stage to the potential problems of implementation". In the same vein, Barrett and Fudge (1981:25)[i] have also stressed the need "to consider implementation as a policy/action continuum in which an interactive and negotiative process is taking place over time between those seeking to put policy into effect and those upon whom action depends". In reality, implementation translates theory into practice, otherwise the policy remains a symbolic one, in which case it is formulated without any intention to secure implementation. In many cases politicians want to be seen as in favour of certain goals, while in reality they do nothing in achieving them. All unimplemented policies are therefore incomplete policies, as they contain many missing links.

2.6.1 Policy implementers

A critical examination of the policy-making process indicates that policy formulation spills into policy implementation. This means that the participants in policy formulation are also represented in the policy implementation, although the participation during the implementation phase is broader, involving both the masses and their representatives. There is apparently no clear 'politics-administration dichotomy', nonetheless, many people contend that such a discernable borderline exists. Such a view is adduced to the inappropriate assumption that policy-makers pass onto policy implementers 'clearly-understood-and-agreed-upon' descriptive goals, objectives, plans or procedures for implementing the policy in question. To the contrary, the bureaucracies often operate under broad and ambiguous mandate that leaves them with much discretion to decide what should and should not be done (Anderson, 1990:174). Additionally, it is not self-evident that implementers are aware that their day-to-day activities involve working with a recognisable entity that may be called a 'policy'. Thus, forestry departments may vaguely be instructed to follow the 'principles of sustainable forest management' whereby forestry policies should balance the interests of all vested interests without compromising the integrity, resilience or the regenerative ability of the natural resource base. Lack of time, interest, information and expertness on the part of policy enactors, as well as the need for flexibility in implementation can explain the delegation of broad authority to bureaucracies. Consequently, the bureaucrats find themselves filling the details, making more precise, definitive and concrete adjustments among conflicting interests. Under these prevailing circumstances, the bureaucrats become an extension of the legislative process and 'civil servants' find themselves completely enmeshed in a country's politics.

[i] Cited in Ham and Hill (1993:108)

Parsons (1995:469) has also reviewed the role of bureaucrats in policy implementation. He cites Dunleavy (1981, 1982) who emphasises that 'street-level' implementers have discretion in how they apply policy. 'Street-level' bureaucrats such as teachers, doctors, planners, engineers, social workers, architects and police officers, all have opportunities and responsibilities for controlling policy implementation. Thus, the policy formulation process may be 'skewed' by policy implementation which is monopolised by professionals. For example, professionals can develop their own ways of implementing government policy which can actually result in outcomes that are very much different from those desired by policy-makers. How 'street-level implementers' shape public policy is easily seen in the EU. If the European Parliament is perceived as the Community's Legislature and the member states as bureaucracies, the picture that emerges indicates a large margin of discretion in policy implementation. Parsons (1995:470) reveals that the "EU law show considerable variation in how they are implemented by member countries". As policies, laws and procedures contain some interpretative element, "a public officer has discretion wherever the effective limits on his power leave him free to make a choice among possible courses of action and inaction" (Davis, 1969:4)[j].

Therefore, whatever the type of government that prevails in a country, either a unitary or federal system, the discretion of bureaucrats in policy implementation is much the same. For example, "The developments in Britain 'where central-local relations exist in policy implementation' and are transforming the way policies are delivered — replacing large bureaucratic departments by hived-off agencies, units that are placed in a quasi-market situation or even private organisations operating as contractors for public services — must be seen not as restructuring the policy delivery system but also as often transforming the policies themselves" (Ham & Hill, 1993:106-7). They indicate further that the skewing of policy-making process by bureaucrats, especially at the implementation stage is attributable to many reasons, including the fact that: conflicts cannot be resolved during the policy-making stage; key decisions are made when all the facts are available to implementers; implementers are better equipped to make the key decisions than anyone else; little is known in advance about the actual impact of the newly designed measures; day-to-day decisions will have to involve negotiation and compromise with powerful groups; and that it is considered politically inexpedient to try to resolve all the conflicts (Ham & Hill, 1993:107-8).

2.6.2 Policy instruments

Policies are implemented using policy instruments which are also called policy tools or governing instruments. They are the actual means which governments have at their disposal for implementing policies, and from among that they must select (Howlett & Ramesh, 1995:80). Anderson (1990:197) stresses that "they are designed to

[j] Cited in Parsons (1995:469).

cause people to do things, refrain from doing things, or continue doing things that they would not otherwise do". Policy instruments are either voluntary, market, financial or regulatory mechanisms whose deployment is designed "to change or reinforce the behaviour of either individuals or groups within society so that their behaviour is consistent with the objectives of policy" (McCulloch & Moxen, 1994:10). Therefore, policy instruments are the *means* designed by governments to orient human behaviour towards desired public policy goals. This behavioural change may be accomplished either by a less intrusive and discernible instrument or by a most intrusive one. For example, Parsons (1995:509) notes that "the mix of enforcement methods may range from brute force and fixed bayonets to information broadcasts which seek to change behaviour". Between these two limits, the range of tools available to policy-makers to address a given policy problem is limited only by their imagination, although such a choice of tools is often as contentious as the choice of a given policy itself.

2.6.2.1 Classification of policy instruments

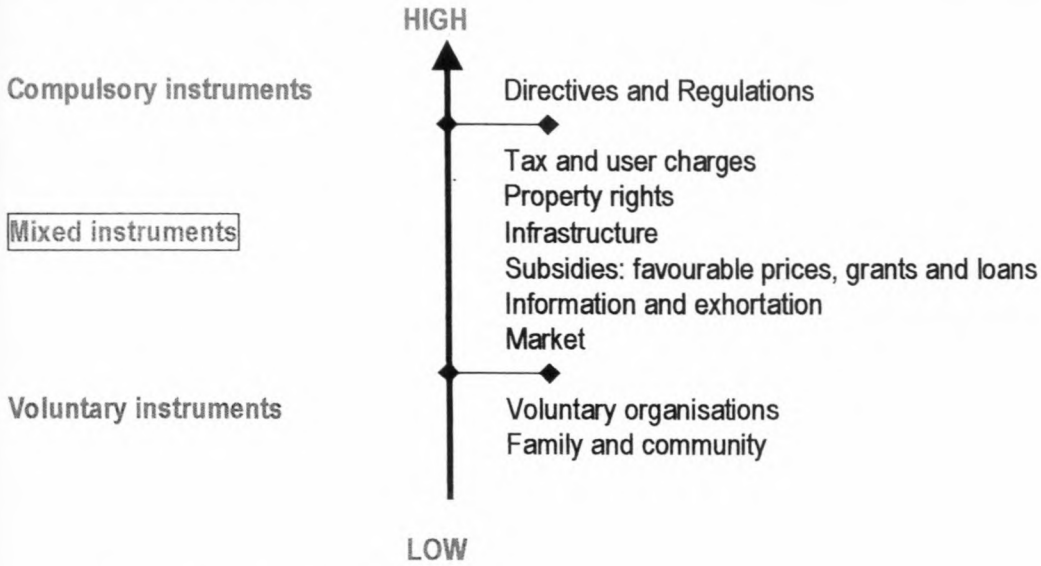
There are many policy instruments available to governments, although it is hardly feasible to quantify them precisely. The first attempt to develop a catalogue of policy instruments was made in the early 1960s that resulted in cataloguing 64 general types of instruments, i.e., there was no systematic effort to classify them according to their origin or effects. Since then, several attempts had been made to classify policy tools. However, a turning point was reached only when two Canadian political scientists[k] classified policy instruments by arranging them along a scale according to the amount of 'legitimate coercion' they entail. Their classification system considered *self-regulation* as the 'least coercive' and *public ownership* the 'most coercive'. Although their work has been considered as a breakthrough in policy instrument classification, their taxonomy is flawed by the fact that it is impossible to measure or operationalise *coercion*. Therefore, it has been suggested that instead of focusing on the slippery concept of 'coercion', it would suffice to base the classification on the level of state intervention in administering policy instruments. Accordingly, a taxonomy that arranges the various instruments of public policy on a voluntary-compulsory axis has been developed. The truly voluntary instruments in this classification are devoid of government intervention, while the compulsory ones are exclusively under state jurisdiction without any room for private discretion. In-between are instruments involving state and private interventions in varying degrees. Figure 2.1 explicates this further (Howlett & Ramesh, 1995:81-82).

Most governing tools are to some degree 'substitutable', i.e., a government seeking to reverse rampant forest degradation and loss in a rural area can deploy any one of the following instruments to realise the same outcome. *First*, the government can adopt a policy of 'wait and see', in which case the state leaves the local communities who experience the consequences of deforestation to implement forest conservation measures on their own.

[k] G. Bruce Doern and Richard Phidd

Second, the government can supply information and tree seedlings to the local people to incorporate them into their farming practices to relieve pressures on native trees. Or *third*, the government can legislate against tree-cutting and authorise rural farmers to put a certain percentage of their farmlands under tree crops. Alternatively, the government can go to the extreme to restock degraded areas and supply rural communities with fuelwood and timber using its own financial resources, thereby leaving no room for other instruments to operate.

Figure 2.1: Classification of policy instruments with implications for forest resources according to the level of state intervention



Source: Howlett & Ramesh (1995:82)

2.6.2.1.1 Voluntary instruments

Voluntary instruments are founded on people's free *will* to do things for others or for common good. If a volunteer does something that serves public policy goals, it is for reasons of self-interest, ethics or emotional gratification. Therefore, the characteristic feature of voluntary instruments — community, voluntary organisations and market — is that they entail *little* to *no* intervention by the state. For example, governments often decide deliberately that they will do nothing about a well-known public problem in the hope that it can be best done by the family and community, voluntary organisations or the market. Governments have definite policies to address natural disasters such as floods and drought, and maritime accidents that threaten coastal avifauna, yet it is the voluntary sector that bears the responsibility for these disasters. Governments also find it more convenient to leave medical and old age care in the hands of the family, community, voluntary organisations or market forces. Education has also been left to the voluntary sector, especially in rural areas where churches demonstrate a *visible* role in implementing educational policy.

The deployment of voluntary instruments in Africa largely benefits the social and economic sectors, however, the use of the tools to address environmental problems is increasing in the UK, and undoubtedly in other EU member states. Although voluntary instruments, including the market can be depended upon for delivering policy goals, as shown above, it is cautioned that they should be used in conjunction with other policy instruments, or else they become blunt. The following discussions highlight the opportunities and constraints for employing voluntary instruments in the conservation of forest and woodland resources.

2.6.2.1.1.1 Family and community

The first set of voluntary instruments that governments could depend on for implementing forest conservation policy at a local level is family and community. In this context, community refers to a group of families who are bonded by blood or share a location, physical space or have common interests, traits or characteristics (Parsons, 1995:504). Ashley and Roe (1998:7-8) define 'community' as a heterogeneous set of local people with a common interest in the resources of an area. The definition also acknowledges that within any community there can be stratification and conflicting interests. In almost all rural African societies, relatives, friends and neighbours provide numerous goods and services to each other — there is a great deal of interdependence. Thus, it is not uncommon that family or community members coalesce to solve problems that confront them individually and collectively. This is evident in the occurrence of self-help projects in rural areas. Such collective ventures can be extended to the field of environmental protection, for instance, tree-planting, co-management of indigenous forest estates, soil conservation and so forth. The collective response of rural stakeholders in the face of the drought incidences that hit the Sudano-Sahelian countries in the 1980s is an important case in point. Governments could legitimately rely on communities to manage their environmental, social and economic problems on condition that they create enabling environments for communities to become more self-reliant and responsible for managing land and forest resources.

This instrument functions best in areas where families and communities have secure land tenure arrangements and communities are headed by traditional leaders, whose authorities have not been undermined. Where security of tenure does not exist, government interventions should correct this market failure at the family level. Unless forced relocations had occurred, rural communities are fairly homogeneous and can react collectively to reverse environmental degradation, if they are supplied with appropriate technologies. Social checks and balances operate to the advantage of forest conservation in areas where communities are fairly homogeneous; otherwise differences in value judgements that characterise heterogeneous communities would render this instrument inviable.

2.6.2.1.1.2 Voluntary organisations

Forest conservation is a long-term investment. For example, seedlings should be raised, planted out and tended to maturity. As a result, whosoever undertakes forest conservation must show visible presence on the site where conservation policy should be implemented. The seasonal nature of voluntary organisations makes them an undependable forestry policy instrument. It is also unlikely that their members would wish to work outside areas in which they would not find satisfaction in what they do. Explicitly, forest conservation cannot be adequately addressed on the basis of voluntary efforts alone. However, in the UK, the use of voluntary organisations in environmental policy implementation has gained momentum. In examining the role of the voluntary sector in implementing environmental policy in Scotland, McCulloch and Moxen (1994:11) report that, by funding the voluntary organisations, the government aims to achieve six immediate policy objectives:

1. The government hopes to attain environmental improvement, as laid down in the government policy and other related documents.
2. The government wants to establish partnership between a variety of agencies, including the voluntary ones which it sees as important to the successful implementation of its long-term policy objective of sustainable development.
3. The government aims to improve the performance of voluntary environmental bodies by empowering them to recruit competent administrative, professional and technical staff.
4. The government aims to encourage the voluntary participation of citizens in environmental conservation.
5. The government also sees its funding of the voluntary sector as a way of training people in environmental subjects or skills.
6. The government aims to see the continuing inputs of the voluntary agencies to the process of the Scottish environmental policy.

It is clear that voluntary instruments require government intervention to optimise their output.

2.6.2.1.1.3 Market

Market is the most important and controversial policy instrument at government disposal. It is a voluntary instrument because it is founded on the interaction between consumers and producers, with the former attempting to buy as much as they can with the limited money at their disposal and the latter seeking the highest possible profits. The outcome of this interaction satisfies both groups; and as a consequence, the market has been branded as an effective instrument in resource allocation. While the primary objective of the interaction between consumers and producers is self-interest, the society as a whole gains from this interaction because whatever is

wanted by the society is provided at the lowest possible price (Howlett & Ramesh, 1995:86). This is what has been termed the 'invisible hand'. In Adam Smith's writings of 1776 called "The Wealth of Nations", it was noted that: "Every individual endeavours to employ his capital so that its produce may be of greatest value. He generally neither intends to promote the public interest, nor knows how much he is promoting it. He intends only his own security, only his own gain. And he is led by an invisible hand to promote an end which was no part of his intention. By pursuing his own interest he frequently promotes that of society more than when he really intends to promote it" (Cited in Ortolano, 1997:111).

Although 'competitive markets' have been celebrated since the days of Adam Smith, widely recognised as the founder of modern economics, the virtues of competition that he and many others have described do not apply to the use of environmental resources (including forest) due to their 'public goods' nature. It is in line with this thought that welfare economists state that "markets cannot aggregate individual utility-maximising behaviour so as to optimise overall social welfare" (Howlett & Ramesh, 1995:28). Therefore, markets fail to allocate 'public goods', precisely the sort of things public policies are intended to address. This implies that the market alone is an ineffective and inefficient policy instrument to allocate forest resources to meet both private and social needs. Put another way, governments have a responsibility to correct market failures, because optimal social outcomes will not result from purely uncoordinated individual decision-making.

2.6.2.1.2 Mixed instruments

Mixed instruments are assortments of incentives and disincentives aimed mainly at non-state stakeholders to encourage compliance with the goals of living resource conservation. *Incentives* can be defined as inducements which are specifically intended to incite or motivate local people, the private sector, industries, governments or international organisations to conserve biological diversity. Likewise, Meijerink (1997:8) conceives incentives as "policy instruments that will motivate and stimulate *economic agents* by creating an environment in which it becomes *attractive* to pursue a behaviour that will be beneficial from society's point of view". It is stated further that incentives may involve temporary transfers from public funds to private entities. An important characteristic of incentives is that they do not force any specific behaviour; rather "they give the economic agent various options; the decision of whether to respond and, if so, how, rests with the agent" (Meijerink, 1997:25). On the contrary, *disincentives* are inducements designed to discourage depletion of biological resources. They are negative incentives, providing an alert or deterrent action against forest loss. To avoid confusion in using the term disincentive with counterproductive incentives, policy analysts have coined the term *perverse incentive* to describe the latter (McNeely *et al.*, 1997:100).

Mixed instruments permit varying levels of government involvement in shaping the decisions of other stakeholders, although they reserve the right to conform or to reject that expected behavioural change. They combine both features of voluntary and compulsory instruments, meriting their placement between the two extremes. Inducing people and institutions to conserve biological resources can take many forms, ranging from a minimum of supplying beneficial information to the advantage of target groups to the maximum of punitively taxing undesirable activity to regulate it or extinguish it completely (Howlett & Ramesh, 1995:91). In this context, tax is used as a regulatory tool and achieves the same function as a user charge which can continuously be adjusted to regulate the level of *consumption* of a particular environmental resource. Here, taxes constitute a permanent disincentive for reducing environmental damage of any nature.

However, taxes do not only serve regulatory ends, but can also be used in several instances as an incentive to encourage a desirable activity, in which case they assume a promotional role and are often referred to as 'tax expenditures'. A variety of deductions, exemptions from income and other categories of tax, preferential rates and so on, permit individuals and corporations to engage in favoured activities. The overall effect of these deductions or exclusions is the same as a direct payment made in favour of the desired activity (Anderson, 1990:203). In this context, tax functions as a subsidy which "refers to all forms of financial transfers to individuals, firms, and organisations from governments or from other individuals, firms, or organisations under government direction" (Howlett & Ramesh, 1995:92). Many people use the terms *incentive* and *subsidy* interchangeably, however, it is clear from the above definition that subsidy is only limited to financial transfers; nevertheless, financial transfers are not the only form of inducements to encourage the conservation of biological resources. Thus, subsidy is a subset of incentive. The EC also defines subsidy along the financial-transfer line. It deems *subsidy* to exist where a government practice involves a direct transfer of funds, potential direct transfer of funds or liabilities; government revenue that is otherwise due is forgone or not collected; government provides goods or services other than general infrastructure, or purchases goods; or there is any form of income or price support (Waer & Vermulst, 1999:19-20). A report commissioned by the Earth Council defines *subsidy* as any measure that keeps prices below and above market level for consumers and producers; or "any measure that reduces costs for consumers and producers through direct or indirect support"[3]. Furthermore, security of land ownership and tenure which influences people's time horizons, is a strong incentive for the conservation of intrinsic biological resources.

2.6.2.1.2.1 Information

Information is a *social instrument* often supplied to individuals, communities, firms and governments to elicit a socially acceptable behaviour. It is intended to make people knowledgeable about an issue so that they could make informed choices about the options that face them. Information is a service-oriented incentive, since it encourages the delivery of desired conservation goals. The right attitudes needed for conservation can be evoked

remotely through the mass media or by face-to-face meetings, depending on the magnitude and nature of the issue; for example, is the problem diffuse or site specific? As land and forest resources degradation and loss occur in rural areas where newspapers, radio and television are considered luxury, it is advisable that Community Forestry Officers take advantage of traditional gathering places such as village markets, churches, dances or marriage celebrations. Clear understanding of the problem at village level can facilitate organisation of village workshops where information can be exchanged effectively.

It is frequently stated that local people know more about forest management than other stakeholders. This would be appropriate, if the demands of society for environmental resources were simple; however, the increasing complexity in society has in turn exerted disproportionate pressure on rural biological resources. Governments, environmentalists, businesses and local people have different demands for forest resources. Worse still, rural communities who live within forest estates or at forest margins express divergent interests for forest resources, mainly due to differences in resource valuation and in setting priorities for resource conservation. Policy instruments are expected to offer compromise solutions that reconcile the various needs by explaining what each stakeholder stands to gain and lose in adopting a particular behaviour. It is this sort of information that permits trade-off among forest-dependent groups that must be availed to local people to enable them choose a line of action from the range of alternatives that face them. Information is an enabling factor in natural resource conservation. As there is a need to treat people as rational utility maximisers, in all their behavioural capacities (Howlett & Ramesh, 1995:19), it is necessary that they are informed to help them calculate their benefits and costs well so that their production and consumption patterns do not impose undesirable social costs.

Although it is easy to disclose information of certain types, the connection between *knowledge*, *power* and *profit* is causing many industries to withhold information from producers or consumers, especially on product content and origin. Zylicz (1997:161) notes that "no firm will share information on the true costs of doing business. Such a disclosure would affect is strategic position *vis-à-vis* its competitors". Thus, flow of information within forestry companies, and between companies and state organs and consumers has never been smooth. However, in the forestry sector, this barrier has been overcome recently by product certification which informs consumers about the sources of their timber and non-timber forest products.

For ethical, health and environmental reasons, the US Congress has adopted the 'community right-to-know Act' in the 1980s (Ortolano, 1997:169). Hanks (1998:347) complains about the lack of adequate environmental data in South Africa and stresses "the need to improve the generation of, and access to, credible environmental information...in South Africa". While it is unclear whether there is a community-right-to-know legislation in South Africa, the Environmental Act that deals with EIA can be seen as a government initiative to generate and disclose

information. In literate societies, minimal resources are expended to disclose information to target groups. For example, the sheer declarations of policy by themselves may cause people to comply, especially if the declarations are made by respected or high-status officials. Presidential appeals to people to plant trees on a tree-planting day are more legitimate than the same appeals made by forest extension officers.

2.6.2.1.2.2 Forest resource ownership

Securing forest titles and rules for tenure is of utmost important to preclude free riding behaviour. Well-defined property rights with respect to forest use create incentives for producers to make long-term investments and use production techniques that permit sustained production of forest products and services. Ensuring forest resource rights to various actors in society make them directly and financially responsible for environmental damage arising from practices on their holding. Thus, security of land and forest resources ownership has been considered as an important instrument that stimulates private regulation (Meijerink, 1997:13). In Southern Africa, there are three primary types of forest resource ownership: state, private and communal ownership. Modifications such as state-community, private-community or state-community-private partnerships may be found in some countries. However, the following sections assess only the key resource conservation attributes of the three main categories of forest resource ownership.

2.6.2.1.2.2.1 State ownership

This is a state property regime, where ownership and control over use of resources remain in the hands of the state. Individuals and groups may be able to make use of the resources, but at the forbearance of the state (Bromley, 1992:457); for example, state ownership of all forest resources in Mozambique, Tanzania and Namibia. State ownership of forest resources in Africa has its roots in the major tenurial initiatives of establishing forest reserves during the colonial administrations, when private and communal tenure of forests were thought to pose a serious danger to sound preservation and utilisation; and it was considered that the state must take over control of the forests and carefully regulate their use (Bruce & Fortmann, 1992:488). During that period forests became resources to be protected by the state against their former users. However, governments have been relatively powerless to enforce ownership rights and defend the legal status of the resources under their stewardship (Watts, 1996:38). Hard-pressed individuals and communities that have lost their traditional farm and ancestral lands without commensurate alternatives quickly perceive the inability of the state to enforce its ownership over the resource; and as a result, they encroach on state forests, slash and burn the standing resource to clear way for shifting cultivation (Watts, 1996:xiii), until the land is severely degraded or infested with weeds. This does not bother them, as they have no incentive to adopt soil conservation strategies. In most Southern African countries, between 10 and 15% of land falls under state control, in the form of state forests, national parks, nature reserves and wilderness areas (Matose & Wily, 1996:196).

secure and *intact bundle* of rights over individual parcels of land for agricultural production and other uses, rural farmers have incentives to invest in land improvement, including tree-planting. However, in the absence of such rights, the insecurity of land simply extends to communal forest resources, causing their overexploitation. This view is clarified in the following section.

2.6.2.1.2.2.3 Communal ownership

This is the type of ownership "in which resources are held by an identifiable community of interdependent users, in which outsiders to that community are excluded and in which use by members is regulated by cultural norms" (Matose & Wily, 1996:196). Common property represents private property for the group concerned because all others other than group members are excluded from use and decision-making; and that individuals have *rights* and *duties* in common property. The capacity to *exclude* is a characteristic common to private and communal property regimes. Common property is a corporate group property. "The property-owning groups vary in size and internal composition, but are social units with definite membership and boundaries, with shared interests, with at least some interaction between members, with common cultural norms, and, often, with their own endogenous authority systems" (Bromley, 1992:459-460). This, however, used to be the case but communal areas are increasingly becoming complex and heterogeneous with different demands for resource use. As a result, this has placed excessive strain on forest resources, creating negative feelings among the members. For example, in Namibia, local people bear the costs of deforestation in terms of soil erosion, lack of fuelwood and timber in their area. However, without security of tenure over forest resources there is little incentive to limit use or increase supply by planting trees. Individuals and communities cannot be certain to reap the benefits of their wise management, since it is very difficult to exclude others from both within and outside the community (NAPCOD, 1996:58). This indicates the gravity of the situation, although the majority of forests and woodlands in Southern Africa come under the category of communal property. Communal properties are in practice state properties in many Southern African nations.

The failure of communal resource use and management in many African countries stems from the lack of well-specified *duties* for resource users. Duties are assigned to encourage resource users to undertake activities that they would elect to neglect, reduce or desist from activities they would otherwise wish to undertake. Effective duties impose costs of resource use upon users. Lack of duties for a communal resource user means that the user has no rights over a communally owned natural resource; rather he/she has a privilege. *Right* can be defined as "the capacity to compel the coercive power of the state to defend 'one's' interest in a particular outcome". Conversely, *privilege* gives a communal resource user the ability to act without consideration for the interests of other persons (Sjaastad & Bromley, 2000:366-8). Typically, this is what the above example on Namibia emphasises. Communal forest resources are quasi open-access resources in many African countries because

there is simply no clear definition of permissible and unacceptable behaviour for resource users. Even where rights and duties exist, the opportunity to escape responsibilities is high due to government inability to enforce duties to make this instrument environmentally doable.

Whilst it is reasonable to compare communal property with private property, it is unrealistic to assume that a group would act in the same manner as an individual owner. The way in which a group can be expected to behave would depend on the size of the group, its terms of association and the nature of the organisation for conducting its business (Tisdell, 1991:107). Therefore, prescribing communal property regime as an ideal innovation to check depletion and degradation of forest resources which are thought to emanate from the other types of forest resource ownership is very simplistic. Furthermore, it should be noted that communal ownership does not entrust or delegate responsibility to individuals to conserve natural resources on communal land. Each individual has an incentive to increase personal gains by, for instance, clearing more land for agriculture, cutting more fuelwood, or adding more personal livestock to common grazing land, knowing that the costs of environmental degradation will be shared with others. Personal cost-benefit calculation or utility maximising behaviour is in principle inconsistent with the common good.

The difficulties associated with communal ownership do not only challenge developing nations, but developed nations also express dissatisfaction with this type of tenure, for instance, referring to Finland, Holopainen states that "an endeavour has been made to establish forests in collective ownership mainly for the purpose of avoiding the obstacles associated with small-scale ownership. These attempts have met with only minor success" (Cited in Hummel, 1984:216).

Welfare economics which is the branch of economics that deals with how to define, maximise, or at least move toward attaining the well-being of society advocates that all resources must be securely owned if markets are to work effectively. Here, *ownership* is defined as the ability and willingness to limit use and access to resources and the ability to transfer them to others. This means that an absentee owner or a government may legally own a resource, but if they lack the ability and willingness to limit access, if they are prohibited from selling or otherwise transferring it, the resources are not owned (Convery, 1995:13). Welfare economics therefore strongly supports privatisation of land and forest resources.

It is indisputable that prescription of communal ownership of forest resources to rural communities is based on the assumption that if African customary usage and management of resources had been allowed to mature it would have evolved to communal use and management. While this might have been the case in some places, there is ample evidence that customary management and use of resources would have been replaced with individual

tenure. It is, however, true that land tenure prior to the arrival of colonial powers to Africa was essentially ethnocentric. The laws and rights were peculiar to localities, communities or ethnic groups; and changed as the communities enlarged and expanded or as they contracted and diminished, meaning demographic changes had started influencing land tenure. Communal management and use of resources was obligatory because there was general insecurity during those troubled times and as a result, the male members of the various ethnic groups worked their fields together, often under a leader. This promoted the group solidarity that was needed in battle.

However, on arrival of the colonising powers, there was considerable improvement in the level of security (Adeyoju, 1991:94-95). Populations began to disperse and farming hamlets that had been settled only during the farming season grew into permanent villages and towns. Cohesiveness that was needed for self-defence collapsed and individualism began to set in as land scarcity developed. This has been asserted by the *property rights school of economics* which points out how private property rights evolve from a primitive regime in which no property exists. This school advocates that, as demands on resources grow, users begin to interfere with each other's production unless they develop ways of allocating the scarce resources among themselves. As time progresses, the potential gains from eliminating the interference and inefficiency make it worthy the cost of organising ways of allocating rights which leads to private property (Pearse, 1993:82). This means that, when a resource is abundant relative to the demands for it the users' rights will remain in its rudimentary form. However, as values rise reflecting strong demand, more sophisticated tenurial arrangements will develop. Therefore, the presence of communal lands now in many African countries, including the case studies, is rather artificial and does not reflect the true choice of the local people who live in these areas.

The foregoing discussions do indicate the social, economical and environmental needs for *privatisation* of land for self-provisioning; however, blanket recommendations that communal property regimes be replaced by privatised ones are unrealistic, as in many African contexts there are still close, effective rules of social cohesion which guarantee proper management of forest resources in communal areas. Therefore, recommendations to change from one tenurial regime to another must be based on the environmental benefits and costs associated with such an approach, and it must be on a case-by-case or country-by-country basis.

2.6.2.1.2.3 Timber price as an incentive for sustainable forest management

Stumpage prices are payments made to the public or private forest owner for timber harvested by someone else (Pearse, 1990:203). Stumpage charges serve the same purpose as royalties and severance taxes, but the latter are usually relatively modest fixed rates applied uniformly, while stumpage prices are specifically intended to capture for the resource owner all or a substantial share of the value of timber that differs on each tract harvested. Stumpage prices are based on the net value of the timber as it stands 'on the stump'. They can be designed to

capture all or a part of this value. Stumpage charges on public timber are determined at competitive auctions, where potential buyers are invited to bid for the timber in terms of money per unit of volume harvested. Bids are submitted either orally or by means of sealed tenders, subjected to a minimum acceptable price. The highest bidder wins the harvesting licence and fixes the stumpage charges accordingly. However, the bidding system is likely to be corrupt, particularly where a few firms dominate logging. They can conspire to bid below the true stumpage value; consequently, dissipating government revenues and imposing social costs.

In most African countries with large native forest resources, particularly in West and Central Africa, stumpage and related charges on logging concessionaires have been deficient. *First*, charges have been maintained at levels well below the stumpage value of timber. This has not only resulted in lost timber rents for the governments, but to excessive pressures from business and political interests to obtain timber concessions and the large short-term profits they offer. This has led to wasteful exploitation, including harvests of timber in marginal areas. *Second*, the structure of royalties has, in combination with inappropriate logging techniques exacerbated loggers tendencies for high-grading forests, thereby causing unnecessary damage to forest ecosystem (Gillis & Repetto, 1993:77). In realty, governments are virtually giving away their forests in a race for quick revenues.

To correct this *status quo*, many authors have called for a sensible reform in forestry policy, especially those relating to royalties, stumpage fees and concession rents. For example, Hazel and Magrath (1992:13) and Gillis and Repetto (1993:78-9) argue that logging concessions must be allocated by competitive bidding. It should be open to the private sector, NGOs and local communities, and adjusted to account for externalities. However, this functions better where there is a stiff competition among bidders. Therefore, sensible reforms in timber pricing policy should result in charging sufficiently high stumpage to reflect the real value of trees or forest resources. Standardised optimal prices for timber species should be established with provisions for adjustments to account for inflation.

This is feasible because in many African countries, governments exercise great monopoly over stumpage prices which if properly calculated, would create an ideal situation for forest conservation, as they are in a better position to restrict wastage by raising prices, a situation that would never prevail under a perfect competition. 'Very high stumpage fees' can effect any one of two scenarios: log poaching, from forest reserves and other state-owned forest estates, if governments are powerless to enforce their ownership rights and defend the legal status of the resources under their stewardship. This also presupposes that governments discourage private ownership of land resources, and as a consequence, *landlessness* is widespread. On the other hand, where private forests exist and rural people have clearly defined, secure, exclusive and transferable rights over certain parcels of land, 'very high

stumpage prices' put attractive price tags on timber. Tree-planting and sustainable forest management becomes a lucrative business, breaking up government monopolies over stumpage in essentially a natural manner.

Furthermore, prices also act as *incentives* to agricultural producers, encouraging intensification. According to the 'producer price argument', there should be a negative relationship between the 'producer price' and the 'area' cultivated to cash crops, i.e., the area increases as prices fall and *vice versa*. This implies that high producer prices create opportunities for farmers to invest their surplus in purchasing genetically improved seeds, chemical fertilisers, pesticides, herbicides and irrigation water. This creates an ideal situation for agricultural intensification. Cash crop production would shift from *extensive margin*, where increased agricultural output entails expansion onto forested land to *intensive margin*, where increased agricultural output is achieved by adding more inputs into a given agricultural production unit. However, this works best where local people have secure usufruct rights, as exemplified by the following international case studies, particularly Tanzania and Zambia.

2.6.2.1.2.4 Taxes as incentives

Taxes are designed to serve three functions: to raise money for the taxing authority; to redistribute income and wealth; and to encourage particular forms of behaviour by either consumers or producers (Grayson, 1993:20). The last is clearly the motive of governments that have forestry policies with provisions for adjusting forest owners' taxes. Almost all governments use taxation systems to encourage some forms of economic activity and discourage others and to benefit some categories of individuals and to penalise others (Convery, 1995:65). Governments can use taxes to extinguish business they consider undesirable, for example, the old European luxury tax on windows kept people of low income living in darkness and ill health. Conversely, taxing blank walls would let in light and promote health. To provide forest outputs nearer to the social optimum, governments often induce private forest owners and rural communities by providing two principal forms of incentives: grants which may include materials and advice given *gratis* and tax relieves. Incentives such as tax-exemptions and even direct grants to NGOs and individuals wishing to regenerate forests may have enough impact to encourage investments which would not otherwise have been made (Ewing & Chalk, 1988:46).

2.6.2.1.2.4.1 Categories of tax

The national tax systems in most African countries are undeveloped: relatively few tax categories are used, and collection is often erratic and incomplete (Convery, 1995:65). The validity of this general statement for Southern Africa may be seen in the following country studies. Therefore, the brief introductions that follow are to provide a general idea of how these instruments could and should be used to promote forest conservation.

2.6.2.1.2.4.1.1 Individual or household income tax

This is the type of tax in which a share of an individual's income is deducted by the government in tax, usually on a pay-as-you-earn basis. This tax will be effective the fewer exemptions there are. If investment in forestry is exempted, it can lead to a high rate of private investment in plantation establishment, and would be extremely useful in the whole of Southern Africa, where forest regeneration in many areas is a hard task due to harsh environmental conditions.

2.6.2.1.2.4.1.2 Value-added tax

The tax in which a percentage of the sale value at each transfer is paid as tax. Each purchaser except the final consumer can reclaim it. In some countries, food, non-alcoholic beverages and some forms of energy such as electricity are VAT-free (Convery, 1995:66). Fuelwood in most, if not all African countries is VAT-exempt, and since it is a highly income-elastic good, meaning that more and more of it is being consumed, especially in urban-rural complexes, as incomes increase, it would affect the extent of forest resources in countries where the majority of population depend on wood for energy. Therefore, it is recommended that the process of tree conversion to any form (fuelwood or timber) must be considered as value adding for that particular use and taxed accordingly. Moreover, tree conversion into a product such as timber and fuel consumes energy, in addition to the fossil fuel expended on product transportation. ITTO (1991:10) suggests that the effectiveness of this instrument may be enhanced by repatriating the VAT paid by consumer countries of tropical forest products to encourage sustainable management of the forests from which the products are derived. Alternatively, forestry companies looking for long-term stability would be willing to forego some of their profits to promote sustainable development of the resources upon which they depend.

2.6.2.1.2.4.1.3 Corporate income/profit tax

This is the taxation system in which a company pays a share of its profits as tax. Corporate income tax is closely related to individual or household income tax in the sense that if a forestry company is exempted, it will result in an increased investment in forestry activity. Alternatively, corporate income tax exemption can be tied to reforesting of certain degraded sites. However, where profits on imported wood and wood-based products are exempted, this can depress domestic wood prices and hence accelerate its consumption, thereby impinging on forest resources. This reflects a market failure.

2.6.2.1.2.4.1.4 Property tax

The type of tax in which land or building on it, or both, are taxed, usually as a percentage of assessed value. Pearse (1990:198) states that land taxes and rentals have the rare quality of *neutrality* because the amount payable does not depend on the inventory, the amount harvested, the choice of rotation, or other variables that

can be manipulated. Consequently, it does not create incentives to alter management decisions and does not distort efficient resource use. Whatever management regime maximises private returns without the tax will continue to maximise returns to the owner with it. The tax is neutral in this sense. However, it must be clarified that property taxes can be powerful influencers of the environment, if for example, devegetated land is exempt from property tax, but forested land is not, quite a different decision-making dynamic from that which would result if the opposite applied will be produced. Again, if new buildings are tax-free or are assessed at a lower rate, expansion of urban settlements to vegetated areas would be encouraged (Convery, 1995:67). Annual ground rents on natural forest concessions must be maintained at appropriate levels to reflect, when combined with other charges, full value of standing forest resources.

2.6.2.1.2.4.1.5 Capital transfer and/or inheritance tax

This entails taxing a percentage of the value of gifts and inheritances above a certain threshold. This tax is seen by many as a vehicle for transferring capital from those who have such capital to those who do not have. Tax on capital transfer by gift or inheritance may be levied on the donor or on the beneficiaries. The aggregate tax on recipients can be reduced under progressive tax rates by dividing capital among many beneficiaries who have little previously accumulated inheritance. Taxation of the donor can be effected under different arrangements: during lifetime, at death, or within a specified period preceding death (Price, 1989:33). In forestry, its environmental implications will depend on how the existing and new beneficiaries use (or intend to use) the forest and wildlife resources occurring on the land. If such a transfer is anticipated, it is important to have mechanisms in place to safeguard the management of environmental assets that will change hands. One way to do this is to tax heavily all activities which are likely to jeopardise the sustainability of forest resources.

2.6.2.1.2.4.1.6 Severance Taxes

These are charges for use of resources or their assimilative capacity. Severance taxes are payments made to society for depleting a natural resource (Pearse, 1990:200-1). In the United States where severance taxes are widely used, it ranges from one-eighth of one percent to three percent the value of material extracted (Buttrick, 1943:354). However, in forestry it is advisable to charge severance fees according to the prevailing value of the harvested wood (ad valorem). The direct distributional effect of severance tax, like the other types of tax, is to shift the economic returns from the logging industry to the government, as a resource owner.

2.6.2.1.2.5 Subsidies

Subsidy is an extraordinarily heterogeneous instrument. One of the most prominent forms of subsidy is *grants*, "expenditures made in support of some end worthy in itself, almost as a form of recognition, reward or encouragement, but not closely calibrated to the costs of achieving that end" (Howlett & Ramesh, 1995:92-3).

Grants are usually made to producers to provoke them to provide more of a desired good or service; for instance, the EU's grant scheme for the purpose of reforestation. To encourage tree-planting in the EC member states, the organisation has implemented a policy of paying out grants to tree farmers, much higher for broad-leaved growers than to those who cultivate needle leaves. This is rooted in the environmental superiority of broad-leaves, particularly in providing habitat for wildlife. Certainly, this is a 'positive subsidy': a subsidy in the form of grants is initiated for good and environmentally sound purposes; nevertheless, the EC's grants for sheep rearing have become counterproductive. Land resource degradation in certain parts of Ireland, where farmers are involved in intensive sheep rearing illustrates this. Thus, the subsidy for livestock production hampers environmental conservation and is effectively a bad or 'negative subsidy'.

Loans from government at interest rates below the market rate also constitute a subsidy. The loan itself is not a subsidy *per se*, but the difference between the interest charged and the market rate is the subsidy. With many African governments in dire need for money, lending for forest conservation, for example, tree-planting on treeless sites at low interest rates is improbable, although land can be availed for this purpose under some conditions. However, money realised from 'debt-for-nature swaps' should be put to this use. This has been possible in the Philippines, where the Foundation for the Philippines Environment was set up with funding made available from a debt-for-nature swap between the US and Philippine governments. Today, the Foundation has expanded and is sponsoring conservation programmes through non-governmental organisations (McNeely *et al.*, 1997:107).

2.6.2.1.2.6 Transportation infrastructure

Public investments like transportation systems — roads, railways and waterways — can have enormous direct and indirect effects on forests by opening up forestlands to settlers. On the other hand, adequate or efficient transportation systems can stimulate investment in tree-planting, as plantation forests are mainly established for timber which needs to be delivered to processing and consumption sites. Paradoxically, inefficient transportation systems can also serve conservation goals; for example, the DRC's pristine tropical rainforests owe their existence to the country's poor transport infrastructure.

2.6.2.1.3 Regulations

A brief examination of any contemporary textbook that deals with policy instruments exposes how today's economists loathe the idea of employing directives or regulations as policy tools for environmental conservation. Nonetheless, the regulatory approach has achieved a great deal and has undoubtedly left us in a much better position than we would have been without it in sub-Saharan Africa. The idea of regulation is straightforward. An environmental agency which in this case is the forestry department, issues commands requiring adherence to certain forest management standards or silvicultural practices to meet desired environmental goals. The agency

then controls by monitoring to see if the correct procedures are followed. The control agency has powers to impose sanctions for non-compliance and offer rewards for conformity to correct silvicultural methods. Unfortunately, many now designate and stigmatise this pattern of regulations as 'command-and-control' which Costanza *et al.* (1997:194) reminds is a more appropriate terminology for application to centrally planned economies such as the former Soviet Union than to a subset of environmental policy instruments. In reality, there is a great deal of education, persuasion, negotiation, bargaining and comprise in the regulatory process. Moreover, the prime aim of a public policy instrument is to control behaviour or secure compliance and not to punish violators, except as a last resort (Anderson, 1990:205).

The regulatory approach will remain an indispensable tool for conserving Africa's native forests and woodlands with their inherent stock of wildlife resources. Although killing people for breaching environmental regulations is medieval, Kenya and Zimbabwe pursue shoot-to-kill policy in their national parks and game reserves. This is not a declared policy instrument in other Southern African nations, although anti-poaching units implement it against AK47 wielding poachers. A recent human rights report from Malawi indicates that warders are slaying poachers. "In Liwonde National Park, 100 km east of Malawi's main commercial city of Blantyre, poachers are being maimed, raped or brutally killed by shooting, electrocution or beating". On their part the organised forces dismissed that the report fails to highlight their plight. As one warder tacitly states: "We shoot to kill in self-defence, it is a question of who shoots first, the reports fails to state how many of us have died"[4].

Seemingly, the *shoot-to-kill* directive is aimed at armed poachers, who have proven too dangerous to arrest. However, the danger that this directive poses to society is that corrupt policy implementers would use their discretion excessively, resulting in killing unarmed petty poachers. Therefore, not to render laws open to interpretation, any instrument should have a counter-check, particularly where human life is at stake, to establish that a correct procedure has been followed. Ballistic and forensic tests should verify that there was indeed a gun and a shootout; otherwise the discretion of game warders and forest rangers is likely to become excessive. It has for example been stated that "small-time poachers like fishermen are being shot on site despite their not offering any resistance". Women were handcuffed and gang-raped and their quarry confiscated (ibid.).

While incentive-based policy tools are desirable, regulatory mechanisms should be used to encourage managing indigenous forests in ways that deter, minimise and mitigate destructive influences. For example, the state may set the silvicultural and harvesting operation standards to be met, leaving the means for achieving them to the concerned parties. Indeed, this is a market-based instrument, but it does not necessarily result in forest conservation on its own. With faulty planning and unregulated harvesting operations becoming the principal cause of forest ecosystem degradation, it is imperative that governments should internalise the costs of use and damage

to biodiversity. Typically, this should involve making pre-harvest planning mandatory; regulating road construction, felling and skidding operations; and enforcing post-harvest assessment and treatment. Regulations could also be enacted to protect intrinsic components such as fish, wildlife and other non-timber forest products because there is a major concern for managing entire ecological systems rather than managing for traditional component such as timber. It is, however, cautioned that directives alone would not internalise the costs of environmental devastation frequently caused by the logging industry. This implies that directives should be combined with voluntary and mixed instruments to yield better results, as discussed under 'the choice of policy instruments'.

2.6.2.2 The choice of policy instruments

The preceding sections indicate that there are many policy instruments that governments may employ to solve a given forest problem. This section deals with the procedure that governments use for choosing one or several tools from those available to them. Accordingly, the choice of a policy tool is governed by:

1. The characteristic of the instrument — this view tends to treat the choice of instruments as a strictly technical exercise that involves evaluating the characteristics of the available instruments; matching them to different types of market failures; estimating their relative costs; and selecting that instrument that meets the *end* mostly efficiently. This involves cost-benefit analysis.
2. The nature of the problem at hand — the word *nature* is rather fluid and could mean magnitude or importance, nonetheless, governments choose the strongest instrument, if that is what the nature of the problem being addressed dictates.
3. Governments' previous experiences in dealing with the same or similar problems are deciding factors in instrument choice. According to the 'rule of thumb', people are better able to strategise and overcome barriers they have encountered in the past. Likewise, governments' successes and failures with instruments would overshadow deployment of any instrument in a particular context.
4. The subjective preference of the decision-makers is a determining factor in selecting policy instrument, i.e., the choice of instrument is based on their professional background, institutional affiliation and cognitive makeup. Decision-makers define the situational context constraining *choice* and as a consequence monopolise the debate on policy instrument choice.
5. The perceived reaction of policy consumers will obviously influence the choice of the instrument (Howlett & Ramesh, 1995:158-61).

It is frequently reported that the main goal of decision-makers is to maximise the probability of re-election; therefore, instruments that are unlikely to alienate voters will be chosen, particularly those that appeal to members of a group capable of creating a winning margin. This is not to state that some decision-makers do not have an

idealistic aim of selecting policy instruments that could bring fundamental change without bothering about remaining in power (Van Kooten & Vertinsky, 1999:11-12).

Although governments can administer policy instruments as piecemeal, two or more instruments can be employed together to correct a given failure. This is illustrated by the incentive-based system of price support in the forestry sector. Governments which hold up high stumpage prices for indigenous timber resources artificially would spark tree-planting on private, non-industrial lands and hence the development of market for forest products. However, the forestry industry, in turn, needs to be regulated, especially in the choice of tree species to be planted, otherwise rural areas would be inundated with non-native trees.

2.7 Monitoring and evaluation

Generally, there is a three-tiered system of planning in a country: policy, plan and programme. For example, a national forestry policy can be considered as an inspiration for action; a plan as a set of co-ordinated and timed objectives for implementing the policy; and a programme as a set of projects or activities (Wood, 1996:266). Evidently, programme represents the translation of policy into practice; its performance is therefore a good proxy for measuring policy performance. Accordingly, the terms *policy* and *programme* have been used interchangeably in the discussions that follow on monitoring and evaluation because a programme such as a national forestry programme is the discernible, measurable entity of the forestry policy. Thus, programme is a functional policy that requires *monitoring* and *evaluation* to determine that the policy is accomplishing the objectives/goals that it is designed to achieve. Monitoring feeds into evaluation and both are a critical stage in policy-making. In reality, this is the platform for defining agenda-setting, policy formulation and implementation.

2.7.1 Monitoring

Monitoring is simply "keeping track of progress and problems", i.e., it measures implementation difficulties as well as achievements (Bowden, 1988:83). Similarly, Casley and Kumar (1987:2) define *monitoring* as a continuous assessment both of the functioning of programme activities in the context of implementation schedules and of the use of programme inputs by target populations in the context of design expectations. They perceive it as an internal programme activity, an important aspect of good management practice and thus an integral part of day-to-day management. This distinguishes monitoring from *evaluation* which is "a periodic assessment of the relevance, performance, efficiency and impact of the project in the context of its stated objectives". Usually, evaluation involves comparisons of information over time. Bowden (1988:83-4) acknowledges the definitional difficulty in distinguishing between monitoring and evaluation, but suggests that one difference between the two lies in the nature of gathering and analysis of data. In essence, *monitoring* involves routine data gathering to track the performance of implementation, while *evaluation* is the analysis of a particular set of data that may be provided by

monitoring. Elkington and Burke (1997:322) also consider *monitoring* as a habitual data gathering and analysis exercise; it is "the regular gathering and assessment of information..."

Likewise, FAO (1990:8)[1] has tendered a simple definition of *monitoring* as "a surveillance system, used by those responsible for a project to see that everything goes nearly as possible according to plan, and that resources are not wasted". Mikkelsen (1994:171) emphasises that *monitoring* is a continuous feedback system, ongoing throughout the life of the programme, and entails the assessment of each activity at every level of implementation. To avoid confusing evaluation with monitoring, it has been indicated that the data collected during monitoring provide the basis for *evaluation* which is the assessment of the effects of the programme on or for the target populations.

The most comprehensive definition of *monitoring* has been supplied by Rossi *et al.* (1999:192), who maintain that "programme *monitoring* is the systematic documentation of key aspects of programme performance that are indicative of whether the programme is functioning as intended or according to some appropriate standard". *Monitoring* involves gathering information about three programme domains: service utilisation; programme organisation; and/or outcomes. Monitoring service utilisation involves examining the extent to which the programme beneficiaries receive the intended services. Monitoring programme organisation consists of comparing what the programme should be doing with what is actually done, particularly with regard to providing services. Monitoring programme outcomes or impact involves surveying the status of programme beneficiaries after having received the services to establish whether they are in line with the intentions of the programmes. Additionally, programme monitoring can include information about the consumption or use of financial resources: do the benefits of the programme justify the costs? In summary, '*monitoring* is the recurrent gathering and assessment of information required to maintain programme performance on an optimal course'. It can be differentiated from evaluation by its high rate of data collection and analysis. It generates data for policy evaluation that is a crucial element of a natural resource conservation policy. Both monitoring and evaluation are achieved by a broad-based set of indicators, encompassing the social, economic and environmental concerns of forestry policy.

2.7.2 Evaluation

Several interrelated definitions of evaluation exist; for instance, Dunn (1994:404) notes that the term *evaluation* is generally synonymous with appraisal, rating and assessment. He notes further more specifically that "*evaluation* refers to the production of information about the value or worth of policy outcomes". Thus, "evaluation is about determining merit or worth" (2000:270). Hogwood and Gunn (1991:219) affirm that "*evaluation* is concerned with

[1] Cited in Mikkelsen (1994:171).

what happens once a policy has been put into effect". Wholey *et al.* (1970:15)[m] offer a more complex definition when they maintain that "policy evaluation is the assessment of the overall effectiveness of a national programme in meeting its objectives, or assessment of the relative effectiveness of two or more programmes in meeting common objectives". Nachmias (1979:4)[n] also ties the definition of *evaluation* to the stated policy or programme 'goals', for example, "policy evaluation research is the objective, systematic, empirical examination of the effects ongoing policies and public programmes have on their targets in terms of the goals they are meant to achieve". Yet, another definition that ties *evaluation* to policy objectives have been attempted by Howlett and Ramesh (1995:168), who assert that "policy evaluation refers to the process of finding out about a public policy in action, the means being employed and the objectives being formed". However, it ought to be noted that the 'goals' of a policy are not often explicit, and some policies may pursue conflicting goals.

Consequently, Dye (1987:351) challenges that *evaluation* should be concerned with *all* of the consequences of public policy, i.e., 'policy impact'. Dye offers an excellent broad definition of policy evaluation when he holds that "policy evaluation is learning about the consequences of public policy". The 'consequences' of a policy refer to its overall impact on the target and non-target groups; immediate and future conditions; direct costs, in terms of resources earmarked for the programme; and indirect costs, including opportunity costs. Thus, Ham and Hill (1993:10) note that "evaluation studies are also sometimes referred to as impact studies as they are concerned 'with' the impact policies have on the population". On the other hand, Smith (1981:225) defines *evaluation* as "judgements about the effectiveness of past actions, not appraisal of possible future alternative strategies". This expresses the occurrence of 'evaluation activity' at pre-implementation phase which Anderson (1990:222) has acknowledged by stating that "evaluation can and does occur throughout the policy process and not simply as its last stage". Obviously, prior attempts are often made to determine or estimate the effects of various policy options before the most appropriate ones are selected. In this context, "Policy evaluation is concerned with the estimation, assessment, or appraisal of policy, including its content, implementation, and effects" (Anderson, 1990:222). Therefore, the definition of *evaluation* can be summarised as 'any attempt, scientific or otherwise, designed to qualify or quantify the effects of a policy, plan or programme on both the social and physical environment'.

It is noteworthy that such evaluation may be conducted *prior* to the implementation of the policy, when efforts are made to forecast the consequences of the various policy objectives/goals during policy formulation exercise. *Internal ongoing evaluation* takes place during the implementation process and is very difficult to separate from monitoring. Chess (2000:772) classifies this as *formative evaluation* which aims at improving programmes in

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[m] Joseph S. Wholey *et al.* (1970). Federal Policy Evaluation. Urban Institute, Washington, D.C. ; cited in Dye (1987:351).

[n] Nachmias, D (1979). Public Policy Evaluation. St Martin's Press, New York; cited in Dye (1987:351).

progress; it provides managers with feedback during programme development and implementation. For example, it would query how well DWAF implements community forestry projects in South Africa's Northern Province, Mpumalanga, KwaZulu-Natal and in the Eastern Cape Province. Alternatively, it would consider complex issues such as the level of participation by rural communities in community forestry projects. It would also examine how implementation differs between these provinces. It may be the bedrock upon which the subsequent types of evaluation are founded. *Midterm evaluation* is conducted three or four years after the commencement of the policy. As the name implies, *terminal evaluation* is carried out when the policy is officially terminated; consequently, it is also known as the 'programme completion report'. *Ex post evaluation*, often called 'impact evaluation' follows policy termination five to ten years later. Chess (2000:773) concedes that this is used for accountability and focuses on long-term results of programmes and has the potential to inform major policy decisions.

Although there is a strong temptation to categorise some types of evaluation as more legitimate in policy impact studies, it is emphasised that all evaluation types are relevant to policy impact studies, regardless of whether they occur prior, during or after the termination of the policy. Moreover, the different types of policy evaluation are linked.

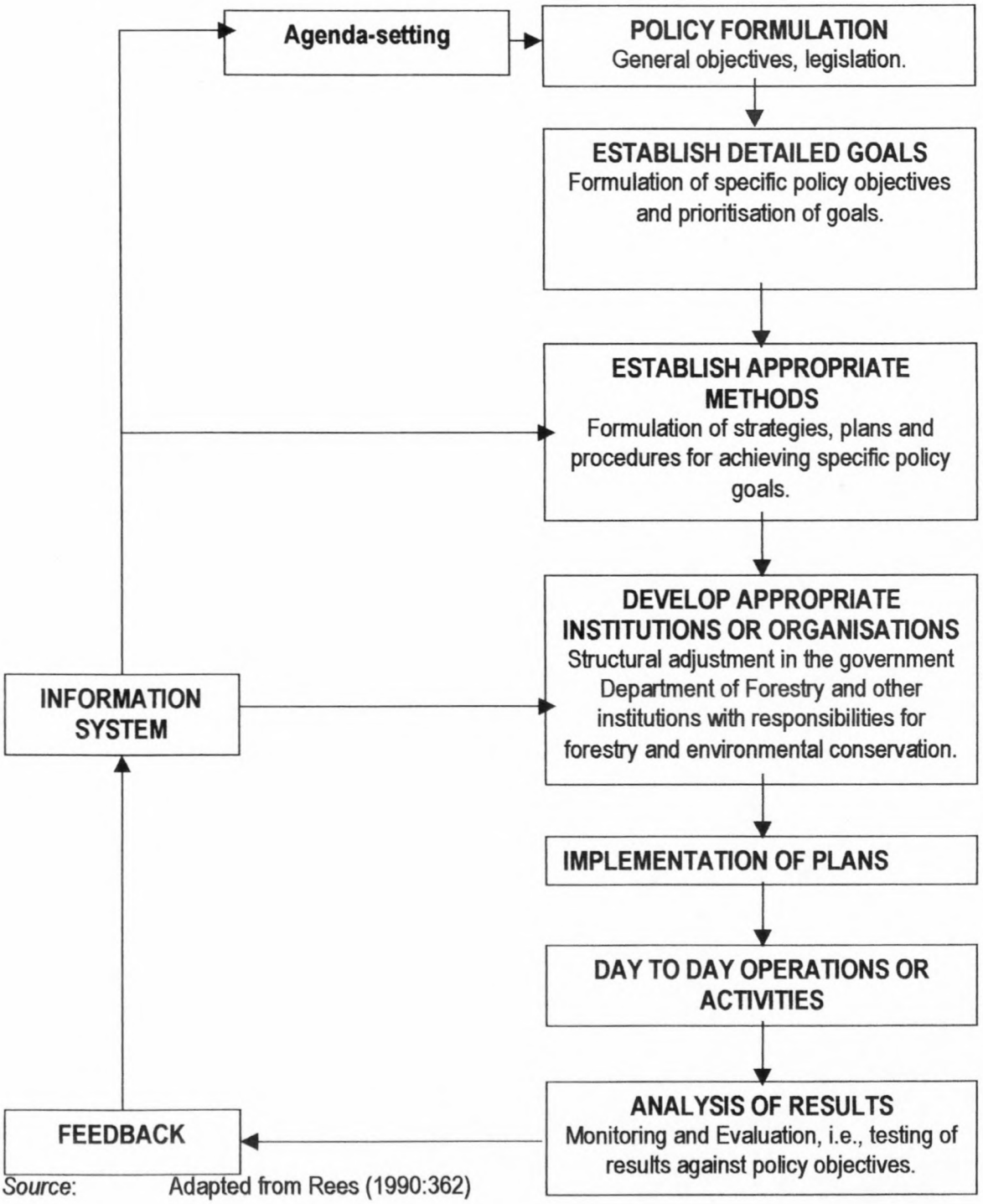
2.8 Conclusions

This Chapter set out to review the theory of forestry policy-making. As a result, the prevailing concepts of forestry policy, the need for it, and its formulation and implementation processes have been examined. There are many definitions as there are people who have attempted to define the concept. It has been established that the need for forestry policy is dictated upon by the inherent market failures that characterise the forestry sector. Forestry policy formulation process has been described and the main actors have been identified. Accordingly, four main groups of participants in policy formulation have been noted and these include government, political parties, the civil society and multilateral development organisations. The civil society embraces rural, forest-dependent communities, including women's groups; the forestry industry; environmentalists; and the mass media, while the multilateral development organisations incorporate the multilateral environmental and trade agreements. It has been noted that this is not a comprehensive catalogue of participants.

The process of policy implementation and the tools available for achieving it have been analysed. The actors in policy formulation are also represented at the implementation stage. Three main categories of policy instruments have been identified. These have been decomposed further into their constituent elements, whose resource conservation characteristics have been assessed fairly thoroughly in a scenario-building manner. Finally, the importance of monitoring and evaluation in measuring the performance of forestry policy has also been stressed.

The various stages in policy-making which this chapter aimed to present, are discernible from the following Figure 2.2. It is important to note from this figure that policy-making is essentially a continuous, circular process. It is an incessant dialogue among policy-connected and policy-affected interest groups. Therefore, policy documents broadly define only directions where day-to-day policy-making must evolve.

Figure 2.2 The idealised policy-making process



Source: Adapted from Rees (1990:362)

Chapter Three

South Africa

3.1 Executive summary

This study set out to examine the effects of forestry policy on the sustainability of forest resources in South Africa. Consequently, the conservation attributes of the South African forestry policy have been assessed, and there are indications that the country has a coherent forestry policy capable of conserving its limited natural forests, subject to satisfactory implementation. South Africa's forestry policy is adequately positioned in its current political philosophy of realising social equity among natural resource users. Thus, the policy emphasises participation of forest-dependent communities in setting up the institutions and systems that influence their lives. The policy also promotes the redistribution of the country's forest wealth among the poor, as evidenced by the ongoing restructuring process that seeks to devolve the responsibility for certain woodlots and the underlying land to communities who were unfairly dispossessed of their rights to the resources. Furthermore, the forestry policy and its associated instrument sanction the development of criteria, indicators and standards for monitoring and evaluation to determine that the policy is on the right course, although these are still under development. However, the greatest conservation challenge for the country is the undervaluation of its forest resources. For example, the sector contributes approximately 2.0% to the GDP and employs about 2.0% of the total economically active population. Nevertheless, the environmental and biodiversity policies which define forestry policy emphasise 'full cost accounting'.

External policies and instruments also affect the sustainability of South Africa's forest resources. For example, South Africa's supreme law, the constitution directs environmental conservation, while its overarching framework policy (the environmental management policy) provides framework for DWAF for achieving forest conservation. This is adequately reflected in the integration of environmental management principles into the forestry policy and its implementation tool, the National Forests Act. Crosscutting policies, such as the biodiversity and land policies, and the multilateral environmental agreements, such as the Conventions on Biodiversity, Climate Change and to Combat Desertification also bear on forest conservation. This is practically illustrated by the South African biodiversity policy which mimics the parent document, and the Convention to Combat Desertification is well integrated into the forestry legislation and also into the environmental management policy. The current land reform programme, which does not regard land as agricultural capital only but as landscape, as a component of ecological systems is considered as an important intervention for biodiversity conservation, including forest.

Generally, there are synergies between South Africa's forestry policy and the policies governing water, energy, population, agriculture, tourism, macroeconomic and transport sectors. Optimisation of synergies with an aim to minimise negative effects between the forestry sector and the other sectors of the economy requires intersectoral policy co-ordination. Intergovernmental co-ordination between national, provincial and local governments is also needed to harmonise forest use and management activities. However, South Africa's institutions tasked with this function are considered ineffectual, raising the concern that forest conservation is likely to be impacted by other activities that use land as a medium for establishment.

3.2 Introduction

The relationship between South Africa's limited forests that cover approximately 7.0% of the country's landscape and a set of 15 natural resource management policies, including that for the forestry sector has been assessed. The forestry policy emphasises the *participation* of local communities in forest conservation and hence in policy formulation and implementation. Restructuring of state forests in the former homeland administrations with the goal of devolving certain woodlots with the underlying land to beneficiary communities reflects the translation of *participation* into practice. Community Forestry Agreements between the Department and local communities is a realisation of the same objective. Furthermore, the forestry policy recognises the significant role of incentives in environmental conservation. Consequently, the National Forests Act contains both framework and financial incentives to incite forest-dependent stakeholders to participate in activities that will promote the sustainability of the country's scanty forests. The magnitude of these incentives and the adequacy of the regulatory part of the Act confirms that the decreasing supplies of forest resources along with increasing demands for forest goods and services cause the value of South African forests to appreciate.

It is therefore apparent that South Africa's forestry policy will encourage forest conservation, subject to satisfactory implementation. However, it is too premature to assess the progress of policy implementation, as some sections of the law might not have come into effect or became operational only a few months ago. Nonetheless, DWAF has stated that a comprehensive policy evaluation would be conducted in December 2000, although the criteria, indicators and standards that should be used in assessing the performance of the policy are under development.

The implications of overarching framework legislation and policy such as the country's constitution and the environmental management policy have been considered. There is a clear indication that the constitution and the environmental management policy define the scope of South Africa's forestry policy and its affiliated instruments. A similar conclusion can be drawn on the role of crosscutting policies such as the biodiversity policy and the multilateral environmental agreements, mainly the Convention on Biodiversity, Convention to Combat Desertification and the UN Convention on Climate Change which have dramatically influenced the contents of the forestry policy. However, the CITES ban on the international trade in elephant and rhino products has no practical effects on forest conservation in South Africa, although it has been a viable conservation tool in Zambia. Land policy has been considered in this study as a crosscutting policy because it affects forestry and all other sectors that use it as a medium for activity. As the security of land ownership and tenure delimit people's willingness to invest in land resource conservation, the current land reform programme is perceived to be an important intervention for biodiversity conservation.

Furthermore, sectoral policies such as water, energy, population, agricultural, tourism, macroeconomic and transport policies have been assessed for their conservation attributes. It is indicated that there is virtually no sectoral policy that does not influence forest conservation. However, those considered here have the potential

to affect forest conservation at a macro-scale. It is generally concluded that there is synergy between South Africa's forestry policy and the above sectoral policies.

3.3 Geography and climate

The Republic of South Africa has a total land area of approximately 122 million ha[1,5]. It is located in Southern Africa, at the southernmost tip of the continent. The country receives an average annual rainfall of about 450 mm. This ranges from less than 10 mm in the western deserts (the Namib and Kalahari) to approximately 1,200 mm in the eastern part of the country. A large part of South Africa is considered arid or semi-arid. It has been estimated that 21% of South Africa has less than 200 mm of rainfall per annum, while 44% receives between 200 and 500 mm/annum. The first and second categories constitute arid and semi-arid lands, respectively. Thus, 65% of the country has inadequate rainfall to support extensive coverage of species-rich native forests which is restricted to high rainfall areas along the eastern coast, KwaZulu-Natal, Mpumalanga and the Northern Province. A vast part of South Africa has summer rainfall that lasts from November to February, while the south-western corner (or the Western Cape Province) has hot dry summers and wet winters[1,6]. Rainfall in this Mediterranean zone is brought by westerly winds from the Atlantic, and occurs mostly between June and September. Although the country is mostly arid and semi-arid, its occurrence outside the tropics has given it a mild subtropical climate, favouring the growth of many subtropical plants. As one commentator states: "South Africa has the third highest level of biological diversity in the world, with 7.5% of the world's vascular plants..."[7].

3.4 Forest resources

South Africa has approximately 7.0% of its land base under natural forest cover, representing about 8,917,000 ha of forest. The majority of South Africa's forest occurs on the lowland areas of the east coast, extending into the Drakensberg ranges. Forests that occur in this area are mainly broad-leaved evergreens with common species including *Olea capensis*, *Xymalos monospora* and *Podocarpus* species[1]. Additionally, the country has extensive areas of woodland savanna, particularly in the Northern Province, Mpumalanga and KwaZulu-Natal, where Acacias appear to be common species. *Colophospermum mopane* occurs in the Northern Province, while trees such as *Pterocarpus angolensis*, *Parinari curatellifolia*, *Terminalia* and *Combretum* species occur both in the Northern Province and in Mpumalanga. *Sclerocarya birrea* stretches from the Northern Province across Mpumalanga up to the northern parts of KwaZulu-Natal (van Rooyen & Bredenkamp, 1996:20, 21, 27, 28; Granger, 1996:32).

According to DWAF, most demarcated conservation forests occur in the Eastern Cape followed hierarchically by the Western Cape, KwaZulu-Natal, Mpumalanga and Northern Province[8]. In another report the Department states that most natural forest occurs in the Eastern Cape, with about 140,000 ha and in KwaZulu-Natal that has approximately 91,200 ha. This is followed by the Western Cape that has about 60,000 ha, and by Mpumalanga and Northern Province, with 35,000 ha each (DWAF, 1996:3). These contradict the above

statement and also the following estimates of different categories of South African forests. What is clear is that South Africa has limited natural forest that occurs mainly along the eastern coast and requires innovative interventions to sustain it.

3.4.1 Afromontane forest

As the name implies, this is a forest type that occurs in mountain areas just below the tree line. It stretches along the mountain ranges from the Western Cape, mainly the Knysna area through KwaZulu-Natal to the Northern Province. Afromontane forests exhibit distinct layer of emergent and canopy trees that can attain a height of 30 or 40 m, and also show a distinct stratum of shrubs and herbs; and occupy approximately 596,300 ha. Trees in Afromontane forests include *Podocarpus latifolius*, *Podocarpus falcatus, Trichocladus ellipticus, Rhus chirendensis, Xymalos monospora* and *Ocotea bullata,* among others (Low & Rebelo, 1996:4-7; Lubke & McKenzie, 1996:12). South Africa's afromontane forests are floristically similar to other formations occurring throughout the continent (Meadows, 2000:382).

3.4.2 Coastal forest

There are 94,700 ha of coastal forest that occurs on a thin stretch of high dunes, especially along the Eastern Cape coast to KwaZulu-Natal, where it is well conserved. This forest type is also known as 'dune forest' by virtue of its occurrence. Common trees in coastal forest include Coast Red Milkwood, *mimusops caffra;* Natal Guarri *Euclea natalensis*, Cape Plane *Ochna arborea* and *Apodytes dimidiata,* among others (Low & Rebelo, 1996:4-7; Lubke & McKenzie, 1996:11). An important forest type within the same category is 'sand forest' which is restricted to the tropical and subtropical coastal belt of KwaZulu-Natal and occupies an estimated area of 34,500 ha. Sand forest is characterised by the dominance of deciduous and semi-deciduous trees in the canopy. There is dense tree stocking, with the upper canopy reaching up to 25 m. Characteristic species include *Cleistanthus schlechteri, Suregada zanzibariensis, Monodora junodii, Cadaba natalensis*, etc (McKenzie, 1996:13).

3.4.3 Plantation forest

It has been estimated that there are 965,000 ha of plantations (FAO, 1995a:14). However, DWAF (1996:8) states that industrial forests had grown to about 1.45 million ha by 1994, although the report confirms the pre-eminence of pines and eucalyptus in afforestation programmes. Accordingly, 56%, 32% and 11% of the area had been planted to pines, eucalyptus and wattle. There are also 28,000 ha of small plantations of poplar which supplied wood for matches. South Africa's plantation forests are situated mainly in the Northern Province, Mpumalanga, KwaZulu-Natal, Eastern and Western Cape Provinces, where favourable climatic conditions for tree growth exist. Quantitatively, Mpumalanga leads, with about 624,000 ha, followed by KwaZulu-Natal that has around 532,000 ha. Ironically, the most suitable areas for afforestation are also the most suitable for agriculture and conservation of biological resources. The following Table 3.1 indicates the size of South Africa's forest resources according to different sources.

While there is no apparent consensus on the extent of South Africa's natural forests as indicated below, even within the same organisation such as DWAF which gives conflicting estimates, it is clear that South Africa has limited natural forest resources. This had been described by a hard-nosed observer, who stated that the greater part of South Africa is "scarcely more clothed than the natives who inhabit it" (King, 1938:4). However, the estimates of the Department agree on the extent of industrial plantations which have shown steady increases in recent years, particularly due to high demands for timber and other wood-based products from both domestic and foreign consumers.

Table 3.1 South Africa's forest resources data (000 ha)

Source	NF	%	DCFA	%	PF	%
FAO, 1995a:14	7,243	6	n.a	n.a	965	0.7
FAO (2001:150&8)[1]	8,917	7	n.a	n.a	1,554	n.a
WCMC[9]	10,384*	8	547.2	0.4	n.a	n.a
DWAF, 1996:2	327	0.2	n.a	n.a	1,450	1.2
DWAF, 1997:46 & 63	400	0.3	300	0.2	1,487	1.2
DWAF[8]	n.a	n.a	176	0.1	n.a	n.a
[10]	n.a	n.a	n.a	n.a	1,518	1.2
Low & Rebelo (1996:4-7)	726	0.6	n.a	n.a	n.a	n.a

Legend

DCFA Demarcated conservation forest area
n.a not available
NF Natural forest
PF Plantation forest
% Expressed as a percentage of South Africa's total land area of 122,104,000 ha
* Total forest area – therefore, could include plantation forests
[10] Natural Resource aspects of sustainable development in South Africa: http://www.un.org/esa/agenda21/natlinfo/countr/safrica/natur.htm (Accessed on 26 Nov 2001)

3.5 Utilisation of forest resources

Forests are universally significant for their planetary functions, although their national values are frequently imputed only from their local economic and ecological functions. Forests are vital to the maintenance of a habitable biosphere – they conserve biological diversity; protect the earth's landscape from unexpected, sudden change; maintain the flow and quality of water in rivers and contribute in maintaining climatic stability, both at local and planetary levels (WCFSD, 1999:18). These planetary functions have caused forestry problems, like other environmental issues to be analysed at the highest levels, for example, the recent upsurge in summits which led to the signing of various conventions. These summits reflect global agenda-setting, although the *decision* to conserve forests, and the *capacity* and *will* to implement international forestry policy remain largely located within nation states. Undoubtedly, international forestry agendas are expected to

provoke nations into appraising the various functions of their forest resources. In line with this international norm, the South African government has attempted to classify the importance of its forests into the categories outlined below.

3.5.1 Contribution to the GDP

The South African government acknowledges that natural forests supply a wide range of goods and services, but maintains that these are poorly understood. Consequently, they are largely unaccounted for in national accounting books. However, the commercial forestry sector GDP component has been put at about 2.0% (DWAF, 1995:31; 7). The term *goods* refer to commodities which are directly consumed, while *services* include the non-consumptive uses provided by forest and woodland resources. Fuelwood, grazing, traditional medicine, curio industry and commercial timber are classic examples of forest goods. To this list should be added non-timber forest products such as honey, bushmeat, mushrooms, edible insects, fibres and so on. Conversely, forest services include protection of biological diversity and water catchments, soil conservation services, aesthetics and ecotourism, and cultural and spiritual utility that forests provide (DWAF, 1997:47-8).

3.5.1.1 Forest products

DWAF (1996:4) states that one-third of South Africa's households rely on wood for energy, with as much as up to 80% of rural households depending entirely on fuelwood in some areas. As often, women trek long distances to gather fuelwood, and the average time spent in such a manner has conservatively been put at five hours per week. Approximately, 10 million tons of wood are burnt for fuel each year. About 6.0 million tons of this amount are extracted from natural forests. The quantity of wood consumed as household source of energy closely approximates that consumed in the formal industrial forestry sector which provides sales of about more than US$160 million annually. Fuelwood accounts for nearly 10% of net national energy consumption (DWAF, 1997:23). It has been observed that fuelwood is the staple energy of the rural people, although it represents only 8.0% of the energy supply. While this figure does not agree with the DWAF's estimate, a large proportion of the South African population depends on fuelwood. Estimatively, 3.0 million households depend mainly on fuelwood for their cooking and heating. In some areas of the former homelands, there is a total dependence on fuelwood for energy, for example, in the Butterworth area of the former Transkei (Ham & Theron, 1999:77).

Fuelwood is an important forest and woodland ingredient in South Africa. Permitting its gathering from state and privately owned protected areas would add more value to these areas and contribute to the economic welfare of the neighbouring communities. Shackleton (1996:35) notes fuelwood as the most important secondary product in communal and protected areas; and computes its value for the central Mpumalanga lowveld conservatively at US$6.5 million/annum. Recent case studies conducted on the consumption of secondary products in Bushbuckridge, Eastern Cape, and in two places each in KwaZulu-Natal and Northern Province indicate the average annual value of fuelwood at about US$180 per household (Shackleton *et al.*,

2000a:49). With approximately 3.0 million households using fuelwood as a source of energy, and with many urbanites using the same resource for barbecue locally known as *braai*, it is plausible that the full contribution of natural forests to the energy sector has not fully been realised. This confirms DWAF's view that, although forests supply a variety of goods, they pass largely uncaptured by the existing resource valuation techniques which are biased in favour of commercial forest products.

South Africa's forests also supply structural materials such as poles and building materials; for example, in surveying indigenous tree uses in four areas in the Eastern Cape Province, Van Eck (1997:61-2) found that many trees are vital for building materials and poles. Furthermore, the above case studies indicate the mean annual value of poles at about US$14/household, while the mean annual value of building materials for 'fences and pens' has been estimated at US$18/household (Shackleton *et al.*, 2000a:49). It is noteworthy that Shackleton and others have monetized many forest and woodland products, including carving wood, wood for tools and furniture, edible herbs and fruits, mushrooms, honey, thatch grass, weaving and construction reeds, medicinal herbs, insects, *inter alia*. However, it is cautioned that these values are rather conservative because they do not incorporate the value of products sold by producer or trading households. According to DWAF (1997:47), forest-based medicinal plants employ approximately 225,000 healers; and the industry generates about US$80 to US$160 million/annum. This exceeds the number of formal employment in the forestry sector, although this figure hardly shapes public decisions on forestry. Mander (1998) reports that about 19,500 tons of medicinal plants are traded each year in South Africa. In Durban alone, between 7,000 to 8,000 people are involved in gathering medicinal plants, with about 500 people undertaking the street trade. These estimates are expected to rise for the whole province of KwaZulu-Natal (ibid.). The curio industry which is heavily dependent on natural forests for wood, yields approximately US$7.0 million annually. Shackleton (1996:36) identifies 17 indigenous tree species which are used in the woodcarving and furniture-making industry in the central Mpumalanga lowveld. The value of the raw material has been estimated as at least US$400,000/eight-year rotation cycle. Many woodland areas in the country provide fodder for livestock, whose value if accurately calculated would provide a better understanding of the importance of forest resources to this sector. Finally, the significant role of natural forests in supplying commercial timber and other species cannot be overemphasised (DWAF, 1997:47).

3.5.1.2 Forest services

Natural forests and woodlands provide habitats for a wide range of fauna and flora, whose benefits to the South African economy and environment are indisputable, for example, the country's national parks and nature reserves that promote ecotourism. It has been estimated that around 5.0% of South Africa's natural forests are in protected areas, such as national parks and nature reserves[1]. Natural forests and woodlands contribute significantly to the maintenance of hydrological cycles. Forests are important types of land use as they protect the soil surface from erosion, in addition to maintaining soil fertility through leaf-fall and decomposition. Forest animal debris also enriches soil composition. It is noteworthy that many rural communities attach high spiritual

and cultural values to individual trees, for example, the *Omumborombonga* tree or *Combretum imberbe* to which old Namibian legends trace the origin of human beings, cattle, sheep and various animals (Erkkilä & Siiskonen, 1992:78). In South Africa's Mpumalanga Province, the fruit of *Kigelia africana* is believed to deter or neutralise lightning strikes, and as a result, people attach it onto their rooftops. Trees and forests shield human habitat and agricultural ecosystems from harsh environmental conditions. Furthermore, forests are essential for sequestering CO_2. It is this function which drew the world together to sign the United Nations Convention on Climate Change in 1992, or the commitments of the Kyoto Protocol in 1997. It is also the same role of forests among others that caused the world to protest against cattle ranching in Central America, and also against the construction of a 'highway' through the Amazon rainforests in the 1980s and early 1990s.

Although forest services are equally or even more important than forest products to certain segments of South African population, they too pass mainly unvalued. This is likely to constrain public investment in forestry, since decisions guiding such investments would be based on what the national accounting books indicate which also fails to reflect the full value of the forest consumables.

3.5.2 Employment

The most recent information for the purposes of the National Forestry Action Programme indicates that the industrial forestry employs the equivalent of about 61,000 full-time in the primary sector, i.e., growing and harvesting trees. An additional 50,000 are engaged in the secondary industrial sector, such as sawmilling, pulp and paper manufacturing, mining timber and poles and particleboard. Furthermore, there are about 50,000 people employed in the management of natural forests and woodlands (DWAF, 1997:12&103). However, the above estimates exclude employment in transportation services, such as that involved in bringing logs from forest to processing plants. Also unaccounted for are seasonal labourers and those in the informal sector, for example, basketry, woodcarving, fuelwood and charcoal and *mopane* worm industries, bushmeat trade and so forth. The estimate that may enhance the public profile of the forestry sector is advanced by SADC (1999:132) which indicates that the industrial forestry employs 242,000 people. This is equivalent to 2.0% of the total economically active population. A recent survey at the DWAF indicates that lifeware in the forestry sector constitutes 2.0% of the total economically active population, but puts the formal employment at 99,000 people, while the informal employment is portrayed at 30,000. The forestry sector employs explicitly a larger number of people both directly and indirectly than the official figures quoted here. Moreover, DWAF (1995:31) has conceded that "the many jobs involved in these sectors mean that over one million mainly rural people depend on this industry directly".

3.6 Rates of forest depletion and recruitment

The term *sustainable development* is frequently used to express the idea that economic growth must be compatible with the environment. The WCED, popularly known as the Brundtland Commission (1987:8) defines it as development that "meets the needs of the present without compromising the ability of future

generations to meet their own needs". It is important to note that this definition does not offer much help to the forestry sector, as it does not provide any guidance to what should be sustained and how sustainable development itself is to be measured or put into practice (Van Kooten & Vertinsky, 1999:5). However, for biological resources the term would generally caution against total depletion or degradation of biological assets, in the long term, through use. Apparently, in the forestry sector, *sustainable use* would include not only maintaining timber resources, but also biological diversity and the ecological functions of forests such as maintaining soil quality, hydrological cycles, climate and weather and downstream fisheries. Furthermore, sustainable forest use should also incorporate maintaining supplies of non-timber forest products which are essential to the livelihoods of local, forest-dependent people.

3.6.1 The annual rate of deforestation

There are indications that considerable areas of South Africa's forests have been destroyed intentionally during the last few centuries both by the indigenous inhabitants and settlers. Van der Zel (1989:3) notes that "the history of the forests is a tragic story of mismanagement, wastage and overexploitation. Through lack of effective control this process of extinction could not be halted 'and as a result' large areas of these forests were completely destroyed or reduced to scrub forests". This has led the ADB (1993:118&127) to conclude that South Africa, Lesotho and Swaziland, no longer experience deforestation, because they have *few* or *no* forests left to clear. Furthermore, the report states that the clearance of the country's indigenous forests was well advanced a hundred years ago — "South Africa long ago cleared its most productive stands of indigenous forests". Apparently, writers on South Africa's forests contend that the country has been experiencing deforestation since the past two centuries, however, they fail to agree on whether it is virtually complete, or it still ensues and at what rates. Forestry officials admit that forest and woodland resources are being depleted, but DWAF has not released any authoritative figure to substantiate this claim. A recent request submitted to the Department concerning the extent of forest loss received no response. In its 1990 global forest resources assessment, the FAO (1995a:19) maintains that South Africa's natural forests were being depleted at an annual rate of about 63,000 ha. Conversely, the most recent FAO estimate indicates that South Africa loses its forests at an annual rate of about 8,000 ha. This value is equivalent to 0.1% of the country's natural forests which is below the world average of about 0.24 %/annum (FAO, 2001:154; [1]). Certainly, this remains the only conclusive estimate of deforestation for South Africa.

3.6.2 The annual rate of forest establishment

Planting of non-indigenous trees was started in South Africa approximately 350 years ago, when the Dutch commander, van Riebeeck attempted to overcome wood scarcity in the Western Cape by introducing *Alnus glutinosa* in the mid 1650s. This was followed by many other exotic species. However, what appears to have been the origin of plantation forestry in South Africa was started in 1825 at Genadendal Mission Station, near Caledon. Nevertheless, it was not until 1876 that about 30 ha of eucalyptus were planted near Worcester to supply fuel for railway engines. Modest plantations of softwood species were established in the 1880s, mainly

along the eastern coast of the Eastern and Western Cape. The total afforested area (by the Cape government) of exotic soft and hardwood species aggregated 8,401 ha at the turn of the 19th century (Van der Zel, 1989:6).

The development of plantation forestry was generally slow; there were only 22,500 ha at the outbreak of the First World War in 1914. As a result, timber scarcity developed due to German submarine warfare against the Allied Forces which nearly succeeded in delinking South Africa from the European and American timber markets. The timber shortage that occurred during the war and the economic depressions in the post-war era were strong motivations for the government to establish plantation forests with the aim of attaining self-sufficiency in wood within 50 years after the war. Consequently, afforestation expanded by about 4,000 ha annually, immediately after the war. This rose to 6,000 ha/annum in 1922 (Van der Zel, 1989:11). South Africa had around 137,400 ha at the end of March 1938, with at least 100,000 ha planted during the 16 years that spanned from 1922 to 1938 (King, 1938:11). Although the First World War was the single most important factor which caused the rapid expansion of the South African forestry industry, the Second World War also provided an additional impetus and so were the discoveries of diamonds and gold (Van der Zel, 1989:9-10).

There are also forestry-specific factors that have promoted the development of the country's plantation forestry. However, the most important of such internal factors has been the inability of South Africa's indigenous forests to meet the country's timber requirements (ibid. 13). Recent and early documentary data on South Africa strongly support the view that the country is lightly forested. For example, Table 3.1 and King (1941:24) indicated that indigenous forests occupy an area of less than 0.2% of the total extent of South Africa. This early realisation would appear to have halted deforestation by now. For example, the most recent FAO estimate indicates South Africa's natural forest loss at 8,000 ha/annum (FAO, 2001:154; [1]). This figure falls below the annual rate of afforestation which the South African government states occurs at a rate of around 10,000 to 12,000 ha/annum. In response to a recent survey, DWAF concedes that afforestation occurs at an annual rate of 11,189 ha. A report by SADC (1999:119) reveals that the South African forestry industry has been planting an average of 20,000 ha/annum. Whichever is the correct estimate, it is apparent that the country has closed the gap between afforestation and forest loss. However, it is important to note that this has been accomplished by using inappropriate species, thereby failing to meet the primary condition for sustainable forest management — strong sustainability.

3.7 Policies influencing the conservation of forest resources

Forest is a resource of concern for many interest groups, including organisations of the international system, the state and the civil society. The organisations of the civil society include forestry industry or business; environmentalists; local, forest-dependent people such as women's groups, rural farmers, hunters, woodcutters and so on. Naturally, any policy, programme or intervention that increases or depresses the demands for forest products and services will certainly affect the quality and quantity of the resource. Since

forestry is a land-based activity, it is also affected by other sectoral policies that require land as their implementation media. Thus, de Montalembert and Schmithüsen (1991:9) were right when they considered *forestry policy* as an economic policy to foster the development of forestry sector, as an important and integral part of land use and rural development policies and as an indispensable element of environmental protection and nature conservation policies. Forest conservation is therefore subjected to a variety of international and national economic, social and environmental policies.

Such a host of policies that bear on the sustainability of South Africa's forest and woodland resources comprises forestry-specific policy; overarching policies, such as the country's constitution and the environmental policy. Crosscutting policy such as biological diversity is capable of influencing forest conservation. Multilateral and bilateral environmental agreements as another category of crosscutting policies have positive spillovers on forest resources, by reinforcing the country's ability to conserve its biological resources. On the other hand, sectoral policies that depend on land, for example, agriculture, wildlife and tourism control forest conservation by depleting or enhancing forest cover. The role of each of the above policies in forest and woodland conservation in South Africa is examined in the following sections which commence with the forestry policy.

3.7.1 Forestry policy

Generally, forestry policy defines the procedure for the use and management of a country's forest resources. For example, it creates opportunities for forest conservation; determines how benefits and costs of forest conservation should be distributed; and provides signals to all those involved in forest resource use and management on how they would be held accountable. It is therefore clear that South Africa's forestry policy should be the major determinant of the sustainability of its forests and woodlands. The manner in which the country's policy has affected or is likely to influence forest conservation is described below.

3.7.1.1 The previous forestry policy

The origin of South Africa's forestry policy could be traced to the various proclamations of the 17th and 18th centuries which were directed at the preservation of woodlands in the modern day Western Cape Province. For example, Jan van Riebeeck whose arrival at the Cape coast initiated an unprecedented exploitation of forests between 1652 and 1910, issued a proclamation in 1658, prohibiting the cutting of timber. This was the first attempt to conserve natural forests in South Africa, a goal that still remains valid in DWAF (Smith, 1998:37). It was unlikely that this and other proclamations controlled woodcutting, as forest destruction proceeded unabated in the area during the first half of the 19th century. The failure of those proclamations to preserve woodlands against excessive woodcutting caused the adoption of more systematic control measures, for instance, 'conservators' and 'rangers' were appointed; and 'The Forest and Herbage Act' was passed in 1859. The government became interested in forestry since then and as a consequence, appointed the first

Superintendent of Woods and Forests in 1880. The Superintendent laid down the principles upon which the forests had to be managed. In 1882, a Conservator of Forests was appointed in King William's Town to tackle the question of reckless felling in the Amatola forests. Having succeeded in controlling the sawyers, the Conservator set about the reservation of forests and grasslands that would be needed for afforestation at a later stage. About the same time a Commission was appointed for forest reservation to determine which provisional reserves should be declared demarcated forests (Robertson, undated: 10[1]; King, 1938:7).

3.7.1.1.1 Forestry statutes

Although forestry had gained a considerable ground on the government political agenda, an important milestone in the history of the forest service occurred in 1888, when the Cape Forest Act 28 which conferred on forest officers powers that had long been needed was passed. This was a most significant piece of legislation because it provided the legal basis for creating South Africa's first resource conservation reserves (Bigalke, 1983:12). Similarly, Smith (1998:38) reports that the object of this law was the protection and conservation of the plant and animal life of the Cape Colony. Equally important was the appointment of a Conservator for Transkei in the same year, which was undoubtedly the first effective step taken for bringing some of the region's forests under supervision. The Transkeian forests suffered grievous damage at the hands of local people and sawyers. The impact of the local people on the forests has been described by the following passage:

> The damage caused by natives strikes at the very existence of forest. They have no use for large sized trees but require millions of saplings for the construction of huts. In this way forests are denuded which follow the removal of undergrowth, the full grown trees gradually succumb and in the course of time disappear. In other cases forests are deliberately destroyed to make way for mealie gardens...I have noticed considerable extents which I knew years ago to be covered with magnificent forest trees now turned into bare hill-sides with gardens dotted over them...In nearly every valley of the Amatolas the lowest and often that portion of the forest which carries the best timber is eaten into and honeycombed by mealie gardens (King, 1941:33).

The government reacted to this devastation by reserving important forests and by encouraging the establishment of plantations to meet the timber needs of the surrounding communities. This control of forests extended further north into the Pondoland that was brought under the Crown in 1894. The Cape Forest Act 28, with a minor amendment in 1902 remained in force three more years after the Union, when Act 16 of 1913 for the whole country replaced it. Act 16 formed the foundation and scope of South Africa's forestry institution. It vested the conservation of state forests and the protection of the sources of all permanent water streams and rivers on state forestland in the Forestry Department. In addition, the Act conditioned the state to establish plantations to control soil erosion (Smith, 1998:40). That was understandably an implicit formalisation of the state involvement in the plantation forestry which continued until the mid-1990s when the state initiated the process of divesting itself of commercial forestry activities. Therefore, the Cape Province entered into the Union with a Forestry Department in a fairly advanced state of organisation; and with a definite

[1] Robertson, C. C. (Undated). The Forests of South Africa. Forest Department, PRETORIA.

afforestation policy. The conservation attribute of Act 16 was the prevention of any further increase in the number of woodcutters, who had already damaged forests in the George-Knysna-Tsitsikama area (King, 1938:10). Consequently, boards were set up under the guidance of magistrates to draw up a list, with a view to preventing any further increase in the number of woodcutters. Indeed, this had the immediate effect of restricting the number of sawyers, thereby relieving pressure on natural forests.

Thus, the Cape Colony pioneered forest conservation in South Africa. Its forestry influence gradually began expanding further north along the coast to Natal and also inland into the Transvaal and Orange Free State. For example, in the Transvaal all 'big forests' were closed for exploitation and the appointment of forest supervisors commenced in 1866, although there were only two by 1891. The Crown Lands Ordinance 4 of 1853 was promulgated in Natal, and the first trained forester to manage the region's forests commenced work in Natal in 1891. Finally, quarantine measures that involved destruction of plants infested with insects and prohibition of the importation of any vegetative materials from areas outside South Africa and Mozambique were introduced in the Orange Free State. The first foresters for the area were appointed in 1902 and the first Chief Conservator of Forests was appointed in 1903 (Smith, 1998:38-9).

Act 16 was slightly amended by Act 14 of 1917 (Robertson, undated: 11). This provided for the demarcation of forest reserves; control of servitude; expropriation of private property for forest conservation; protection of both demarcated and undemarcated state forests against trespass, fires, poaching, etc; and also provided for the sale of forest products. Although the above legislation was aimed at controlling indigenous forest loss, woodcutters still remained a serious threat and as a result, the government undertook an exhaustive inventory of the Tsitsikama and Knysna forests in 1928; and was completed in 1930. The forests in George were not included in this survey because their destruction had been virtually complete. The result of the survey indicated an immediate need for reduction in the annual cut; however, nothing substantive was devised until 1937, when the Woodcutters Annuity Act was introduced through parliament. The Act entailed payment of £25 each to woodcutters who had not qualified for old age pensions or who were unfit. This amount was based on their average earnings from woodcutting; and the government was willing to employ able-bodied annuitants to put them in a better financial position. Finally, deregistration of woodcutters was secured by Proclamation Number 58 of 1939 (King, 1941:29-30). It was also about that time that the reservation of the country's natural forest resources was virtually complete.

The establishment of plantation forests was also gaining momentum, as the government had already acknowledged that the overexploited natural forests could not meet the country's timber requirements. The government supported its afforestation policy by placing large sums of money at the disposal of the Department which indeed caused a rapid increase in the rate of afforestation. For example, out of the total 137,400 ha at the end of March 1938, at least 100,000 ha were afforested during the 16 years from 1922 to 1938 (King, 1938:11). The government also encouraged tree-planting on private land by subsidising seedlings

and by providing free technical advice. In addition, the government created a scheme of annual tree-planting competitions in KwaZulu-Natal (Robertson, undated: 12).

Additional statutes were introduced subsequently; for example, the Forest and Veld Conservation Act 13 of 1941. This Act transferred the forests on Trust Land which used to be under the control of the Department of Native Affairs to the Forestry Department, ending the dual control over state forests in South Africa. The Act also empowered the head of the state to declare shrubs and trees on private land as protected trees (Smith, 1998:40-41). This apparently removed private incentives for forest conservation on non-industrial, private land. Such intervention could also entail expropriation of local farmers from their traditional areas, since the government lacked responsibility for the majority population. Act 13 of 1941 was repealed by the Forest Act of 1968 to incorporate addressing the problem of forest and veld fires. Mountain Catchment Areas Act of 1970 was introduced to manage the sources of the most important water resources in the country. This was to consolidate and vest the management of water resources on both state and private land in one department, i.e., the Forestry Department. Finally, the Forest Act of 1968 was repealed by the Forest Act 122 of 1984. *Section 7* of this Act provides for the issuing of afforestation permits to both state and private interests (Smith, 1998:43). This *Section* remains functional today, as afforestation requires permit, since it is regarded as a 'stream flow reduction activity' according to *Section 36(1)(a)* of the National Water Act No. 36 of 1998.

South Africa's current forest and woodland resources owe their existences to these Acts. Implicitly, they contain sufficient conservation attributes; however, the environment in which these Acts operated contaminated such professionally sound forestry interventions. Put another way, the difference between the forestry policy and the framework economic policy (apartheid), where the former was expected to operate was blurred.

3.7.1.1.1.1 Forestry training

To address forest conservation issues better required well-trained staff; consequently, South Africans began to be sent abroad for forestry training as early as 1882. This was to augment the expertise of European-based professionals who had to be imported into the country. In 1906, a South African School of Forestry was established, however, it was closed down in 1911 shortly after the Union because it was decided that the South African Forestry Service should draw qualified forestry officers from the Oxford School of Forestry. The priority for employment in the forestry service was given to South African graduates on Rhode's Scholarship. Overseas training of South African professional foresters ensued until 1932, when a Forestry School was established in Stellenbosch, giving rise to the present day "Faculty of Agricultural and Forestry Sciences". The recognition of the need for technical officers caused the establishment of a technical forest school in Tokai in 1912. This was transferred to Saasveld in 1932; and is now called the "Faculty of Forestry, Port Elizabeth Technikon" (King, 1938:10).

3.7.1.1.2 The goals of the previous forestry policy

Generally, there were two main aims of the government policy on forestry. *First*, to protect the indigenous forest and woodland resources; for example, Ackermann (cited in Bigalke, 1983:12) noted that the South African forestry was born out of the need to conserve the country's limited natural forest resources. The *second* goal was to undertake and promote afforestation due to the treelessness of the country which had increased its dependence on timber imports. In other words, the development of plantation forestry industry was an important goal. This policy remained in force and was slightly modified to check the harmful environmental effects of plantation forestry, especially the ability of certain species to outcompete native species or to increase the rate of water loss through evapotranspiration. Like other forestry policies of the time, the South African government at best, saw no role for rural, forest-dependent people, or at worst adopted a deliberate policy of marginalisation. For example, Peart and Wilson (1998:238) have observed that the concern for the environment before the implementation of democratic rule in South Africa, "was largely articulated within an 'authoritarian conservation' paradigm which focused on protecting the natural environment from people". This resulted in forced relocation of Africans to make way for national parks and nature and forest reserves; and as a consequence, conservation policies were viewed negatively by the black majority population.

In conclusion, South Africa's previous forestry policy, that started as a proclamation issued by the first Governor of the Cape, Simon van der Stel in 1683, was to control the reckless exploitation of forests for timber and fuel (Grut, 1977:33). Subsequent proclamations and Acts addressed the same problem until it became very obvious that natural forests could not meet the timber and fuelwood needs of the society that laws favouring the establishment of plantations were passed in the last half of the 19th century. External factors such as the discovery of diamonds and gold which required sufficient timber for mine props, the First World War that created timber shortage and the subsequent Great Depression encouraged the expansion of the country's plantation forestry. Apparently, market failure which in that context meant the inability of the resource to meet the needs of all vested interests equitably, prompted the incremental formulation of South Africa's forestry policy.

3.7.1.2 The existing forestry policy

The current South African forestry policy is formulated to rectify the market and policy failures that characterised the previous policy. This is strongly encoded in the following statement: "A new forest policy must address the needs of South Africa for the benefits coming from forestry, tangible and intangible...and the needs of communities, workers and businesses involved in forestry". This had been echoed further by the then Minister of DWAF, Prof. Kader Asmal, who stressed that the South African forestry policy must continue not only to foster and encourage the industry, but also to ensure that forestry which has been almost reclusive, is brought to all stakeholders in ways that can improve their quality of life (DWAF, 1995:1).

3.7.1.2.1 Forestry policy formulation

DWAF embarked on the process of policy formulation immediately after the establishment of the Government of National Unity in 1994. The Department set up a representative organising committee that initiated the process of a national forestry policy conference whose aim was to draw out broad participation of vested interests, identify areas of common ground and highlight policy issues. Essentially, there were three groups of participants to the policy formulation process: the government, civil society and the representatives of bilateral organisations.

3.7.1.2.1.1 The government

This includes DWAF, as a lead agent with legislative mandate to ensure that the country's forest and woodland resources are managed in a sustainable manner. Other government departments whose activities bear on South Africa's forests and woodlands were also represented in the policy formulation exercise. For example, the Departments of Agriculture; Land Affairs; Trade and Industry; Labour; Minerals and Energy; Arts, Culture, Science and Technology; Education; and the Department of Environmental Affairs and Tourism participated in the policy development process. Other organisations of the state such as National Forestry Advisory Council and parastatals like universities and research institutions, for example, the CSIR were also involved in the policy formulation. Representatives from the National Assembly Portfolio Committee were also visible.

3.7.1.2.1.2 The civil society

The participation of the civil society was elicited through conferences, for example, a National Forestry Policy Conference was held at the World Trade Centre in Kempton Park, on 2 and 3 March 1995. Three hundred and thirty delegates, from all interest groups, including a contingent of about 60 representatives of rural communities attended the gathering. To facilitate their effective participation in the main conference, the representatives from rural areas had to go through preparatory meetings. Peart and Wilson (1998:258) assert that "preparatory pre-conference meetings were held in order to enable traditionally marginalized people to participate in the conference more effectively". A representative editorial committee compiled the debates of the conference, the conference report and some further material into a discussion paper appropriately termed "Towards a policy for sustainable forest management in South Africa" that was issued by the Department in July 1995. Critique and comments were received from 68 parties. This was followed by the conference on the Greening of South Africa which was held on 19 and 20 October 1995. This was organised *by* women *for* women, and it attracted 365 delegates countrywide. The above led to the development of the country's White Paper that was issued in March 1996. The paper was termed "Sustainable forest development in South Africa: The policy of the Government of National Unity" (DWAF, 1996:2).

3.7.1.2.1.3 Bilateral organisations

Representatives of organisations such as the UK's DFID and the Danish co-operation for Environment and Development represented the international community in the formulation of South Africa's forestry policy.

3.7.1.2.1.4 The salient features of the existing policy

The government's overall goal is to promote a sustainable forestry sector capable of satisfying the social, economic, cultural and environmental values of its society. This is to be pursued by encouraging wider participation in policy formulation and implementation, particularly by rural communities, the private sector and other government economic sectors that exert tremendous pressure on forests. Participation in policy formulation has been very comprehensive, as outlined above, however, the role of 'unofficial' stakeholders in policy implementation remains embedded in the following policy objectives that address 10 main features of the sector. Accordingly, the forestry policy tackles the issue of natural resource management; working conditions of the workers; the industrial subsector; community forestry; conservation of natural forests and woodlands; global concerns for SFM; and examines the position of South Africa in relation to SADC and emphasises the importance of bilateral relations. Additionally, the role of research, education and training in forest conservation has clearly been stipulated in the policy. The objectives of South Africa's forestry policy are therefore summarised under these themes.

i. To develop the forestry sector within the context of overall land and water resources-use planning

This is premised on the fact that many sectors compete with forestry for natural resources, particularly for land and water which is consumed both by the domestic and industrial sectors. The concern for water is also justified by the arid conditions that prevail over much of the country. Therefore, the government intends to regulate where and how afforestation should be practised, especially in the headwaters of streams and rivers. The government also undertakes to remove afforestation from sites where demonstrable environmental damage has been incurred.

ii. To improve the working conditions of those engaged in the forestry sector

This objective is founded on the recognition that the encouragement of sustainable development and hence a competitive forestry sector is subject to a dynamic, skilled and competent manpower, who are satisfied with their employment conditions. It also follows that the concern for the physical environment in the forestry sector is dependent on the professional skills of employees. Equally important is their time horizons in forest conservation, i.e., their ability to retain and grow in their jobs is a strong incentive for them to develop and implement innovative forest conservation measures. It is also important to note that forests appeal better to government and public through provision of employment, their ability to increase incomes and raise the standard of living of the population, especially in rural areas where the resources occur. The WCFSD

(1999:65) has clarified that forest users such as "timber corporations, groups who trade in non-timber forest products, and forest workers, value forests for the profit, income, and job opportunities they provide".

iii. To develop a diversified, nationally and internationally competitive industry that meets the needs of all interests without degrading the physical environment

The government recognises the important role that the forestry industry plays in the national economy. The centrality of plantation forestry in South Africa is attributable to the natural scarcity of indigenous forests. The government's role in this sub-sector is largely through co-ordination, stimulation and control of plantation forestry. The co-ordination role is aimed to harmonise the activities of the industry with other land and water resources-dependent interests, while the stimulation function deals with the government's intention to diversify the sector. Typically, the government would facilitate the entry of smallholders and entrepreneurs by creating enabling conditions; undertake or support research; encourage investment and any other activity that it sees fit to expand and sustain the industry. Finally, the control function of the government is extremely critical, if the industry has to appeal to the majority of South Africans and has to remain competitive in the global economic order. There are indications that plantation forestry has adverse environmental repercussions, particularly the water effects. The government would strive to use its legal mandate to control, mitigate or discourage the harmful environmental effects of the industry.

iv. To encourage 'community forestry' to improve the social, economic and environmental status of rural communities

The South African government acknowledges that community forestry improves the social and physical environment of local people, conserves forest and woodland estates and creates income opportunities for rural, peri-urban and urban communities. It is seen as a viable enterprise, much needed in every rural district to create employment. Since the benefits of community forestry accrue to local communities, the government would *first*, attempt to develop community forestry in a context whereby the beneficiaries are the primary driving force, particularly on communal lands. However, state forests would be managed in a partnership with local communities. *Second*, the government aims to promote community forestry by encouraging people to plant trees, especially the indigenous species in their gardens and fields, on streets and parks and in designated plantation forests. This would enrich the local resource base, relieve pressure on natural forests which are extremely important for the conservation of biological diversity and for improving the living environment of rural communities.

The government seeks to implement its policy on community forestry by supplying relevant information and technologies which would arise from scientific research programmes. Provision for financial support to community forestry would be made where necessary, although the government intends to pursue the "principle of people-driven community forestry". According to the National Forests Act of October 1998, DWAF would encourage community forestry by availing incentives such as information, advice and extension services;

seeds and seedlings; and grants, including recovery from disaster on condition that there are no such grants from any other source. It would therefore be appropriate to state that community forestry is sufficiently subsidised, i.e., its establishment and sustainability would not be a formidable task.

v. To conserve natural forests and woodlands

This recognises the important roles that South Africa's forest and woodland resources play, both at the local and planetary levels; and emphasises the need to perpetuate these. Accordingly, the government aims to protect lawfully designated protected state forests against illegal operations. Forests in this category will be degazetted only by a two-thirds majority of the National Assembly. State forests whose management has been decentralised to Provincial Forest Administration would be carefully monitored to ensure that national interests are achieved. Similarly, state forests whose authorities have been delegated to other agencies would be monitored; and the central government would use its regulatory mechanisms to ensure that the resources are adequately conserved. However, the administration of forests and woodlands on land outside state forests lies with the competent conservation agencies, communities and the private sector. Nonetheless, the government would still encourage the sustainable use and management of these resources, rehabilitation of degraded forests and protection of forests and woodlands under threat. The government will meet its monitoring responsibility for forests and woodlands in this category; provide information and technology for SFM and use regulations, persuasion and influence to ensure that national objectives are met. In this context, *information* is an incentive for forest conservation.

vi. To ensure that the national accounts of the state of South Africa's forests and woodlands are maintained up-to-date for presentations at international forums, where the government would be well represented

This objective is developed in response to the most recent global environmental concerns such as Agenda 21 that reiterates that national forests and woodlands should be used and managed sustainably. The government also recognises the important implications of environment for trade — environmentally literate consumers who are also the wealthiest exert strong influence on global timber markets in which South Africa wants to remain competitive. Therefore, this objective reflects the government's need to implement internationally-agreed-upon norms in the country's forestry sector.

vii. To establish partnership with other SADC member states for SFM

Deforestation has challenged forest conservation in many Southern African countries, including South Africa. SADC has identified the control of deforestation by increased afforestation, fuelwood plantations, and tree-planting as a priority environmental issue in its environmental review of 1993, long before the admission of South Africa into the organisation. SADC member states also maintain that there is a considerable economic opportunity for the region in SFM. Therefore, South Africa has much to learn from the knowledge and experience of other SADC countries by joining in designing common initiatives to address forest conservation

and other natural resources in general. South Africa would work to assist the free flow of ideas, information and technology among SADC countries, in addition to assisting in establishing common norms and standards to safeguard the sustainability of the region's forest and woodland endowments, and ensure equitable trade in forest products among countries. For example, development of criteria and indicators for timber certification which is an important market instrument for realising sustainable forest management in the region.

Forest certification has already been recognised as an important intervention for sustainable forest management in South Africa. According to FAO (2001:158), 828,000 ha of South Africa's forest have been certified by Forest Stewardship Council (FSC), making it a leader in the scheme. SAFCOL, which is the biggest timber company, is certified according to the FSC criteria, and so are Mondi, Bracken Timbers and African Charcoal. Sappi Forest Company pursues ISO 14001 series environmental management system certification. Clearly, the concern for environmental conservation encourages companies to compete to become 'ecological innovators' in their areas of specialisation. 'Ecological innovators' refer to companies that go a step further from declaration of intent to active environmental conservation, such as development and implementation of new products (environmental technologies), new processes, new resources, new markets and new systems. Ecological innovations are known to increase a company's competitiveness, both at national and global levels (Blättel-Mink, 1998:50). In the forestry sector, several timber firms that scramble to have their forest management practices certified show such competition.

Although timber firms want their forest management practices to be evaluated and certified to attract consumers, they prefer certification systems which are well entrenched in environmental protection. This is because consumers readily identify with environmental activism. Thus, many timber companies would prefer the Forest Stewardship Council criteria because only 25% of its criteria is developed by economic interests, while 75% of the criteria is formulated by social and environmental interests (Upton and Bass, 1996:186; French, 1998:82). ISO 14001 series, which is pursued by Sappi, is also an attractive tool for environmental conservation. However, French (1998:82) asserts that the major weakness of the ISO system has been its relatively narrow base, i.e., "industry has been active player from the beginning, but environmental groups did not participate until recently". This is how the system has acquired its unpopularity. Notwithstanding, Lawes *et al.* (1999:461-9) maintain that the primary difference between the two schemes is that FSC certifies the route by which the product is achieved, and requires the participating company to guarantee custodianship and management of the product from production to processing. Conversely, the ISO series certifies the process of achieving the product, i.e., management capacity and performance standards, but not necessarily the product.

viii. To establish bilateral international relations in forestry

This signifies a clear understanding of the importance of exchange of information, technology and expertise between countries. For example, the bilateral relations between the UK and Denmark, who funded the process and contributed human resources, have facilitated the formulation of South Africa's existing forestry

policy. Bilateral relations also foster development of common norms and standards for forest products and hence promote international trade in forest products between nations. This can have important results for forest conservation.

ix. To promote research, technology and innovation in the forestry sector

The government recognises the primary importance of research in the provision of information and the development of techniques for the numerous facets of forestry. Consequently, the National Forests Act empowers the Director-General to authorise forestry research that must promote the objectives of forestry policy and conform to national policy for science and technology. The Department also thinks that it is necessary to maintain science and technology capacity that is appropriate to the development of forestry, and the innovation required to promote progressive improvement in forestry policy and practice.

x. To promote education and training

The government appreciates that well educated, skilled and competent professional staff and workers are prerequisites for sustainable development of the forestry sector. Therefore, the government would invest in the education and training of forestry personnel at different levels with priority given to forestry skills which are in short supply. This would entail revision of curricula of some tertiary institutions to reflect more recent concerns. Basic literacy among forest workers would also be addressed. The government would encourage forestry firms to participate in training incentive schemes since the overall objective of the policy is to assure the availability of competent personnel to carry out the numerous and diverse activities in the indigenous and industrial forests.

3.7.1.2.2 Policy implementation

This section focuses on identifying the competent authorities for implementing South Africa's forestry policy and on examining the range of instruments at their disposal, having examined the theory of policy implementation in the preceding chapter. There are many actors that participate in policy implementation in South Africa, particularly at the grassroots and hence the term participatory forest conservation that simply recognises the unwavering role of all policy-affected and policy-connected stakeholders in policy implementation. There are equally many policy instruments some of which develop as the situation conditions, and have proven to be much useful from the standpoint of forest conservation, although they have not been formalised. However, the actor(s) and the instruments depicted here are solely the official ones, or those that carry legal mandate.

3.7.1.2.2.1 Policy implementers

The three-tiered governing system in South Africa permits policies to be administered either at the central, provincial or at the local government level. For example, DEAT conducts little hands-on administration of environmental policy, having delegated most of its responsibilities to the provincial government. On the other

hand, DWAF has kept the implementation of forestry policy under strong centralised control and has established a network of regional offices, rather than delegating policy implementation functions to the provincial or local government (Peart & Wilson, 1998:146). While it is too premature to pre-empt the outcome of this centralised policy implementation process as the new policy has barely taken off, it is likely to generate lack of co-operation between DWAF's forest officers and provincial or local government law enforcement agents.

3.7.1.2.2.2 Policy instruments

Generally, policy objectives are expressions of government's broad intentions, while policy implementation is the process of putting these otherwise wild dreams into practice using assortment of policy instruments that are specifically designed to influence the behaviour of policy consumers in a particular manner. However, a detailed, comprehensive, yet integrative planning phase that seeks to translate policy statements into *actions* based on a country's forestry problems often precedes policy implementation. In principle, amorphous policy statements are reformulated into compact, specific objectives and targets. This is the so-called National Forestry Action Programme whose primary objective is to provide a framework for implementing the new forestry policy.

The preparation of South Africa's National Forestry Action Programme, recognised by FAO and United Nations Conference on Environment and Development as the most appropriate planning process for sustainable forestry development and implementation of Agenda 21, commenced in August 1996 and was released in September 1997. In the National Forestry Action Programme, the preceding 10 general statements of intent have been reformulated into 22 specific problem statements with strategies for accomplishing them, and also with indicators for monitoring and evaluating achievements. For example, the problem statement for community forestry emphasises that:

> At least two million rural households in South Africa have long gained benefits from trees and associated resources. However, these resources are in decline. Although there are notable successes, community forestry efforts in South Africa and elsewhere have frequently failed to reverse resource decline and to impact on improving rural livelihoods (DWAF, 1997:21).

The recommended overall strategy for overcoming this problem consists of a *goal*; a *strategy* which defines tasks, responsibilities, schedules and prevailing, or intervening hindrances; and *indicators* for achievement. The goal for community forestry is "to put in place measures to ensure that institutions, services, technologies and policies promote and support self-sustaining community forestry". On the other hand, the strategy is "to develop, throughout the country, provincially based planning frameworks for the development of community forestry, based on an improved understanding of local resources, opportunities and aspirations". This strategy can be realised by a number of interrelated tasks, one of which is, for instance, "to improve understanding of the value of community forest resources at the local and national levels through developing a system of

national forest resources accounting". The competent authority for implementing this task is DWAF alongside the Central Statistical Office; the timeframe runs from Jan 1998 to Dec 2000; and the identified obstacle is the unavailability of relevant skills. Achievement of the goal can be assessed by an improved understanding of community forestry's value and contribution; agreed roles and responsibilities for various stakeholders; provision of efficient, effective and complementary services; removal of obstacles to community forestry; and by mobilisation of resources (DWAF, 1997:21-5). These are the specific indicators of achievement for the above goal.

The legitimacy of each problem statement in the National Forestry Action Programme is examined in a broader policy context. For example, what is the position of the White Paper on Sustainable Forestry Development in South Africa; Rural Development Strategy; White Paper on Agriculture; or White Paper on the Conservation and Sustainable use of Biological Diversity on that particular problem? This is then followed by the 'current setting' of the issue concerned (e.g., community or industrial forestry). Although past profiles of the issues under consideration may be invoked, much attention is frequently given to the present situation. For community forestry, the roles of the government, NGOs and community-based organisations, commercial companies and traditional authorities are examined. These are the foundations for *strategic actions* on community forestry. The same type of planning is applied to the other sectors of the South African forestry: natural forests and woodlands; industrial forestry; human resources development and labour; research, technology and innovation; and so on. It is therefore important to note that this is a sound planning exercise, because strategic actions or plans are grounded in the country's environmental, social and economic problems.

While a comprehensive and integrated approach to forestry policy development, including action plans or strategies is much needed in principle, the development of these green plans is fraught with problems. One of the problems with this approach is the tendency for National Forestry Action Programmes to be formulated in a technical and top-down manner, although the importance of public participation is emphasised. The extent of social participation is therefore rather limited or even completely lacking; politicians and bureaucrats, who initiate and own such plans retain control at the national level. Thus, what is sustainable in this type of planning is largely determined in a top-down manner by the existing government (Bührs & Aplin, 1999:317-8). However, the South African government has countered this problem by involving the representatives of all other stakeholders in the planning process. In fact, the forestry industry, local NGOs that represent the interests of rural communities, community-based organisations, other government departments with interests in land, international organisations, think tanks, tertiary institutions and private individuals were represented.

Another related problem of National Forestry Action Programme is that it lends itself to symbolic politics, i.e., the rhetoric of green plans and strategies can be impressive, but their implementation minimal or non-existing

(ibid.). However, with South Africa's National Forestry Action Programme barely three years old, it is too premature to challenge this statement.

Explicitly, the National Forestry Action Programme attempts to translate South Africa's forestry policy into workable programmes of action. However, for the programmes to yield desired outputs require legislation which is the aggregation of laws that seek stakeholder compliance. "Legislation provides the legal instruments which are necessary to put into effect many of the objectives of a forest policy". It facilitates the translation of the objectives of a policy into specific legal provisions influencing the use of forest resources and the way these resources affect the development of society (Husch, 1987:44). It is this recognition that the South African White Paper on forestry policy has emphasised the formulation of a new law to embody all the necessary aspects of the new national policy, as indicated in the following passage:

> The purpose of the new Act will be to promote the sustainable development of all forest resources in South Africa and to regulate and control afforestation and deforestation. It will reflect an integrated approach to the protection, management and utilisation of forest and woodland resources. This would accord with international custom and reflects the principle of stewardship under which every forest owner must ensure that the entire forest resource is sustainably managed (DWAF, 1996:25).

As a result, a new law termed the '*National Forests Act* of October 1998' came into effect to encourage managing forests in the above manner. The formulation process and the contents of the law are summarised in the following sections.

3.7.1.2.2.2.1 National Forests Act (NFA) of 1998

This is the South African Law that seeks fair and equitable distribution of the country's forest and woodland resources among user groups. With many interest groups, each exerting strong demand for forest and woodland products and services, the formulation of a law to harmonise their various needs had not been an easy, one-stage task. Consequently, the 'National Forests Act' had to pass through several stages in the form of a discussion paper, green paper, draft white paper and a white paper which saw the translation of a Bill into an Act. The *first* step in the process entailed the appointment of a legal drafting team. A steering committee, whose members were intimately involved in the development of the National Forestry Action Programme, was appointed to examine the contents of the Bill. This was to ensure that there was a fair representation of stakeholder viewpoints. *Second*, a working paper containing suggested provisions for the new Bill was produced for consultation by the end of September 1997. Consultation on the proposed contents of the Bill included provincial and local governments, and stakeholders from the private sector, NGOs, unions, women's groups and civic society. *Third*, the working paper was revised, incorporating the views expressed during the consultations. This led to the second draft of the working paper that was discussed at a national workshop in March 1998. *Finally*, the debates and discussions of the national workshop were prepared into the National Forests Bill that was presented to parliament and was passed the same year in October 1998 (DWAF, 1997:133).

3.7.1.2.2.2.1.1 The main features of the law

Although the term law in the minds of many is associated with meting out of penalties, it is also an agent of change in that it incorporates incentives that incite people to conserve forest resources. It is this aspect of forest law that has increasingly become very important in the conservation of biological resources on non-industrial, private and communal lands, especially in industrial nations. For example, the US' wildlife habitat and forest incentives programmes. To relieve pressure on its scanty natural forest and woodland resources, South Africa's forestry policy has attempted to encourage the country's forest-dependent stakeholders to participate in forest conservation through incentive schemes, mainly non-financial ones. These have sufficiently been balanced by regulatory and deterrent measures to safeguard managing these resources according to the prescriptions of the policy. The National Forests Act is divided into nine chapters and the characteristic feature(s) of each chapter is(are) summarised below. In reality, proper enforcement and monitoring of South Africa's Forest Act will result in forest conservation, since a few of the country's population depends directly on forest resources for self-provisioning.

Chapter 1

This chapter introduces the National Forests Act and is appropriately termed the "Introductory Provisions". It sets out the purposes for which the Act is passed, i.e., to:

i. promote the sustainable management and development of forests for the benefits of all stakeholders;
ii. create the conditions necessary to restructure state forests;
iii. provide special measures for the protection of certain forests and trees;
iv. promote the sustainable use of forests for environmental, economic, education, recreational, cultural, health and spiritual purposes;
v. promote community forestry; and
vi. to promote greater participation in all aspects of forestry and the forest products industry by persons disadvantaged by unfair discrimination.

The chapter also defines the important terms used in the Act, facilitating the interpretation of the law.

Chapter 2

The second chapter addresses the first objective of the Act, namely to promote the sustainable management of forests. The first part of this chapter lists the principles of sustainable forest management that apply to all official decisions affecting forests. These principles *firstly*, state that natural forests must not be destroyed, except for land use types that have superior economic, social or environmental benefits. *Secondly*, a minimum area, the appropriate size of which should be determined scientifically for each woodland type should be conserved. *Thirdly*, forests must be developed and managed to conserve biodiversity, ecosystems and habitats; promote fair distribution of their products and services, and to advance people who were unfairly discriminated against.

The application of these principles therefore requires that any activity that will impact on a natural forest or woodland must be preceded by an EIA. The first part of the chapter also empowers the Minister to set criteria, indicators and standards for assessing and enforcing SFM; and to create incentives to manage forests sustainably. The criteria, indicators and standards may apply nationally, regionally or to specific forest management units; and bind all owners of land on which there are forest types to which the standards apply. The second part of the chapter deals with research, monitoring and reporting. Here, the Act obliges the Minister to conduct or commission research to promote the objectives of the forestry policy. Monitoring of forest resources and the dissemination of the information derived from monitoring are mandatory.

Chapter 3

The third chapter consists of special measures to protect forests and trees, and is subdivided into four parts. *Part one* prohibits the destruction of indigenous trees in any forest without a license. *Part two* allows the Minister to declare certain forests as protected forest areas. It sets out the procedure for and effect of such declaration. Furthermore, it has provisions for the management of such declared areas. *Part three* allows the Minister to declare a tree, a group of trees, a woodland or species of trees as protected entities. The procedure and effect of this declaration are also set out. There is also an emergency procedure for protecting trees which are threatened with immediate harm. Finally, p*art four* empowers the Minister to intervene urgently to prevent deforestation and to restore deforested areas to their original states. The procedure for and the effect of the exercise of these powers are set out. There is also a provision for the Minister to enter into agreement with the owner of the deforested area to salvage the situation. The most important conservation aspect of this chapter is that "Any natural or juristic person or any organ of state may apply to the Minister to protect a forest, tree or group of trees".

Chapter 4

Chapter 4 deals with the use of forests, and regulates a wide range of uses of primarily state forests that range from recreational use to commercial and community forestry. Thus, the chapter is divided into three parts. *Part one* deals with access for recreation and related purposes — sets out the right of access to state forests for the purpose of recreation, education, culture or spiritual fulfilment. It is noteworthy that this right may be restricted and the procedure for doing so is stipulated. Furthermore, the Minister may encourage the voluntary granting of access to forests that are outside the state jurisdiction. There is indeed a provision for limited financial assistance to forest owners who put their estates to this use and also for compensation, in case they suffer any damage for having allowed access. *Part two* vests the right to use and manage state forests and the forest produce in them in the state (Minister). It provides for the transfer of rights in state forests by licenses, servitude, lease agreements and agreements to sell forest produce. A provision is included to avoid allocation of conflicting rights in state forests. *Part three* addresses the most important issue of community participation in forest conservation (community forestry). It encourages communities that wish to indulge in

community forestry activities in state forest and woodland areas to enter into agreements with the Minister, and sets out the procedure and the minimum requirements for entering into such agreements. Also, the Minister may avail financial or other forms of assistance to community forestry and certain categories of forestry. For example, the Minister may provide information, training, advice and management and extension services; establish and maintain nurseries and other facilities to provide seed and plants for community forestry; and provide material or financial assistance for community forestry, including recovery from disaster.

Chapter 5

Chapter 5 addresses the various institutions that play a role in implementing the National Forests Act. The *first part* of the chapter deals with the establishment, objectives, constitution, meetings, staffing and funding of National Forests Advisory Council. The main objective of the Council is to advise the Minister on all aspects of the South African forestry. It is empowered to establish the Committee for SFM to advise the Council itself, the Department and the Minister on all aspects of SFM and the Committee on Forest Access. The Committee on SFM and the Committee on Forest Access are permanent committees of the Council. The *second part* deals with the establishment of the National Forest Recreation and Access Trust, while the *third part* empowers the Minister to establish a panel from which facilitators, mediators and arbitrators could be selected for purposes of dispute resolution. Some of the factors that they ought to take into account in resolving conflicts are stipulated.

Chapter 6

Chapter 6 addresses the administration of the Act. *Part one* deals with the general powers and duties of the Minister. For example, the Minister must develop and implement a forestry policy; assign and withdraw the assignment of certain powers and duties; delegate certain powers and duties; expropriate property for forestry; reserve state land for forestry; and make regulations. *Part two* deals with the general powers and duties of the Director-General; and the delegation of certain powers and duties to an official of the Department, an organ of state; and to other persons or entities who are not an organ of state. The procedure for such delegation has been clarified, accordingly.

Chapter 7

Chapter 7 sets out the relevant offences in terms of the Act and their respective penalties. *Part one* deals with sentencing of offenders, while *part two* lists all the offences relating to the corresponding chapters in the Act. One important feature of this chapter is that the Minister may amend the maximum amount of R50,000 to counteract inflation. The ability of inflation to erode fines over time and therefore reduce their deterring effects has often been overlooked in many forest laws.

Chapter 8

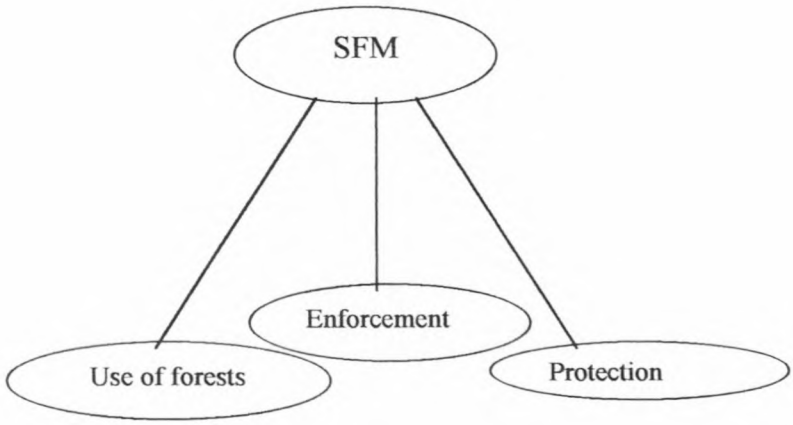
Chapter 8 is concerned with enforcement. It provides for the appointment of forest officers and specifies their powers to police this Act effectively.

Chapter 9

Finally, Chapter 9 deals mainly with the transition to a new legal instrument for forest, in addition to miscellaneous items that need to be regulated.

Thematically, the National Forests Act can be portrayed as a tripod. Chapter 2 that deals with SFM, its criteria, indicators and standards; and emphasises the importance of research, monitoring and reporting forms the top of that tripod. One leg (Chapter 3) of the stool that supports SFM emphasises the "protection of forests and trees". Protection refers to the protection of natural forests, protected areas and trees against illegal activities and controlled forest areas. Another leg (Chapter 4) supporting SFM deals with the "use of forests"; this incorporates both non-consumptive and consumptive uses and collaborative forest management. Finally, the other leg of the sustainability stool is the enforcement of the Act (Chapters 7 & 8) that defines the offences and penalties; and assigns the responsibilities of forest officers. The following Figure 3.1 conveys the broad picture of the National Forests Act.

Figure 3.1 Representation of the structure of National Forests Act



3.7.1.2.2.2.1.1.1 Striking characteristics of the National Forests Act

The National Forests Act of 1998 is extremely comprehensive, translating what would have appeared vaguer in the policy into concrete or specific legal provisions. There are outstanding features of South Africa's Forests Act which if emulated in other Southern African countries would protect the region's natural forests and woodlands. For example, in South Africa, the government has the power to intervene to halt deforestation in any forest area within the borders of the Republic by declaring any forest that undergoes deforestation as controlled forest area. A violation of this directive is a second category offence and carries a penalty of a fine or imprisonment for a period of up to two years, or both a fine and such imprisonment on a first conviction. Forest loss and degradation frequently occur and escalate without the knowledge of a country's competent authorities. To avoid running into this fix that has pervaded other African countries, the government has

mandated DWAF to monitor forest resources; their biological diversity, health, vitality, productive functions, and their protective and environmental and social functions. The Department must also monitor the level of provision of socio-economic benefits; and the status and appropriateness of the policy and the legislative and institutional framework for forest management.

Another important feature of the Act is that the Minister can grant financial or other assistance to a registered landowner who has voluntarily agreed to have his/her land set aside as a *forest nature reserve*; a *forest wilderness area*; or *any other type of protected area*. This approaches the US' wildlife habitat and forest incentives programmes or the EU's set aside programme. Equally important is the absence of arbitrary reservation of protected areas, i.e., there is a legal provision for the Department to consult with the communities residing on the land adjoining the proposed protected area. To discourage illegal operations in state forests the Law authorises any court that imposes a fine for an offence in terms of this Act to disburse a sum of not more than one-quarter of that fine to the person whose evidence led to the conviction or who helped bring the offender to justice. Obviously, this would encourage local people to police state forests and woodlands. However, the negative aspect of this is that this benefit may not accrue to forest officers in the service of the state. Implicitly, they have no incentive to arrest offenders or would even accept bribes to look the other way unless there are administrative benefits associated with each offence successfully prosecuted.

3.7.1.2.2.3 Forest resource ownership

The ownership of forest and woodland resources in New South Africa is complicated by the previous governance systems which consisted of the Republic of South Africa and the four homelands. Currently, two main categories of forest and woodland resource ownership are recognised: 'state ownership' that is achieved through DWAF and the Department of Public Enterprises; and 'commercial or private ownership'. There is no official communal tenure, although dilapidated woodlands in the former homeland administrations have been managed and used communally. The ongoing attempts to devolve certain categories of these woodlands to the rightful owners of the underlying land is certainly a procedure for formalising communal tenure and management in those former homeland administrations.

3.7.1.2.2.3.1 The state ownership: SAFCOL

The ownership of the industrial plantations of the former Republic of South Africa has been vested in the South African Forestry Company Limited (SAFCOL); a parastatal, which was created by *Section 2(1)* of the Management of State Forests Act, No. 128 of 1992. SAFCOL commenced business on 1 April 1993 and is currently placed in the Department of Public Enterprises, where it is expected to undergo restructuring. In this context, *restructuring* means *privatisation* that is aimed at relinquishing the role of the state in plantation forestry to the business sector. As the Chief Director of Forestry, Ms Lael Bethlehem writes:

Whereas in the past the state has planted, tended and sold trees, it will increasingly turn its attention to promoting and regulating forestry. It will concentrate more on pressing problems such as the management of indigenous forests and the use of trees in community development projects (Weekly Mail & Guardian, March 19, 1999).

The establishment of SAFCOL therefore ended the long history of the state's direct involvement in commercial forestry. Industrial plantations in the ownership of the Department of Public Enterprises cover an estimated area of 270,000 ha. Ninety percent of this area is under pines, while 8.8% and 1.2% is under eucalyptus and other hardwoods. In addition to these commercial plantations, the company manages approximately 100,000 ha of conservation areas. Apparently, SAFCOL manages about 400,000 ha of state forestland and other intrinsic assets such as buildings and machinery. The company employs more than 5,000 people, as the Department of Public Enterprises puts it: "SAFCOL's staff compliment has subsequently grown to almost 5,400"[11]. Certainly, this is how the company makes a meaningful contribution to community development and hence natural resource conservation. Job security reduces poverty, lessening dependence on consumable components of biodiversity.

To disengage itself fully from the ownership of industrial forests, the state has sought the restructuring and/or privatisation of commercial forests and the associated assets currently under the control of the company. It is important to note that restructuring will affect only the company's built infrastructure, capital equipment and trees, but *not* the underlying land. As Bethlehem emphasises: "The land will not be sold, but will be leased with strict provisions for environmental controls, community rights and public access" (Weekly Mail & Guardian, March 19, 1999). *Section 27* of the National Forests Act deals with the procedures and conditions for leasing state forests, while *Sections 19-21* address public *access* or non-consumptive use of forests and woodlands. Furthermore, the policy framework for restructuring emphasises economic empowerment, i.e., leasing of state-owned enterprises, including forests and woodlands should aim at empowering previously disadvantaged groups[11].

3.7.1.2.2.3.2 DWAF forests

The ownership of indigenous forests in the former Republic of South Africa has been vested in DWAF. Similarly, DWAF assumed responsibility for the management of the extensive forests of the four former homelands when they became reabsorbed within the New South Africa in 1994. These forests cover more than 238,436 ha and are scattered across the Eastern Cape, Mpumalanga, Kwazulu-Natal and the Northern Province. These comprise around 130,464 ha of poorly managed, but potentially productive plantations; some 12,953 ha of non-industrial plantations also known as community woodlots; and 95,019 ha of 'true' closed canopy indigenous forests (DFID, 1999:23). These closed canopy indigenous forests have come under the secure ownership of DWAF in accord with the Department's objective of retaining the control of the country's marginal natural forests, while the former categories are undergoing restructuring which incorporates devolution of woodlands.

Restructuring

In this context, restructuring means the disposition of DWAF's industrial and non-industrial forests and their inherent assets in a manner that ensures maximum possible contribution to poverty alleviation and the removal of inequity. Implicitly, restructuring involves redistribution of state-owned forests to encourage wider ownership of these resources, especially by those previously dispossessed by inappropriate economic policies. The ultimate goal of restructuring the state forestry sector is *local empowerment*. For example, Mayers (2000:33) notes appropriately that "increased attention is being put on forestry as a tool for *local empowerment*, whereby previously disadvantaged communities and individuals benefit from taking effective control and responsibility for decision-making regarding their forest assets". Although the state acknowledges that this is the primary objective of restructuring, it should not come at a loss to the state. Consequently, the state wants to realise financial benefits from the process. For example, by embarking on restructuring the state aims to avoid losses on the management of industrial and non-industrial forests; and also wants to encourage competition, investment and hence to increase timber production.

To facilitate restructuring DWAF's forest and woodland resources, it is necessary to categorise these assets. Accordingly, the above poorly managed, but potentially highly productive industrial plantations have been reclassified into categories A and B. Category A consists of highly productive industrial plantations and are economically viable, while category B plantations are those forests with potential for commercial exploitation, but their economic viability is below that of category A, according to the prevailing level of production and technology. Generally, the production of category A plantations is equivalent to the production of commercial forests in the private sector. Finally, category C consists of non-industrial plantations which are also known as 'community woodlots'.

Category A forests have been packaged into the following for bidding: Eastern Cape, Western Cape, Kwazulu-Natal, Mpumalanga and the Northern Province. The Eastern Cape package is subdivided into north and south, and bidders have already been secured, while the other sites have not got bidders and are to be retendered. Should bidders not be found for the other packages or the deal for the Eastern Cape fails to be finalised, all category A plantations will shift to SAFCOL by 1 November, 2000. DWAF will therefore remain only with categories B and C.

Category B plantations are mainly for black empowerment, i.e., they will be leased to black businesses or entrepreneurs with an aim of redistributing the country's forest wealth. The government seeks to balance the ownership of forestry businesses by earmarking this category for redistribution among the black majority population only. Similarly, category C which consists mainly of woodlots, will be redistributed among previously disadvantaged rural, forest-dependent people. These woodlots vary in size from a few hectares to more than 500 ha; and are predominantly eucalyptus. They are found mainly in the Eastern Cape and the Northern Province, and currently are undergoing devolution process. However, not all non-industrial woodlots

will be devolved to rural communities, since some contain areas of natural woodlands. DWAF will retain 22 of such type for natural resource conservation, while the majority will be devolved to rural communities mainly for subsistence and for business, whatever they deem to satisfy their economic want. It is important to note the difference between Categories A and B plantations that undergo 'restructuring' and Category C plantations that undergo 'devolution'. Devolution intends to transfer the management, control and ownership of woodlots to beneficiary communities with underlying land rights, while restructuring does not address the issue of the underlying land currently undergoing reform.

The implication of 'restructuring' for forest conservation is that local people's needs for timber, fuelwood and non-timber forest products will be met outside protected forest reserves. In practice, DWAF's control over indigenous forests and woodlands will be improved, as the department will concentrate its human and financial resources on this particular area of forestry. Moreover, lack of focus on forest conservation issues due to the vast expanse of these resources in the public sector, has frequently been noted as an important reason for their encroachment, degradation and subsequent loss.

3.7.1.2.2.3.3 Private ownership

Forests in the private sector consist predominantly of plantations, with approximately 703,000 ha owned by large companies such as Mondi, Sappi, Hans Merensky and Natal Timber Co-operative. About half of this estimate (~308,000 ha) is owned by commercial farmers and other private interests such as growers, over 1,000 of whom are registered with the South African Timber Growers' Association. The primary objective of commercial forest owners is profit maximisation, with frequently undue consideration of the social costs involved. For example, afforestation involves the replacement of natural vegetation such as grassland and woodland communities. To control the negative effects of afforestation schemes the government requires that "afforestation should continue where justifiable...and effective assessment is needed to ensure that proposed afforestation is properly evaluated in terms of biodiversity (and water) impacts" (DWAF, 1996:15). Thus, the use of land for afforestation for commercial purposes has been declared as a 'stream flow reduction activity' that must be regulated, according to *Section 36(1)(a)* of National Water Act No. 36 of 1998.

The resource conservation aspects of privately-owned commercial forests include the employment opportunities accorded to many rural communities, who would have depended on natural resources in a direct manner without their existing job securities — poverty driven environmental degradation. Commercial plantations also relieve pressure on the country's limited natural forests, including wildlife habitats, i.e., they cushion human effects on the environment. Finally, plantations are not biological deserts; they provide habitats to wildlife such as avifauna and certain invertebrates, in addition to sequestering CO_2. These functions are realised better with the use of indigenous trees.

3.7.1.2.2.3.4 Private-community forestry partnerships

The international pulp and paper companies (Sappi & Mondi) have established partnerships with individual farmers to grow trees on their own lands under purchasing agreements defined in a contract. These out-grower schemes have been running since the early 1980s. The size of forests under this arrangement and the operation of the scheme for Sappi are described in the following passage:

> Today Sappi's outgrown timber is sourced from an area of some 88,000 ha in KwaZulu-Natal which includes 11,000 ha owned by 8,000 black smallholders and the holdings of about 260 white farmers with 50 ha or more each. Farmers sign a contract with Sappi which entitles them to free expertise, silvicultural training and seedlings, advance payment for work and a guaranteed market for their trees at current market prices. When the trees are ready for harvest, Sappi pays the out-growers the market value of the produce, less any advance payments. Out-growers earn about US$205 per hectare per year, which compares favourably with alternatives such as livestock grazing or sugar production (Mayers, 2000:35).

Currently, there are five forestry companies that participate in these private-community partnerships. The use of fast growing hybrid eucalyptus clones has shortened the rotation cycle; in northern KwaZulu-Natal, trees could be ready for harvesting in six to seven years. This combined with a cash incentive offered to the growers at the end of each year to ensure good management of trees and maintenance of firebreaks, has a significant effect on the viability of the private-community forestry partnerships (Ham & Theron, 1999:76). These partnerships are between private companies and individual community members; however, Koch and de Beer (2000:186) have observed a partnership between a private forestry company and community groups as a single entity. The North East Cape Forests scheme at Bethania in the Eastern Cape exemplifies this; nevertheless, they have affirmed that both Sappi and Mondi are exploring the opportunities for establishing such ventures.

The forest conservation aspects of these partnerships are the inherent economic benefits that improve the standard of living of out-grower families. Employment opportunities under this arrangement relieve undue dependence on natural forests and biodiversity. A further conservation benefit relates to the availability of fuelwood in out-grower woodlots which also lessens dependence on natural forests and woodlands for this purpose. The scheme also cultivates tree-planting ethic in smallholders, in addition to immobilising atmospheric CO_2.

3.7.1.2.2.4 Lifeware

According to a 1997 estimate, South Africa has 15 million economically active labour force[5]. DWAF's policy department states that the forestry sector comprising all the various segments of ownership employs about 2.0% of this number in the formal sector. Although lack of skills has been cited as a possible risk that would hamper the implementation of the strategies contained in the National Forestry Action Programme (DWAF, 1997:26,30,35,40,67&138), a recent survey indicates that South Africa has adequate labour force, particularly at the professional and technical levels. This is attributable to the country's regional comparative advantage in forestry educational institutions that offer certificates, ranging from diploma to postgraduate degrees. The

University of Stellenbosch is a leader in forestry training, catering for the needs of South Africa and other African countries. This is followed by Port Elizabeth Technikon that has a faculty of forestry with a high turnover of graduates and diploma holders. Forestry science has also been introduced to the Faculty of Agricultural Sciences in the University of Natal; and the University of Orange Free State runs 'tree pathology co-operative programme'. There is a Department of Pulp and Paper Technology in the Natal Technikon, while Fort Cox College of Agriculture and Forestry also offers courses in forestry (DWAF, 1997:116). Therefore, it would be illogical for South Africa to experience a shortage of professionally qualified personnel, especially when the country itself has limited forests.

3.7.1.2.2.4.1 Gender equity

Around 40% of South Africa's forestry labour force are women, although the country has no national gender policy. This is rooted in the White Paper on forestry that emphasises gender equity in the forestry sector, given the critical role that women play in natural resource conservation. In fact, women made up 25% of legislators in the first democratic national assembly which is a major achievement when compared to the 3.0% figure during apartheid. South Africa has made commendable steps towards gender equity in less than a decade. For example, the United Nations Development Fund for Women has acknowledged South Africa's commitment to empower women and achieve gender equality in decision-making and hence in forest conservation. This is clarified below:

> Of the 188 member states, only eight have successfully met global agreements to achieve gender equality in secondary education enrolment, and at least a 30% share of women's seats in parliament during the last decade. Seven out of the eight countries are from the industrial world: Denmark, Finland, Germany, Iceland, the Netherlands, Norway, and Sweden. The only country from the developing world is South Africa[12].

Additional international institution favouring gender equity is the Convention on the Elimination of Discrimination Against Women. South Africa is a party to this Convention that was ratified on 15 December 1995. Gender equity is thus well entrenched in South Africa's national policies, strategies and laws. For example, women head the Chief Directorate of Forestry and the Chief Directorate of Water Use and Conservation within DWAF.

3.7.1.2.3 Policy evaluation

The policy declarations in the White Paper have been translated into specific activities or strategies that make up the country's National Forestry Action Programme. The timeframe for implementing these strategies is three years and terminated in December 2000. A recent survey indicates that the Department would conduct a formal, comprehensive, consultative and participatory evaluation of the programme at the end of this timeframe. However, this response from DWAF's policy section is unrealistic since many of the policy instruments have not come into effect yet, or came into effect two years after the National Forestry Action Programme. For example, *Sections 1-6, 8-17, 22-28, 33-64* and *70-80* came into effect on 1 April 1999, while

Sections 19-21, 29-32 and *65-69* became operational from 25 February 2000. *Section 7* which prohibits destruction of natural forests and is therefore crucial to the conservation of the country's indigenous forests, was due to come into effect before 31 August 2000. It is unclear whether this has taken place. Finally, *Section 18* that empowers individuals and institutions like the Nature Conservation Department of the University of Stellenbosch to apply to the Minister to protect a forest, tree or group of trees is still outstanding.

In practice, previous forestry legislation should be used where sections of the new law have not come into effect. However, this would make it extremely difficult to isolate the outputs of the previous policy from the existing one — a phenomenon commonly referred to as 'lag effect'. Furthermore, policy implementation involves changing people's attitudes; and the timeframe required to do this is determined by what people stand to gain from adoption of a particular form of behaviour. Therefore, filling gaps in the new National Forests Act with pieces of old legislation is counterproductive in that street-level bureaucrats and their clients would become too familiar with the old laws. This is unfortunately bound to happen in South Africa, as the link between forest officers and planners in the headquarters is weak. Thus, it is appropriate to state that *comprehensive evaluation* of the forestry policy as claimed by DWAF is farfetched, particularly when the tools sanctioned by *Section 4(2)(a)* of the National Forests Act for policy evaluation such as criteria, indicators and standards for sustainable forest management are under development.

3.7.2 External policy influences on forest conservation

Forest conservation is affected both by forestry-specific policy and legislation, as described above; and also by policies that are external to the forestry sector. For example, de Montalembert (1995:25) has indicated that there is a growing awareness that policy measures and activities in other sectors affect the economic, social and environmental sustainability of forests at least as much as policies set within the forestry sector. Indeed, these policy decisions taken outside the forestry sector can be major determinants of forest conservation. Similarly, Olbrich *et al.* (1997:55) have noted that public awareness of environmental issues has increased to such an extent that the environment is now a global issue at the top of most policy agendas. National forestry policies have not escaped from this environmental scrutiny. Thus, it is appropriate to examine the consequences of these external policies for South Africa's forests to improve their conservation by encouraging the integration of forest conservation decisions into other sectoral policies; and also by promoting intersectoral policy co-ordination. Such policies that are likely to yield important results for forest conservation include the overarching framework legislation and policy, exemplified by the country's constitution and environmental management policy; the crosscutting policies such as that dealing with biodiversity, land and multilateral environmental agreements; and finally, sectoral policies, involving agricultural, tourism, population, macroeconomic, water and others described in the following sections.

3.7.2.1 Effects of overarching framework policies

Overarching policies, programmes, strategies or laws define both the content and context of a country's natural resource use and management policies. There are two types of overarching policies in the Republic of South Africa: the constitution which is the highest law in the land and the environmental management policy which is in turn conditioned by the constitution, but sets the scope of all environmentally related policies, programmes, strategies and laws, including those for the forestry sector.

3.7.2.1.1 The constitution

The constitution guarantees environmental rights for all South Africans. *Section 24* states that "everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations". This should be achieved "through reasonable legislation and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development". Apparently, there has been a genuine concern for the conservation of South Africa's forests. This is epitomised by the White Paper on forestry and by other sectoral policies which all invoke the constitution in their formulation. The need for legislation and other related measures to encourage sustainable use and management of the natural capital has also been authorised.

The relationship between the constitution and forest conservation has also been noted by Kruger and Everard (1997:39), who cautioned that "in examining policy options for addressing SFM, we need to take account of the relevant provisions of the constitution…as well as the goal of environmental sustainability". Thus, forestry policy that should create SFM is shaped by the constitution and the environmental management policy. With clear mandate emanating from the country's supreme law, forest conservation should not be a difficulty task today as it was in the mid-19th century, when state institutions undermined natural resource conservation.

3.7.2.1.2 The environmental management policy

Environmental management policy for South Africa was issued by DEAT in May 1998. It is an overarching framework policy, i.e., it informs government agencies and state organs about their duties; and how they could develop strategies to achieve those objectives. The policy applies to all government institutions and to all activities that impact on the environment. The policy also informs the public about the government's objectives and how it intends to accomplish them.

As the name implies, the framework policy has a wider scope, covering all the different aspects of the environment. However, only a few attributes of the policy that have ramifications for forest conservation would be highlighted. Such important attributes include the *vision* of the policy, its *principles* and the *overarching goal*. The *vision* of the environmental management policy is that of a society in harmony with its environment, including forest resources. Equally important are the *principles* of environmental management. They are

important tools that the government uses in decision-making and in developing and testing policy and its associated legislation. Also, the overarching goal of 'sustainable development' which entails shift away from the previously unrestrained and environmentally insensitive development to an environmentally sustainable economy, has positive effects on forestry. This is indicated clearly in the White Paper on forestry and in its corresponding instrument that aims to promote SFM.

3.7.2.1.2.1 The principles of environmental management

The principles for environmental management that influence South Africa's forests and woodlands include accountability; allocation of functions; alienation of resources; capacity building and education; conflict of interest; co-ordination; custodianship; demand management; equity; environmental justice; full cost accounting; global and international co-operation and responsibilities; good governance; inclusivity; integration; open information; participation; precaution; prevention; and the polluter pays principle. The manner in which these principles affect forestry is briefly described below.

'Accountability' relates to the government's responsibility for the formulation, monitoring and enforcement of all policies that control the natural environment, including forests and woodlands. This accountability is attributable to the government's constitutional duty to protect the environment since it is the 'custodian' of the nation's environmental assets. 'Allocation of functions' between state organs is visible in the environmental sector; for example, the central government delegates some of its responsibilities to the provincial government that in turn delegates some of its responsibilities to the local government. However, this is not the case for the forestry sector where DWAF centralises the administration of the forestry policy. 'Alienation of natural resources' such as forests and the underlying land must respect people's ownership rights and ensure the sustainable use of these resources. This principle acknowledges the vital relationship that exists between the sustainability of a renewable natural resource and its security of ownership. This principle is derived from *Section 25* of the constitution. 'Capacity building and education' are necessary for sustainable natural resource management and also for effective participation in achieving sustainable development. Appropriation of natural resources by various interest groups often results in actual or potential conflicts. Such conflicts should be resolved by ensuring effective policy implementation and monitoring to maintain environmental norms and standards. This can be mitigated further by 'intergovernmental and sectoral co-ordination' which is an important principle for harmonising conflicts, antagonistic policies and legislation with respect to the environment.

Additional principles include 'demand management' which can be achieved by adjusting the price of goods and services to reflect environment costs. It is implied that the price of forest goods and services should reflect their replacement or social costs. Similarly, adoption and implementation of natural resource policies, programmes and projects should be based on 'full cost accounting'. This means, assessment of full social benefits and costs should be the foundation of any intervention.

Access to information for decision-making, environmental protection and for effective participation in environmental governance is a constitutional right. 'Open information' is in fact an important characteristic of 'good governance' which is also one of the principles of the overarching framework policy. 'Participation' of policy-affected parties in environmental management is a basic human right and a sufficient condition for attaining 'equity' and 'environmental justice'. Equitable access to environmental resources is a principal method for redistributing the country's environmental costs and benefits.

Other related principles for environmental management include 'precaution' and 'prevention'. Precaution is the best principle to apply when there is uncertainty about the environmental effects of certain decisions or actions, and is widely used in environmental management. The precautionary principle is very simple; it is just a common sense. All that it amounts to is that "if one is embarking on something new, one should think very carefully about whether it is safe or not, and should not go ahead until reasonably convinced"[13]. The further application of the principle as an important tool in environmental protection is demonstrated by the 4P that requires all those indulging in activities that may impair the environment in the absence of any reasonable scientific certainty to pay a bond that should be paid to the payee when the worst scenario does not occur in the long run. On the other hand, prevention involves anticipation and deterrence of negative environmental effects that accrue as a result of development projects. Measures designed to protect the quality of a riverine ecosystem from forestry activities such as logging, application of herbicides or afforestation amount to prevention.

3.7.2.1.2.2 The overarching goal of 'sustainable development'

The most important aspect of the environmental management policy is the overarching goal of 'sustainable development' that reflects the government's intention to move from the previous situation of uncontrolled, environmentally insensitive development to sustainable development that balances the society's quest for economic development with ecological concerns. Indeed, 'sustainable development' has become the official goal of many governments, particularly after the Rio Summit. It is a broad term which many environmentalists believe has become an empty catchword or prone to abuse, especially by politicians for packaging their rhetoric. To avoid misrepresenting its view, the South African government has divided the broad goal of sustainable development into seven strategic goals and objectives. The main features of these seven goals that are likely to control forest and woodland conservation are noted below.

i. Effective institutional framework and legislation

The government aims to create an effective, adequately resourced and harmonised framework and an integrated legislative system. This would be achieved by *first*, the 'integration and co-ordination' of all government functions that affect environmental management. Forest is a resource of concern to many stakeholders and its management is impinged upon by many other land-based activities. A framework policy

that directs intersectoral policy co-ordination will therefore lessen the effects of other land use types that compete with forestry for land. *Second*, 'conducting regular reviews of the relevance and appropriateness of all government policies and legislation, with the aim of updating them is another important way of meeting the above goal. This is an important objective for evaluating the performance of natural resource conservation policies. *Third*, effective institutional framework requires 'reallocation of resources' in all government departments and state organs to meet the need for people-driven sustainable resource management; and also to redress the past injustices and inequalities. This is translated in the ongoing restructuring of DWAF and its forests and woodlands. *Fourth*, equally important for creation of effective institutional framework and legislation are 'capacity building and research' and development. These concerns are reflected in the forestry policy, the National Forestry Action Plan and in the National Forests Act.

ii. Sustainable resource use and impact management

This goal emphasises sustainable natural resource use which involves conservation of biodiversity through the integration of environmental concerns into macroeconomic and social planning. Also vital is the emphasis on 'impact management' that indicates the need for EIS to mitigate the negative effects of development on the biological environment. Accordingly, EIA has become an important tool for evaluating the effects of other land use types on forest resources. *Section 3(1)(e)* of the National Forests Act requires any person to conduct EIA in respect of any activity which will or may affect natural forests and/or woodlands.

Sustainable resource use can be achieved by improving environmental performance that in turn is centred on the *participation* of all stakeholders. The need for stakeholder participation in forestry policy-making and in conserving forests and woodlands is emphasised in the White Paper on forestry and also in the National Forests Act (*Section 27(2)(b)*). Additionally, the environmental management policy identifies 'conservation of biodiversity' as a key objective for attaining the above goal. This entails establishing and maintaining protected areas to ensure landscape, ecosystem, habitat and gene diversities; expanding human capacity to converse biodiversity; creating and implementing conditions and incentives that encourage resource conservation; and also involves promoting the conservation of biodiversity at the international arena.

Sustainable resource use and impact management also includes promoting efficient energy use, renewable energy resources that may include biofuel and encouraging environmentally benign alternative energy sources. The environmental management policy recognises the inclusion of environmental considerations in designing transport network as a strategy for lessening the impact of transportation system on biodiversity. Resource conservation also involves designing population strategies that recognise the consequences of rapid population growth on the environment, particularly in terms of resource consumption. The policy recognises the important role of tourism in conservation and therefore seeks to ensure that it does not damage the environment and promotes the participation of rural communities. 'Sustainable agriculture and forestry'

through the encouragement of low input farming systems and the protection of indigenous forests has been noted as an important measure for conserving the country's biological resources.

Also important is the inclusion of 'environmental resource economics' as a procedure for meeting the goal of sustainable biodiversity use and management. It has been stated that environmental resource economics should be employed to ensure that markets reflect the cost of environmental resources. The need to develop and maintain 'a national environmental accounting system' to reflect the social cost of depletion of environmental assets has been explicit and so is the need to remove all direct and indirect subsidies that encourage unsustainable use of environmental resources. Cost-benefit analysis and risk assessment have been noted in the policy as important tools for improved decision-making.

The above goal and the associated objectives and strategies or measures clearly define the broad aim of South Africa's environmental management policy, since it encompasses the social, ecological and economic aspects of natural resource management. Therefore, the policy goal is capable of sustaining biological resources (including forest resources), if its recommendations are incorporated in the policies of other land-based sectors and implemented adequately.

iii. Holistic and integrated planning and management

This goal seeks comprehensive and integrated environmental management, that is, environmental concerns should be integrated into the existing and future government policies, legislation and programmes; and into all economic development planning processes and activities. This goal should be accomplished by 'integrated environmental management'; establishment of 'environmental development and rehabilitation fund'; intersectoral policy, programme or activity 'co-ordination and integration'. The establishment of environmental development and rehabilitation fund is the unique objective to this goal. This fund is necessary for rehabilitation of degraded areas such as those affected by deforestation.

iv. Participation in environmental governance

This calls for the establishment of mechanisms and processes to ensure effective public participation. This can specifically be achieved by creating structures and mechanisms that encourage the participation of marginalised and specialised interest groups. The participatory role of local communities in forest conservation has been a major concern of South Africa's forestry policy and legislation.

v. Environmental education and empowerment

Environmental education deals with the development of the human resources necessary for initiating and managing the country's environmental assets. It refers to both formal and informal teaching and learning of environmental issues, with the former materialising in certificates, diplomas and degrees, while the latter results in environmentally literate citizenry capable of implementing environmental policies with the least

degree of coercion. Environmental literacy informs the public about their environmental rights and responsibilities, and about the quality of their environment and the measures needed to maintain it. This improves their capacity to conserve environmental resources, starting with energy and water at the domestic sphere to the environmental assets in the public sector such as protected areas.

Environmental education and empowerment can be accomplished *first* by 'education and training'. This requires integration of environmental education in all formal education, all training and unemployment relief programmes, and enhancing environmental literacy through the use of all forms of mass media. *Second*, 'empowerment of citizens through capacity building', particularly those from disadvantaged backgrounds to assist them in managing their environment with due care and concern in their attempts to subsist. Their capacity can also be developed by assisting those involved in micro, small and medium enterprises to develop appropriate environmental management procedures. Forestry, which plays an important role in the rural economy, will benefit from these interventions. *Third*, involvement of 'marginalised and special interest groups' such as women, workers, the unemployed, the disabled, traditional healers and the elderly should be encouraged and supported in the design, planning and implementation of environmental education and hence in capacity building programmes and projects.

vi. Information management for sustainable development

Sound information on which to base appropriate decisions is necessary for a nation, including politicians, bureaucrats, farmers, environmentalists and natural resource-dependent communities. The EC (1996:143) rightly asserts that "sound scientific and technical information is an essential basis on which to instigate and implement any development process". The important role that information plays in fostering informed decisions is reflected in *Section 32* of South Africa's constitution that considers access to information as a right of every citizen. This is translated further into the environmental management policy that aims to develop and maintain information management systems that will provide timely information to all those concerned to safeguard effective environmental management. The most important output of this goal is the periodic production of the 'state of the environment report'. This will provide accurate, timely and accessible information about the condition and prospects of the country's environment; increase public understanding of environmental issues; and will also report on the effectiveness of environmental policies and programmes. The White Paper on forestry and the National Forests Act indicate this concern.

vii. International co-operation

Conservation, equitable access to natural resources and sustainable management of environmental assets such as forest and wildlife, and water and fisheries, are best addressed by some regional and international groupings, since these resources transcend the political frontiers of individual countries. In other words, the benefits of environmental conservation do not accrue to national interests only and *vice versa*. Consequently, there is a greater need for international co-operation on environmental issues to maximise positive

transboundary externalities, while minimising disbenefits. Bilateral and multilateral commitments by governments are therefore a prerequisite for urgent and effective actions to deal with environmental endowments that are likely to generate international externalities.

The policy acknowledges the significance of 'international agreements' and stresses that the government should honour all international environmental agreements and obligations. However, in undertaking 'international co-operations' with countries that share the same environmental concerns, South Africa should take into account that such co-operation is in accord with its national environmental policy. Due priority should be given to the Southern African countries while drawing international environmental co-operation. It is noteworthy that the policy stresses that South Africa must ensure that international obligations and engagements do not encroach onto the environmental rights of its citizenry and that the *principles*, *obligations*, *norms* and *standards* established in this policy are not breached. To prevent 'transboundary impacts', the government should adopt appropriate measures, including the prevention of transboundary shipments of hazardous and toxic waste. Additionally, the government should ensure that international trade does not result in wasteful exploitation of the country's natural resources or hinder their conservation. Finally, South Africa should take appropriate measures that contribute to the stabilisation of GHGs. Although forest is not mentioned in this respect, its vital role in purifying the atmosphere of $C0_2$ is likely to appeal to the South African government.

The White Paper on forestry recognises the value of exchange of technology, information and expertise between countries in the field of forestry. The numerous international environmental agreements and conventions to which South Africa is a signatory demonstrate the significance of international co-operation. In summary, the role of the environmental management policy as a framework policy is indisputable, given that its principles and goals are strongly reflected in both the White Paper and the National Forests Act. The following crosscutting biodiversity policy which is anchored in the Convention on Biodiversity accords with the same principles and goals.

3.7.2.2 Effects of crosscutting policies

Crosscutting policies are those policies whose concerns for certain resource conservation issues cut across sectors. The biodiversity and land policies, and the international conventions, treaties, protocols and declarations to which South Africa is a party, are typical examples. For example, in South Africa, the biodiversity policy stresses biodiversity conservation and this concern is reflected in the forestry, agricultural, land, water and population policies, among others. On the other hand, the land policy, especially the aspect that deals with land ownership and tenure security affects forest and wildlife conservation, determines investments in agricultural production, delimits the construction of transport and communication infrastructures, conditions the human population density, particularly where there is heavy reliance on the natural capital and so on. Similarly, the concerns expressed in the multilateral environmental agreements such as the Convention

on Biodiversity, Convention to Combat Desertification and the Convention on Climate Change cut across sectors.

Of note is the high propensity to classify multilateral environmental agreements as overarching framework policies, since many countries enshrined 'environmental conservation' in their constitutions only after having become parties to these agreements. However, it is cautioned that such temptation must be desisted for the following reasons: the term 'crosscutting' is adopted with respect to the forestry sector; and multilateral environmental agreements are not superimposed on parties, but are implemented according to a country's possibilities. By implication, the *power* of decision, the *capacity* and the *will* to implement these agreements remain largely within nation states. For example, in the preceding section on "international co-operation", widely promoted by the multilateral environmental agreements, the government states that such multilateral co-operations should accord with the *national* environmental policy. It has been stated further that international agreements and obligations should not encroach onto the environmental rights of South Africans, as defined by the country's constitution. These merit the classification of multilateral environmental agreements as crosscutting policies, rather than overarching framework policies. The implications of these crosscutting policies for forest conservation are described under the following headings.

3.7.2.2.1 The Biodiversity policy[14]

The biodiversity policy and strategy for South Africa is rooted in the Convention on Biodiversity that was open for signature in Rio de Janeiro from 5 June 1992 until 14 June 1992, and remained open at the UN Headquarters in New York until 4 June 1993. South Africa signed the Convention on 4 June 1993; and as there was imminent ratification[o], the country needed to develop its own biodiversity policy. Consequently, a discussion paper was released for public comment and critique in March 1996. This was followed by an educational leaflet in English, Afrikaans, Xhosa, Zulu and Pedi to enlighten people about the concepts of biodiversity. In addition, 10 stakeholder briefings were held in seven provinces to evoke broad participation in the discussion process. This was followed by a national consultative conference held in Pretoria in May 1996 to discuss the issues raised in the discussion document and also to assess policy options for achieving certain ends. The inputs of 160 participants, together with 46 comments from a variety of sources formed the Green Paper that was released for public comment on 28 October 1996. The 'Editorial Committee' developed a draft White Paper and was submitted to the Reference Group in 1997. The Group recommended minor changes and authorised the submission of the Paper to the Minister of DEAT and to the committee of national ministers and provincial members of executive councils (MinMEC). The Steering and Editorial Committees were delegated the responsibility to develop and see the adoption of the White Paper on biodiversity by parliament.

[o] South Africa ratified the Convention on 02 November 1995.

3.7.2.2.1.1 The vision, mission and principles

The vision, mission and principles of biodiversity policy were derived from South Africa's constitution that authorises environmental conservation. Fitting this mandate, the country's vision is 'a prosperous, environmentally conscious nation whose people coexist harmoniously with their natural environment from where they derive benefits'. The mission of the government is 'to conserve the country's biodiversity by ensuring ecologically sustainable, socially equitable and economically efficient allocation of biological resources'. These are to be accomplished by guiding principles which comprise intrinsic value; duty of care; sustainable use; the fair and equitable distribution of benefits; full cost-benefit accounting; informed and transparent decision-making; the precautionary principle; accountability and transparency; participation; recognition and protection of traditional knowledge, practices and cultures; co-ordination and co-operation; integration; global and international responsibilities; and evaluation and review. The implications of these lofty principles for forest conservation have been elaborated in section 3.7.2.2.1, which examines the principles that guided South Africa's environmental management policy.

3.7.2.2.1.2 The goals of biodiversity policy

The origin of South Africa's biodiversity policy can be traced to the Convention on Biodiversity, whose primary objectives are "the conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources..." (*Article 1* of the Convention). This *Article* defines the objectives of the Convention on Biodiversity and also shapes the goals and strategies of South Africa's biodiversity policy, as examined below.

1. Conserve the diversity of landscapes, ecosystems, habitats, populations, species, and genes in South Africa.

This goal reflects the greater need to converse biological resources at alpha, beta and gamma diversity scales. This describes the country's aim to meet the Convention's key obligation of "the conservation of biological diversity". This broad goal is to be accomplished by implementing seven interrelated policy objectives which are briefly outlined in the following sections.

i. To identify important components of biodiversity and the processes that threaten them

While there is already a considerable knowledge about many aspects of biodiversity and about the adverse factors that threaten them, this information is patchy, inconclusive and not well organised to facilitate effective management. As a result, the government will focus more on filling the existing gaps in information. The strategic approach to realise this objective is collaboration with relevant interested and affected parties to identify the important components of biodiversity for conservation, using biological, social and economic criteria. This strategy will benefit forest species that have been severely impacted by overexploitation for natural remedy, fuelwood and construction materials. Similarly, forest ecosystems that provide habitat for

wildlife and opportunities for spiritual and cultural gratification, and are attractive for recreational purposes will be conserved.

ii. To maintain and strengthen existing arrangements to conserve South Africa's indigenous wildlife

The majority of South Africa's indigenous forests and woodlands are either 'nature reserves' or 'national parks'. A substantial body of law already protects these wildlife habitats; however, these laws have sidelined the communities who bear the consequences of wildlife conservation. The government will collaborate with interested and affected parties in wildlife conservation through a variety of mechanisms such as legislation, planning controls, guidelines and designation of protected areas with due priority given to conservation of the components of biodiversity that require urgent protective measures. An important legal instrument in this respect is 'The Endangered Species Act' which ensures the sustainability of all South Africa's wildlife resources. An additional strategy to accomplish the same objective is the encouragement of research to gain better understanding of the structure, function and composition of the country's ecosystems. As *in situ* protection of South Africa's indigenous wildlife cannot occur without their habitats, this objective encourages conservation of natural vegetation given that 66% of the country is non-forest.

iii. To establish and manage efficiently a representative and effective system of protected areas

This is derived from *Article 8(a)* of the Convention on Biodiversity that informs parties to establish a system of protected areas where special measures need to be taken to conserve biological diversity. South Africa recognises the significance of its protected areas, but concedes that none of them is a part of a planned, co-ordinated network, thereby causing policy conflicts. An outstanding intervention to rectify this, is the establishment of a committee to co-ordinate conservation efforts between national and provincial conservation agencies. The government's strategy is to build on such initiatives by establishing a 'national co-operative programme' to identify ecosystems, habitats, populations and species that would contribute to the country's system of representative protected areas. The ultimate aim is to conserve a 10% of each type of terrestrial ecosystem. Putting at least 10% of a country's land base under biodiversity conservation has become the official goal of many governments since the Earth Summit, although it is doubtful that South Africa will meet this target in terms of protected forest area.

Another strategy relating to the same objective is to develop a comprehensive plan of action to strengthen protected area system through measures such as the purchasing of new land for conservation purposes; contractual agreements, land exchanges, the definition of existing protected areas and state land, and the harmonisation of legislation. Indeed, these are remarkable interventions, however, it is unlikely that the government will commit sufficient financial resources to purchasing new land for biological resource conservation. To the contrary, the government should purchase new land for settling the landless whose survival needs place disproportionate pressure on protected areas. The other important strategy is to

encourage the involvement of local communities and other interested parties in making and implementing decisions concerning the designation of new protected areas. Participation of local people in conservation programmes is essential, nonetheless, the material benefits associated with this participation are often exaggerated. This raises the expectation of local people to the extent that they regard participatory natural resource management as an ultimate solution to their economic misery. Consequently, when a local community's aspirations for economic welfare are not met, they begin to see no reason for the existence of protected areas in their neighbourhoods. For example, it has been noted that "...the creation of expectations among communal rural communities by developers and government officials alike, that development in such areas can be funded entirely from the perceived unrestricted income of a never-ending stream of international eco-tourists who have an insatiable interest in South Africa's wildlife and its indigenous cultural heritage, is untruthful and extremely dangerous for the future relationship between rural communities and any nature conservation activity. In this regard, the creation of undeliverable expectations is most probably the most insincere way of conducting so-called community participatory programmes for the sake of nature conservation" (Els & Bothma, 2000:22).

The final strategy entails encouraging private landowners to continue participating in voluntary conservation schemes such as conservancies, private nature reserves and South African Natural Heritage Programme, and also in co-operative management partnerships such as biosphere reserves and contractual parks. It is apparent that the private sector is involved in game farming and also in providing tourism infrastructures in national parks, game and biosphere reserves. This may reflect state-private-community partnership, where the state owns the protected area, the private sector invests in the development of the protected area through services and the community benefits from this investment by way of employment and the use of infrastructures such as transportation, schools and clinics. There should be many protected areas operating in this manner. The conservation aspect of this arrangement is that rural communities may begin to see protected areas some of which are forest reserves as necessary for livelihood.

iv. To promote socially and ecologically sustainable development in areas adjacent to or within protected areas

This policy objective is allied to the above, and is also defined by the same *Article 8* of the Convention on Biodiversity. South Africa recognises that the viability of its protected areas is contingent on the magnitude of social, economic and ecological integration between protected and adjacent areas. This is important where protected areas which are often the centres of economic activity, fall within poverty-stricken parts of the country. The government aims to remedy these economic imbalances between protected areas and their environs by establishing biosphere reserves, community-based wildlife management schemes, multiple use areas, nature tourism, development projects, the introduction of conservation grants and other economic incentives. Promoting state-private-community partnerships for planning and managing the use of biodiversity within and outside protected areas; developing the capacity of communities that live within or outside protected

areas to manage protected areas; and recognising local expertise and traditional institutions are also viable options. Further strategies that the government has identified for realising the same objective include avoidance, mitigation or compensation of all those who have suffered the consequences of protected areas; and the use of local producers and labour in providing services to tourists. The final strategy concerns the settlement of land claims, taking into account the conservation status of the land. The 'Makuleke Communal Property Association', where the northern part of the Kruger National Park was vested in the local community is a case in point.

The Makuleke case illustrates attempts for equitable redistribution of the benefits and costs of natural resource conservation; and also the integration of surrounding communities into the management of protected areas. This intervention falls within the framework of the constitution and environmental policy, and also within the framework of environmental agreements to which South Africa is a party.

These strategies are likely to result in protected area value addition, particularly in the eyes of surrounding communities who are frequently the agents of forest degradation and loss.

v. To restore and rehabilitate degraded ecosystems, and strengthen and further develop recovery plans where practical and where this will make a significant contribution to the conservation and sustainable use of biological diversity

Although South Africa's landscape has changed dramatically, there has not been an overall national approach to restore ecosystem functioning and biodiversity apart from the rehabilitation of agriculturally degraded areas to maintain productivity on large commercial farms, in addition to the restoration of previously mined sites.

To meet this policy objective, the government's strategy is to prioritise rehabilitation actions on the basis of the contribution that restored areas can make to the conservation of biodiversity. This comprises developing a programme to rehabilitate degraded areas of national concern. The programme will identify key sites for restoration, using biological and socio-economic criteria; and will link restoration of ecosystems to the provision of jobs, skills and opportunities for the poor. The programme will also support research; monitor the effectiveness of rehabilitation measures; and will continue to regulate and mitigate adverse effects on biodiversity. Furthermore, the programme will continue to conserve and restore populations of threatened species by developing appropriate legislation to enable their identification, the use and deployment of off-site conservation facilities and expertise, and will develop and implement recovery plans for species at risk.

These measures offer opportunities for controlling degradation and loss of terrestrial ecosystems. In reality, this objective which is again founded on *Article 8(f)* of the Convention, is expected to have started yielding fruits in the forestry sector because it has already been translated into a law. For example, *Section 17* of the

National Forests Act gives the Minister powers to intervene urgently to prevent deforestation and to rehabilitate deforested areas.

vi. To control the introduction and spread of harmful alien organisms and regulate the risks associated with the use and release of genetically modified organisms

This has been defined by *Article 8(g&h)* of the Convention on Biodiversity that cautions against uncontrolled introduction of species that are likely to have adverse environmental impacts that could threaten indigenous ecosystems, habitats or species. South Africa's recent attempts to eradicate alien vegetation are a clear indication that the country is paying for its past error of unregulated introduction of alien species. For example, the Reconstruction and Development Programme's project to clear invasive alien vegetation as part of a water conservation campaign and job-creation. This is, however, an ad hoc measure, and the government aims to rectify this by adopting a proactive and preventive approach. This will entail balancing the risks involved in introducing and releasing alien organisms and genetically modified organisms, with the potential social, economic and environmental benefits derived from them. Implicitly, not all alien species pose grave danger to the conservation of natural ecosystems, habitats or species. This is illustrated by the exotic trees which meet the majority of South Africa's demand for timber and to a lesser degree fuel, relieving pressure on the country's limited indigenous forests.

The most important strategy from the forestry perspective should be increased regulation of exotics in plantation forestry and increased promotion of local, indigenous species in land rehabilitation. Moreover, DWAF supports research into the domestication of indigenous trees at the University of Stellenbosch. Instead of providing incentives to landowners to control or eradicate alien organisms identified as threatening biodiversity, the government should provide incentives to landowners who plant native trees, while exotic tree growers should be taxed according to the proportion of external costs that they generate.

vii. To support, complement and enhance 'in-situ' conservation through strengthening measures for the 'ex-situ' conservation of components of biological diversity

This objective recognises the complementarity of *in situ* and *ex situ* conservation. *Ex-situ* conservation is important in the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions. In forestry, *ex-situ* conservation includes the use of techniques and facilities such as genebanks, nurseries and arboreta. The government's strategy in this regard is to promote *ex-situ* conservation of indigenous and traditional plant genetic resources for their various uses; for example, the cultivation of medicinal trees. Other strategy with implication for forests and/or trees include the regulation and management of the collection of biological resources from natural habitats for *ex-situ* conservation to avert threats to natural ecosystems and *in-situ* populations of concerned species. Thus, *ex-situ* conservation is an insurance strategy against decimation of biological resources from their natural habitats, and will become increasingly essential as the demand for certain components of forest ecosystems mounts.

2. Use biological resources sustainably and minimise adverse impacts on biological diversity

Typically, this is a paragraph of the parent Convention on Biodiversity (*Article 10(b)*). This goal describes South Africa's plans for meeting the requirements of the Convention and is divided into four policy objectives as presented below.

i. To integrate the conservation and sustainable use of biological diversity into all sectoral and cross-sectoral plans, programmes and policies at all levels of government and industry

This objective indicates that South Africa's biodiversity is used and impacted by different sectors in different ways. For example, agriculture competes with forestry for establishment; nonetheless, trees increase agricultural productivity by shielding field crops against extreme climatic conditions. Wildlife tourism does not use forests in the same way as agriculture, yet the non-consumptive use of forests by tourists may have serious implications for forest resources. Similarly, the Department of Trade and Industry's foreign trade policy may have important results for South Africa's forest resources, particularly now when the value of rand relative to main currencies is dropping steadily. This may favour export and hence accelerate the rate of forest exploitation.

To accomplish the goal of using biological resources sustainably and minimise negative effects on biodiversity, the government aims to ensure that all domestic and foreign policies, plans and programmes support the conservation of biological resources and mitigate repugnant impacts on biological resources. It is implied that all government departments whose activities are likely to affect biodiversity conservation should integrate biodiversity considerations into their policies, plans or strategies; and that a representative entity comprising such sectors be constituted to oversee, co-ordinate and integrate policies that affect biodiversity either directly or indirectly. It is essential to note that intersectoral policy co-ordination is disposed to streamline traditionally antagonistic policies with forest conservation policy.

An additional government strategy is to ensure the adoption of measures that permit full environmental, social and economic costs and benefits of conserving biodiversity to be reflected in prices of environmental goods and services and also in national indices of economic status. This has also been expressed in the environmental management policy. However, it is more than two years now, yet there is no indication that South Africa is tending towards the system of national accounts. Worth noting, the significance of optimal pricing policy for forest resources as a tool for forest conservation has been emphasised in the second chapter of this study. Appropriate prices for forest commodities would incorporate the market price and the consumer surplus to reflect social value.

ii. To conserve and use sustainably biological resources in *terrestrial*, aquatic and marine coastal areas and avoid or minimise adverse impacts on the biodiversity of such areas

This objective originates from *Article 10(b)* of the Convention on Biodiversity that requires parties to "adopt measures relating to the use of biological resources to avoid or minimise adverse impacts on biological diversity". The South African version is rather broad, however, to remain within the confines of this study, the following analysis will focus only on *terrestrial* ecosystems of which forest is an integral entity.

The government has admitted the degradation and loss of the country's terrestrial systems, including forests; and recognises the significant role these systems play in the economic development of the country. To conserve biological resources in terrestrial areas and to avoid adverse effects, the government aims to identify and wherever possible remove incentives that encourage the loss of biodiversity; and maintain and develop new financial and other incentives that support the conservation of biodiversity and stimulate local stewardship of terrestrial areas. This objective can also be met by developing and implementing guidelines that safeguard sustainable harvesting of biological resources. For example, this requires the development and application of methods and technologies that are capable of maintaining the long-term ecological integrity of forest and woodland ecosystems. Additional interventions likely to encourage forest conservation include the encouragement of indigenous tree-planting to build the local resource base; and the incorporation of biodiversity considerations in agricultural and livestock production.

It is noteworthy that forestry-related incentives for forest conservation have been examined under the forestry policy and the National Forests Act. Stimulation of local forest stewardship is also reflected in the National Forests Act, for example, Community Forestry Agreements between DWAF and local communities. However, one disincentive which militates against forest conservation and falls outside the scope of this policy, is poverty that surrounds South Africa's forested areas. This has increased dependence on forest and woodland resources, with many local communities extracting non-timber forest products not for own use, but also for the market. Consequently, there are incidences where medicinal trees in the Eastern Cape have been killed due to excessive debarking to supply urban centres with natural remedy. There are reports of armed poachers who enter state forests with pickups to harvest timber and non-timber forest products (pers. comm.)[p].

iii. To integrate biodiversity considerations into land-use planning procedures and environmental assessments

This is a judicious objective whose implementation will enhance the compatibility between biodiversity conservation and other types of land use. This is certainly the ultimate goal of contemporary conservation. *Article 14* of the Convention has broadly defined this important objective which is akin to the preceding one.

[p] De Villiers, D. (2000). Nature Conservationist, Cape Nature Conservation. Mr. Div de Villiers is involved in community-based natural resource management activities in the Eastern Cape Province.

Therefore, it does not merit re-examination here because the government's strategy for attaining both objectives is fundamentally the same. Furthermore, the use of environmental impact study to avert adverse impacts of other land use types on forest biodiversity has been amplified by *Section 3(1)(e)* of the National Forests Act.

iv. To support efforts to bring about changes in human numbers and lifestyles to achieve socially and ecologically sustainable development

This objective is premised on the understanding that increasing human populations and extravagant lifestyles are capable of upsetting the reproductive capacity of environmental assets such as forests, wildlife and fisheries. Hence, the government's strategy is to effect changes that will increase the compatibility between South Africa's population and their lifestyles, and the environmental resources that support them — population policy should be responsive to biodiversity conservation. There is also need to heighten awareness about the lifestyles that have negative effects on biological resources, particularly that of the more affluent, who consume most of the country's biological resources. In addition, the government will support initiatives that reduce natural resource consumption and implement studies to establish South Africa's human carrying capacity. In forestry, this would involve efficient utilisation of forest and woodland resources, unlike the wasteful exploitation that is still widespread in many African countries, particularly those with extensive forest cover.

3. Ensure that benefits derived from the use and development of South Africa's genetic resources serve national interests

Article 15 of the Convention on Biodiversity that deals with "access to genetic resources" defines this third goal. This goal, like the parent document recognises South Africa's sovereign rights over its natural resources, the authority to determine access to them, and also the right to benefit from their exploitation. However, the Convention also informs parties to facilitate access to their genetic resources, and that such access should be based on mutually agreed terms. Scientific research on genetic resources, transfer of technological and financial resources between/among parties are equally emphasised. The following policy statement outlines South Africa's stance on access to genetic resources.

i. To control access to South Africa's genetic resources through the introduction of appropriate legislation and establishment of institutional structures

This should be attained by establishing a national committee to develop detailed guidelines and conditions for biodiversity prospecting, guide the development of appropriate agreements, and to examine ways for strengthening existing controls and legislation. Another strategy concerns benefit-sharing between national institutions and local communities who are the custodians of traditional knowledge necessary for the collection of genetic resources. Such benefits should include co-ownership of research data and 'patents' to stimulate economic development in the most disadvantaged parts of the country and sections of population. Also, the

government plans, among other things, to develop a system to provide legal protection for collective 'intellectual property rights (IPRs)'.

Patenting of IPRs, rather than natural life-forms, is an important tool for benefit-sharing between poor communities where biodiversity is abundant and rich nations that have limited biodiversity, in addition to being an effective instrument for controlling access to a country's genetic resources. Thus, each country has the right to protect its IPRs or that of its local and indigenous communities against piracy. For example, "a number of studies and reports by non-governmental groups and indigenous organisations have complained of such knowledge of local and indigenous communities which they traditionally share with others for public benefit, being 'pirated' and patented in their names and as their IPRs by foreign companies and researchers from abroad"[15]. There have been many cases of indigenous community knowledge frequently passed down by oral tradition to succeeding generations being pirated by foreigners, although in few well-known cases such as the patents in the US for the Indian neem, *Azadirachta indica* and turmeric have been challenged (ibid.).

This traditional knowledge has fed, healed and clothed the world and continues to do so. It has been estimated that three-quarters of the plants that provide active ingredients for prescription drugs today originated from local people's knowledge of natural remedy. Estimatively, 75% of the 120 active compounds currently isolated from the higher plants and widely used in contemporary medicine demonstrate a positive relationship between their modern curative use and the traditional use of the plant from which they were extracted. The current value of medicinal plants derived from leads given by indigenous people and local communities stands at about US$43 billion, while the value of crop varieties improved and developed by traditional farmers to the international seed industry is approximately US$15 billion[16]. Thus, it is not surprising that the South had to work hard collectively to foil US attempts to whittle down farmers' rights on agricultural biodiversity, when the US wanted to reach agreements with individual farmers, rather than nation-states to purchase their IPRs[17]. Although contemporary jurisprudence draws a distinction between the creativity of indigenous peoples and local communities, and the creativity of corporate interests, only the latter are valued and rewarded. In other words, "corporate interests of the North invade the local commons of the South, freely tap its biological diversity for source materials, classify any 'improvement' or modification to them as 'invention', and then claim IPRs over the end product"[16].

South Africa's position on limiting access to its genetic resources by the use of patents and IPRs is therefore a viable tool for adding value to its conservation efforts, and also for allocating benefits between national and local community interests. Forest conservation poses to benefit from patenting of IPRs in that the natural resources over which local communities hold IPRs may be woodland and/or forest-based.

4. Expand the human capacity to conserve biodiversity, to manage its use, and to address factors threatening it

This deals with 'public education and awareness', and is set within the context of *Article 13* of the Convention on Biodiversity. This is to be accomplished by pursuing three closely related policy objectives which have briefly been described below.

i. To increase public appreciation and awareness of the value and importance of biodiversity, and public involvement in its conservation and sustainable use

It is important to note that people's willingness to invest both time and energy in any production system is influenced by what they stand to derive from such an investment. For rural South Africans, appreciation of biodiversity would only take place when the advantages of biodiversity conservation begin to improve their economic status. This will not, however, occur easily, particularly where biodiversity conservation policies until recently have been biased in favour of the affluent. It is this recognition that the government aims to foster appreciation of biodiversity among local communities by mainly establishing clear links between biodiversity conservation and community development and welfare. In forestry, this objective is realised mainly through community forestry which seeks to balance the welfare of trees and forests with that of peri-urban and rural communities.

ii. To improve the knowledge and understanding of South Africa's biodiversity necessary for its effective conservation

The government notes that this should be met by paying more attention to research, inventories, monitoring and evaluation, data and information, and traditional knowledge. The decisive role that these strategies play in improving the knowledge and understanding of biological resources, including forests and hence their conservation has been indicated above and in *Articles 7* and *8* of the Convention on Biodiversity.

iii. To enhance the capacity necessary to conserve and use South Africa's biological diversity sustainably

The Department of Environmental Affairs and Tourism recognises that training is key to developing management capacity. This crucial disposition is seen in *Article 12* of the Convention that stresses the establishment and maintenance of training programmes for conservation of biological diversity. The government's strategy is to restructure South Africa's training curricula, making it sensitive to environmental conservation; support short and long-term training courses in biodiversity management to improve the capacities of all those concerned; and provide incentives to develop professionally qualified labour-force in biodiversity conservation. Apparently, there are indications that environmental concerns are being incorporated into certain subjects taught to six and seven-year olds at 'grade one'; and this increases with the level of education. Therefore, it would be fair to state that training in South Africa, especially of those whose

activities are land-based has adequate considerations for biological diversity; and hence the need for environmental impact studies for development projects that are likely to impair forest biodiversity.

5. To create conditions and incentives that support the conservation and sustainable use of biodiversity

This goal recognises the functional role of 'incentives' in promoting the sustainable use of biological resources. This is informed by *Article 11* of the Convention that urges that "each contracting party shall, as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity". This objective is decomposed further into two, with the first dealing with promotion and development of economic opportunities that encourage the sustainability of biodiversity, while the second one deals with creation of incentives for biological resource conservation.

i. To promote and develop economic opportunities that are compatible with and which complement the conservation and sustainable use of biodiversity

This is because unprecedented dependence on biological resources for self-provisioning has been noted as a main factor leading to the overexploitation of these resources, particularly forests. Rapid population growth in and around forested areas in the face of high unemployment (and hence poverty) upsets the delicate balance that exists between rural communities and their biological environment. This is because forests are safety valves for economic hardship, as they offer opportunities for self-employment and subsistence. This unfortunate scenario has already manifested itself in South Africa's biodiversity rich regions, and the government has conceded that unless the socio-economic status of these natural resource-dependent people is improved, the country's protected areas will be overwhelmed by poor communities' quest for survival.

Consequently, the government aims to encourage CBNRM initiatives that permit local communities to use biological resources for subsistence and commercial purposes. As biological resources become more lucrative, undue pressure is likely to develop which the government aims to stem out by developing institutional structures and legal arrangements to control access to ensure equitable benefit-sharing. Eco-tourism, especially the development of partnership between 'state-private-community' is seen as a responsible economic activity capable of sustaining the natural resource base. Therefore, the government seeks to promote (and subsidise) tourism. The government also aims to encourage local people to add value to biological products that they harvest, especially those developed for commercial purposes to ensure their sustainable use. Furthermore, the government supports Medicines Control Council's efforts to develop a regulatory framework for the approval of traditional medicines.

It is apparent that these strategies have some conservation attributes, although they have failed to identify certain resource conservation issues. For example, strong emphasis on nature tourism can discount the value

of biodiversity, if local people's expectations are not met. Moreover, aggressive promotion of the industry will result in oversupply of tourism resources, thereby depressing their value, including protected areas. Value addition to biological products harvested by local people and the approval of traditional herbal medicine my Medicines Control Council are strategies that are likely to increase the value of forests in local, rural economies. However, it is often not the immediate people who live in and around forest reserves that threaten these ecosystems. It is frequently the distant, sophisticated urban consumers who overexploit forest and woodland resources for self-interest. Thus, Shackleton *et al.* (2000b:3) have noted that commercialisation of forest or woodland products "may result in increased appropriation by outsider groups and the more wealthy in the community, possibly at the expense of subsistence use and the livelihood security of the poor".

ii. To create incentives that support the conservation and sustainable use of biodiversity

South Africa is aware of the significant function of 'incentives' in conservation. It recognises the use of economic instruments as well as non-fiscal incentives such as 'education' and 'tenure reform' as important tools for the conservation and sustainable use of biological diversity, and also for promoting new uses for these resources through technological development. There is therefore a greater need to develop new incentives for conserving biodiversity which the government asserts should be sensitive to bioregional and socio-economic variations in the country. The government also bemoans the insufficient investment in the conservation of biodiversity, but aims to increase it.

The government's specific strategy with respect to biodiversity include maintaining, adjusting or developing new financial and other incentives that support the conservation of biological resources. Developing new finances for conservation will comprise many interventions, including the use of taxes, levies and charges linked to activities directly affecting biodiversity to generate revenue for biodiversity conservation; establishment of a 'Biodiversity Trust Fund'; and the introduction of incentives such as tax relief, rebates or concessions to encourage the private sector involvement in biodiversity conservation. An additional strategy is to develop measures that would enhance the capacity of existing conservation agencies to receive, generate and invest funds to promote their objectives and to enter into contractual agreements with private landowners.

The National Forests Act pledges enough incentives for SFM, although there is no clear or implied statement on the use of taxes for forest conservation. There is a revelation that South Africa lags behind on the use of taxation for environmental conservation. For example, it has been noted that "the current reluctance of the Department of Finance to introduce charges is their lack of capacity to administer new taxes" (Hanks, 1998:317) in the field of environmental protection.

6. To promote the conservation and sustainable use of biodiversity at the international level

The parent document (*Article 18* of the Convention) has clearly defined this goal which has also been translated into the eighth objective of South Africa's forestry policy. It is important to note that South Africa's

ratification of the Convention on Biodiversity, among others, demonstrates the vital role of international co-operation in biodiversity conservation. The practical implication of this goal is indicated by the presence of international development agencies such as DANCED, DFID, FINNIDA, IDRC, UNDP, and others that provide financial and technical support to the South African government for the purposes of forest conservation.

By implication, South Africa undertakes to participate actively in new agreements and arrangements relevant to biodiversity conservation; undertakes to promote rapid ratification of relevant agreements; and supports the participation of civil society in international agreements. South Africa also supports efforts to establish a forum for biodiversity conservation in Southern Africa. It will continue encouraging international collaboration in scientific and technical biodiversity research; and finally, will solicit external financial resources for crucial biodiversity programmes and projects.

South Africa's stance on biodiversity conservation at international level is founded on the realisation that the benefits and disbenefits that accrue as a result of consumption of the country's biological resources do not recognise political boundaries. This realisation is valid for forest and woodland resources, whose magnitude of externalities are felt both within and outside their geographical locations.

In summary, South Africa's biodiversity policy is reflected well in the forestry policy and legislation. It is an appropriate crosscutting policy.

3.7.2.2.2 The UN Convention to Combat Desertification

South Africa signed the UN Convention to Combat Desertification on 9 January 1995, and ratified it on 30 September 1997. The environmental concerns reflected in the Convention are sufficiently incorporated into the country's forestry and biodiversity policies. For example, *Article 10(c)* informs parties to "give particular attention to the implementation of preventive measures for lands that are not yet degraded or which are slightly degraded". The National Forests Act has a provision for preventing deforestation and hence desertification. On the other hand, subsection *(f)* informs parties to "provide for effective participation at the local, national and regional levels of NGOs and local population, both women and men, particularly resource users, including farmers and pastoralists and their representative organisations, in policy planning, decision-making, and implementation and review of national action programmes". *Participation* of policy-affected and policy-connected people in policy formulation and implementation processes is well anchored in South Africa's institutions.

It is noteworthy that the concerns shown in the Convention's regional implementation annex for Africa (Annex I) have also been mirrored in the country's biological resource conservation policy and legislation. *Article 4(b)* of the Annex commits parties "to sustain and strengthen reforms currently in progress toward greater decentralisation and resource tenure as well as reinforce participation of local populations and communities".

The ongoing process of restructuring that involves devolution of woodlands and the underlying land to local communities illustrates South Africa's step in this direction. Provisions for Community Forestry Agreements between local communities that wish to engage in community forestry and DWAF is another example of community involvement in natural forest management.

Generally, the concerns expressed in the Convention to Combat Desertification have been incorporated well into South Africa's forestry, environmental and biodiversity conservation policies whether advertently or superficially. For example, *Article 8* informs parties to encourage the co-ordination of activities carried out under this Convention and under other relevant international agreements, particularly the UN Framework Convention on Climate Change and the Convention on Biodiversity. It is fair to state that South Africa is well placed to understand the reinforcing effects of these international nature conservation policies. *Article 10* informs parties to design and implement national action programmes to combat desertification, i.e., parties should identify the factors contributing to desertification and practical measures to combat desertification and mitigate the effects of drought. South Africa's National Forestry Action Programme is an impressive example, among other environmental programmes. *Article 11* dwells on the importance of 'subregional and regional action programmes', while *Article 12* informs parties about the significance of 'international co-operation'. These have all been expressed in the forestry policy, environmental management policy and in the country's biodiversity policy.

Article 16 deals with 'information collection, analysis and exchange'; *Article 17* tackles research and development; while *Article 18* directs parties to facilitate the financing of the transfer, acquisition, adaptation and development of environmentally sound, economically viable and socially acceptable technologies to combat desertification and/or mitigate the effects of drought. These objectives basically expound the importance of 'scientific and technical co-operation', a matter that every South African biological resource conservation policy has emphasised. *Article 19* directs parties to recognise the significance of 'capacity building, education and public awareness' and *Article 20* deals with the means of procuring 'financial resources' for programmes to combat desertification. *Article 21* deals with 'financial mechanisms' that the 'Conference of Parties' should promote to fund mainly affected African parties. Again, South Africa has stressed the significance of 'capacity building, education and public awareness' in its various environmental management policies. Likewise, South Africa has noted the centrality of financial resources in environmental conservation.

Therefore, it is appropriate to point out that the UN Convention to Combat Desertification has informed natural resource conservation policy in South Africa like the Convention on Biodiversity. They are effective crosscutting policies.

3.7.2.2.3 The UN Framework Convention on Climate Change

South Africa signed the UN Framework Convention on Climate Change on 15 June 1993 and ratified it on 29 August 1997. The most significant conservation aspect of this Convention is the need for parties to promote sustainable management and co-operate in the conservation and enhancement of sinks and reservoirs of GHGs, including forest biomass (*Article 4*). Also, *Article 2 (ii)* of the Kyoto Protocol encourages the protection and enhancement of sinks and reservoirs of GHGs. It emphasises the promotion of sustainable forest management practices, afforestation and reforestation, especially by industrialised countries. Furthermore, *Article 10* of the Protocol stresses the importance of regional and international co-operation in controlling climate change.

Although African parties made no commitments to reduce GHG emissions, the recognition of trees as important $C0_2$ sinks and reservoirs is already reflected in many forestry policy statements. Thus, the UN Framework Convention on Climate Change has informed forest conservation at least at the policy level.

3.7.2.2.4 The CITES ban as an international conservation tool

The CITES ban on the international trade in elephant and rhino products has no practical implications for South Africa's forests, since these animals are found mainly in fenced areas, whose conservation status in the eyes of the civil society has been determined. This is unlike the case in many other Southern African countries where sustainable management of these big games determines the conservation status of protected areas that include forests and woodlands.

3.7.2.2.5 Land policy

In Africa, land performs a significant economic function. For example, UNEP (2000:55) has appropriately recognised that "land is the critical resource and the basis for survival for most people in Africa". This is true in rural areas where it is the primary production factor, source of employment, power and wealth. Its ownership and tenure define people's willingness to invest in land resource conservation. Generally, land users who have uncertain ownership or tenure over the long-term often tend to maximise their immediate returns at the expense of the long-term benefits that might accumulate from more sustainable use. In situations where prospects for short-term returns on investments are absent, local people have taken to protest, frequently resulting in violent clashes. This is illustrated by the ongoing land conflict in Zimbabwe where the landless with the government support are invading commercial farms. Thus, "land is a social asset, crucial for cultural identity, political power, and participation in local decision-making processes"[18]. It is therefore not surprising that the liberation wars staged on the continent were fought closely around land issue. The conservation aspect of landlessness is that the dispossessed people cannot participate functionally or interactively in environmental conservation. This compromises participatory forest conservation, prompting the poor and the powerless to overexploit forest resources as much as they can, if the opportunity arises. Under this system, resource degradation and loss escalate, particularly when the resource in question is held by an absentee

landlord frequently in the form of a government agency that lacks necessary resources to enforce its legal ownership.

In South Africa, the distribution of this invaluable resource *land* among the South Africans has been described as highly inequitable. For example, in 1994, 90% of agricultural land was in white hands, supporting only 5.3 million white farmers and their labourers, while 10% of agricultural land, supporting 13 million people in homelands was in the hands of black majority population (DWAF, undated: 57)[q]. This has also been detected by Els and Bothma (2000:20), who point out that 48% of South Africans subsist on 14% of the country's total land area. This translates into more than 17 million people who depend mainly on subsistence agriculture, thereby exerting high pressure on land resources. A further land issue discouraging responsible land resource use relates to the insecurity of land to the vast majority of people inhabiting communal areas. For example, Dovie *et al.* (2000) have complained that "problems with land tenure issues have prevented rural communities to effectively manage their own commercial endeavours in South Africa". It is implied that policies which do not guarantee land tenure security to rural communities, are disincentives for investment in land and forest resources conservation. Alternatively, "policies enhancing security of tenure in communal areas will assist in raising the contribution of natural resources to livelihoods" (Shackleton *et al.*, 2000b:1); and hence in lessening poverty. Therefore, it is appropriate that South Africa's existing land policy indicates an overwhelming demand to upset the current highly skewed land distribution and the inherent tenure insecurity through a land reform programme that includes land restitution, distribution and land tenure reform.

3.7.2.2.5.1 The main thrust of the land policy

South Africa's White Paper on land policy identifies land reform as a key programme for addressing the injustices of racially-based land dispossession; the inequitable distribution of land ownership; and for addressing the insecurity of tenure for the majority of parties. A land reform programme that aims to redress these imbalances can be termed as the "redistribution of land with greater equality". This is to be achieved by pursuing three sub-programmes, including land restitution, land redistribution and land tenure reform. According to the White Paper, "the purpose of land *redistribution* is to provide the poor with access to land for residential and productive uses, in order to improve their income and quality of life" (DLA, 1998:36). The objective of *restitution* is to restore land and provide other remedies to people dispossessed by racially discriminatory land policies and legislation. *Tenure reform* is more complex than the aforementioned types, and may involve carving new systems of landholding, rights and ownership (DLA, 1998:49&57). The theme of *tenure reform* is to ensure security of land to all South Africans under diverse forms of locally appropriate tenure. This incorporates legal recognition and formalisation of communal land rights, and also the consolidation of the rights of tenants on mainly white commercial lands (Koch & de Beer, 2000:177).

[q] Making forest policy work – a DWAF course.

3.7.2.2.5.2 Land reform and environmental conservation

The current scenario in the former homeland administrations, where most of South Africa's protected forest reserves are found is that of overcrowding, impoverishment and land resource degradation. For example, UNEP (2000:55) has cited that "soil losses in South Africa alone are estimated to be as high as 400 million tonnes annually". The DLA (1998:25) confirms that the worst natural resource degradation ensues around informal settlements where people have *little* to *no* control over their environment. It is believed that land reform programme which is directed at poverty reduction would ameliorate the current levels of environmental destruction due to overcrowding of marginal, erodible and often dangerous land by poor people. Furthermore, the DLA asserts that the mitigation of land resource degradation should not occur simply by distributing people over a wide area to dilute their impact, but rather by incorporating environmental concerns in project planning. By implication, new landowners should prepare a feasibility study that would include, among other things, an assessment of the environmental implications of the proposed undertaking on the concerned land. The most significant conservation aspect of this measure is that EIA should be coupled to the disbursement of Settlement/Land Acquisition Grant of about US$3,000 that the government pays to each householder that acquires new land under the current land reform programme.

The costs of establishing South Africa's protected areas have been borne by local communities, particularly in the form of land expropriation. People had to make way for forest and wildlife reserves, and in so doing drove a wedge between conservation authorities and local communities. However, today, the role of local communities in natural resource conservation has become more important; and it is this realisation that local communities are laying land claims against national parks and other resource conservation areas. For example, de Villiers (1999:4) notes that three claims had been made against national parks and many more had been lodged against provincial parks. The Makuleke community lodged one notable land claim case in 1996 against the northern part of the Kruger National Park. The community members said that they were deprived of their land rights, that were removed from the land against their will and that they had not been adequately compensated. The land in question was restituted successfully to the Makuleke who want the land to remain part of the national park on condition that joint management takes place between the community and South African National Parks. This is a classical example of how land reform through its restitution sub-programme has succeeded to promote participatory biological resource conservation. Resolving the other claims laid against protected areas alongside land redistribution and tenure reform will thus increase local people's participation in natural resource conservation. Moreover, it has been stated that "tenure security '(which is to be assured under the reform programme)' is a precondition for people to invest in land improvements and encourages environmentally sustainable land use practices" (DLA, 1998:13).

Other important attribute of South Africa's land tenure reform is the emphasis on gender equity. The programme aims to remove the practices that discriminate against women acquiring land. For example, the

DLA (1998:ix) has indicated that the land reform programme will require the removal of legal restrictions on women's access to land and will promote their active participation in decision-making and land ownership. In other words, "the Ministry of Land Affairs committed itself to taking legislative and administrative measures to give women and men equal rights to economic resources including access to ownership and control over land and other properties, credit facilities, natural resources and appropriate supporting technology" (DLA, 1998:18).

3.7.2.3 Effects of sectoral policies

Sectoral policies can broadly be defined as policies that originate from the other sectors of the economy such as transport, agriculture, wildlife and tourism, trade and industry and population, and are likely to yield outcomes that may have implications for forest conservation. There is virtually no policy that does not have a bearing on forest and woodland conservation; those that may generally appear to be far detached have an implication for forests when scrutinised. HIV/AIDS that many would think has no impact on forest and woodland consumption can pose a serious conservation challenge in a country that has no pragmatic policy for HIV/AIDS or whose capacity to provide chemotherapy to AIDS sufferers has been inundated. This is because the sick population of such a country would fall back onto natural remedy. Trees, shrubs and herbs that exhibit medicinal characteristics will be uprooted, debarked and destroyed, thereby impairing the integrity of forest ecosystems. Similarly, the Reconstruction and Development Programme housing scheme that aims to build houses for the *have-nots* in South Africa may hasten timber consumption. This will increase timber prices, if the timber is procured locally. However, the domestic timber market would be dampened, if the timber is imported from other countries, and this could cause disinvestment in forestry. The use of wood substitutes such as concrete or metal in construction would have the same effect of devaluing timber resources.

The ability of almost any policy to influence forest conservation is incontestable. Therefore, it is inappropriate to assume that the sectoral policies which have been included in this study, are the only ones that affect South Africa's forests. Rather, they are the ones whose positive or negative impact on forest conservation can be assessed at a macro-scale.

3.7.2.3.1 Water policy

The government agency with responsibility for water is placed in the same department with forestry, and hence the name DWAF. The single most important policy objective of South Africa's water policy that would have positive effect on forest conservation is that "all water use, wherever in the water cycle it occurs, will be subject to a 'catchment management charge' which will cover actual costs incurred". Another similar statement has stressed that the policy will seek to charge users for the full costs of providing access to water that include infrastructure development and 'catchment management activities'. Also, the White Paper states that the farming sector which incorporates plantation forestry and the mining industry will have to pay a price for water

that reflects the real economic cost that includes the indirect costs to society and the environment. The government has reiterated in its 'water pricing policy' that the price of water will reflect water resource management costs as well as appropriate 'resource conservation charge'. It has also been stated that "penalties for serious offences will reflect the extent and nature of the damage, and must include provision for the recovery of the costs of repairing the damage." The White Paper indicates further that the Chief Directorate of Water Use and Conservation must influence or prevent land use planning decisions which could lead to unacceptable impacts on water resources. Generally, this includes decisions that would cause deforestation or interference with the integrity of catchment forests. There is therefore a strong indication that the water policy has sufficient provisions for water resource conservation, including catchment forests.

An additional characteristic of the national water policy that has some implication for this study is the recognition that "women are the traditional custodians of natural resources in the rural areas, and they are also the people who suffer most from degradation of water and other natural resources. Women are also articulate in their defence of the environment and in promoting water conservation activities". The policy affirms that empowering women by encouraging their participation in Catchment Management Agencies will ensure that their voices are heard in supplying clean water. Thus, the government supports the feminisation of water management which is also reassured by the following Act.

3.7.2.3.1.1 The National Water Act

The use of price to encourage water conservation that indirectly includes catchment forests has also been reflected by the National Water Act No. 36 of 1998. *Section 56(2)* states that the pricing strategy may contain a strategy for setting water use charges to fund water resource management. This includes among other things, monitoring water resources and their use, water resource protection and conservation. The same *Section 56(6)* notes that in setting a pricing strategy for water use, it could be appropriate to consider incentives and disincentives to promote the efficient and beneficial use of water and to reduce detrimental impacts on water resources. This undoubtedly includes catchment zone management which is a forest conservation activity.

While the policy statement on water pricing has appropriately been translated into law, both the policy and the law still remain general statements of intent. This means that water prices paid by consumers are not reflective of upstream efforts often made to conserve forests to ensure sustainable supplies of water to downstream areas. This is attributable to the lack of appropriate institutions such as Catchment Management Agencies to implement the policy. Nevertheless, the seventh chapter of the Act deals with the establishment of Catchment Management Agencies and their responsibilities. This organisation is expected to be funded by water use charges, in addition to other sources of money, including that appropriated by parliament.

Representation of stakeholders, including women in water management committees, agencies or boards is one of the most important policy objectives that has been translated effectively into a law. For example, the Act echoes that "a Catchment Management Agency may be established for a specific water management area, after public consultation, on the initiative of the community and stakeholders concerned". However, where this is unfeasible, the Minister may establish a Catchment Management Agency on his/her own initiative. The role of stakeholders has also been reiterated in the appointment of the members of the governing board of a Catchment Management Agency. Accordingly, the board of a Catchment Management Agency will be constituted in such a way that the views of concerned parties are represented in a balanced manner. The Act indicates that the appointment of governing board of Catchment Management Agency should achieve sufficient gender representation. Equally important is the emphasis on monitoring, assessment and information, both in the policy and the law. The fourteenth chapter of the Act stresses that "monitoring, recording, assessing and disseminating information on water resources is critically important for achieving the objectives of the Act". The Minister is therefore mandated to establish national monitoring systems whose purpose will be to facilitate the sustainable and co-ordinated monitoring of various aspects of water resources by collecting relevant information and data.

3.7.2.3.2 Energy policy[19]

There is no clear government policy on fuelwood, although it is an important biofuel in South Africa. The government policy appears to focus only on conventional energy supply sectors such as electricity, nuclear energy, oil and gas, liquid fuels, coal and renewable energy sources. The latter category does not include fuelwood; it refers to solar energy, wind power and hydro-electricity. Nonetheless, the government's short-term policy priority is stated to "facilitate the production and management of woodlands for rural households", while the medium-term priority is to "promote improved combustion techniques and appliances for fuelwood and other traditional fuels"[19]. While a reference has been made to wood in the broad policy objective of increasing people's access to affordable energy services, the mere lack of recognition of fuelwood as a vital energy supply sector in South Africa is a disservice to forest conservation. This is particularly important where the emphasis on rural electrification and other forms of energy is not seen to relieve pressure on forests in the poor rural parts of the country, mainly in the Eastern Cape, KwaZulu-Natal and Northern Province.

3.7.2.3.3 Population policy

South Africa's population was estimated at 43 million people, while the annual growth rate was put at 1.3% in July 1999[5]. On the other hand, the White Paper on population policy estimates the current population growth rate at 1.9%/annum. However, this is expected to decline in the 2000–2010 period. Whichever population growth rate estimate is the most appropriate, it is unmistakable that South Africa has one of the lowest population growth rates on the continent. In fact, the relationship between rapid population growth and environmental conservation has been discussed under the second goal of the biodiversity policy.

The current population policy was formulated to correct the previous population policy failure that aimed to arrest population growth by intensive family planning activities, ignoring the root causes of rapid population growth. As a result, its goal is to bring about changes in the determinants of the country's population trends to make them consistent with the achievement of sustainable human development. The determinants comprise education, primary healthcare, economic development and human resource development, among others, while "sustainable human development" involves enlarging people's choices by creating enabling environment for them to enjoy long, healthy and creative lives. It is noteworthy that long and healthy life requires healthy environment which for rural people could include maintenance of large blocks of natural forests to provide clean source of drinking water, food, natural remedy, source of income, fuel, timber and non-timber forest products, recreation and opportunities for self-employment.

The preceding goal defines the broad objective of the policy, that is, to enhance the quality of life. Again, there is an implicit concern for environmental conservation. In fact, ensuring environmental sustainability through comprehensive and integrated strategies that address population, production and consumption patterns has been identified as an important strategy for improving the quality of life. Therefore, it is fair to conclude that, although there is no explicit target for population growth rate and hence fertility, there is a concerted effort to reduce the existing level of population growth. The single most important conservation attribute of South Africa's population policy has been the unwavering recognition that population pressure can exacerbate environmental degradation and disrupt ecosystems such as forest upon which many rural and peri-urban people depend for self-provisioning. Educating natural resource-dependent people to understand this important link is indeed a path to participatory resource conservation.

3.7.2.3.4 Agricultural policy[20, 21]

Agriculture contributes approximately 5.0% to the GDP and absorbs 30% of the labour force[5]. Thus, it is an important sector in the South African economy. This is reflected in the White Paper on agriculture that addresses seven policy areas: agricultural production; marketing; sustainable utilisation of natural resources; agricultural financing; institutional infrastructure; information; and agricultural technology, research, extension and training. While all these areas exert some influence on land and forest resource conservation, none of them exceeds "sustainable utilisation of natural resources". Sustainable utilisation of natural resources from forest conservation standpoint would entail agricultural production at the *intensive margin*. Agricultural expansion at the intensive margin which means expansion on land already cultivated with the given crop involves increased application of inputs to a given area of land to realise increased outputs. This type of production is environmentally friendlier, particularly for terrestrial ecosystems such as forest, woodland and grassland, as opposed to agricultural expansion at the *extensive margin*. The latter entails expansion onto land not already cultivated and involves deforestation in forested areas (Convery, 1995:60-1).

3.7.2.3.4.1 Sustainable utilisation of natural resources

This policy area *firstly* considers South Africans as custodians of the country's natural resources and that the government should employ policy instruments to invoke this responsibility to encourage efficient and sustainable agricultural resource use. Such interventions should include establishment of full property rights in areas where there have been open access to the natural resources. *Secondly*, the policy requires that "South Africa's productive agricultural land should be retained for agricultural use". This is necessary because if productive and fertile lands are converted to housing and industrial establishments, agriculture will be pushed to marginally productive and fragile ecosystems, thereby threatening biodiversity. The *third* objective deals with land users' responsibility for the rehabilitation of mismanaged natural agricultural resources. The government will discourage the use of marginal land that is prone to erosion, and also the land that has been damaged irreparably. This is a clear indication of South Africa's commitment to the Convention to Combat Desertification. The instruments that will be used here will include information, economic and regulatory tools.

Furthermore, the government concedes that environmental damage in rural areas is due to the incorrect application of irrigation methods, excessive use of agricultural chemicals and also due to the pollution of surface and groundwater resources by power stations and mines. The spread of alien vegetation, the increasing use of land for plantation forestry and the destruction of indigenous forests by agriculture are posited as threats to rural biodiversity. Accordingly, the government recognises its responsibility to provide assistance and also to enforce law to correct these market failures. These would include availing the latest technology for managing natural resources to farmers at affordable prices, the use of economic and legal instruments to discourage practices that are harmful to the environment. In addition, the government would ensure that the benefits and the real costs of natural resources are incorporated fully in the pricing of resources to discourage abuse. This is one of the principles of environmental management.

The concern for sustainable utilisation of natural resources is reflected in South Africa's Landcare programme. The overall goal of this programme is "to optimise productivity and sustainability of resources so as to result in greater productivity, food security, job creation and a better quality of life for all"[22]. The Landcare programme like the agricultural policy stresses that successful land care which involves the conservation of natural resources is the ultimate responsibility of land users. Nonetheless, the government would promote and assist land users to conserve resources by channelling its capital spending towards conservation objectives, designing innovative incentives to conserve land resources, and also by employing its regulation and legislation (ibid.).

South Africa's goal of sustainable agriculture could relieve pressure on biological resources in and around protected areas, if it is pursued faithfully. Sustainable agricultural development and growth will provide steady job opportunities in either the production or processing sector. This will increase the level of economic activity in rural areas, triggering the establishment of other services. Diversification and growth in the business and

service sectors will occur, with many rural people becoming less inclined to poach timber and wildlife resources. Eventually, the value of protected areas will appreciate and many people will begin to place more value on the intangibles whose consumption does not threaten the natural resource base. It is also important to note that, as the state tightens its control over state forests, the demand for non-timber forest products such as medicinal plants will increase. With guarantees for tenure security, rural people would cultivate medicinal trees, shrubs and herbs to offset the market demand, and as a consequence, drawing pressure off protected forests, woodlands and national parks.

3.7.2.3.5 Tourism policy[23]

Tourism is the fourth largest earner of foreign exchange, although its precise impact on the South African economy falls below the average world estimate for 1995. The industry's contribution to the world economy stood at 10.9% in 1995, while the contribution to the South African economy was put at 4.0%, which is far below the industry's contribution to the US and British economies where it registered 10.5% and 12.3%, respectively. Moreover, the country has extraordinary resource base for tourism that includes wildlife, diverse and impressive scenery and unspoiled wilderness areas, among others. Forest, which consists of trees and other associated vegetation and habitats is a medium for wildlife conservation and is therefore important to the tourism industry. The White Paper on tourism defines the scope of tourism policy in South Africa with due considerations for sustaining tourist areas of natural attraction that encompass forest ecosystems. The policy statements relevant to this study are examined below.

South Africa aims to develop a sustainable and competitive tourism industry in a socially, economically and environmentally responsible manner. Consequently, the White Paper defines the policy objectives that cover these three major concerns. The social objectives address, among other things, the need to encourage participation of all South Africans in tourism development through planning, policy formulation and implementation. Another important social objective deals with the provision of appropriate tourism education, training, awareness and capacity building, especially of those previously neglected groups. Gender equity considerations are equally important and so is the need "to monitor and minimise potential adverse social impacts of tourism". These are important policy objectives whose conservation effects have already been stressed in the preceding discussions.

The economic objectives which are likely to have significant conservation effects, include the need "to create sustainable employment opportunities...to use tourism to aid the development of rural communities and to encourage linkages between tourism and other industries...and to promote domestic tourism amongst all South Africans". Existence of employment opportunities for communities in the proximity of protected areas would certainly relieve pressure on these areas and would also improve the image of protected areas. Making tourism facilities accessible to many South Africans would change people's attitudes towards protected areas,

causing many to see the need for conservation of the country's biodiversity. The planned incorporation of tourism as a subject in the school curriculum in 1998 would invoke similar attitude in young South Africans.

The most important environmental objective is "to encourage the conservation and sustainable usage of tourism resources". It is essential to note that tourism resources comprise protected areas such as forest reserves, wilderness areas and national parks. Therefore, it would be appropriate to summarise that there is a synergy between forestry and tourism policies.

3.7.2.3.6 Wildlife policy

In South Africa, wildlife conservation is achieved through the biodiversity policy. For example, the first goal of the biodiversity policy is to "conserve the diversity of landscapes, ecosystems, habitats, populations, species, and genes in South Africa". The second objective for achieving this goal is to "maintain and strengthen existing arrangements to conserve South Africa's indigenous wildlife", while the third objective seeks to "establish and manage efficiently a representative and effective system of protected areas". It is conspicuous that these policy statements and many others emphasise wildlife conservation. It is noteworthy that there are corresponding strategies for these objectives; what remains to be done is the formulation of legislation for translating these theories into programmes and projects that result in the protection of wildlife and their habitats. Currently, the Department of Environmental Affairs and Tourism is in the process of producing such legislation. Therefore, South Africa has no wildlife policy *per se*.

3.7.2.3.7 Macroeconomic policy

South Africa's macroeconomic policy that is likely to affect forests consists of exchange rate and employment policies[24,25]. It would be fair to state that the South African rand has seen steady depreciation in recent years which provides a stable environment for a concerted expansion of export industries. Implicitly, the scope of plantation forestry and agricultural industries are expected to expand as the profitability of export timber and agricultural produce increases. This in turn would cause more natural forests and woodlands to be overexploited and converted to plantation forestry and agricultural areas. Fortunately for South Africa, indigenous forests are increasingly being brought under tight state control and consequently, their conversion will not occur unheeded. Moreover, the establishment of plantations requires a permit, since it is a 'stream flow reduction activity' in addition to being a potential threat to biodiversity. Furthermore, the depreciation of rand would increase the accessibility of the country's tourism resources to foreign consumers which if not adequately regulated would result in overconsumption of tourism resources. Typically, this involves, among other things, overtaxing of the physiological density of protected areas.

The government has identified employment creation as a focal pillar for social and economic transformation. However, employment policy can promote activities that are environmentally positive or negative. For example, providing employment to the 29% of the unemployed labour force would create social and economic

stability, therefore discouraging illegal exploitation of forest and woodland resources. A job gives a person income, self-respect and opportunity to contribute to the development of the country. With secure jobs incidents of illegal cutting and selling of timber by armed woodcutters like in the Manubi forest in the Eastern Cape would decrease, since it is attributed to the high unemployment and retrenchment in the area[41]. Although obsession with job creation can be counterproductive, poverty reduction through employment is key to forest and woodland conservation in South Africa, otherwise the value of these resources will become more significant to the unemployed and retrenched that return to rural areas. Moreover, high level of unemployment and retrenchment does not constitute sustainable development. Ideally, as the economy grows, it will impact the environment negatively. However, this needs to be mitigated, and as a consequence, more jobs are created in environmental conservation and social welfare is enhanced.

3.7.2.3.8 Transport policy

South Africa's transport infrastructure is at an advanced state, comparable to that of a First World country. It is unlikely that the transport policy will encourage road and rail construction in forested areas where land transport network will threaten forest biodiversity. Moreover, new land transport infrastructure such as roads and railways will not attract haphazard human settlement as residential areas are subjected to a host of regulations. The employment of EIA as a planning tool will check the adverse effects of transport development on forest ecosystems. Furthermore, the second goal of South Africa's environmental management policy stresses "sustainable resource use and impact management", with particular emphasis on the inclusion of environmental considerations in designing transport networks. The same concern has been echoed by the second goal of South Africa's biodiversity policy that requires the integration of biodiversity considerations into land-use planning and in EIA.

In conclusion, the current transport policy has no discernible negative effect on forest conservation. Rather, the previous policies which developed the existing transport networks, have facilitated ecotourism; encouraged the development of intensive agriculture whose implications for forests are unmistakable; and have opened up opportunities for marketing the products of sustainable forest use and management.

3.7.3 Intersectoral policy co-ordination

The primary objective of intersectoral policy co-ordination is to ensure harmony between a given set of policies such that all the concerned policies either individually or hybridised do not defy the goal of sustainable development for any particular sector. Alternatively, the interaction between a given number of policies must attain a theoretical 'pareto optimality'. South Africa recognises this significant function and as a consequence has set up two structures to optimise the beneficial synergy and minimise the negative effects between policies. Peart and Wilson (1998:247) note that there is a Committee for Environmental Co-ordination and another committee that consists of national government ministers and provincial members of executive councils (MinMEC). The Environmental Conservation Act 73 of 1989 established the Committee for

Environmental Co-ordination, with the responsibility for co-ordinating actions taken by national and provincial government departments that bear on the environment. It is headed by the Director-General of the Department of Environmental Affairs and Tourism and consists of the Directors-General of national government departments that have environmental mandate, for example, Department of Land Affairs and DWAF. There are also representatives from the provincial governments on the committee. The committee meets three to four times annually, while MinMEC meets four times a year. Similarly, the Director-General of the Department of Environmental Affairs and Tourism, Directors, Chief Directors or Permanent Secretaries of provincial environmental departments attend MinMEC meetings. However, MinMEC has been considered ineffectual because there is a lack of commitments by ministers to attend the meetings; and also due to lack of adequate representation by the provincial governments. There is only one representative from each province on the committee, although there are several departments that impact on the environment. Also, there is an apparent consensus that the Committee for Environmental Co-ordination is ineffective.

Furthermore, there are no formal co-ordinating institutions between government departments at the provincial level and few or no formal links between provincial and local government (Peart & Wilson, 1998:247), where policies and programmes that address environmental conservation are expected to be implemented. This will certainly militate against forestry policy implementation, as each land use type that competes with forestry is likely to be ill-informed about the concerns for forest, woodland and grassland conservation. This scenario will be aggravated further by the apparent lack of participation by provincial and local governments in forestry policy implementation, since DWAF has elected to work through its regional offices, rather than through environmental structures at the provincial and local government levels.

3.7.4 Conclusions

This study set out to examine the effects of forestry policy on the sustainability of forest resources in South Africa. Consequently, the conservation properties of the forestry policy have been assessed, and there are indications that the country has a coherent forestry policy capable of conserving the limited natural forests that cover approximately 7.0% of the overall land base, subject to satisfactory implementation. The quality of South Africa's forestry policy indicates the socio-economic and environmental significance of forests to the South African society. DWAF states that the sector contributes approximately 2.0% to the GDP and employs 2.0% of the total economically active population. However, these estimates do not incorporate the contribution to the rural informal sector and as a consequence, grossly underestimate the full contribution of the sector to the national economy. The proportion of the country's annual budget invested in forestry development would serve as a proximate proxy for assessing the economic value of forests. Unfortunately, this information has not been procured. However, allocating only 0.2% of the overall budget to an important department like the Department of Environmental Affairs and Tourism in the 1998/9 financial year (Peart & Wilson, 1998:241), might paint a grim picture for a related department like DWAF. Nevertheless, the emphasis on full cost accounting in the biodiversity policy and environmental management policy, combined with EIA is expected to

rectify this situation, if these concerns are pursued pragmatically. Furthermore, full cost accounting is also expected to address stumpage charges whose current methods of determination are unknown.

The South African government has acknowledged that 'fair and equitable distribution of natural resources' among the different segments of its society is at the heart of forest conservation. Consequently, a number of measures at the policy level have been employed to create social equity. *First*, the policy emphasises participation of forest-dependent people in setting up the institutions that affect their lives. Implicitly, the policy encourages participation of rural communities in policy formulation, implementation and evaluation processes. *Second*, the policy emphasises that such participation should be gender-sensitive, i.e., women should participate in making decisions that concern forests, since they are the key stakeholders in forest conservation. *Third*, the policy promotes redistribution of the country's forestry wealth and obligates that such reallocation of natural resources should equally encourage gender equity. The current land reform programme that recognises women as competent resource owners reinforces this concern further.

The Chief Director of Forestry indicates that there is adequate lifeware to implement the policy, although there appears to be implementation deficits in many areas. For example, there are incidents of illegal logging in state forests and woodlands in the Eastern Cape. The frequent excuse put forward by forest officers and rangers who are themselves law enforcement agents is that poachers are armed with AK47 assault rifles, while forest guards have been disarmed. The apparent lack of capacity to develop innovative tools to deal with such conditions indicates that the Department lacks the necessary skills to overcome street-level obstacles to policy implementation. For example, South Africa has a fairly well established licensing system that could be used effectively to control the illegal trade in forest products.

To determine that the forestry policy is doing the sort of things it is supposed to do requires monitoring and evaluation. Monitoring and evaluation are frequently conducted using criteria, indicators and standards that are still being developed. Intersectoral policy co-ordination is awfully necessary for assessing the relationship between forestry policy and other sectoral, crosscutting and overarching policies. It determines synergy and optimises it, in addition to identifying policy conflicts and facilitating their resolution. Lack of intersectoral policy co-ordination has been posited as an important factor derailing the conservation of forest and woodland resources in Africa, given the potential of other land based activities to establish themselves at the expense of forests and woodlands. There are two committees in South Africa to conduct this function: Committee for Environmental Co-ordination and Committee of national ministers and provincial members of executive councils, both of which are considered ineffectual, raising the concern that the forestry sector will continue to be adversely affected by other sectors.

There is an overwhelming indication that the overarching framework policy has adequately defined the context of forestry policy, and that there is a strong synergy between the forestry policy and the crosscutting policies

that appear to consolidate the contents of the policy. Furthermore, the concern for environmental conservation has also been reflected in the other sectoral policies included in this study. There is therefore awesome evidence that the overarching framework policy, crosscutting and sectoral policies in South Africa support forestry, at least at the context and content level. It is too early to speculate whether this support has been translated into practice on the ground, since most policies have just become operational.

The ultimate goal of any forestry policy, programme, strategy and law is to conserve forest resources. Today, the official goal of many governments since the Rio Summit is to maintain at least 10% of their land base under forest cover. However, it is extremely doubtful that the South African forestry policy will make this target achievable with less than 1% of the country's total land area under natural or indigenous forest cover, according to local estimates. Another important proxy for imputing ecological sustainability at the macro-scale is to relate the rate of forest exploitation to the rate of forest recruitment. For South Africa, the annual rate of afforestation closely mimics the annual rate of forest depletion. This would be expected to place South Africa on the path to SFM, if the species used were of native origin (strong sustainability). Finally, to formulate issue-centred policy requires up to-date data on forest resources which unfortunately had not been the case for the South African policy. The forestry policy formulation exercise commenced in 1995 and was completed in 1996, while a national forest resource assessment was completed only in 1999, according to DWAF's forestry policy section. Therefore, the decisions adopted in the policy might not be strictly issue oriented.

The overall performance of South Africa's existing forestry policy is depicted in the following Table 3.2. South Africa has a forest conservation index of about 3 (or 2.8 using local estimates) which indicates the likelihood of SFM. Alternatively, this index means that the country's forestry policy and other external policies that support forest conservation will certainly result in SFM subject to satisfactory implementation, as these policies have barely come into effect.

Table 3.2 **Estimate of South Africa's Forest Conservation Index (FCI)**

Indicators	Scores
Protected forests	3 (1)*
Forestation/deforestation ratio	2 (N/A)*
Forest resources data	3
Monitoring and evaluation	2
Adequacy of external policies	5
Institutional capacity	5
Intersectoral policy co-ordination	2
Democracy in policy-making	5
Gender equity	3
Security of land tenure and ownership	3
Contribution to the GDP	2
Employment as a proportion of labour force	2
Investment in forestry development	N/A
Mean Score (FCI)	**3.1 (2.8)***

N/A = Not available; * FCI using local forest estimates (Low & Rebelo, 1996:4-7).

Chapter four

Tanzania

4.1 Executive summary

This study aimed to assess the effects of forestry policy on the sustainability of forest resources in Tanzania. Accordingly, the conservation attributes of the country's forestry policy have been assessed. There is ample evidence that the existing policy which was unilaterally formulated by the government in 1953, but has undergone several bureaucratic reviews, is a general statement of intent. This is attributable to the lack of contemporary legislation for implementing the policy, although many of its statements are still valid. As a result, there is also no direct or implied statement on monitoring and evaluation of the forestry policy. Tanzania's forest resources like the South African ones are also undervalued. For example, the sector contributes only 3.0% to the GDP and employs about 2.8% of the employed labour force. These estimates are faulty because 91% of Tanzania's energy is derived from forests, and the rural economy is heavily dependent on forest products. This would become clearer if the opportunity cost of woodfuel was taken into account, let alone the timber and non-timber forest products.

The sustainability of Tanzania's forest resources is also influenced by policies which are external to the forestry sector. Of concern are policy measures emanating from the overarching framework, crosscutting and sectoral policies. The overarching framework policy (environmental policy) aims to combat land degradation, comprising the containment of deforestation. The policy also emphasises broad-based participation in natural resource management, although these concerns are not reflected in the country's existing forestry policy. However, Tanzania has commenced reaping the benefits of the Convention on Biodiversity, especially in terms of technology transfer, financial assistance and scientific research co-operation. The country does not appear to derive conservation benefits from other multilateral environmental agreements, although it crusades against the resumption of the ivory trade. There is a widespread insecurity of land resources, with forests in the public sector serving as open-access resources, while the reserves are also subjected to a certain degree of trespass.

Tanzania's forest resources also fall under the vagaries of sectoral policies. For example, the country's water policy does not appreciate the role of catchment forests in sustaining adequate supplies of water. The energy policy recognises the primacy of forests in the provision of energy to the majority of the population but lacks appropriate interventions for sustaining the natural resource base. Increases in human population negatively affect the rate of forest production by reducing the forest area, while simultaneously escalating the forest removal rate. The agricultural policy promotes agricultural production at the *extensive margin* and the livestock policy converts forested areas into pastures. Two macroeconomic interventions, *ujamaa* (villagisation) and structural adjustment programme (SAP) also define forest conservation. *Ujamaa* causes deforestation through emigration from the nucleated community settlements and SAP encourages exports of forest commodities, discourages importation of fossil fuels and generally puts agricultural inputs outside the reach of smallholders. The programme also impacts on forests through the reductions in the public sector investments, thwarting government efforts to control the negative environmental effects of the private sector, such as forest and wildlife poaching. There are marked policy conflicts between the forestry policy and the preceding external policy measures because there is no intersectoral or interdepartmental policy co-ordination.

4.2 Introduction

Tanzania's landmass encompasses a variety of forest ecosystems, which cover approximately 44% of its total land base. These forests benefit the country in many ways, although official estimates are based on wood production only. Ironically, Tanzania's forest resources experience intense depletion and degradation which, according to this study, are caused by an array of inappropriate, counterproductive policies and instruments that undervalue forests and overvalue the results of clearing them for other uses. The most important and legitimate policy that must be blamed for the apparent lack of forest conservation is the existing forestry policy that was promulgated in 1953, but has undergone several unilateral updates in recent years. This weighted approach to policy-making has made the country's forestry policy extremely unpopular, not only among the members of the public towards whom the government adopts a paternalistic attitude, but also among the forestry professionals, who have termed it as being obsolete without bothering to read and understand it, particularly those who were employed after 1972.

Nonetheless, the policy statements are still valid on closer scrutiny. What mostly besets this policy is the lack of forestry legislation to implement its provisions. Consequently, the government has formed a new policy whose resource conservation qualities have not been assessed in this study, as several attempts to procure the document from the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism have proven futile. Moreover, a 1998 policy whose instruments are still being formulated and whose implementation strategies are yet to be devised does not bear responsibility for what is happening now to trees and forests in Tanzania.

The environmental policy attempts to address the overriding environmental problem in the country, i.e., land degradation. This noticeably broad area places emphasis on the containment of deforestation, although the practical measures for doing so are not translated from the overarching framework policy to the existing forestry policy. Likewise, the environmental policy stresses broad-based participation in the management of environmental resources; again, this is not reflected in the forestry policy in a practical manner. Apparently, participation by forest and wildlife-dependent rural communities in making and implementing decisions about these resources is at best a political rhetoric.

The effects of crosscutting policies, which include the multilateral environmental agreements and the land policy, have been assessed. It is evident that Tanzania has already commenced reaping the benefits of the Convention on Biodiversity, particularly in terms of capacity building, financial assistance, and scientific research co-operation between nations. Steps have been taken to implement the Convention to Combat Desertification. However, the government has failed to comprehend that reversing desertification is a major investment and therefore needs long-term enabling factors such as ownership and security of tenure to

sustain anti-desertification activities. Tanzania has not optimised the ratification of the Framework Convention on Climate Change; otherwise pragmatic policies would have been put in place to rein in the current unwarranted rate of deforestation, since this Convention sees forests as an important sink for CO_2. Tanzania is a party to the CITES, and is among the most vocal African countries crusading against the resumption of the ivory trade. The land policy that vests the ownership of all Tanzania's land in the state creates insecurity of land and forest resources to the government that cannot uphold and enforce its legal ownership of forests due to the vastness of these areas and the limited budget, administrative and technical capacities; and to rural cultivators, agro-pastoralists and herders, and timber concessionaires. Weak tenurial arrangement imposes external costs, that is, the costs of deforestation are not borne directly by the perpetrators. The overall effect of this is the extremely high rate of deforestation, overgrazing and soil erosion that have affected certain parts of Tanzania to the extent that the government has initiated the short-sighted policy of resettlement.

Furthermore, Tanzania's forest resources also fall under the influences of sectoral policies. For example, the country's water policy does not appreciate the role of catchment forests in ensuring and sustaining adequate supplies of water. This can be attributed to the institutional misplacement of water in the Ministry of Energy and Minerals. The energy policy recognises the primary role of forests and woodlands in provision of energy to the majority of the population, however, the market failure which manifests itself in insecure land and forest resources tenure causes most biomass fuels to be collected free of charge. Increases in human population negatively affect the rate of forest production in Tanzania by reducing the forest area through diversions and encroachments, while simultaneously escalating the forest removal rate by increasing mainly the fuelwood removals. The agricultural policy aims to increase agricultural production at the *extensive margin*, alongside the livestock policy that focuses on developing forested areas into pastures through bush clearing. Also, the strengths and implications of tourism policy have been assessed, and the absence of wildlife policy despite the country's superb national parks, game reserves and game controlled areas has been noted.

There are two macroeconomic policies whose effects on the sustainability of Tanzania's forests have been evaluated: *Ujamaa* or the 'villagisation policy' and the contentious structural adjustment programme (SAP). *Ujamaa* was both an economic and political philosophy pursued by the Tanzanian government during the late 1960s, throughout the 1970s until the 1980s. *Ujamaa* contributed to the concentration of pressures on forests and today, continues to cause unnecessary deforestation as emigration from the nucleated community settlements occurs. On the other hand, SAP works on the forest resources in two main ways. *First*, through exchange rate reform, which encourages exports of forest commodities, discourages importation of fossil fuels and generally puts agricultural inputs outside the reach of smallholders who are the backbone of Tanzania's agricultural sector. Implicitly, it encourages agricultural extensification with its attend implications

for forest resources. *Second*, it impacts on forests through the reductions in the public sector investments. Consequently, the Tanzanian government's efforts to control the negative environmental effects of the private sector such as forest and wildlife poaching are eroded.

The study draws attention to the marked lack of intersectoral policy co-ordination and also to the poor communication between departments within the same ministry. Finally, the study concludes with the assessment of the performance of Tanzania's forestry policy against a set of indicators, specifically designed for this study. The only indicator in which Tanzania's forestry policy shows a good performance is the 'size of protected forest reserves'. Nevertheless, the term *protected forest* may need redefinition in the Tanzanian context.

4.3 Geography and climate

The United Republic of Tanzania that includes Tanganyika and the offshore islands of Mafia, Pemba and Zanzibar has a total area of about 94,000,000 ha (Persson, 1975:202; Banyikwa, 1991:96;[1]; TPCILM, 1994:7-8). The country has a total land area of approximately 88, 604,000 ha (FAO, 1995a:3; FAO, 1995b:109;[5]); and a water surface area of 5,905,000 ha[5]; WRI, 1986:256). Mainland Tanzania (Tanganyika) is sandwiched between eight countries and the Indian Ocean. It is bounded by Uganda in the north; Rwanda and Burundi, in the north-west, respectively; Zaire in the west; Zambia and Malawi, in the south-west; Mozambique in the south; and the Indian Ocean in the east, while Kenya forms the north-eastern boundary. The islands of Zanzibar, Pemba, Lantham and Mafia are situated in the Indian Ocean. Tanzania has a northern belt of mountains, consisting of the Usambaras, Pare, Kilimanjaro and Meru. In the south, there are the Southern Highlands, comprising of Ukaguru and Uluguru Mountains, while the central part of the country consists of plateau and vast plains, which are studded by wildlife. These features make Tanzania a country of contrasts, for instance, it has both the highest and lowest parts of Africa — the summit of Mount Kilimanjaro, 5,895 m above sea level; and the floor of Lake Tanganyika, which is 358 m below sea level (Berry, 1995:924).

Temperatures that influence plant growth and hence vegetation type are closely influenced by altitude. A wide variety of landforms therefore produce a range of temperature regimes from tropical to temperate. However, temperatures in Tanzania are not a major limiting factor for plant growth, although the high mountain areas are an exception. Rainfall is variable, both from place to place and time to time. A greater part of the country experiences rainfall in a single rainy season — November to May. About 3.0% of Tanzania receives rainfalls exceeding 1,250 mm, while 50% receive less than 750 mm/annum (Persson, 1975:208). Cromwell (1996a:109) states that only 20% of the country has a secure rainfall of more than 750 mm annually. Nonetheless, Tanzania is among the few Southern African countries that experience heavy rainfall.

Volcanic soils, which are reconstituted from volcanic ashes, are rich in plant nutrients; however, Tanzania has poor soils over much of the plateau in the central part of the country (Cromwell, 1996a:109). This should, however, not be attributed to the natural characteristics of the soil in the plateau region, without considering the farming practices in such a fragile habitat, where soils are naturally susceptible to erosion. Infertile soils over much of the country has produced intense population concentrations of up to 200 people per km^2 in the favourable agricultural areas around Kilimanjaro, despite the fact that the country's 27,328,000 people theoretically translates into 30.8 inhabitants per km^2 (FAO, 1995a:3). However, it has been reported that only 5% of Tanzania's land surface is under cultivation (Cromwell, 1996a:109). Conversely, Van Buren (1995:929) notes that about 8.0% of Tanzania's land area is under agricultural crop cultivation, while Mtuy (1996:490) states that approximately 6.0% of the country is under agricultural crop production. Whichever figure is correct, there is a strong indication that the majority of the country is still covered by sparsely populated rangelands and woodlands.

4.4 Forest resources

About 43% of all land area of Tanzania has some form of forests: natural and plantation forests. Quantitatively, there are 79,000 ha of plantation forests of which 68,700 ha are softwoods. The softwood tree species in this category are *Pinus patula*, *Pinus caribaea*, *Pinus elliottii* and *Cupressus lusitanica*, while plantation hardwood species consist of *Tectona grandis*, *Chlorophora excelsa*, *Acacia mearnsii*, *Eucalyptus saligna*, *Eucalyptus maidenii* and *Eucalyptus grandis*. The natural forests in Tanzania cover some 44,000,000 ha of which the main tree species are *Junipera procera*, *Ocotea usambarensis*, *Olea welwetschii*, *Pterocarpus angolensis*, *Khaya nyasica*, *Chlorophora excelsa*, *Julbernadia* and *Brachystegia* species (Kowero, 1990:15). Persson (1975:210-11) states that Tanzania has a total natural forest area of 44,230,000 ha and 28,562 ha of man-made forests, while FAO's 1990 forest resource survey states that the United Republic of Tanzania has 33,555,000 ha and 154,000 ha of natural and plantation forests. The total forestland is 33,709,000 ha, which constitutes about 38% of the overall land area. The same report states that forest and other wooded land collectively make about 68,497,000 ha (FAO, 1995a:13). The most recent FAO estimate indicates that 44% of Tanzania's total land base is under forest cover (FAO, 2001:150; [1]). This is undoubtedly the most authentic, since the procedures for data capture and estimation are verifiable. In summary, forests alone constitute approximately 44% of the country's overall land area. An overview of each forest type closed or high forest, miombo woodland, mangrove and plantation is provided below.

4.4.1 Forest

A closed or a high forest consists of a dense growth of tall trees, with several storeys embracing an upper storey of dominants, which forms a closed canopy that inhibits the penetration of sunlight, thereby effectively

curtailing the massive growth of grass and other light-demanding vegetation on forest floor. Closed forests occur in areas receiving more than 750 mm of rainfall that is well distributed throughout the year or on sites with high groundwater tables, for example, riparian or gallery forests along watercourses and swamp forests. Persson (1975:211) is probably one of the few individuals, who have attempted to estimate the area of the closed forests. He puts the area of Tanzania's high forests at 1,339,000 ha, encompassing 355,000 ha and 975,000 ha of unreserved and reserved forestland, respectively. Tanzania's closed forests also represent the remnant of rainforest that used to cover an extensive area in the north-eastern part of the country prior to the arrival of colonial administrations, which converted most of it to agro-export plantations, in addition to destruction of vast swathes in an attempt to eradicate tsetse flies — causative agents for *trypanosomiasis* (Watts, 1996:4). Accordingly, the area of the existing tropical rainforest is estimated at 0.5% of the country's landscape. If the area of the land surface of the United Republic of Tanzania is correctly stated as 88,604,000 ha, according to the FAO and World Resources Institute, then 443,020 ha of tropical rainforest still occur in the country (Berry, 1995:925). Common species that occur in this evergreen forest type found on flat coastal plains in the north-east include *Sterculia* species, *Chlorophora excelsa*, *Khaya nyasica* and others (Mgeni & Malimbwi, 1990:68).

The montane and submontane forests, which occur on highland and mountain areas, constitute a closed forest in Tanzania. Evergreen or semi-deciduous moist montane forests exist on the windward sides of the mountains between altitudes 2000 m and 2500 m above sea level. Common species in this category are: *Ocotea usambarensis*, *Podocarpus milanijianus* and *Croton macrocalyx*. The leeward sides are occupied by dry evergreen montane forests, with *Juniperus procera*, *Podocarpus* species, *Ocotea* species, *Olea* species and others, as common species. This type of closed forests are situated, almost all, on high altitude areas, covering Mountains Meru and Kilimanjaro, and West and East Usambaras, in addition to other highlands and mountainous areas such as Mbulu Highlands, Hanang Hanang, Mporoto, Ufio-Mikiulu, Rungwe, Uluguru, Udzungwa and Livingstone Mountains.

The moist intermediate and lowland forests are found on the lower east facing hill and mountain slopes of the Usambaras, Nguru and Uluguru Mountains, and on some islands of Lake Victoria in Bukoba and Mwanza Districts. The moist intermediate and lowland forests are floristically the richest and the most complex vegetation type in East Africa. The Common species found in this type of forest consist of *Cephalosphaera usambarensis*, *Allanblackia stuhlmannii*, *Isoberlinia scheffleri*, *Newtonia* species and *Parinari* species (Mgeni & Malimbwi., 1990:68).

4.4.2 Miombo woodland

A *woodland* is "a mantle of trees of one or at most two storeys whose crowns more or less touch so as to form a light but mainly continuous canopy" (Brown, 1969; cited in Mgeni & Malimbwi, 1990:86). Mgeni and Malimbwi point out that the trees normally have spreading crowns with a canopy height of about 8.0-18 m. Furthermore, they state that the canopy species are usually deciduous with a ground cover of grasses mixed with herbs and shrubs. *Miombo* is an informal term used to describe the central, southern and eastern African woodlands largely characterised by the three closely related genera of *Brachystegia, Julbernadia* and/or *Isoberlinia* from the family of *Caesalpinaceae*. Twenty-one species of *Brachystegia* and three species of each of the above two genera have been recorded in *miombo* woodland. Mature undisturbed *miombo* is a closed deciduous woodland, which generally occurs on geologically old, nutrient-deficient soils in areas experiencing unimodal rainfall. The shrub vegetation is variable both in density and composition, while the ground cover varies from a dense coarse grass growth to a sparse cover of herbs and small grasses (Campbell, 1996:2). This definition qualifies *miombo* woodland as a forest.

The *miombo* woodlands constitute the largest single vegetation type in Tanzania, forming nearly 90% of the total forest area. *Miombo* woodlands occur from sea level up to 600 m in areas receiving annual rainfall ranging from 600 mm to 1200 mm. In addition to the dominant tree species, some canopy associates such as *Pterocarpus angolensis* and *Afzelia quanzensis* are very valuable timber species. In terms of exploitable species, Persson (1975:210) states that there are about 15 exploitable trees per km^2 in *miombo* woodland. This estimate rises to 60 tree species for a secondary *miombo* woodland. The best *miombo* stands are capable of yielding 35-80 m^3/ha, although the trees are generally small, rarely exceeding 60 cm dbh. From a logging perspective, it appears that miombo woodlands are excellent as far as manoeuvrability of logging gear is concerned, therefore, minimising damage to undesired species and hence assuring future harvests.

4.4.3 Mangroves

In Tanzania, these are moderate-size evergreen trees and shrubs, mainly belonging to the genus *Rhizophora*. These edaphic communities, which are associated with saline or brackish conditions, occur along the coast, particularly where the river meets the sea. They are found in the Rufiji Delta, Kilwa, Lindi, Mtwara,Tanga, Pangani and Bangamoyo Districts embodying Zanzibar, Pemba and Mafia, covering an area of about 100,000 ha (Mgeni & Malimbwi, 1990:69-70). Adams (1992:2) and ADB (1995:4) indicate that there are 115,000 ha of mangroves that occur mainly along Tanzania's coast and on the islands where freshwater mixes regularly with the sea. However, Persson (1975:208) conservatively states that the area of mangrove forests is around 80,000 ha. The total area occupied by mangroves is estimated to be 79,000 ha for Mainland Tanzania, closely confirming Persson's estimate (Abeli, 1990:85). Apparently, the two estimates are for the mainland country only.

4.4.4 Afromontane forest

Afromontane forests occur on high mountains between altitudes 2500 m and 5000 m above sea level. The steep slopes of Uluguru Mountain, above the crop cultivation line have kept some 1,200 ha of forest almost intact. Above the cultivation line, most of the mountains in Tanzania are still covered with afromontane forests, which protect the source of water for dry-season, small-scale irrigation. However, where cultivation reached mountaintops before the forests were reserved, the streams have dried up and the soil is extremely poor. The majority of Tanzania's afromontane forests are in the East Usambaras, where more than 45,500 ha of afromontane forests exist. These forests in Usambaras are biologically rich, harbouring about 300 different types of trees, about half of which are endemic, several types of endemic or rare birds, reptiles and insects. Uluguru area also has many endemic birds, plants and animals (Chenje & Johnson, 1994:142-3). Afromontane forest species consist of *Hagenia species*, *Podocarpus milanjianus* and mountain bamboo (*Oxytenanthera* species), which is frequently used in rural house construction and bamboo piped water technology.

4.4.5 Plantation forest

Estimates made in the late 1980s indicate that Tanzania had about 80,000 ha of plantations. For example, in making a brief introduction to the origin of plantation forestry, which started in Tanzania in the early 1950s, Hofstad (1990:122) indicated the total area of plantation forests at about 79,000 ha, although he acknowledged that the area under the management and ownership of other institutions was not precisely known. Malimbwi and Mgeni (1990:60) also put the total area of plantation forests at 79,000 ha. However, recent indications are that Tanzania has an estimated 154,000 ha of plantations (FAO, 1995a:13). ADB (1995:4) has confirmed that Tanzania has approximately 150,000 ha of plantations, with about 80,000 ha owned by the state, while the rest are privately owned. This overturns all the above-unverified estimates made up to 1990.

In terms of the extent of single plantations, Swaziland's Usutu pine plantation is the largest single plantation in Africa, followed by Tanzania's Mufundi plantation, which is more than 40,000 ha (Chenje & Johnson, 1994:138). This indicates that Tanzania had pursued a robust afforestation policy in the 1950s and 1960s. Kowero (1990:23) states that the reliance of plantation forestry on the government treasury did not enhance the growth of plantations in the country. The recent establishment of a self-supporting revolving fund system in Meru, Usa, West and North Kilimanjaro forestry projects, if allowed to operate in other areas will go a long way in improving the status of industrial forestry, as timber rents and other charges will be used in financing plantation forestry. However, the use of exotic species in establishing plantation forests is drawing much criticism, as conservationists are becoming wary about alien invasion. Replacement of indigenous forests

with exotics by the plantation forestry industry is indeed cheaper than reclaiming degraded sites; nevertheless, it is in itself deforestation by another name. Thus, plantation forests are dubbed by many as biological deserts because many indigenous animals and plants cannot survive in exotic woodlots.

It is indisputable that afforestation can constitute an environmental problem. However, most exotic species possess superior growth characteristics than indigenous tree species, thereby coping well with high demand for forest products, especially timber, poles and fuelwood. This causes many governments to discount the potential environmental threats of afforestation with exotic trees. Furthermore, the silviculture of all main exotics introduced into Africa is relatively well known, while research into propagation techniques of many indigenous species has not even commenced in many African countries. This makes breeding or propagation of indigenous trees on a commercial scale to meet demands for wood and wood-based products a formidable task. Thus, phasing out exotic trees from plantation forestry is rather unrealistic now, given the long gestation period of indigenous timber resources and the uncertainties facing producers. Nevertheless, this is not a *carte blanche* for substitution of indigenous forests for exotic plantations. Rather, it is argued that the use of exotic tree species in plantation establishment should be well regulated and the external costs sufficiently internalised. Internalising the external costs associated with exotic plantations will certainly increase the incentives for afforestation with native species or reforestation of harvested areas.

4.5 Utilisation of forest resources

Tanzania's forest resources have been identified as one of the major means of production, vital for economic development. As in other countries with natural forests, the benefits accruing from the forests include environmental protection and aesthetic value; round and industrial wood production; animal fodder and browse; fruits; medicines; honey and beeswax; bushmeat; fibres for making rope, mat, baskets and furniture; mushrooms; nitrogen fixation by certain species of the family *Caesalpinaceae*; employment; provision of habitat for wild fauna and flora (Mgeni & Malimbwi, 1990:70); and ecotourism, which is the backbone of the economy in the neighbouring Kenya. For example, the production statistics for the mangrove forests alone for the period ranging from 1980 to 1987 indicate that around 475,000 poles valued at US$31,900 were harvested for construction purposes (Abeli, 1990:85). In the same vein, Mgeni and Malimbwi (1990:69-70) state that the mangroves have been providing a wide variety of goods and services, consisting of wood production, support for fisheries and salt production, and stabilisation of coastal and shorelines. It has been reported that the mangroves are being degraded and destroyed due to overexploitation and conversion to rice farms and salt evaporation ponds. While this statement may be correct, there is more underlying cause to it, as will be unveiled later.

Furthermore, Tanzania's forests have a profound effect on the structure and function of the human habitat both locally and globally. They provide more than environmental and material services, although the majority of the contributions that forests make to human society are frequently not captured by the existing methods of resource value accounting. The contribution of the forestry sector to the Tanzanian economy is best discussed under GDP, employment, forest products and forest services.

4.5.1 Contribution to the GDP

The forestry sector in Tanzania contributes 3.0% to the GDP (Mgeni & Malimbwi, 1990:70). This appears to be extremely conservative, however, this cannot be attributed to the difficulties involved in quantifying certain benefits from forests, but to the forestry professionals, who have failed to estimate, for instance, the overall biomass energy consumption which can easily be used to make some estimate of the contribution of forests to this particular sector by computing the fossil fuel equivalent, and multiplying this by the prevailing market price. It is clear that the economic value of forest resources is much higher than this; moreover, the 'national assets accounting books' only record the timber value (Mtuy, 1996:484). Mwaipopo and Hazenberg (1985:5) have earlier expressed dissatisfaction with the irregular valuation of the contribution of forest resources to the GDP. They affirm that the contribution of the sector is larger than that expressed in economic terms as vast areas outside forest reserves and plantations serve as supply source for the households, village industries and construction purposes.

Kowero and O'Kting'ati (1990:103-104) attribute the difficulty of quantifying forest-related products in Tanzania to the element of information confidentiality built into the management of the private sector that plays key roles in production and consumption of some of these commodities. For instance, statistics on production of honey and beeswax are not easily available, because this production is largely in the private sector, which may entirely fail to record it. More reliable data are on export trade, which falls short of accounting for domestic consumption that can exceed the quantity exported to foreign markets. It has, however, been estimated that natural forests in Tanzania are capable of producing 50,000 tons of honey and over 5,000 tons of beeswax annually. At 1986 prices, this production represents about US$458 million and US$8 million, respectively. Currently, consumption of game meat in response to higher beef prices is steadily increasing.

4.5.1.1 Forest products

The forest resources in Tanzania play a key role in the economy, for example, fuelwood accounts for 91% of the macro-energy consumption (Pearce & Turner, 1991:345-6). Fuelwood consumption in the country constitutes up to 97% of all wood products consumed nationally (Mgeni & Malimbwi, 1990:70). Nepal is the leading developing country with the highest reliance on traditional fuels (firewood and charcoal) followed by

Malawi and then Tanzania. Pearce and Turner (1991:345-6) assert that the extent to which traditional fuels are utilised can be used as an indicator of economic development, as countries with a substantial reliance on woodfuels are invariably the poorest. The remaining 3.0% of the roundwood production is accounted for by the industrial wood, most of which is consumed locally. Forests and woodlands also provide poles and other materials for constructing houses, particularly in rural and peri-urban areas. Thus, ADB (1995:4) has indicated that "fuelwood, wood for charcoal and poles are the main uses of forests and woodlands" in Tanzania. FAO has summarised Tanzania's forest products as follows:

> Most wood harvested in Tanzania is burned for fuel. Tanzania produces sawnwood, softwood pulp and paper from local raw material. The bulk of the industrial roundwood harvest is utilised for posts, poles and other agricultural purposes. Tanzania's most important non-wood forest products are wattle bark extract, fodder, medicinal plants, honey and beeswax[1].

Furthermore, woodlands provide browse material for livestock; and where animals are stall-fed considerable amounts of fodder are collected from natural forests, especially during the dry season (O'Kting'ati & Kowero, 1990:134). Other non-timber forest products of economic importance include honey and beeswax; drinks (bamboo wine); food; natural remedy; ropes; materials for basketry, pottery and other rural industries; etc.

4.5.1.2 Forest services

Tanzania's forests and woodlands are also important for their non-consumptive uses. For example, the significant role of catchment forests in water regulation, soil and gene pool conservation, and in climate/weather amelioration cannot be underestimated. Nonetheless, catchment forests cover only 1.7% of the country's total surface area (Mgeni & Malimbwi, 1990:73). In relation to soil protection, O'Kting'ati and Kowero (1990:133) asserted that forests prolong lifespans of costly national investments like the hydroelectric and irrigation dams by reducing the rate of siltation. The 540 forest reserves, totalling 13 million ha, and covering approximately 15% of Tanzania's land area, are important wildlife habitats (ADB, 1995:4). Wildlife is a source of material and immaterial benefits both locally and globally, for instance, the bustling tourism industry in the country. Forests also improve agricultural production by maintaining soil fertility through forest litter decay and decomposition. The widespread shifting cultivation in the country is dependent on this process. O'Kting'ati and Kowero (1990:134) have noted succinctly that Tanzania's forests would attract a greater attention from policy-makers, if all these contributions could be converted into some proximate monetary form.

4.5.2 Employment

Primary forestry and forest-based industries employ about 2.8% of the employed labour force in the country. Tanzania's labour force has been estimated at 13.495 million[5]. Employment contributes to the government

revenues through taxation of gross incomes; and the multiplier effects arising from increased disposable incomes also improve the national economy of the country (O'Kting'ati & Kowero, 1990:132). Although there is no official estimate of employment in the informal sector, considerable number of Tanzanians is self-employed in forestry, particularly in the woodfuel, pole and other construction material and non-timber forest product supply sector.

4.6 Rates of forest depletion and recruitment

It is indisputable that Tanzania's forest resources are important both locally and internationally. This importance should be reflected in the efforts put forward by the Tanzanian society to protect its forests against abuse such that they will continue to meet the society's expectations both in terms of forest products and services. The pragmatic forest conservation approach in this context would essentially involve harvesting only the mean annual increment, without tempering with the natural resource base. This is because an investor who utilises a part of the profit on investment, rather than the capital investment itself is likely to succeed in business. The same applies to forest conservation. With an estimated annual increment of 70 million m^3 and an annual extraction rate of approximately 28 million m^3 (ADB, 1995:4), there is a strong temptation to term Tanzania's forest management as being sustainable. However, wood extraction is not the only challenge facing the country's forests; rather, it is the diversion of forests to non-forest uses that threaten the country's forests. It is therefore more appropriate to assess the link between forest loss and forest recruitment. Moreover, the above estimate of mean annual increment might have been based on misleading assumptions. Furthermore, it is doubtful that Tanzania has the capacity to conduct a countrywide survey to determine the annual volume of wood extracted from its forests.

4.6.1 The annual rate of deforestation

Estimates show that the upland and lowland evergreen forests and *miombo* woodlands in Tanzania disappear at a rate of about 2.0%/annum. "The data for clearly identifying trends over time are lacking, but anecdotal evidence suggests an increase over time" (Cromwell, 1996a:114). About 500,000 ha of forest and woodland are lost each year (Hofstad, 1990:122). Banyikwa (1991:102) has reported that fuelwood needs for domestic use alone account for 40,000 ha of deforestation, constituting a loss of 0.5% of the forested area every year. The same source states that 45% of the country is already seriously affected by deforestation, while 35% is currently being threatened. Cumulatively, 80% of all the forests in Tanzania are under the threat of deforestation. However, Banyikwa's estimate has been rebuffed by yet another estimate that blames the annual disappearance of up to 500,000 ha of woodland on fuelwood consumption (Kowero & O'Kting'ati, 1990:103). Chenje and Johnson (1994:139) and ADB (1993:119) quote the annual rate of deforestation from the World Resources 1992-3 at 0.3%/annum. This represents about 130,000 ha of closed canopy, open canopy and plantation forests.

This estimate has been confirmed by ADB (1995:22) as the most realistic, although the basis for such a judgement is unclear. On the other hand, FAO, which is indisputably the only organisation whose data should be the most accurate, as it used state-of-the-art technology to record the extent of forest resource cover and the rate at which it disappears, indicates that 0.2% of Tanzania's forest resources are being deforested every year (FAO, 2001:154; [1]). This is equivalent to 91,000 ha/annum; and it is the most recent information on the country's forest loss. The average annual rate of deforestation for tropical Southern Africa stands at 0.8%, while the world average is at 0.2%. It appears that the annual rate of deforestation in Tanzania has been reduced since 1990, when FAO's estimate indicated that Tanzania was experiencing an annual rate of forest loss of about 438,000 ha/annum (FAO, 1995a:18). Nevertheless, the country still has one of the highest rates of deforestation in sub-Saharan Africa.

4.6.2 The annual rate of forest establishment

Tanzania's annual rate of afforestation has been placed at 8,600 ha (FAO, 1995a:18). On the other hand, Cromwell (1996a:117) notes that the government's afforestation programme replaces only about 0.5% of the area lost each year. Since the annual rate of deforestation is estimated at 91,000 ha (FAO, 2001:154; [1]), the government replaces the equivalent of 46 ha of forest annually. Although there is no record on the private sector, there is indication that farmers plant trees to control on-farm soil degradation. This cannot, however, exceed government efforts in establishing plantation forests. However, considering the FAO's data as the most authentic would still place the annual rate of forest loss in excess of afforestation and/or reforestation by a wide margin. This challenges both categories of sustainability: weak and strong sustainability. The policy-related factors that lead to this constantly widening gap between forest loss and recruitment are examined in the following sections.

4.7 Policies influencing the conservation of forest resources

Tanzania's forest resources are subjected to a forestry-specific policy and to other policies that are external to the sector. The potential for other policies to influence forest conservation can be attributed to the multiple roles of forests in human society. Forest is a major means of production, rendering it liable for impact by national economic policies and political philosophies; it is an integral part of land use and this exposes it to the influences of land tenure and other land use policies. Furthermore, forest is a main source of livelihood to many rural Africans, thus making it an integral part of rural development policies; forest is an indispensable element of environmental conservation and as a consequence, it is subjected to a variety of national, international and multilateral environmental agreements and so on.

4.7.1 Forestry policy

Tanzania is reported to have two forestry policies: the existing policy and a newly formulated policy (pers. comm.[r] ;[26]); however, the latter has not been available for this study. Nonetheless, what is currently happening to trees and forests in Tanzania cannot be attributed to a 1998 forestry policy whose instruments are still being assembled. Realistically, the formulation of the plan and strategies for implementing the policy has not even commenced. For example, a Dec 2000 report maintains that Finland has just agreed to formulate the country's National Forestry Programme (TOMRIC Agency, 2000). This analysis will therefore focus only on the existing forestry policy, which is responsible for the ongoing forestry practices in the country.

4.7.1.1 Policy formulation

The existing forestry policy was promulgated in 1953, eight years before the country attained independence in 1961. This was reviewed in 1963 to detail the manner in which forest and tree resources of Tanzania would be managed sustainably[27]. Local and foreign experts have repeatedly referred to this policy as outdated; consequently, the policy has been under various reviews since 1980 (Mtuy, 1996:490).

4.7.1.1.1 The government

In Tanzania, forestry policy formulation is the prerogative of the Ministry of Natural Resources and Tourism under which the Forestry and Beekeeping Division falls. Mtuy (1996:488) has noted that "each directorate drafts policy statements for its respective sector using a team of experts. The draft is discussed in divisional technical meetings, seminars, workshops and personal contacts within the sector to see that most of the key components have been fully addressed. There is no mechanism to take the policy to the 'grassroots' for discussion and therefore policy formulation remains a sectoral responsibility". Without making an unnecessary effort to explain what transpires at the cabinet and parliament before the policy is formalised, it is essential to note that forestry policy formulation in Tanzania is exclusive of non-state stakeholders.

4.7.1.1.2 The salient features of the policy

The following are the four main features of the existing forestry policy:

i. **To demarcate and reserve in perpetuity, for the benefit of present and future inhabitants of the country sufficient forested land or land capable of afforestation to preserve and improve local**

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climate and water supplies, stabilise land liable to deterioration and provide sustained yield of forest produce of all kinds for internal use and export

This policy statement stresses environmental conservation; sustainable management of forests to provide forest goods and services both for domestic and foreign consumption; and the need to reserve land capable of being afforested. These are noble objectives, which gave rise to the designation of approximately one-third of the country's overall land area as national parks, game and forest reserves. In other words, this statement contains in a broad manner the objectives related to the establishment, use and management of national parks and equivalent ecosystems. Therefore, it would be incorrect to term this policy objective outdated, as it has established areas for biodiversity conservation, and will continue to do so as the need arises.

ii. **To manage this forest estate and all forest growth on public lands so as to obtain the best financial returns on the capital value and the cost of management insofar as such returns are consistent with the primary objectives above**

The second objective draws attention to the management of forests to obtain the best financial returns on the capital value. This statement recognises commercial and multiple use of forests with minimum damage to the environment, which is regarded as the natural capital. The objective encompasses both state-owned and privately-owned forest estates, although the levels of exploitation, regeneration and protection needed to maintain the balance in the forest ecosystem should be determined by forestry professionals according to the characteristics of the local physical environment. If strictly adhered to, there would not be much deforestation in Tanzania because this phenomenon does not reflect 'the best financial returns on the capital value'. Thus, undervaluation of forests, which frequently results in forest conversion to non-forest uses, would not occur under this policy objective.

iii. **To encourage and assist the practice of forestry by local government bodies, private individuals and enterprise**

The third objective of the policy demonstrates government's intention to encourage and assist the practice of forestry by local government institutions, private individuals and businesses. Local government structures refer to village councils, while private individuals consist of local population that includes disadvantaged members of society such as women, who are more often relegated to some inconsequential positions of authority. In the 1950s, the concern for women and sustainable community-based forest management was farfetched in almost all African countries. However, the inclusion of rural people in Tanzania's forestry policy objective demonstrated a very good foresight, although the type of participation envisaged at the time would not be the same as what the development or donor agencies wish to see today. At best the Tanzanian policy-makers would wish to see a functional participation, at worst passive participation, in which case people participate by being told by an administration, project management, or by local government representatives

about what is going to happen. Conversely, in 'functional participation', people participate by forming groups to meet predetermined objectives related to what is at stake. Here, the involvement of local people tends to come when major decisions have been made, rather than during the planning stage (Ramirez, 1998:48). This is precisely how the government aims, until today, to include and encourage the rural populace and other non-state interests in forest conservation, as indicated under the section on policy formulation.

Contrary to the government's perspective on participation, what is needed and expected of Tanzania's government is a real partnership with forest-dependent people — 'interactive participation' in forest conservation. Here, people participate in joint analysis, which ultimately leads to action plans and the formation of new local institutions or the strengthening of existing ones. The local groups in this type of participation have control over local decisions, and as a result, people have a stake in maintaining structures or desired practices. As Gow (1992:43) rightly acknowledges: "sustainable development means increasing the potential of rural people to influence and control their future on a long-term basis". This is what every African nation endowed with natural forest ought to do, as in recent years, forestry services have been beset by lack of resources to maintain policies under which certain groups were prevented from using forests and offenders were punished (Babin & Bertrand, 1998:19).

In reality, if local people had faithfully been involved in forestry practice as stipulated there would not have been high rates of deforestation and land degradation. Relocation of people and livestock from one degraded part of the country to another where vegetation and land are still intact would not have occurred, either. Moreover, local people detest relocation. It is not their choice, but what the government subjects them to (Kaoneka, 1990:127). Furthermore, it is utterly ludicrous to have a commendable policy statement without the means for securing it.

iv. To undertake and promote research and education in all branches of forestry and to build by example and teaching a real understanding among people of the value of forest to them and their descendants

Finally, this demonstrates government's intention to undertake and promote forestry education and research in all branches of forestry: those present and those yet to be discovered, and to build by example and teaching a real understanding among the people of the value of forestry and forests to them and their offspring. Indeed, this is a valid objective. It is appropriate that a forestry policy has a declaration of objectives concerning the education and training of forestry personnel at different levels: professional, technical and forest industry worker. Apparently, the government aims to achieve this by controlling the curricula and numbers of students, providing financial incentives to training institutions or by providing

fellowships directly to students. In reality, every government should build a sufficient lifeware to manage its natural forest, which is a vital renewable natural resource intricately joined to other biological resources.

Undertaking education and research in all branches of forestry is essential to explore how forest resources can contribute towards meeting the increasing needs of society without running them down. In the past, forestry education and research had been centred on production, protection and on wood utilisation; however, today, attention is being focused on social influences and relations of forestry. Consequently, issues of community forestry, rural development and land-use planning feature dominantly in forestry education and research. Therefore, forestry research is increasingly incorporating social element (Husch, 1987:35-36). On the other hand, extension services are needed to convey the benefits of forestry training and research to the public. The information that needs to be disseminated to stakeholders includes general information, technical and economic information to create a better understanding by the public of the value of forests and woodlands to improve their conservation.

4.7.1.2 Policy implementation

A forestry policy, which is to be concerned with the manner in which forests and tree resources should be managed to meet society's demand for forest goods and services must be implemented, otherwise it loses meaning. This means that a national forestry policy must often be accompanied by a set of laws and regulations, collectively known as legislation. Legislation is meant to orientate and control the behaviour of individuals and forest resource user groups to ensure that forests are utilised in ways that maximise their social values. Legislation defines both incentives to encourage compliance with the objectives of policy and penalties to discourage actions, which are antagonistic to the achievement of forestry policy objectives. The link between legislation and forestry policy has been clarified by de Montalembert and Schmithüsen (1993:5), who state that policy development must be followed by legally binding norms, which are the result of policy formulation processes as well as being the basis for their implementation. Therefore, changes in national forestry policies, putting more emphasis on sustainable forest resource use must thus lead to corresponding modification of legislation, without which a policy statement is void.

4.7.1.2.1 Policy implementers

The intimate relationship between policy formulation and legislation and hence policy implementation has been clarified in the preceding paragraph. It is implied that the unilateral approach to policy formulation in Tanzania is also reflected in the policy implementation, since there are no formal institutions for involving other interest groups, although statements to this effect are found in the existing policy. However, the absence of formal institutions does not always mean that rural communities and other non-state stakeholders do not engage in forest management. Frequently, donor-propelled governments permit certain activities that

are not institutionalised, but are well set to attract donor funds. For example, the ongoing forest conservation that involves forest-dependent rural communities and local or international NGOs in the East Usambaras[28]; the 4,500,000 ha Selous Game Reserve CBNRM Programme; and other similar programmes around the Serengeti and Ruaha National Parks[29]. These programmes have been funded by bilateral arrangements with the governments of Germany (GTZ), Britain and Norway. The groundwork for these community-based programmes was laid by "The Tanzania Forest Conservation Group", which is currently registered as an NGO. It is therefore possible that rural people can participate in forest conservation without a legislation that empowers them to do so. However, lack of legal instruments to specify roles and deal with power relations and distribute benefits and disbenefits fairly within the community, will promote expropriation of conservation returns by the few who appear to enjoy some form of power.

4.7.1.2.2 Policy instruments

Although Tanzania's forestry policy was unilaterally formed, the policy statements are still valid today. What besets this forestry policy most is the absence of forestry legislation for implementing the provisions of the policy. Consequently, the Tanzanian forestry policy is unpopular, not only among the rural community, but also among the forestry professionals, technicians and workers. The majority of Tanzanians do not know whether they have any policy. Mtuy (1996:498) echoes that "most of the forestry staff who were employed after decentralisation in 1972 have not implemented it... because they have not seen it or they have not bothered to look for it and understand it". Accordingly, Tanzania is least concerned about its environment, although it draws heavily on its forest and forest-based renewable natural resources, such as wildlife that was expected to generate $500 million/annum from gross tourism receipts (van Buren, 1995:932), let alone the sale of timber and wildlife resources for both domestic and foreign consumption.

4.7.1.2.2.1 The Forest Ordinance of 1959

What may be termed as a policy instrument currently in possession of the government is the Forest Ordinance of 1959, which is also referred to as being out-of-date. On close examination it could be seen that the Ordinance was designed and oriented towards forest protection and conservation. It is not meant to serve as a comprehensive policy instrument. Rather, it is an administrative instrument, which enables the establishment and protection of reserves. The Ordinance is just the equivalent of South Africa's third chapter of the National Forests Act that deals with the declaration of protected areas and trees and their subsequent protection. The main body of the Ordinance is still valid, but certain phrases and all timber charges and penalties are indeed out-of-date, although it is stated that timber prices are adjusted periodically. The Forest Ordinance has not been implemented in the last 20 to 30 years; more realistically, since the inception of the villagisation policy. Consequently, many people in the villages who have respected laws for many years have

found themselves with the Ordinance that is not enforced. On their part, the law implementing agencies are tempted to break the law because there has been no control from the top (Mtuy, 1996:501).

Generally, the Ordinance has failed to conserve Tanzania's forest resources due to its narrow scope; and in circumstances where it is stretched to address issues outside its boundary, faults become more glaring. For example, the Ordinance has failed to determine the optimal stumpage that would encourage forest conservation. Moreover, timber production is still a major purpose for managing forests and forest product price is a major determinant of forest conservation, since it controls supply and demand, and hence investment in SFM. This important link is assessed in the following section.

4.7.1.2.2.1.1 Timber pricing

Although the government claims that timber charges are adjusted periodically, "the fees neither reflect the value of forest products to the society nor the resource replacement cost. This contributes to deforestation and forest degradation. At the same time artificially low wood prices are hampering farmers to make investments in tree growing, due to low expected earnings"[27]. Thus, *stumpage,* which can be defined as the sale value of standing timber, is indeed a key factor in the successful practice of forestry. It is argued that the stumpage must take into account a number of variables such as species quality and size; timber quality; distance from the mill (port); logging methods and conditions; type of end-product to be derived from the timber; and product marketing conditions. However, the major factors influencing the valuation process of stumpage are the selling price of the product; the cost of logging, hauling, milling and transportation; and the margin for profit and risk (Mwaipopo & Hazenberg, 1985:1-2).

Tanzania does not have perfectly competitive markets for stumpage — prices for stumpage cannot be determined by the market forces through stumpage demand and supply mechanisms. This is because the ownership of stumpage in most of the commercial natural forests and in all industrial or plantation forests is vested in the state. The government therefore exercises a monopoly over stumpage prices, which if properly calculated, would create an ideal situation for forest conservation, as the government is in a better position to restrict wastage by raising prices, a situation that would never prevail under perfect competition. However, this does not mean that stumpage prices should be arbitrarily fixed. A concerted effort should be made to determine the replacement cost or the import parity of the concerned species. In other words, the government timber pricing policy should aim at internalising the externalities generated by private forest activity such as logging. Moreover, the basic argument that policies, which lower the value of timber, discourage reforestation and secondary regeneration is undoubtedly valid (Kiamowitz, 1996:61).

The government monopoly of stumpage in Tanzania could create two extreme problems. "It is quite possible for the government to set very low prices which could interfere with proper management of forests. Under such a situation, wood-based industries would find timber almost costless and might become excessively selective" and wasteful (Kowero, 1990:20-21). This has been suggested to have explained partly the lopsided logging of Tanzania's native forests, where loggers are deeply involved in timber grading — harvesting only the scarce fine hardwoods, resulting in their overexploitation. At the other extreme, the government as a monopolist could set very high stumpage prices, which the wood manufacturing industries could pass onto the burden to the consumers of their products in form of higher prices. This could limit the consumption of such wood products to institutions and wealthy individuals. However, this is reported to have two effects, one of which is that high prices discourage the achievement of broader societal welfare like improvements in housing; and finally, some industries that face competitive markets cannot pass onto the consumers high stumpage prices, resulting in their close down. This deprives the society of not only such products, but also of employment and other benefits (ibid.).

However, the first argument is unambiguously based on the absence of any guiding principle. Environmental conservation should be the basis for intervention. 'Very high stumpage fees', contrary to Kowero's point of view, can effect any one of two scenarios: log poaching, in forest reserves and other state-owned forest estates, if the government is powerless to enforce its ownership rights and defend the legal status of the resources under its stewardship. This also presupposes that the government discourages communal and private ownership of forest resources, and in consequence to this, landlessness is widespread. On the other hand, where communal and private forests exist, and rural people have clear, secure, enforceable, transferable and exclusive rights over certain parcels of land, 'very high stumpage prices' put attractive price tags on timber, as wood becomes a scarce commodity. Tree-planting and sustainable forest management become a lucrative business, breaking up the government monopoly in essentially a natural manner rather than artificially holding down the stumpage price to encourage local consumption of wood and wood-based products by those who, otherwise, have not cultivated strong appetite in timber consumption. The current stumpage charge of T.Shs200,000 for a cubic metre of *Pterocarpus angolensis*, which is a "Class B" timber, appears to be a good price for safeguarding the sustainability of Tanzania's forests and woodlands, although it is difficult to state whether it is the equilibrium price or suboptimal. At the prevailing exchange rate of about T.Shs650 per United States dollar, Tanzania's "Class B" stumpage of US$30.77 compares well with the Canadian stumpage in B.C. that varies from $27.47 to $28.03 per cubic metre. This reflects an increase of 63.8 to 81.8% on its previous stumpage charges, which ranged from $15.17 to $17.20 (Alavalapati *et al.*, 1997:143).

The Tanzanian timber pricing policy recognises three categories of timber: Classes A and B, which include among others *Khaya* species and *Pterocarpus angolensis*, respectively; and Class C, which consists of the most common forest and woodland tree species. While each timber class has a different price, there is no clear statement on the type of stumpage policy in practice. However, the sale of timber on a cubic metre (volume) basis suggests the 'comparative value pricing system', which is the means of assessing the relative value of each stand of timber being sold. In this system the total stumpage revenue collected approximates an overall forest revenue objective set by the government (Alavalapati *et al.*, 1997:144). This method therefore requires a thorough knowledge of the standing forest resource to compute the expected revenue; otherwise the government would virtually be giving away its timber resources. Contrary to stumpage pricing system used for the natural forests, the present stumpage structure for plantation forest produce is pan-territorial, irrespective of the location and differences in the state of the plantations together with differences in their dependent utilisation facilities. Since costs differ among plantations and wood processing mills or companies and there are few plantations in Tanzania, development of plantation-specific stumpage charges and/or selling of logs rather than standing trees have been recommended (Kowero, 1990:22).

The development and sale of species-specific stumpage has been opposed for often having led to overexploitation of desired species. For example, "at present, most of the natural forests are simply being mined. That is, only the easiest timber to get out and the most highly priced trees are being exploited without real concern for what happens afterwards. This has led into transformation, damage and loss of the whole environmental systems, the disappearance of plant and wildlife species, the destruction of watersheds and the onset of erosion". The tendency to harvest only the desired species has led to heavy exploitation over the last 20 or 30 years. The existing few forests near settlements are protected by difficult, steep and inaccessible terrain (Abeli, 1990:70). Kowero (1990:21) has observed that the hardwood industries in Tanzania give a very strong preference to the scarce fine hardwoods, as compared to the relatively abundant general utility hardwoods. Relatively abundant general utility timber species refer to "Class C" tree species, which are not as highly valued by the logging industry, as Classes A and B. Under species-specific stumpage system, high quality or rare woods, would be excessively mined, resulting in unnecessary destruction and abandonment of more "ordinary" timber species. Since the user is only charged for the timber harvested, it does not matter how much wood is wasted in the process; and as a result, there is *little* to *no* incentive for the forest user or logging firm to optimise wood harvesting process (Gaviria, 1997:33).

4.7.1.2.2.2 The need for a new policy instrument

Without a relevant legislation to address the other branches of forestry, as the existing Ordinance is mainly concerned with strict protection and conservation, the government forestry policy expresses intentions rather than obligations. As a result, the implementation of the policy may be half-hearted or may not take place at

all, depending on the personal whimsies of the concerned foresters. Tanzania's forestry policy is in fact the expression of the intentions and aspirations of a restricted group of people — the forestry specialists. Therefore, legislation that is developed to support such a policy is bound to be ineffective in that it will remain isolated from the country's larger reality (Cirelli, 1993:10); and deforestation will continue unabated.

To address the problems of forest resource depletion and degradation requires changes in legislation to accommodate the needs of the public, especially the rural poor, who rely heavily on forests for livelihood. The balance between the well-being of the people and the well-being of the trees, forests and the environment must be established and regulated by law. In other words, forestry legislation should harmonise human activities with the biological and physical aspects of forest ecosystems. This means, forestry legislation should provide a clear definition of the concept of sustainability in the context of forest management and determine the meaning and relevance of sustainable management in connection to the present and potential outputs of forests such as the production of timber and fuelwood for local consumption; the supply of non-timber forest products and services for both local and industrial consumption; and the maintenance of the protective role of forest cover, such as provision of habitats for wild fauna and flora, and for hydrological purposes.

In formulating new forestry legislation, Tanzania should steer away from the legislation that places emphasis on the punishment of culprits and the compensation of the state. Rather, the legislation should promote the restoration of deforested areas or encourage forest conservation on non-industrial, private land. Implicitly, there is a greater need today to employ self-regulatory or market instruments such as incentives to encourage appropriate forms of resource management. Thus, legislation should have incentives to promote those practices and benefits that are of concern to the larger community living in proximity of forested areas. Financial incentives to be considered in this context include grants for the improvement of long-term production potential of forests. For example, reforestation and afforestation grants for native tree species, grants for silvicultural improvements, or deposit-refund for post harvest treatment; compensation for costs of specified management measures undertaken by forest owners in the public interest; and compensation for prescribed losses, such as benefits foregone by forest owners for reductions in timber harvests in ecologically unique areas. For instance, nesting sites along streams, wetlands and areas frequented or inhabited by certain keystone species, endangered or threatened faunal and floral species.

The existing forest product taxes, levies or charges provide viable sources for these grants. Therefore, there is no need to hide under the carpet of poverty; moreover, it is clear that Tanzania suffers more from self-inflicted poverty. The effectiveness of financial mechanisms in ensuring rural community involvement in forest resource management has been established by Morell (1997:36-39), who concluded that the results

obtained through the use of 'tax exemption' and 'special funds' in Costa Rica and Nicaragua are proof that farmers respond to economic incentives and market signals. Therefore, the assumption that farmers respond better to incentives of moral or ethical nature than to market signals and economic incentives in the context of a market economy is absurd.

Finally, one of the most important institutional prerequisites for SFM is legislation that establishes appropriate and reliable forms of *forest tenure*, including various forms of forest ownership and rights. Thus, forestry legislation must include clauses that determine the categories and nature of forest ownership; the rights and obligations of different classes of resource users and the categories and nature of usage rights (de Montalembert & Schmithüsen, 1993:7). Centralisation of forest resource ownership in the government has played a critical role in the breakdown of local institutions that had ensured equitable distribution of benefits and costs of conservation. The state ownership of forests has given way to uncontrolled or inequitable appropriation and use of forest resources (Stedman-Edwards, 1998:58). Enactment of new forestry legislation should take this into account to avoid falling back to the existing situation that aggravates forest resource depletion at the expense of the larger community.

4.7.1.2.2.3 Forest resource ownership

The legal status of forest resources in Tanzania strictly follows the existing land ownership and tenure pattern, i.e., the natural forests and to a larger degree the plantations are vested in the state. The government states that 5.0% of Tanzania's forests and woodlands are designated national parks and game reserves, 30% are forest reserves, while the rest are public forestlands (ADB, 1995:4). Public forests are open for use by the people. It is this category of forest that experiences overexploitation most because the country's legislation is concerned solely with forest reserves; it does not protect forests outside the forest reserves (Moyo *et al.*, 1993:251). Apart from the estimated 70,000 ha of plantations in the private sector, the state is the only shareholder in the indigenous forest. Such highly skewed ownership of an important socio-economic, cultural and environmental asset has disastrous consequences for the sustainability of the resource. This issue is best addressed under the land policy, given the potential for land ownership and tenure security to determine forest conservation in Tanzania.

The almost exclusive ownership of the country's forest resources is also reflected in the ownership of forest-based industries. Although the existing forestry policy encourages the participation of private individuals and enterprises in forest management and hence the ownership of forest-based industries, the majority of the large forest-based industries are owned by the government through its parastatal organisation such as Tanzania Wood Industry Corporation and the National Development Corporation. Several district development corporations operate an unspecified number of hardwood sawmills. There are over 100

sawmills in the country, in addition to numerous pit sawyers (Kowero & O'Kting'ati, 1990:102). The government's ownership of large wood-based industries gives it a complete monopoly over conversion of wood and production of certain wood products such as hardboards, particleboards, veneer, plywood, most of sawnwood and paper. This monopoly consigns the private sector to numerous small hardwood mills (Kowero, 1990:19). This is supposed to increase the *life* of the resource by controlling the output and raising the prices of converted and other wood-based products to reflect the social value of trees and forests. Surprisingly, the government has not realised the conservation viability of its comparative advantage.

4.7.1.2.2.4 Lifeware

The poor state of forest resource management in Tanzania indicates inadequacy in forestry research in the last 20-30 years. However, a number of qualified forestry professionals are available, but are either misallocated or have little or no operating funds and transport. The availability of professional and technical forestry staff in the country is attributed to the Sokoine University of Agriculture that offers high degrees in the various branches of forestry. Despite the adequacy of forestry personnel, the poor conditions of service in the public sector cause demotivation; and as a result, the education of local community, especially those living at forest margins becomes erratic. Instances can be found when experts with low salaries and without incentives are called upon to comment on policy statements, but hardly concentrate on the issues concerned and jump to incorrect conclusions. Forest officers are equally reluctant to enforce law, since they have no incentives to do so; instead they become prone to bribery. These explain the country's rampant forest depletion and degradation (Mtuy, 1996:489&500).

Lack of law enforcement has bred corruption that has manifested itself in illegal logging, which is reported to be destroying the country's forests. For example, Odhiambo (1999b) writing for the Environment News Service indicates that "illegal exploitation of forests in Tanzania has reached a point of crisis. The illicit activities, some by government officials, place Tanzania's 33.5 million ha of forest and woodland increasingly at risk. An estimated 500,000 ha of Tanzania's pristine forests are lost annually through illegal timber trade". The Permanent Secretary in the Ministry of Natural Resources and Tourism has admitted that some forestry staff are guilty of engaging in illegal timber trade. The forestry personnel are also suspected of collusion in the decimation of endangered animal species because hunting controls are lax. Lack of up to-date legislation, its enforcement and supervision explain the rising trend in illegal operations in Tanzania's forest and wildlife reserves.

4.7.1.2.2.4.1 Gender equity

There is no formal forestry policy instrument that sanctions the participation of women in forest conservation. The only instrument that contains gender equity considerations is the United Nations "Convention on the

Elimination of all forms of Discrimination Against Women". Tanzania signed the Convention in 1985 and ratified it in 1986. Since then, the Committee on the Elimination of Discrimination Against Women (CEDAW) has conceded that Tanzania has made commendable steps in *engendering* the public sector. Currently, there is a 'Ministry of Community Development, Women's Affairs and Children' that works towards asserting women's position in the country. What should be considered as a major achievement in Tanzania is the empowering of women through law reform whose ultimate objective is to defend women's rights to property that includes land resources. This will certainly improve women's socio-economic status, especially in rural semi-arid areas where women plant trees to offset the hardship of hunting for fuelwood, but they do not always have the final say because they do not own the land. Unlike South Africa, women account for only 16% of the legislature[s].

While there is no information on the proportion of women in the forestry sector, approximately half of the total employed labour force were females, according to a 1990/91 survey. Furthermore, females constituted 53.6% of the labour force in the agricultural sector[t]. The UNDP has also observed that women constitute the majority population in Tanzania and are a productive labour force, particularly in rural areas. The security of their ownership of means of production is essential for mobilising their full potential[30]. The same holds for on-farm forest conservation because it has increasingly become clearer today that "women farmers tend to use and perfect traditional cropping methods developed over time to protect precious natural resources. This makes them key players in the conservation of soil fertility"[31], and hence increase crop production at the *intensive margin*. Today, planners have recognised the value of learning from women's local knowledge to protect and sustain the environment. Therefore, the absence of forestry legislation to promote the participation of women in forest conservation in Tanzania is erroneous.

4.7.1.3 Policy evaluation

Policy evaluation is informed by the forestry legislation that defines the variables to be monitored and assessed. Without appropriate legislation in place and also without effective law enforcement, policy evaluation is an impossible task. For example, de Montalembert and Schmithüsen (1993:7) maintain that forestry legislation should provide an institutional base for monitoring and assessment of the impact of forestry policy on forest resources. They point out that forest law must contain provisions that establish the principles and necessary mechanisms for the regular monitoring of the state of forests at both the local and the national levels; assess the impacts of forest management planning, especially with regard to forest area, biological diversity and the health of forest stands and outputs of public interest; provide for the dissemination

[s] CEDAW/C/TZA/2-3 30 September 1996
[t] CEDAW/C/TZA/2-3 30 September 1996

of monitoring and evaluation data; and provide for the use of monitoring and assessment data as feedback in the process of policy formulation, revision or amendment.

In summary, unless Tanzania has a comprehensive legislation that covers all the various categories of forests and woodlands, and that such a law is implemented unreservedly, 'forestry policy evaluation' will remain a myth. In reality, the forestry sector needs structural adjustment to curb the current state of lawlessness and corruption.

4.7.2 External policy influences on forest conservation

There are three categories of external policies that influence SFM either in a negative or a positive manner. These include the overarching framework legislation and policy, and the crosscutting and sectoral policies, which have all been defined in the preceding chapter on South Africa.

4.7.2.1 Effects of overarching framework policies

Normally, there are two primary institutions that shape natural resource policies and hence the sustainability of natural resources such as forests and woodlands. These consist of the constitution, which is certainly the highest law in the land giving effect to all national policies and instruments; and the environmental policy that in turn is conditioned by the framework legislation, but informs the contents of all other policies and instruments designed for certain environmental assets or media.

4.7.2.1.1 The constitution

It is generally accepted that there are only two Southern African countries that have formally enshrined environmental protection in their constitutions, although UNEP (2000:218) has added Mozambique to the list. Namibia is the first country to do so followed by South Africa; and the apparent reason is that the formulation of these countries' constitutions coincided with the upsurge in international environmental summits. The 1980s marked the commencement of global environmentalism; however, it was not until after the Earth Summit in Rio de Janeiro in June 1992, that many countries became aware of the intimate relationship between economic development and the environment. As the countries recognise that the quest for economic development requires the mobilisation of a country's economic sectors towards a well defined goal, so is there need to mobilise those sectors to protect their environments, which in many circumstances are also the means of production. Consequently, African countries like Namibia and South Africa realise the need to institutionalise environmental conservation at the highest level so that measures devised to protect environmental resources permeate every aspect of economic activity. Such level of awareness was non-existent when Tanzania's constitution was put in place; the same holds for other African countries whose constitutions have been rather static since the 1970s. It is therefore feared that Tanzania's environmental

policy and the responsibility for implementing it should be fragmentary or scattered in many government departments.

4.7.2.1.2 The environmental management policy

ADB (1995:31) maintains that "a national environmental policy for Tanzania exists in draft form and is currently being discussed and refined". Generally, the priority of the environmental policy is to combat land degradation, which is noticeably a broad area emphasising the containment of deforestation, soil erosion, land use conflicts, overgrazing and shifting cultivation, in addition to the protection of catchment areas. An explicit priority is also accorded to the protection of water resources against industrial and urban pollutants. Currently, untreated sewage, solid waste, mercury or cyanide from the mining industry pose grave threat to both surface and ground waters. Additional government policy directions on the environment can be detected from its 'priority areas for action' that include research; environmental education; land management in communal areas; alternative economic activities; industry; and broad-based participation.

The government identifies lack of knowledge as a serious impediment to the formulation of appropriate environmental policy with realistic targets. Consequently, it identifies the need to promote environmental research by strengthening research institutions, mainly by availing funds, facilities and expertise. Specific research areas embrace alternative energy sources such as solar and wind energy, biogas and coal. In addition, root causes of resource degradation and loss need to be examined; appropriate property regimes and incentives that encourage sustainable use and management need to be identified; and feasibility studies into waste minimisation and/or recycling should be conducted. The importance of information in environmental protection need not be emphasised. In effect, inadequacy of environmental education increases the rate at which environmental resources are discounted.

Furthermore, the government has acknowledged the endemic land resource use conflict and degradation in communal areas and has emphasised the clear definition of property rights as a tool for rationalising appropriate land use, resolving land use conflicts and for guaranteeing tenure security. Indeed, this is a valiant approach to suppressing land resource degradation. Unfortunately, this lofty statement is not implemented; otherwise the recent conflict that erupted on 5 Dec between sedentary cultivators and Maasai pastoralists would not have resulted in 31 deaths by 12 Dec 2000 (Rwegayura, 2000).

The environmental policy recognises the centrality of agriculture in the economy and sees the need to diversify it by promoting other activities such as manufacturing, processing, tourism, etc. This is to lessen dependence on the natural capital, particularly forests through the promotion of non-consumptive uses such as nature tourism. Tanzania has unique natural areas of tourist attraction; nevertheless, the economic

potential of this sector has not been exploited fully. What is common to South Africa and Tanzania is the recognition of the significance of incentives in sustainable development. For example, in seeking alternative economic activities, the government concedes that it will employ economic incentives to achieve efficient and rational use of natural resources. However, it is cautioned that such economic incentives should be based on sound CBA; otherwise the resource rent for the government would be eroded, therefore necessitating more exploitation of the concerned resource.

In the meantime, broad-based participation, particularly by forest and wildlife-dependent rural communities in forestry and wildlife policy-making is a political rhetoric. For example, the recent violent eviction of villagers from the Kazizumbwi Forest Reserve, 45 km away from Dar es Salaam is an illustrative case (Odhiambo, 1999a). The villagers had been living in the same area since the colonial period; however, a unilateral decision by the forestry administration to extend the boundary of the reserve to engulf the village without consulting the communities distorts the meaning of local participation in natural resource management. Similarly, the Maasai protest against an Arab hunting company to which the Ministry of Natural Resources and Tourism has awarded unilateral hunting rights in a Maasai area is another case in point. The Ortello Business Company is finishing the construction of a building in the Loliondo Game Controlled Area and also a three-km long airstrip. The airstrip is jeopardising the annual animal migration from the Maasai-Mara to Serengeti. Currently, the Loliondo area is becoming deserted due to the slaughter of wildlife and uncontrolled felling of trees. An Arab prince is accused of landing on the airstrip still under construction and taking off with massive numbers of live games (Odhiambo, 2000). These developments occur without consultations with the Maasai who are the rightful owners of the area.

Therefore, encouraging local people like the Maasai to participate actively in making decisions about their environment is extremely critical in Tanzania, as the era of top-bottom policies must rapidly be brought to an end if the forest and wildlife resources of the country are to be sustained. However, this does not mean that the responsibility for the development and implementation of natural resource policies should solely rest with the local community. Just as the top-bottom approach is dictatorial and one-sided, complete reliance on the bottom-up approach is insufficient. What is desired is the inclusion of rural people in policy formulation and implementation processes to enhance and improve their management capacity in particular, and to enable them to respond to the conflicting demands from different users for access to the concerned natural resources. For example, Cirelli (1993:11-12) emphasises that to reconcile conflicting interests, which have been seen as a basic challenge for forestry policy and legislation, requires not only identifying interests involved, but also involving them sufficiently in the formulation process so that they may be confident that their views have been taken into account.

4.7.2.2 Effects of crosscutting policies

Crosscutting policies are simply policies whose objectives are somewhat reflected in certain sectoral policies. For example, the concern for biodiversity conservation is indicated in the agricultural, wildlife, tourism, population, coastal, fisheries and industrial policies, *inter alia*. The UN Framework Convention on Climate Change influences the forestry, agricultural and industrial policies; the same holds for the UN Convention to Combat Desertification. Similarly, the CITES ban on the international trade in elephant and rhino products and now on the broader-leaved mahogany is likely to influence wildlife, tourism, forestry and international trade policies. Furthermore, the Tanzanian land policy is posed to affect agricultural, wildlife, water, housing, transport, industrial and other related policies. These are the crosscutting policies that will be considered in the following sections.

4.7.2.2.1 The biodiversity policy

Tanzania signed the UN Convention on Biodiversity on 12 June 1992, and ratified it on 1 March 1996. Although Tanzania has no national biodiversity policy of its own, the ratification of this Convention legally qualifies it to have one. Being a party also qualifies Tanzania to benefit from technology transfer, financial assistance, scientific research co-operation between countries, research and training, public education and awareness, exchange of information and impact management — the sort of things that the Convention sees fit to promote the conservation of biodiversity at national level, in the concerned party states. In reality, Tanzania has commenced reaping the benefits of this Convention. Currently, there are several European countries and international development agencies that have invested in biodiversity conservation or are working on the country's biodiversity programmes. For example, Finland has expressed its commitment to support Tanzania in formulation of the National Forestry Programme and in the East Usambaras Conservation Area Management Programme (TOMRIC Agency, 2000).

The Lake Victoria Environmental Management Programme, which is a joint initiative of the three East African countries of Kenya, Tanzania and Uganda, is premised on the Convention on Biodiversity. The World Bank and the Global Environmental Facility have injected US$20.4 million into the project. DANIDA has funded environmental management and pollution abatement project in Mwanza (close to the Lake Victoria) within the context of capacity building. The Lake Tanganyika biodiversity and pollution control project joins together the riparian states of Burundi, Tanzania, Zaire and Zambia. The UNDP and the Global Environmental Facility are the funding agencies for the project that is expected to cost US$10 million[27]. In addition, the British, Norwegian and German governments are also involved in community-based biodiversity conservation programmes (Section 4.7.1.2.1). Thus, Tanzania stands to achieve more in terms of biodiversity conservation with the Convention, rather than without it.

4.7.2.2.2 The UN Convention to Combat Desertification

Tanzania signed the above Convention on 14 October 1994 and ratified it on 19 June 1997[32]. However, a contradictory source states that Tanzania signed the Convention on 16 April 1997[27]. The United Nations Sudano-Sahelian Office indicates that approximately 33% of Tanzania, mainly in the arid, semi-arid and dry sub-humid areas, is affected by desertification. Tanzania's environmental policy identifies land degradation and desertification as a major threat to its terrestrial ecosystems. By becoming a party to the Convention will enhance the country's ability to contain desertification. For example, the Convention requires the establishment of institutions and programmes for implementing measures that would retard the escalation of desertification. Tanzania has already taken initiatives to implement interim measures called for under the resolution on 'Urgent Action for Africa'. The country has, for instance, established 'drought and desertification control unit' within the National Environmental Management Council, and has executed the formulation of the National Plan to Combat Desertification. Furthermore, the government has taken a number of remedial measures to bridle desertification in the northern and central parts of the country worst affected by deforestation and overgrazing. These measures focus mainly on land resource conservation[27].

The government states that the land resource conservation measures are being implemented in a consultative and participatory manner that gathers all stakeholders, including rural communities whose socio-economic status is expected to be improved in the process. However, what the government has apparently failed to understand is that reversing desertification is a major investment and therefore needs long-term enabling factors such as ownership and security of tenure to sustain the necessary activities, lest people's desire to control desertification dies out as soon as a project terminates. Many of the land resource conservation projects in the country started before the UN Convention to Combat Desertification; consequently, the Convention was expected to invigorate them. However, today, the vicious cycle of land degradation ensues with people and livestock being moved from highly degraded sites to lush vegetation areas where they begin the same lifestyle that culminates in land degradation and desertification. There is an explicit lack of accountability by sedentary cultivators and herders; the government needs to create conditions that can internalise the costs of land degradation and desertification.

4.7.2.2.3 The UN Framework Convention on Climate Change

Tanzania signed the UN Framework Convention on Climate Change on 12 June 1992, and ratified it on 1 March 1996[27]. A report submitted to the fifth session of the United Nations Commission on Sustainable Development on 1 April 1997, indicated that Tanzania was developing a 'National Action Plan on Climate Change'. It is difficult to verify whether the Plan has been produced. What is clear is that the Convention recognises the significance of biomass in sequestering CO_2, a major constituent of GHGs. Implicitly, Tanzania's role would be to secure large blocks of intact forests as sinks in collaboration with the civil society.

With the current rate of deforestation of about 91,000 ha/annum that shows no clear signs of abatement, it is evident that Tanzania has not optimised the ratification of the Convention.

4.7.2.2.4 The CITES ban as an international conservation tool

Tanzania ratified the CITES on 29 Nov 1979, and consolidated it with the regional Lusaka Agreement on Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora that Tanzania signed on 8 Sept 1994[27]. The first officers of the Task Force were appointed in May 1999 (ENS, 2000). Kenya, Tanzania and Uganda are the most vocal African countries crusading against the resumption of the ivory trade. To them, the worth of ivory is in the non-consumptive use, i.e., the nature tourism, whose benefits, if appropriately partitioned amongst the bearers of the consequences of wildlife conservation, will improve the image of wildlife resources in the eyes of communities who live at the margins of wildlife habitats. With additional innovative wildlife conservation tools such as decentralisation or even devolution, elephants and other game species will appeal better to rural communities as live animals, rather than as ivory and meat. Poachers would become unpopular as rural communities begin to enforce law, and many illegal operations in game reserves and game controlled areas would be disallowed, thus increasing the synergy between elephant and forest conservation.

4.7.2.2.5 Land policy

Forest resources consist of two separate, but closely related entities: the land and the association of trees, shrubs, herbs and other life forms and habitats on that given land. Therefore, land tenure can be expected to influence not only the ownership of forest resources, but also its sustainability. This has been clarified unambiguously by de Montalembert (1995:26), who states that "policies that influence land use and tenure are of critical importance" to forestry, as the land resource base is the common denominator of all sectoral policies dealing with natural resources. Bruce and Fortmann (1992:471) affirm that people only manage trees and forests on land with secure property rights. Given the relationship between forests or trees and land tenure, it follows that state action or inaction with respect to tenure systems can encourage or discourage sustainability of forest resources.

Deforestation is indeed a central environmental challenge facing Tanzania like other African societies; and as a result, forest resources are rapidly becoming scarce. To safeguard its use to meet the needs of all interests will increasingly depend on the security of land resource ownership, i.e., the ability and willingness to exclude others will define to an important extent how successful forest resource management will be. Panayotou and Ashton (1992:199) have observed that the lack of interest in investing in the enhancement and management of a natural resource, particularly forest, is traceable to the lack of assurance that the benefits accruing from this investment will ever materialise. Consequently, investments that would otherwise be very attractive will

not be made if the returns are to be shared among unspecified number of claimants who have free access without incurring any part of the costs involved in developing the resource. To avoid such deficiencies, economists call for a complete property in land, which is in itself a strong incentive favouring continuity of forests. Complete property refers to the various dimensions of property rights, and implies that none is restricted. Thus, to channel incentives to use and develop forest resources most efficiently the rights of the users must be *exclusive, beneficial*, sufficiently long in *duration, divisible* and *transferable*, and *secure*. This is not only a necessary condition, but also a sufficient condition for maximisation of human welfare (Pearse, 1993:89). *Human welfare ecology* is increasingly becoming an important conservation paradigm, as the recent international statements and resolutions on forests are influenced by it.

4.7.2.2.5.1 Roots of land insecurity

Tanzania's prevailing land tenure system needs to be viewed against the background prior to colonisation, and during German and British rules, as any of those periods could have shaped the country's land resource ownership and use. There is indeed overwhelming evidence that in Tanzania, as elsewhere in Africa, before the colonial conquest, land belonged to different ethnic groups which were further subdivided into clans or families. It was administered by a chief or an elder responsible for land rights to be worked or grazed by clan and family members. Ownership of land was essentially a birthright (Watts, 1996:5). Likewise, a forest tract was the property of a particular tribe or clan whose members enjoyed rights of use of forest products, but not the right to dispose of it (Mather, 1992:89). However, this changed in 1884, when a German adventurer and explorer was granted "under some dubious agreements" large tracts of land by local chiefs. That agreement facilitated the German conquest of Tanzania, which resulted in land alienation and creation of *land tenure* to suit the needs of German settlers. The German colonial policy in Tanzania was to promote plantation agriculture consisting of crops such as coffee, cotton, rubber and sisal. Coffee and rubber are tree crops, which require similar environmental conditions to tree species that occur in the tropical rainforest in the north-eastern part of the country. Therefore, the implications for establishing these agro-exports were much obvious — conversion of forestland to plantation agriculture.

By 1895, considerable tracts of fertile land had been taken over by German settlers. To do that the colonial rule decreed all land, whether occupied or not, unowned 'Crown Land' and vested it in the empire. A later circular introduced in 1896 distinguished between ownership claims, which were to be proved by documentary evidence; and mere rights of occupation that was to be proved by *cultivation* and possession of land. Proof by documentary evidence was designed specifically to suit settlers who therefore enjoyed security of tenure, while the populace were left only with *permissive* rights of occupation. What attracts attention here is the fact that settler lands were pronounced both administratively and legally *owned* lands, while indigenous lands were *unowned*; and accordingly, qualified to be 'Crown Land' (TPCILM, 1994:8-9).

When Tanzania was passed onto British hands as a Trust Territory after the First World War, some 485,830 ha of land alienated from Germans were sold as enemy property. The largest share was purchased by Europeans, followed by Indians who were said to have acted as dummies for Germans, while less than one-fifth of one percent was bought by Africans. Thus, land alienated during the German rule continued to remain as expropriated land during the British rule. In reality, nothing changed regarding land tenure, as the British acknowledged German freeholds and leaseholds. Although the British land legislation, termed as Land Ordinance of 1923 was drafted with an eye on the UN Trustee Agreement, it was a replica of the German Imperial Decree of 1895. While the Land Ordinance did not, for example, contain the term *vest* nor did it declare the lands of Tanzania 'Crown Lands', all lands were declared to be 'Public Lands' and placed under the control of the Governor for the benefit of the inhabitants of the country. When the Ordinance was amended in 1928, the aim was to give customary law titles a statutory recognition. However, that was not to be, as was confirmed by the pronouncements of the colonial courts in two cases decided in the 1950s. The court observed that the occupation of public lands by African population was merely *permissive* and did not establish any right to contest state decisions (TPCILM, 1994:10-12).

In Tanzania, land was declared public land and vested in the state by the colonial Land Ordinance, some 70 years ago; and continues to be so in the post-independence Tanzania. Kowero (1990:16-17) confirms that in Tanzania, all land belongs to the society and the government merely acts as a caretaker or trustee on behalf of the people. Individuals, institutions and other vested interests can only make claims on improvements made on land, but not on the land itself. Thus, the government has not had any different land tenure policy since independence. For example, the most significant amendment of the British colonial Land Ordinance was to replace the term *Governor*, wherever it appeared in the Ordinance, with the term *President*. The whole of the lands of Tanzania whether occupied or unoccupied are declared to be public lands and such lands are declared to be under the control and subject to the disposition of the President and shall be held and administered for the use and common benefit, direct and indirect of the natives of Tanzania (TPCILM, 1994:19). Furthermore, the former Tanzanian President, Julius Nyerere argued against freeholds in Tanzania during his rule, however, he demonstrated tendency to leaseholds when he was explicitly quoted as:

> The Tanganyika African National Union Government must go back to the African custom of land holding. That is to say, a member of society will be entitled to a piece of land on condition that he uses it. Unconditional, or *freehold* ownership of land (which leads to speculation and parasitism) must be abolished (TPCILM, 1994:17).

Ensuring secure land tenure is an incentive aimed at the land resource user to encourage wise resource management. Security of land tenure facilitates access to credit facilities, which can be used to improve the means of production or in natural resource development. For example, investing in tree-planting on farmlands or in natural regeneration to assure future forest crop. Leasehold does not contain sufficient

incentives to encourage farmers to manage trees on their farms. The term *leasehold* is in itself a disincentive as it constantly reminds the lessee that the land does not belong to him and will never belong to his descendants. It is important to note that a rural Tanzanian farmer is a rational economic man, who responds to economic signals in a continuous manner to maximise his own welfare. When opportunities appear that are likely to improve his situation, he is quick to seize these opportunities (Convery, 1995:78; Mather, 1992:352-3). Likewise, when opportunities arise to exploit forests unsustainably for short-term benefits, rural Tanzanians will seize this opportunity in the face of prevailing land tenure insecurity.

While the state ownership of land and forest resources in Tanzania might be intended to secure control and benefit for the whole country, the state lacks sufficient administrative ability and control to manage the forests effectively. The inability of the state to enforce its ownership rights and defend the legal status of the resources under its control will lead to overexploitation of both land and forest resources, as long as there is land insecurity for rural people who live at forest margins. This pressure will mount until the government makes them responsive to environmental degradation by privatising the benefits and costs of deforestation and eventual land degradation. It has consistently been observed that security of land, which in turn guarantees security of trees and forests on that land can contribute significantly to improving local management strategies. Conversely, the current insecurity of land and regulations governing allocation of parcels of land for the various uses aggravates deforestation. For example, FAO (1995b:109) indicates that lack of clear land use policy and regulations, as well as poor tenurial arrangements have encouraged free access to land resources, resulting in rampant deforestation and forest resource degradation in many regions in the country.

4.7.2.2.5.2 Impact of insecure land tenure on forests

In Rufigi district, there are extensive forests, comprising a half of Tanzania's remaining mangrove forests, which constitute about 30% of the mangroves left in all East Africa. The total land area of the district is about 1.3 million ha, 90% of which are forested, including 40,000 ha of rich coastal mangroves. This massive occurrence of forest resources has promoted a rapid extraction of timber, construction poles and wood for charcoal production; nonetheless, the District has a population density of only 11 persons/km^2. The most important source of income has been the sale of forest products such as logs, charcoal, poles and fuelwood, about three-quarters of which are taken from the limited mangroves. The wood and timber industry employs over one-fifth of the District's labour force. As a result, it has been stated that the immediate cause of deforestation has been the lucrative markets for timber in rapidly growing Dar es Salaam and the Gulf States. All forest exploitation in the District has been reported as indiscriminate and wasteful by any criterion. At the peak of this exploitation, producer prices for cashew nuts increased by 40% and cotton prices went up by 100%, while that of charcoal rose by 400%. Prices for timber and poles behaved similarly. Based on this

information one would easily conclude that attractive prices for forest products and agro-exports are the principal reasons why local people choose to overexploit the mangroves and other forest types. However, such a conclusion would be unjustified, as the local people has had managed the same forest resources on sustainable basis in the past. Moreover, a rational resource user anticipating continued good markets would have managed the mangroves for maximum sustainable yields (Barraclough & Ghimire, 1995:88-9).

The breakdown of the customary land tenure that undermined the traditional production systems and villagisation provide the best explanation for this destructive deforestation. As Colchester puts it: "...lack of land security has promoted mismanagement by undermining traditional concepts of custodianship and resource allocation" (Colchester, 1993:73,74,78). Banyikwa (1991:100) attributes extensive agriculture in Tanzania to insecurity of land tenure when he elucidates that investments in intensive farming systems have failed to develop and transform agriculture, because the tiller does not own land. Insecurity of land, which therefore limits future supply of forest products or use of the land frustrates adoption of sustainable utilisation of natural resources, which in this case involves investment in future production or conservative use of the forest or the land (Alexandratos, 1997:213).

Similarly, Westoby (1987:311) candidly asserts that "there is no technical fix which can save the forests. The main instruments of forest destruction are the disinherited of tropical countries: peasant farmers, shifting cultivators and rural landless. But these are the *agents* not the *causes*. Their pressure on forests is steadily increasing as a consequence of policies bent on preserving a highly skewed distribution of private property in land and other resources. This pressure will inevitably increase, until there is more equal access to land and other resources. This is not a sufficient condition, but it is a necessary condition". In the same vein, WRI (1992:122) states that "one of the primary forces pushing landless migrants into the forests is the inequitable distribution of agricultural land...Land reform policies, therefore, are one of the most potent tools governments possess to stabilise forest use". Myers (cited in Watts, 1996:16) argues that the single largest agent of deforestation is the shifted cultivator, who is often squeezed out of traditional farmlands and heads for the last unoccupied lands he is aware of — forests. In strong contrast to the next two most significant contributors to depletion of forest resources, that is, the timber logger and the livestock herder, he sees no alternative to what he is doing. Myers affirms that the shifted cultivator is far less 'blameworthy' for he is subjected to a range of forces, which include misdistribution of traditional farmlands, inequitable land tenure systems and inadequate attention to subsistence agriculture, *inter alia*. It is important to note that these arguments logically segregate between *agents* of deforestation: rural and migrant farmers, livestock herders and loggers; and *causes* of deforestation, which are policies that motivate the agents to invade and devegetate standing forests.

4.7.2.3 Effects of sectoral policies

It is axiomatic that natural resources interconnect at least in an indirect manner, for instance, catchment forests are critical for water and fisheries; forests provide habitats for wildlife and promote wildlife-based tourism; agriculture may encourage or discourage forest conservation; transportation infrastructure may behave similarly; and so on. A policy that is designed to promote a given resource would contain sufficient incentives or disincentives to promote or impede the sustainability of other resources, especially in the absence of intersectoral policy co-ordination. For example, de Montalembert (1995:26) has indicated that a recent FAO/World Bank agricultural review in Ecuador, mainly recommended national policy changes for activities which are not directly related to the forestry sector, but which nevertheless impinge on it like the above land policy. Therefore, it is appropriate to assess how these sectoral policies influence forest conservation in Tanzania.

4.7.2.3.1 Water policy

The Tanzanian government declared the country's water policy in 1991, with the overall objective of ensuring the supply of good quality water for domestic, livestock, irrigation, industrial and other uses to which water is subjected. The policy emphasises on ensuring conservation and more efficient utilisation of existing water resources through:

i. institutional improvements leading to better planning and management of water resources, and more effective provision of water supply services;
ii. greater attention to proper soil management around water sources and the need to avoid cutting trees in order to prevent soil erosion and flooding; and through
iii. improved measures to monitor and control water quality so as to prevent contamination of water by industrial waste, sewerage, and poorly planned sanitation as well as excessive use of pesticides and fertilisers (Mtuy, 1996:492).

This policy does not explicitly express the role of forests in maintaining the integrity of watersheds; it fails to acknowledge water as a by-product of effective maintenance of catchment forests. This is directly linked to the institutional deficiency that placed water in the ministry responsible for energy, where the dependency of water supply on catchment forests is ill understood. Although this policy is vague catchment forests cover 1,600,000 ha, about 1.7% of the total surface of Tanzania. The impact of these forests is very significant in water regulation, soil conservation and climate amelioration. These forests need to be protected from human interference (Mgeni & Malimbwi, 1990:73; Malimbwi & Mgeni, 1990:60). Likewise, O'Kting'ati and Kowero (1990:133) state that catchment forests prolong life spans of costly national investments like hydroelectric and irrigation dams by minimising the rate of siltation, in addition to reducing destruction of villages and farmlands

through flooding. The intricate relationship between forests and water supply is best explained by Chenje and Johnson (1994:142-3), who reiterate that afromontane forests in Tanzania protect the source of water, however, in areas where cultivation reached the top of the mountains before the forests are protected, the streams have dried up.

It is understandable that the Tanzanian government placed water into the ministry of energy, because of the hydroelectric power. However, in countries where governments comprehend the interconnectedness of water, forest and electricity, water and forestry have always remained in the same institution, while provisions are made to ensure transfers from the electric power sector for watershed protection (Gaviria, 1997:32-3). It is therefore argued that Water should coexist with forestry to safeguard its sustainable supply for the various uses.

4.7.2.3.2 Energy policy

Forests and woodlands in Tanzania account for 91% of the macro-energy consumption (Mtuy, 1996:492; Mgeni & Malimbwi, 1990:70). Woodfuel accounts for about 97% of all wood products used (Mgeni & Malimbwi, 1990:70). Forests provide 97% of fuelwood and charcoal used in urban and rural settlements (Banyikwa, 1991:101). While there may not be a consensus on the precise estimate of the contribution of forests and woodlands to the energy sector due to spatial variation and the differences in survey methods used, there is an ample proof that urban and rural communities rely heavily on forest resources for energy, as illustrated in Table 4.1, which attempts to reveal the contribution of each energy source.

Table 4.1 Projected energy consumption in million tons of oil equivalents.

Energy type	1986	1988	1991	1996	2005
Petroleum and Gas	0.81	0.90	1.06	1.90	2.24
Coal	0.02	0.02	0.02	0.03	0.24
Electricity	0.08	0.09	0.11	0.14	0.19
Crop residues	0.91	1.01	1.17	1.44	1.66
Woodfuel	13.65	14.55	15.88	18.07	20.55
Total	**15.47**	**16.57**	**18.25**	**21.50**	**24.68**

Source: Mtuy (1996:492).

The government of Tanzania promulgated the energy policy in 1992, with policy statements covering hydroelectric power; other indigenous energy resources, such as coal and natural gas; petroleum and forestry. However, the objectives quoted and discussed here are forestry-specific and/or are related to

forestry in some way[s]. This does not mean that poor development of other energy resources such as hydroelectric, coal and natural gas, wind and solar energy, and petroleum does not influence the rate of consumption of woodfuel. The *status quo* in energy provision and consumption in Tanzania is that forests and woodlands are the main source of energy for both rural and urban populations, and will continue to be so. Thus, Hofstad (1990:119) emphasises that it would be meaningless to discuss the availability of alternative fuels to wood as the need for wood energy is so evident that the alternative sources are expensive or difficult to supply. Therefore, what the government pursues to safeguard the sustainable supply of this renewable resource, is assessed below.

In Tanzania, the government energy policy aims:

i. to arrest forest depletion and degradation caused largely by growing energy demand. This will be done by improved management of existing forests and woodlands, increased village planting on farms, introduction and promotion of efficient charcoal stoves, and improved charcoal production techniques;

ii. to ensure reliability of energy supply;

iii. to minimise energy price fluctuations in order to contribute to stability of prices in general through strengthening and rationalisation of energy supply sources and infrastructure and a rational energy pricing structure; and

iv. to develop the country's human resources in the energy sector, including expanded teaching of energy and environmental analysis in schools and universities (Mtuy, 1996:492-3).

It is unmistakable that the energy policy acknowledges the primary role of forests and woodlands in provision of energy to the majority of Tanzanians; and the need for their conservation. What is of concern are the fictitious techniques to be employed in arresting forest depletion in the face of prevailing government policies that influence land use and tenure. Forest and woodland management would be improved if forest resource users had secure, transferable and clear ownership and use rights. This could result in the commitment of interest groups to a long-term sustainability of the forest resources (de Montalembert, 1995:30). Property rights therefore need to be clear, secure, enforceable and transferable. "Resolving land tenure insecurities is an essential prerequisite for effective wood energy (and wider development) policies and practices" (Soussan, 1993:54).

Tanzania has had a long tradition of woodfuel scarcities; and it was agreed that this could be addressed by planting around 400,000 ha/annum. "Despite a national village afforestation programme, conceived and implemented from the late-1960s, plantings never exceeded much more than 10,000 ha/annum". A number of subsequent studies carried out to establish the cause of low response among farmers concluded that

farmers could respond to fuelwood constraints in many ways, and often placed an extremely low priority on tree planting for fuelwood (ADB, 1993:121). This is because there have been plenty of open-access forests and woodlands, where wood energy could be harvested free of charge. Mtuy (1996:492) notes further that "most of the rural biomass fuels is collected free of charge and unless the income of farmers is increased sufficiently, fossil fuels and charcoal cannot compete with it". Moreover, communal woodlot programmes to offset high demands on natural forests suffered because it was unclear who owned the production from the woodlot and how the benefits would be distributed to the villagers who established and tended it. There was indeed little enthusiasm for managing woodlots, which led to livestock damage and uncontrolled cutting.

4.7.2.3.2.1 Fuel pricing policy

To ensure reliability of the energy source would not be a formidable task, as woodfuel has the advantage of being a renewable resource. If properly managed, forests and woodlands would continue to serve the energy needs of the existing and future generations of Tanzanians. However, this depends on the willingness of policy-makers to internalise the costs of environmental degradation into the prices of goods and services that people consume. In reality, the price of a cubic metre of wood extracted from a natural forest should reflect habitat destruction, biodiversity loss and other environmental services that would be foregone. This, coupled with appropriate forest laws would create a strong incentive for rural households to incorporate tree crops in their farming practices. Smallholders and commercial tobacco growers would thus be obliged to grow trees to cure their harvests, as open-access forests and woodlands would increasingly become under absolute control. On the other hand, urbanites would continue to pay favourable prices for wood energy to facilitate investment in forest establishment and management.

It is important to consider the environment as a central factor in assessing prices for different types of fuels. This is not only because the extraction and processing techniques of some fuels impair the environment, but also due to generation of obnoxious by-products which are likely to compromise the air and water qualities, and convert habitats to inhospitable sites. Soussan (1993:52) has reinforced this argument by stating that the real cost of different forms of energy needs to be assessed, while the exact value of environmental stocks, flows and sinks must be valued and fully accounted for. However, valuing and enforcing socially optimal prices for woodfuel is awesome, especially when dealing with communal and open-access resources. Reforming policies that distort markets or create situations in which benefits are dissociated from costs, prices from scarcities, rights from responsibilities, and actions from consequences; and resolving property rights, while not an absolute solution will produce prices that will more accurately reflect the social costs of resource exploitation.

The relationship between fuelwood consumption and its price has been examined for Tabora Town. For example, O'Kting'ati (1984:8) found that increased fuelwood prices depressed its consumption, that is, the price of fuelwood is inversely proportional to the amount consumed. Accordingly, per capita consumption among urban dwellers who paid approximately US$4 for a cubic metre of fuelwood was 1.1 m^3/annum, while per capita consumption of those who accessed a cheaper market, where a cubic metre was sold for US$1 or less, was 1.9 m^3/annum. A previous study conducted to assess per capita fuelwood consumption in rural parts of Tanzania, where people had free access to the resource established a consumption of 2.33 m^3 per capita/year. In areas like the Usambaras, per capita fuelwood consumption of 2.6 m^3/annum was recorded.

These prices appear to be the market prices that prevailed at the time or at least are unofficial. Official prices for fuelwood extracted from natural and plantation forests according to 'The Forest Amendment Rules of 1987', were T.Shs10 and T.Shs8/stacked m^3. This was equivalent to one-tenth of a US dollar according to the 1987 exchange rate, however, today the exchange rate is roughly TShs700 per US$. One reason for this very low price of firewood from natural forests is that stumpage fees are seldom paid, only extraction and distribution costs need to be paid for (Hofstad, 1990:122). This reaffirms the point that fuelwood in Tanzania is collected free of charge, especially by those who can venture into natural forests, be they in the public domain or state-controlled forest reserves. The plantations are equally highly discounted because the majority of them are owned by the state.

In fact, fuelwood prices in most parts of Tanzania are so low that neither the government nor the private organisations in the country and individuals will find it profitable to invest in its production. However, in areas where deforestation has been complete, especially around major towns, fuelwood production could develop into profitable business. Increasing prices of fuelwood in urban and suburban markets can make private production of fuelwood profitable and develop a changing relationship between the forest resource user and the forest resource. This, however, calls for well-defined, secure and exclusive ownership of all forest resources by the parties concerned: the state, local people and private organisations.

The low prices for biomass energy can be offset by imposing taxes on its production and by creating incentives on other energy sources such as fossil fuels and electricity. However, this requires a co-ordinated energy policy. Alternatively, sustainable woodfuel policy requires an environment for intersectoral co-operation between the ministries of energy and forestry. Unfortunately, this is not the case in many situations; and as a result, biomass energy has tended to slip into the gap between the ministries responsible for forestry and energy. This has led to a situation where either both institutions ignore biomass energy scarcities, or both ministries claim proprietorial rights, if there is an external funding. Although the Tanzanian government declared its energy policy in 1992, it is evident that the policy is not implemented. For example, it has been

stated that "there is an urgent need to have regular consultations between the ministry responsible for energy and the ministry responsible for forests to implement the policy of woodfuel energy" (Mtuy, 1996:493).

4.7.2.3.2.2 Solutions to fuelwood crisis

In Tanzania, fuelwood is both the principal source of energy and the main use of wood, yet commercial fuels and commercial timber production are the preoccupations of the ministries responsible for energy and forestry. Relegating biomass energy to inconsequential economic position exposes the inherent policy and market failures, which characterise the Tanzanian forestry sector. As the central issue is not how to supply more biomass energy, but rather how to ensure that the energy needs of both urban and rural populations are met in a sustainable manner, there is a need to create the necessary preconditions for planning, if real sustainable solutions to fuelwood crisis are to be found. While the activities undertaken in any fuelwood strategy will obviously vary from one place to another, policy interventions that seek to create the following favourable conditions are not uncommon:

1. Secure property rights (land and forest resources): customary, communal and private, particularly to those groups experiencing severe problems in accessing biomass resources. The economic theory on sustainable forest management presupposes that the *trees* and the *land* are securely owned and controlled by someone: a private person, a group of persons or the state for the foreseeable future. It is only in this way, that the owner can count on the possibility to harvest the fruits of what has been invested. The success of sustainable forest management in the northern hemisphere over the last decade or two depends on such ownership structures, which exist in several African countries, but are not enforced in the same manner (Hofstad, 1990:119). This is due to what is commonly called 'lack of political will', which the policy analysts have recently termed 'policy failure'.
2. Access to and management of local land resources should be improved, for instance, by removing barriers which limit local people's access to communal or state land.
3. Knowledge and inputs relating to land use should be provided to rural farmers to improve the quality of existing land and forest resource management.
4. Market functions need to be improved through more stable and predictable policies, which regard biomass fuels as commodities.
5. Creation of effective structures to ensure that local people have a say in the policies and decisions that affect their livelihood (Soussan, 1993:53).

Finally, an effective biomass energy policy must be translated into action through implementation of strategies at specific localities where fuelwood scarcities abound. Each locality will determine the appropriate mix of technical packages it desires: supply enhancement, conservation or fuelwood-switching options. In other

words, there should be no predefinition of technical choices to encourage participation of local people in addressing problems that confront them.

4.7.2.3.3 Population policy

Tanzania had a human population of about 27.5 million in 1990. The annual population growth rate for the period ranging from 1980 to 1990 was estimated at 3.8% (FAO, 1995a:3). However, official estimates at mid-1990 put the population at 25.6 million people. Mtuy (1996:493) reports that the population of Mainland Tanzania is expected to rise to 33 million by the year 2000. The growth rate is about 3.0%. This is close to the most recent CIA estimate that puts Tanzania's population at about 35 million, with a growth rate estimate for the year 2000 at 2.5%[5]. What is discernible from these estimates, although they fail to agree, is that the population of Tanzania is approximately 30 million and is rapidly expanding.

In Tanzania, the implications of an unstable, rapidly increasing population for forests is much evident, although there is no simple relationship between the level of human population and the extent of forests, as the periods of rapid deforestation in the past had not necessarily been at the times when population was most rapidly expanding (Watts, 1996:12). The major concern about Tanzania is that, fast population growth rate in the country would outstrip the national ability to provide the bare necessities of life such as housing, food and fuel. This means that, increases in human population are directly proportional to the rate at which living trees are cut for fuel, humid forests and woodlands are overgrazed by livestock and are converted to croplands that are in turn overploughed by desperate farmers to feed additional mouths. Fuelwood consumption alone demonstrates with uttermost clarity the gravity of the situation. For example, it has been estimated that up to 500,000 ha of forest and woodland are cleared annually to meet fuelwood demands (O'Kting'ati & Kowero, 1990:103). This may appear exaggerated, but the mere fact that fuelwood is the main source of energy for the majority of Tanzanians whose per capita consumption in urban and rural areas amount to at least 1.1 m^3 and 2.0 m^3/annum is indicative of the threat posed by increases in human population to forest biomass.

While discussing the supply of fuelwood in Tanzania, Hofstad (1990:121) comments that the population grows by more than 2.5%/annum, while at the same time the forest and woodland is reduced by 0.5% annually. He cautioned that the latter figure may not seem dramatic, but the rate may increase in the future. Kaoneka (1990:127) has also attempted to portray the relationship between population increase and forest depletion. He attributes agricultural land scarcity to population increase, which forces people to encroach natural forests to increase the farming area.

In Tanzania, where agricultural output is increased at the extensive margin, and people depend heavily on the natural capital, increases in population result in forest biomass depletion at a higher rate. Accordingly,

population increases negatively effect the production rate by reducing the forest area through diversions and encroachments, while simultaneously increasing the forest and woodland removal rate by increasing fuelwood and construction timber removals (Saxena *et al.*, 1997:269-270). The Tanzanian government comprehends the negative impact of rapid population growth on the physical environment. For example, it has been noted that "rapid population growth (about 3.0%/annum) concentrated in attractive areas combined with poverty and poor farming methods are aggravating forest and environmental degradation" (Mtuy, 1997:493). Therefore, a coherent policy aimed at reducing population growth will positively affect the levels of both stocks of forest biomass and total forest area. The Tanzanian population policy mainly aims at reinforcing national economic growth through human resources development to improve social welfare. The policy emphasises on:

i. regulating population growth;
ii. enhancing the quality of life of the population;
iii. improving the health and welfare of women and children;
iv. strengthening family-planning services;
v. improving demographic database;
vi. developing appropriate population information, education and communication systems; and on
vii. building institutional capacity to deal more effectively with population issues and priorities (Mtuy, 1996:493).

It is intriguing that during the past decade, many of the world's poor nations condemned the notion of family planning as an imperialist and racist scheme touted by the developed world. Yet today, a Third World nation like Tanzania, which is again the world's third poorest country, has committed itself to limiting its population growth. But how committed? A commitment to strengthen family planning by availing birth-control information and devices to every man and woman would be productive in urban areas, where urbanites have learnt the bitter lesson of coping up with many children. Their hope for better standard of living has often been lost in the battle to feed, dress and educate their children. This would help them to heed calls for family planning, but not in rural areas, where many uprooted and destitute peasants without an economic base view children as a personal social security necessary for survival, particularly in old-age. For example, in 1948, the population of Lushoto District in Western Usambaras was 138,000, but rose to 357,000 in 1988. The reason: population growth has been initiated by the demand for children, and the demand for more children could partly be explained by the shaky patterns of land tenure that prevail in the area. In poor societies children are needed on a daily basis; and having many children is one of the ways of coping with expropriation and economic insecurity among the marginalised rural people. In addition, children's labour, especially cash

remittances by those who become migrant workers provide better insurance against natural catastrophes such as drought, disease and pest attacks that cause bad harvests (Watts, 1996: 25).

This argument counters well the perception among many observers that citizens of developing nations are improvident breeders, who sacrifice the welfare of the family to satisfy their sexual desires. In Tanzania, stabilisation of the rural population could therefore be achieved by removing the incentives, which oblige them to want more children. Land reform policy, which would provide secure landholdings to all dispossessed rural populace, is indeed a potent tool. This, combined with population education would limit the incentives facing rural families to have many children. This is indeed a positive contribution to stabilise the national population rather than targeting British or international aid programme in the field of population by a grandiose population policy, which is not aimed at the underlying causes of rapid population growth.

The concept of family planning will of course, meet stern moral criticism and debate, because it is sometimes thought to undermine the principles of Christianity. For example, in stating the position of the Vatican, two weeks before the Preparatory Committee for the International Conference on Population and Development in Cairo, September 1994, Pope John Paul II states that:

> In defence of the human person, the Church stands opposed to the imposition of limits on family size, and to the promotion of methods limiting births which separate the unitive and procreative dimensions of marital intercourse, which are contrary to the moral law inscribed in the human heart, which constitute an assault on the sacredness of life. Thus, sterilisation, which is more and more promoted as a method of family planning, because of its finality and its potential for the violation of human rights, especially of women, is clearly unacceptable; it poses a most grave threat to human dignity and liberty when promoted as a part of population policy. Abortion which destroys existing human life, is a heinous evil, and it is never an acceptable method of family planning, as was recognised by consensus at the Mexico City United Nations International Conference on Population (1984) (Johnson, 1994:359).

Of all entrenched values, religion presents perhaps the most formidable obstacle to population control policy. Muslim fundamentalists have also fought against national family planning efforts in Iran, Egypt and Pakistan. However, stiff religious objections need not entirely thwart national efforts in population planning. It is advisable that, where such resistances are imminent or encountered, vigorous campaigns should be mounted to promote natural birth-control techniques (Time, 1989:35). The issue of population control should not be restricted to secular institutions, as street children who are generally perceived to be a by-product of unwanted births and orphanage challenge both government and church organisations which spend both time and money to educate, feed and accommodate these disadvantaged persons. Therefore, to win the support of these religious zealots in population control initiatives, it is important to involve them in devising strategies to stabilise the rapidly increasing human population, for which in Tanzania, there is every indication that it works against its own life-support system.

4.7.2.3.4 Agricultural policy

It has explicitly been stated that agriculture is the mainstay of Tanzania's economy, providing a livelihood for 88% of the economically active population and accounting for 81% of export earnings. Subsistence farming accounts for about a half of total agricultural output (Van Buren, 1995:929). It has been confirmed that the agricultural sector accounts for an estimated 50% of the GDP, 80% of exports and 90% of employment. Smallholders with an average size of about 2.0 ha produce an estimated 80% of agricultural output (Mtuy, 1996:490-491). On the other hand, FAO maintains that the "agricultural sector accounts for about 50% of the GDP, employs close to 90% of the labour force and generates more than 80% of export earnings"[1]. These three sources affirm that all agricultural activities are concentrated on some 6.0 million ha, which represent about 7.0% of the country's land area. This estimate does not differ much from the WRI's figure of 5,190,000 ha (WRI, 1987:268).

However, these estimates appear to be incorrect, as they have failed to conform to some basic assumptions. For example, if a conservative population level of about 25 million people is chosen for Tanzania (Van Buren, 1995:935), and that 90% of the people are actively involved in agriculture, but only a half of this percentage is directly engaged in agricultural crop production on 1.7 ha each, then 19,125,000 ha, which represent approximately 22% of the overall land area is cultivated. Additionally, if the FAO's extremely conservative estimate of 0.87 ha per agricultural worker in Tanzanian in 1985 is used (Watts, 1996:48), instead of 1.7 ha, still 9,787,500 ha, which is equivalent to 11% of the country's land area, is cultivated. Therefore, the estimate of Tanzania's land area under agricultural crop production, is at best dubious, at worst faulty, since these estimates tend to argue indirectly that agricultural crop production in Tanzania is achieved at the intensive margin.

What is important in the relationship between agriculture and forestry is that, agricultural land continues to be carved out of natural forests and woodlands. Mtuy (1996:491) complains about the current government agricultural policy that aims to accelerate growth of production and exports. Increased agricultural production involves intensive cultivation of areas already under production as well as expansion of the area under cultivation. The environmental repercussions of intensive agriculture do not affect forest resources in Tanzania, as it would do in an industrial nation where high demands for fertilisers and pesticides encourage spewing of sulphur dioxide and other related gases into the atmosphere, which would eventually affect forest primary productivity as acid rain.

On the contrary, expansion at the *extensive margin* typically involves clearing land of forest vegetation, using hand tools, more frequently fire and machines, depending on the level of agricultural mechanisation in a country. This is the type of agriculture widely practised in Tanzania, mainly by smallholders. It impacts on

forest resources in a directly negative manner, as it encourages conversion of forestland to agricultural estate. Documentary evidence indicates that there has been a 17% increase in the area planted to the nine major food and cash crops grown since 1986. About 80% of this increase has been in heavily or lightly erosive crops such as maize, sorghum, cassava, cotton and tobacco (Cromwell, 1996a:119). Areal calculations indicate that land clearing for agriculture accounts for approximately 40% of all deforestation in Tanzania because both smallholders and largeholders expand their farmlands. Expansion for smallholders is essentially to maintain output in the face of declining yields as fertiliser has become too expensive for them to afford now due to the removal of 80% government subsidy. For commercial farmers, increasing the agricultural area is economically cheaper than buying more fertilisers, machines, spare parts and fuel for intensification. As a result, agriculture expands into catchment areas and forest reserves.

4.7.2.3.4.1 Effects of producer prices on forests

The 'producer price argument' is that favourable producer prices and exchange rates can increase farmers' incentive to invest in land improvement and *vice versa*. Pearce and Turner (1991:353) argue that the most efficient and administratively simple alteration to incentives is the raising of producer prices. However, the implication is that when government intervenes to support or raise the prices of crops that deplete the soil or to reduce the prices of crops that protect the environmental, the noticeable outcome is environmental degradation (Convery, 1995:61). Most governments in developing countries have some form of price control, although the prevalence of black markets thwarts the anticipated effects of these controls. The consequence is that farm-gate prices are lower than the border prices for internationally traded agricultural commodities. Table 4.2 shows ratios for selected widely traded commodities in Tanzania. It can be seen that Tanzanian tobacco growers received 50-70% of the world price. The same holds for cotton and coffee producers who received about 50% of world prices, with the exception of 1985, when world price for cotton raised the producers' margin.

Table 4.2 Ratios of producer prices to international prices for three cash crops.

Year	Coffee	Cotton	Tobacco
1970		0.73	0.78
1971		0.61	0.84
1972	0.57	0.57	0.84
1973	0.43	0.35	0.84
1974	0.43	0.33	0.68
1975	0.36	0.52	0.70
1976	0.30	0.42	0.65
1977	0.35	0.46	0.63
1978	0.39	0.56	0.70
1979	0.29	0.51	0.51
1980	0.41	0.53	0.47
1981	0.53	0.62	0.50
1982	0.52	0.73	0.50
1983	0.47	0.67	0.70
1984	0.47	0.65	0.55
1985	0.50	1.03	0.75

Source: U. Lele cited in Pearce and Turner (1991:354)

Pearce and Turner (1991:354) argue that raising the producer prices close to world prices will increase the incomes of farmers, enabling them to secure surpluses that can be reinvested in resource conservation to increase the supply. However, as prices are significantly influenced by policies, rational resource use depends on how the agricultural policy tools are aimed at increasing agricultural output at both the subsistence and commercial levels. Tanzania has had a history of policy failures, that is, the opportunity costs of land conversion are inadequately reflected in the supply price of forested land. In other words, the supply price of forested land in Tanzania does not adequately reflect the value of services performed by forests while they are intact. This results from the incorrect overvaluation of the benefits of removing forests, for instance, unsustainable but attractive prices for cotton, coffee, tobacco and other cash crops. The Tanzanian government should have known by now that favourable producer prices in the face of quasi open-access nature of forest resources is a strong incentive for forestland conversion to agriculture.

Since 1986, market liberalisation has encouraged the planting of maize and cash crops, particularly cotton which is Tanzania's main export in terms of area cultivated (Cromwell, 1996a:119). Tobacco is Tanzania's

third largest export and has experienced significant growth rates in the 1990s (Van Buren, 1995:929). High tobacco growth rates have two implications for the environment: tobacco production occurs at the extensive margin, eating deeper into forest resources; and tobacco requires curing, which accounts for 4.0% of deforestation in Tanzania (Cromwell, 1996a:116). It is worth noting that felling trees for curing tobacco is one of the major causes of shrinkage in forest resources. Economic expediency has pressured smallholders to increase export crop production, particularly tobacco; and as a result, large parts of Mbeya, Rukwa, Iringa and Tabora regions have been converted to tobacco plantations, covering 42,000 ha. It has been estimated that each hectare of tobacco requires one hectare of woodland for curing. Thus, to satisfy the energy demand, a corresponding 42,000 ha was harvested (Banyikwa, 1991:103). It is implied that yearly planting of the '42,000 ha tobacco farm' results in the annual clearance of 42,000 ha of forest for fuel.

Tea production has become increasingly important in recent years. The producer prices fell sharply in 1985 and remained at a low level until 1989, when a slight improvement began. Prices continued to rise during the early 1990s. In early 1991, the UK-based Lonrho announced that it would invest US$5.6 million aimed at doubling yields at the Mufindi estates to 3,000 kg/ha and extending the planted area from 730 to 1,000 ha, thereby adding 270 ha to plantation agriculture. In addition, the UK-based Commonwealth Development Corporation is planning to establish a 600 ha tea estate at Njombe in the Iringa region (Van Buren, 1995:929). Tea also needs fuelwood for drying. These expansions are in direct response to the general increase in real terms in producer prices for the major cash crops.

4.7.2.3.4.2 Livestock policy

Tanzania has some 13 million cattle, 12 million sheep and goats, 330,000 pigs and 176,000 asses. These figures continue to multiply. The main concern about livestock is that, approximately 64% of the human population and 60% of the livestock are concentrated on only 20% of the country's land area because 60% of Tanzania's land area is infested with *Glossina* species, which are the vectors of *trypanosomiasis*, a deadly disease in man and cattle. Dense stocks of livestock in tsetse fly-free, semi-arid regions, where the terrestrial ecosystem is inherently fragile lead to overgrazing, which is manifested in degradation of vegetation cover, soil compaction due to trampling and exposure to wind and water erosion (Banyikwa, 1991:102; Mtuy, 1996:491 & Van Buren, 1995:936).

The livestock policy seeks to increase livestock production to attain self-sufficiency in food production through long-term use of the land. While the policy stipulates that range management will be undertaken in line with soil conservation and farm management in conjunction with other related sectors, it contains some clauses, which are of major environmental concern. For example, the policy states that unused land will be developed

through bush clearing as one of the management options. The policy also states that livestock owners in overgrazed or degraded areas will be resettled in lightly stocked areas.

Bush clearing as a management option encourages vast clearance of natural vegetation to establish rangelands. Local agropastoralists have practised this technique for centuries, especially for initiating the growth of palatable forage. However, repeated application of fire followed by dense population of grazers and browsers is likely to cause overgrazing which leads to soil erosion. Bush clearing, was attempted by the British in their attempt to eradicate tsetse flies, but resulted in deforestation. Relocation of livestock herders to low density areas of the country also has the same effect on forests and woodlands. There is evidence that vast tract of forests and woodlands are currently being converted to rangelands in Mpanda, Sumbawanga, Chunya and Tabora Districts (Mtuy, 1996:491). Furthermore, the existence of a clause on relocation of livestock from a degraded part of the country to lush vegetation is a disincentive to wise utilisation of pasture. Farmers would not heed government calls for destocking or maintenance of carrying capacity, because they are aware that if the land resources, including the vegetation become degraded, they would be relocated to yet another pristine pasture. Moreover, the tsetse fly scare in humid forested areas has somewhat died down. In the northern and western Tanzania, rangelands are actually utilised beyond their carrying capacities. Since many of these rangelands are on public forestlands, they have not escaped from 'the tragedy of the commons' (Mgeni & Malimbwi, 1990:74).

In Tabora, there is increasing in-migration of livestock herders from the semi-arid regions to the north and east of the District where livestock pressures on land and vegetation resources are rapidly mounting. Currently, there are two categories of agropastoralists moving into the area: seasonal herders in search of dry season grazing only, and others who are penetrating deeper into the region for longer periods with strong prospects to settle down. Either way, the forest reserves are quasi open-access resources for livestock herders. What is being experienced in Tabora now is taking place throughout Tanzania. This phenomenon cannot be halted, but needs to be contained. Moreover, *miombo* can be utilised as a graze and browse resource (Shepherd *et al.*, 1991:85). Maintaining the correct balance between land and vegetation resources, and livestock populations requires a policy solution that will make every livestock herder responsive to rangeland resource depletion and degradation.

As traditional management dominates livestock production, policy that would aim at designating permanent indigenous reserves for use by specific communities or clans should be pursued. Attempts should be made to revive customary grazing rights, where possible. The responsibility for managing such lands should be relinquished to the traditional leaders and community organisations because societies in cattle-rearing areas evolve around peers or leaders who still have strong authority. Each livestock-rearing group should have a

definite grazing range with exclusive rights. Coherent policy tools should be designed in consultation with traditional village leaders to implement this policy at the local level. The government should reduce its activities in such areas to monitoring for compliance, and intervene only when the sustainability of the resource is threatened. It is inappropriate for a small fraction of Tanzanians to degrade most of the country's landscape for private benefits. Moreover, the animal husbandry in Tanzania is characterised by low economic output, which is not worth this environmental devastation.

The designated indigenous reserves would dictate the number of animals to be stocked. There would be no *relocation* under any circumstance. Where rangelands are overgrazed, herders or agropastoralists must be made to bear the full consequences of their reckless activities. Shepherd *et al.* (1991:85) observe that destocking and labour intensive resource conservation measures have consistently been resisted. However, destocking and intensive land conservation practices would naturally be the options facing agropastoralists, who do not have additional areas for extensification or relocation. The majority of countries in Central America adopted similar livestock policies, which have promoted conversion of forests to pastures. However, in Nicaragua, the agrarian reform process, which commenced in 1979, was an important deterrent to private investment in livestock rearing. Consequently, by the early 1980s, most of the cattle raisers in the country with farms large enough to qualify for the agrarian reform law responded to the threat of expropriation by reducing their herds (Kaimowitz, 1996:49). Therefore, the Tanzanian government should focus on major policy instruments such as permanent grazing land distribution policy; otherwise the priority attached to conservation of native forests would continue to be lowered to accommodate short-term economic necessities of unsustainable agropastoral practices.

4.7.2.3.5 Tourism policy

Tanzania is renowned for its wildlife, which consequently has led to the designation of 25% of its land area as national parks, game reserves and game controlled areas. Mount Kilimanjaro, Ngorongoro Conservation Area, Selous Game Reserve and Serengeti National Park have been classified as World Heritage Sites (Cromwell, 1996a:109-110). Likewise, Mtuy (1996:494) affirms that Tanzania is one of the few countries endowed with natural attractions that include Mount Kilimanjaro and wildlife studded national parks and game reserves. Approximately, 30 million ha which constitute 33.8% of the total land area of the country has been demarcated as national parks and game reserves. It has also been reiterated that Tanzania has one of the highest proportions of land area devoted to forest and wildlife conservation. Many of its protected areas have high global priorities (Rodgers, 1994:4). Several local and foreign NGOs have invested in the tourism sector which is increasingly being regarded as having good potential, given Tanzania's unspoiled beaches and spectacular game parks, which cover about one-third of the country, together with its record of political stability (Van Buren, 1995:932).

On its part, the Tanzanian government promulgated the tourism policy in 1991, highlighting the potential contribution of tourism to the development of the country. The policy envisages a rapid and dramatic increase in the number of tourists visiting the country each year and acknowledges that concerted efforts are required from tourism-related institutions (Mtuy, 1996:494).

The relationship between forestry and tourism is that tourism can be categorised as a non-consumptive use of forest, and therefore are inseparable. Very often, terrestrial areas that are attractive for their natural and tourist qualities are either forest reserves, national parks or game reserves, which serve the purpose of protection forest. This role can be more emphasised, if its opportunity cost were taken into account. This point has been affirmed by O'Kting'ati and Kowero (1990:134), who point out that several areas classified as forests harbour game parks and reserves. These forests provide niches for wildlife, for example, the leopard finds it difficult to stay in open grassland savanna for a long time; the giraffe and elephant browse on trees to meet their daily fodder intake; many avifauna, especially eagles, vultures and owls spend considerable times perched on trees; and prawns and some fishes breed in mangrove-rich coastal waters (Kowero & O'Kting'ati, 1990:104).

Since protected areas, which are the scenes of tourist attractions, are situated in rural areas, the development of tourist infrastructure is an investment in the rural parts of Tanzania, resulting in creation of more off-farm jobs. This will slow down agricultural expansion to forested areas and check the rate of urban migration as capital inflows occur. Naturally, nature would appeal to many rural people who would in turn invest in the maintenance of vegetation cover as their attitude towards the natural physical environment begins to change. In the words of de Montalembert (1995:31), investment in rural areas results in protection of rural environment, landscape and amenities, which will demand for increased control on forestry activities that are incompatible with the ideals of environmental protection. Consequently, more protected areas will be established and issues of environmental education will become increasingly important.

However, the development of tourist infrastructure requires a good road network (for efficient conveyance of tourists and supplies), the implication of which has been assessed. Erection of accommodation facilities, both in cities or towns and rural areas will definitely consume timber, necessitating logging, which is frequently the precursor for forest conversion. In addition, increased rural income sets the scene for increased wood consumption: fuelwood, as energy is income elastic and construction timber as the need for improved housing is initiated. Newly constructed and revamped city hotels and tourist resorts generate waste, adding problems to the insufficient waste management facilities. Currently, Tanzania's 12 major towns are without sewage treatment facilities and two-thirds of urban refuse remain uncollected (Cromwell, 1996a:111). Since

the government has targeted to earn $500 million on gross receipts from tourism, it would continue to project a good image by giving due consideration to tourist needs, for example, by supplying safe drinking water and adequate waste management in the environs of tourist facilities. However, this would mean withdrawing environmental services from large segments of the larger community. Furthermore, setting an ambitious target of $500 million in earnings for the mid-1990s was an incentive for degrading the environment. Whatever happened in the tourist industry, for instance, exceeding the carrying capacity of certain fragile habitats or even tourist facilities, as long as this target was not attained, the competent authorities for environmental quality would always turn a blind eye.

4.7.2.3.6 Wildlife policy

Despite Tanzania's superb game parks and reserves, which accommodate spectacular wildlife, the most important living resource in the country as it provides protein, employment, income and revenue in terms of foreign exchange, the country has no wildlife policy. Consequently, Mtuy (1996:494) affirms that the wildlife sector is still underdeveloped and it is for this reason that the government is in the process of drafting a wildlife policy intended to address the development and conservation of this resource. The FAO (1995b:110) also states that a team has been tasked to develop Tanzania's wildlife policy. It is extremely unusual that Tanzania has no wildlife policy until today when the government pledged itself to preserve the country's wildlife resources for the current and future generations in a document entitled the Arusha Manifesto at independence, in September 1961. This commitment is emphasised below.

> The survival of our wildlife is a matter of grave concern to all of us in Africa. These wild creatures amid the wild places they inhabit are not only important as a source of wonder and inspiration but are an integral part of our natural resources and our future livelihood.
>
> In accepting the trusteeship of our wildlife we solemnly declare that we will do everything in our power to make sure that our children's grandchildren will be able to enjoy this rich and precious inheritance.
>
> The conservation of wildlife and wild places calls for specialist knowledge, trained manpower, and money, and we look to other nations to co-operate with us in this important task - the success or failure of which not only affects the continent of Africa but the rest of the world as well (TPCILM, 1994:263).

Apart from the Wildlife Act of 1974, such a grandiose commitment is not reflected in a definite course of action to be pursued to realise this vision.

The Tanzanian government earns revenues from export sales of trophies, live birds and animals; and recent reports indicate that there has been a steady increase in the value of such exports, in addition to increased domestic consumption of game meat (Kowero & O'Kting'ati, 1990:106). Thus, it is true to state that the government recognises environmental problems, but it does not contain practical measures to deal with them. Poaching and destruction of wildlife habitats, particularly in Maswa, Mkomazi, Manyara, Tarangire and Kitavi

National Parks and Game Reserves, where about 15% of the wildlife habitats have been consumed by agricultural-related activities demonstrate government's inability to face matters of environmental concern (Banyikwa, 1991:102). Certainly best known was the loss of 290,000 elephants, about 60 animals per day, due to poaching and despoliation of habitat during the 1980s (Cromwell, 1996a:111). Additionally, all 35 rhinos in Manyara National Park and 1,173 in Selous Game Reserve were lost within a decade, from 1976 to 1986. Large numbers of buffalo and wildebeest also perished (Banyikwa, 1991:104). It is also worth noting that there is serious poaching for the pot and cash as a result of 12 permanent settlements on the fringes of Serengeti National Park. Game meat from the Park is traded in the lakeside town of Musona, where it has gained a significant share of the market. The strategic location of the town near the border with Kenya probably plays a role in boosting the trade in bushmeat (Chenje & Johnson, 1994:51).

The degradation of many wildlife areas through overgrazing and overbrowsing can be attributed to the absence of wildlife policy in Tanzania. If the vegetation in the national parks and game reserves are to sustain wildlife, then scientific management of the animals becomes necessary. This can be achieved through direct manipulation of wildlife population sizes and composition by cropping, culling or relocation; and through manipulation of vegetation, using early or controlled burning and enrichment planting of forage and shelter species. To do this, requires a wildlife policy that should explain the purpose and use of protected areas such as national parks and game reserves; and why such management approaches are mandatory throughout the country, especially in areas where habitat degradation is envisaged. Furthermore, the lack of wildlife policy leaves the crucial issue of 'who owns or controls the bundle of rights associated with wildlife' unanswered. The answer to this question has significant implications for local communities' greater management control over wildlife. For example, Chenje and Johnson (1994:50) report that in Tanzania, wildlife found in game reserves and game controlled areas is classified as 'government trophy'; nonetheless, the wildlife habitats in these reserves are designated as commons. This contradiction should be rectified, as local people are becoming increasingly vocal about who should manage and control the utilisation of wildlife resources on lands, which belong to the community.

One contentious case in point, regarding ownership and control of wildlife resources erupted in 1992, when a group of six Maasai villages in Loliondo, a wildlife-rich area in the eastern part of Serengeti National Park, contested a government permit giving an exclusive hunting concession over their area to an Arab *sheikh*. The permit has not been withheld and the legal issue of ownership and control of wildlife resources ensues with much dissatisfaction on the part of Maasai tribesmen.

Under the *Ujamaa* Act of 1976, all land and resources on it belong to the villagers under whom they are registered. Explicitly, the law gives absolute control of wildlife resources to Maasai villagers. However,

undermining their influence over the management of wildlife resources, although this has legally been conferred upon them, is turning them against the resources with which they have lived in harmony for a considerable time. Unless it can be demonstrated that forests and the wildlife inside them are there to produce and supply goods required to satisfy local needs, the incentive for their protection are far-fetched.

Perhaps what happened in Amboseli Biosphere Reserve, which lies at the Kenyan-Tanzanian border concerning the Kenyan Maasai should have sent an undistorted message to the Tanzanian wildlife authorities. The buffer and transition areas of Amboseli Reserve are merged into what are collectively termed as dispersal areas, which are owned by the Maasai tribesmen. Increasing human and animal populations over the last two decades or so have exacerbated conflicts in resource use, with sharpened competition between cattle and wildlife for water and fodder. To reduce competition, the Maasai started spearing wildlife since the wild animals did not appeal to them, as such. However, when the Kenyan Wildlife Conservation and Management Department was disbanded and replaced by the Kenyan Wildlife Services, Maasai perception of wildlife started to change. This was because one of the policy interventions applied by the Kenyan Wildlife Services was that of sharing the revenue collected from the Park's entrance fees with the local Maasai living in the environs of the Park. The revenue that constitutes 25% of the total gate entry fees is disbursed in the form of community services such as schools, dispensaries, water and cattle dips. Although this initiative was taken as late as September 1991, its promise is manifested in the sharp decline in Maasai hostilities towards wildlife, with the number of reported cases of killed animals dropping almost to zero (Hadley, 1994:30).

The Maasai tribesmen in this situation have begun to see wildlife on a par with cattle, essential for their economic development. Schools, health centres and watering points are important for societal welfare, while dipping improves the health of their animals, which would not have been feasible without incurring personal costs.

While the management experience of one country may be useful to a neighbouring one, or to one with similar conditions, efforts to adopt or borrow policy and legislation from other countries have generally been fruitless because the cultural and legal foundations that facilitated their development cannot be imported. However, resource managers should use legal and policy experiences as a reference point from which to begin developing their own strategies, not as a blueprint to be imposed (McHenry, 1993:46). Therefore, here, the particularly thorny issues of resource ownership and rights of use should be clear, simple and capable of being implemented, since any legal structure that does not address these issues in a straightforward manner in the local context or undermines local people's resource management initiatives has the unpleasant effect of transforming local people who hunt wildlife only for food into lawbreakers. Granting hunting rights to some Arab *sheikh* on customary land without involving the concerned villagers would produce an attitude of

disinterest in the local Maasai and even antagonism between them and the state-controlled wildlife management. Government wildlife policy in this case should have been directed at satisfying most importantly, the economic want of the people in whose area the resource exists, otherwise the economic usefulness of the resource would never be appreciated by the local people. Once this has become the mood, the resource in question will inevitably be degraded. Therefore, it is important that national interests should not supersede local interests.

The repercussions of trampling on local people's rights forsake of national interests have been reiterated by the Tanzanian Director of Wildlife, who confesses that people's rights were ignored in the colonial period and even in recent years in establishing conservation areas. One case in point is the western part of the famous Serengeti that used to be the hunting ground of the people of Ikoma, Ikizu, Zanaki and others. When Serengeti became a national park, wardens became tough and prevented them from hunting in the areas where they had customary hunting rights. This happened without any commensurate alternative. It has therefore been emphasised that the history of the establishment of the national park holds the key to the persistent poaching in western Serengeti. The poachers are bitter that they were not involved from the beginning. They did not participate in the process that led to the establishment of the park. Poaching in western Serengeti is in fact a manifestation of latent frustrations against top-down decisions, which often come as *dos* and *don'ts*. Thus, the planning of national parks and other protected areas must take into account the rights and needs of the people who depended on the area before its designation as a conservation area. The essence of this is to make the surrounding people see the protected areas they have vacated as being beneficial to them; otherwise these areas would revert to quasi open-access resources since protected areas are too vast to be guarded by a few wardens (TPCILM, 1994:274). Moreover, it is improbable that Tanzania has the capacity to fence off its wildlife conservation areas like South Africa. It is noteworthy that *community participation* through benefit sharing, ownership and partnership is a key element in South Africa's environmental management and biodiversity policies.

4.7.2.3.7 Macroeconomic policy

There are two macroeconomic policies that influence forest conservation in Tanzania. The first is the *ujamaa*, which is a variant of African socialism and is therefore both an economic and political philosophy. *Ujamaa* or the villagisation policy required the State apparatus to control the major means of production, including forest resources[26]. Structural adjustment, which is "the process of helping an economy respond effectively to market signals, to reach the point at which producers and consumers confront prices that reflect resource scarcity and adjust their production and consumption decisions accordingly" (Convery, 1995:32), has important implications for forest conservation. These are attributable to a variety of interventions administered in the programme; for example, devaluation of the currency; removal or reduction of

subsidies/price controls; liquidation or restructuring and privatisation of state-owned assets; and so forth. It is plausible to state that the effects of SAP on Tanzania's forests are camouflaged in the other sectoral policies, since the programme is being implemented in almost, if not all government institutions.

4.7.2.3.7.1 Impact of the villagisation policy on forests

'Villagisation' was a policy pursued by the Tanzanian government during the late 1960s, throughout 1970s until the early 1980s. The policy was primarily aimed at forcing the rural populations to migrate and settle in artificially created large community villages. The equivalent of those predetermined community villages were the 'Native Reserves' that existed in the Republic of South Africa and Namibia. It is undeniable that Tanzania's community villages (*Ujamaa)* would have acquired the same name had the German and British colonial governments set them up. The main objective of villagisation, according to Van Buren (1995:928), was originally to raise output through collectivisation and large-scale agricultural production, but the results, from an agronomic perspective, were a dismal failure. The creation of *Ujamaa,* like the Native Reserves dismantled the customary or traditional socio-political institutions and hence affected the relationship between the land and forest resource users and the resources concerned, as the settlers were more frequently evicted from their familiar environments to be resettled in different physico-social environment: lowland people resettled in highland areas and *vice versa.* Furthermore, these villages created local population concentrations that strained the physiological densities of the settled lands. Mtuy (1996:497) reflects that "the villagisation programme of the 1970s contributed to the concentration of pressures on natural resources 'and' in some cases politicians closed their eyes to existing policies and laws where they were seen as obstacles to villagisation". These are where the importance of villagisation lies in this study.

Ujamaa, the local name for those extensive compulsory villages was contentious and caused much environmental degradation. For instance, the creation of high-density population centres resulted in continuous clearing of land for agriculture. This was exacerbated by a heavy dependence on woodfuel, which all culminated in an alarming rate of loss in forest cover – 25% of the forest area between 1980 and 1993. The loss of vegetal cover led to excessively high rates of soil erosion of about 55 tons/ha/annum in the worst affected areas. The government's preoccupation with the implementation of villagisation accorded a low priority to urban planning, although the rate of urban expansion was very high, about 10%/annum. Consequently, by the late 1980s, three-quarters of urban households still had no piped water, 12 of the country's 19 major towns still had no sewage systems and about two-thirds of urban garbage remained uncollected (Cromwell, 1996a:111).

In connection to forest and woodland management, the State saw the granting of village-level control (to village councils) as decentralisation, while for those millions compulsorily villagised such control was an

infringement upon previous rights enjoyed under customary tenure. The friction between the State and the adherents of customary land tenure has more recently led to the relaxation of the land laws dealing with the allocation of lands within villages; and renewed emphasis on the importance of 'private' landholding for farmers. This lax attitude belatedly adopted by the Tanzanian government has initiated out-migration in many parts of the country. People are moving away from the nucleated community settlements and are returning to lands vacated at the time of villagisation. Thus, local people's land rights, which the government thought had been liquidated by villagisation are being revisited. It has correctly been concluded by Shepherd *et al.* (1991:85-6) that "land rights put 'on ice' twenty or more years ago are now being reactivated".

The villagisation programme was born out of a policy; and the villagisation policy like any other policy, had a target – those who were affected by the policy, which was more than 80% of Tanzania's population by 1982. To implement a policy successfully, the government should have taken into account the receptivity and demands of those whom the policy would affect. Husch (1987:11) has emphasised that, "if a policy or some of its elements are resisted by the public the chances of success are greatly reduced or nullified". The recent rebellious attitude among settlers to return to their ancestral lands reflects such a resistance, which has created a forum for many Tanzanians to undermine not only the land laws, but other laws as well. Unless the government legally enforces the customary land rights and embarks on *privatisation* of certain land types for certain categories of land use, land and forest resource laws would continue to be ignored, the consequences of which are yet to be felt. Villagisation has caused much environmental devastation, particularly in ushering in deforestation with its related hardships. However, its future impact will depend on how the returnees perceive and use their ancestral lands; and how the government aims to intervene: with a generally perceived package of incentives or government-perceived package of incentives. This is extremely critical, because if the government acts in a manner to remind them that all land in the United Republic of Tanzania is a State land, they will undoubtedly adopt exploitative approaches to land and forest resource use and management. Moreover, exploitative resource use is easier for them (than wise resource management) since they have practised this for years in the community villages.

4.7.2.3.7.2 Structural adjustment programme

The structural adjustment interventions that are important to the environment include 'exchange rate policy' and 'the reductions in the public sector investments'. Exchange rate policy involves devaluation of the currency and trade liberalisation, which are adjustments to external market conditions. The underlying premise of external adjustments is that it will provide incentives to increase international competitiveness of tradable goods and shift production to export sectors. On the other hand, exchange rate reform is believed to shift internal terms of trade in favour of farmers, thereby stimulating on-farm investments.

4.7.2.3.7.2.1 Exchange rate policy

The unpleasant environmental effects of devaluation of Tanzania's shilling are that export of forest and wildlife resources is likely to increase due to their increasing profitability. Since exchange rate reform favours the export commodities, it has raised the prices of imported agricultural inputs and machinery beyond the reach of many smallholders. A study conducted in Tanzania indicates that rising seed prices and the collapsing State seed distribution programmes lessen the use of improved seed varieties. With undue access to improved agricultural technology by the majority of the country's farming community, agricultural intensification has suffered. To maintain desired levels of agricultural output without inputs necessitates expansion of agricultural holdings; and in the process deforestation and encroachment of marginally productive habitats have been promoted. Where extensification becomes difficult, smallholders reduce fallow periods between plantings; however, this increases the pressure on soils. Soil exhaustion in turn forces smallholders to target pristine forest and woodland soils, resulting in a vicious cycle of deforestation (Reed, 1996:306).

Tanzania employed fuel subsidies widely to encourage the consumption of fossil fuels as a way to avert excessive dependence on fuelwood consumption before the structural adjustment reforms. Trade liberalisation that involves removal of subsidies has increased the relative prices of imported energy sources such as petrol and kerosene and obviously also electrical appliances. In response, urban and rural Tanzanians shifted to firewood and charcoal consumption, with the net effect of increased rate of forest and woodland degradation and loss (Reed, 1996:315). Ironically, the removal of fuel subsidies forestalls the consumption of fossil fuels and lessens atmospheric pollution, provided alternative sources of energy other than biomass exist. Otherwise, it would be appropriate to use fossil fuels and maintain huge blocks of forests and woodlands as sinks to mitigate the incidences of air pollution. The UN Framework Convention on Climate Change is founded on the realisation that fossil fuels generate obnoxious gases, but these can be minimised by forests, not the other way!

4.7.2.3.7.2.2 Reductions in the public sector investments

SAP also involves reductions in environmental and social services as well as privatisation of state-owned assets. The Tanzanian government reduced expenditures for environmental goods and infrastructures, but tried to protect its employees against retrenchment by retaining them, but cutting out the funds that would permit them to perform their duties satisfactorily (Reed, 1996:316). For example, policymakers would retain employees, but would not provide them with vehicles to facilitate law enforcement; alternatively, they would not encourage hard work through incentive schemes such as bonus, salary increments or promotion. Consequently, government efforts to control the negative environmental effects of the private sector such as forest and wildlife poaching were not implemented. This caused many people to ignore forest laws, leading to

widespread environmental crimes. In fact, Tanzania's national parks and game reserves were characterised by environmental crimes, which Cromwell (1996a:111) indicated resulted in a loss of about 60 elephants per day during the 1980s. Also, there has been a consistent report about illegal logging of Tanzania's forests (Odhiambo, 1999b). These and other ensuing environmental crimes can be ascribed to SAP, which has waned the capacity of law enforcement agencies.

Reductions in the public sector investments also entailed cutbacks in the quality and scope of government-provided social services. The ultimate consequences of these reductions are reflected in the extent of poverty in the country, with the rural poor and women bearing the brunt of these cutbacks (Reed, 1996:316). Collapse of social services provokes poverty-induced environmental degradation such as deforestation and soil erosion, which is widespread in Tanzania. "Privatisation, which involved downsizing or dismantling state marketing boards for agricultural products and divesting transportation systems to the private sector" (Reed, 1996:317), works in a similar manner. The impacts of retrenchment on the standard of living in Tanzania are very drastic, since it has been stated that 51.1% of the country's population live below poverty line[5]. It is noteworthy that divesting transportation systems to the private sector is unlikely to create sustainable agriculture in Tanzania, where the majority of the population still needs to be empowered to access services in the private sector. In Tanzania, Mozambique, Zambia and other sub-Saharan countries transport network is incomplete. Therefore, abandoning transportation systems to the private sector will limit service delivery along well-developed transport infrastructures. This will consign the rural poor to a severe incidence of poverty, which will induce rural-to-peri-urban migration. Without formal employment, the peri-urban and rural families would turn to using natural resources to survive, particularly through burning charcoal and capturing animals. Poaching of wildlife is realistically widespread in Tanzania.

4.7.2.3.8 Transport policy

Tanzania's transport policy was declared in 1987, with the objective of developing a multimodal transport system throughout the country. This means, roads will be constructed into hitherto inaccessible areas. While this can be seen as offering opportunities for better management and utilisation of forest resources, the opening up of previously inaccessible areas may have adverse impacts on forest resources. This is because roads have the potential to attract settlements, thereby effecting loss of biological diversity as a consequence of encroachment of reserved lands, and destruction of unique ecological sites (Mtuy, 1996:494). Moreover, it has been stated that if there is one single government policy that has had a major and indisputable impact on enhancing conversion of forests to non-forest uses, it is road construction in forested areas. In Honduras, it was found that "those areas nearest to roads are most susceptible to deforestation. The further an area from a road, the smaller the percentage of area affected by deforestation. Beyond 5.0 km there was rapid drop in the percentage cleared" (Kaimowitz, 1996:40). In Panama, it has been shown that colonisation and eventual

deforestation are likely to occur within 2-10 km of either side of a rural road constructed in forested areas (Kaimowitz, 1996:40). Road construction, as highlighted above, promotes conversion of forests to other uses both directly and indirectly. By constructing roads to new areas makes it easier for rural farmers and loggers to enter forests and deforest, and it is cheaper to transport timber, fuelwood, agricultural produce and other produce, which may arise as a consequence of forest conversion. Furthermore, roads can also promote land speculation.

It is not only the government-constructed roads, which are primarily aimed at improving transport system in a country that cause deforestation. Private logging roads have been another major problem; and as a result, WRI classifies commercial logging of timber as one of the main causes of deforestation, not by virtue of the damage to non-target trees, but the opening of virgin areas for subsequent settlement. When forests are opened up by logging roads, shifting cultivators have better access to it, which contributes to the deforestation process (Watts, 1996:78). Hard-pressed individuals and communities that have lost customary rights without commensurate alternatives encroach forest areas opened up by logging roads, slash and burn the remaining stand, and practise shifting cultivation for a few years until soil fertility has been depleted, weed infestation is severe and crop yields are low. Only then do they move on, spreading out from logging roads in waves to clear another patch of forest, leaving behind a devastated land covered by bush, weeds and scrub on which trees do not easily regenerate (Watts, 1996:125).

Controlling settlement, land speculation and deforestation along newly constructed roads is invariably difficult. Therefore, construction of an ordinary road or a railroad through a forested area is an open invitation to convert forests to non-forest uses, or at least to change the structure of the forest ecosystem, especially in Tanzania, where government policy promotes resettlement of sedentary cultivators and pastoralists from degraded and deforested habitats to areas with lush vegetation. For example, people from Kilimanjaro had been resettled in the northern part of Morogoro Region, north-west of Handeni District and in Babati (Kaoneka, 1990:127).

The government of the United Republic of Tanzania should approach the issue of establishing a road network throughout the country very cautiously, as roads can induce deforestation in areas such as protected areas where deforestation is least called for. In planning road alignment, it would be appropriate to consider unique ecological features as physical barriers. This means, environmental impact studies should precede road development projects. Construction of logging roads should also be controlled, as it leads to loss of productive land, let alone its other effects. For instance, a 1,000 ha forest with a road density of 20m per ha and the right of way width of 20m will result in 40 ha of productive forest being taken by roads (Abeli, 1990:88). In reality, the Tanzanian government should have appreciated by now the impact of transport

facility on forest resources — the construction of 1,600 km long central railroad by the Germans and Tanzania-Zambia railroad after independence collectively caused much deforestation, both directly and indirectly (Watts, 1996:5).

4.7.3 Intersectoral policy co-ordination

It is worth noting that there are marked policy conflicts between forestry and external policies because there is no intersectoral policy co-ordination. For instance, agricultural policy calls for a rapid increase in the production of food and export crops, yet the agricultural policy-makers rarely address themselves to the adverse implications of such policies; the government transport policy aims to develop adequate road network in the country without realising that roads are more frequently the beginning of the end of forests, if constructed through forested areas; and so forth. There are also sectoral legislations, which undermine the legitimate resource conservation legislation. The operation of the Land Ordinance inside protected areas conflicts with the purpose for which the areas have been established; for instance, *Section 6* of the Land Ordinance has been used in recent years to locate lodges and grant rights of occupancy in the Serengeti and Ngorongoro conservation areas. *Section 69* of the Mining Act empowers the Minister of Energy and Minerals to designate any area for the prospecting for and mining of minerals. There is no statement on the exemption of conservation areas or inclusion of conservation agencies in recommending or restricting the siting of prospecting and mining operations. However, *Section 48* of the Petroleum Act restricts the exercise of exploration rights in a national park, forest and game reserve or the Ngorongoro Conservation Area, among others (TPCILM, 1994:270-1).

The lack of intersectoral policy and/or legislation co-ordination is visible in the environmental policy. For example, ADB (1995:26) observes that the "responsibility for the enforcement of environment-related legislation has been entrusted to many specialised agencies with the expertise in the management of a particular aspect of an environmental problem. This reflects the fragmentary approach to solving environmental problems". This fragmentary and uncoordinated approach to environmental management indicates the absence of an overall, central authority to oversee the co-ordinated implementation of the environmental policy. This is where Tanzania differs from South Africa, where there is a central authority to oversee and co-ordinate the implementation of environmental policy, but this central authority is ineffectual.

Intraministerial and departmental conflicts also require rectification. In fact, the lack of national wildlife policy in Tanzania exacerbates conflicts among Tanzania's institutions for natural resource conservation. For example, Serengeti Wildlife Research, Tanzania National Parks, Ngorongoro Conservation Area and the Division of Wildlife Management are cases in point where each organisation has its own way of managing areas of the same natural resources to the extent that they are under its charge. There is extreme

fragmentation of conservation policy along lines of institutional divisions and subdivisions. Many institutions with links to natural resource conservation are simply uncoordinated. The Director of Wildlife complains that there is no reason for not having one wildlife authority to oversee the management of national conservation areas. With one authority for all conserved areas, work would be co-ordinated better, and issues of policy formulation, interpretation and implementation will be addressed in a comprehensive manner, rather than in a sketchy and fragmented manner, which falls short of national aspirations (TPCILM, 1994:275). Therefore, there is an urgent need to have regular consultations between forestry and other types of land use to co-ordinate policy issues and monitor their impacts and interactions to minimise conflicts between policies, which are otherwise designed to promote valuable developments.

Also important is the need to resolve strategically the disharmony between 'land tenure' and 'land use', since this has a significant impact on the use and management of all land-based natural resources. This disharmony is certainly one of the major causes of the country's environmental problems.

4.7.4 Conclusions

This study aimed to assess the effects of forestry policy on the sustainability of forest resources in Tanzania. Accordingly, the conservation attributes of the forestry policy have been assessed, and there is ample evidence that the existing policy, which was unilaterally formulated by the government in 1953, but has undergone several reviews, is a general statement of intent. This is because there is no contemporary legislation for implementing the forestry policy; nevertheless, the policy statements are still valid, although the lack of implementation has made it extremely unpopular. Clearly, the existing forestry policy is unlikely to conserve the fairly extensive forests that cover an estimated 44% of the country's land surface. The apparent lack of capacity in the formulation of forestry legislation to balance between the well-being of the people and that of the trees, forests and the environment is mirrored further in the inability of the State to assess fully the contribution of forest resources in the Tanzanian national economy. For example, it has been stated that the forestry sector contributes 3.0% to the GDP and employs about 2.8% of the employed labour force. Certainly, these estimates are faulty because 91% of Tanzania's energy is derived from forests. This picture will become clearer if the opportunity cost of woodfuel is taken into account, let alone the timber and non-timber forest products such as honey and beeswax, medicinal plants, fodder, bushmeat and others. Furthermore, the proportion of the employed labour force in the informal forestry sector may exceed that in the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism.

With the above information appearing incorrect at first glance, it would be appropriate to assess the value of forests from the Tanzanian government's investment in sustainable forestry development. However, experience has shown that African governments typically plough back less than a quarter of the revenues

generated by the forestry sector. There is often the government attitude to liquidate forests and channel its revenues into other sectors, which are considered to be more modern or to have better growth potential. Without clearly thought-out policy and legislation for controlling the current reckless deforestation in Tanzania *now* and in the foreseeable future, it would be fair to state that Tanzania pursues a policy that sacrifices forest for other land use types without conducting appropriate cost-benefit analysis or environmental impact assessment.

Forest conservation is essentially *for* people and *by* people. Implicitly, there is a greater need for forest-dependent communities to participate interactively in designing, implementing and monitoring the institutions that govern the allocation of forest resources; otherwise the chances of forest conservation are greatly nullified. In Tanzania, there is no legal instrument that encourages the participation of civil society in decision-making. Consequently, forestry policy formulation is still considered a technical issue and the responsibility for developing the policy for managing the country's reasonably vast natural forests is vested in the Forestry and Beekeeping Division. This exclusionary attitude has led to the unpopularity of the forestry policy and its blunt instrument, the Forest Ordinance of 1959 that falls short of conserving forests outside reserves, and has not been implemented in the last 20-30 years. Therefore, gender-sensitive participatory forest management is yet a myth!

There is a widespread insecurity of land and forest resources in Tanzania, with forestlands in the public sector serving as open-access resources, while the reserves are also subjected to a certain degree of trespass. This combined with lack of law enforcement and corruption is eroding the government's revenues from the forest. The insecurity of land and forest resources has made the country's main forest product (woodfuel) to be collected free of charge, thereby causing disinvestment in private forestry. The price of woodfuel paid by consumers in Tanzania reflects only extraction and distribution costs and hence private cost, while in reality the price should have reflected social cost.

Tanzania has adequate lifeware both at the professional and technical levels; however, the poor working conditions in the government service have caused demotivation. Consequently, forest laws and regulations are not enforced and are not controlled or supervised from the above. Being an economically viable resource, forest officers have taken to illegal trade, bribery and hence corruption. This has led the Canadian government's International Development Research Centre to conclude that the Tanzanian government lacks proper mechanisms for forest conservation. On the other hand, policy evaluation is farfetched, since it is expected to be sanctioned by the forestry legislation that is currently obsolete. As the formulation and implementation of natural resource conservation policies are departmental responsibilities, there is no deliberate synergy between the forestry policy and other sectoral policies. If there are coincidental inter-

ministerial or departmental synergies, they have not been capitalised into a meaningful outcome due to lack of intersectoral policy co-ordination. There is realistically a poor communication between departments or divisions within a particular ministry.

Finally, the performance of a country's forestry policy can also be assessed by the link between the annual rates of forest depletion and recruitment; the size or tendency of the country's protected forests towards the global minimum of 10%; and also by the timeliness of forest resource data upon which policy considerations are based. In Tanzania, at the present rates of forest loss and recruitment, it will take at least 35 years to reforest a year's deforestation. 'Protected' forest reserves constitute 15% of the country's total land area, which is in excess of the 10% global target. Nonetheless, with illegal logging taking place in protected forest reserves, the term *protected* merits redefinition. Tanzania has not surveyed its forest reserves in the last 20 years; consequently, the Forestry and Beekeeping Division has no concrete estimate of the resources under its custodianship and the rate at which they disappear. It is therefore safe to state that national decisions concerning forests like the most recent forestry policy are based on some ghost forest resource data. This will lead to formulation of inappropriate forestry legislation, programmes and strategies in certain localities, thereby thwarting forest conservation efforts on the ground, where the theory must be put to practice.

The performance of Tanzania's forestry policy is summarised in the following Table 4.3. Accordingly, the country has a forest conservation index of 1.9, which indicates unsustainable forest management.

Table 4.3 Estimate of Tanzania's Forest Conservation Index (FCI)

Indicators	Scores
Protected forests	5
Forestation/deforestation ratio	1
Forest resources data	1
Monitoring and evaluation	1
Adequacy of external policies	1
Institutional capacity	3
Intersectoral policy co-ordination	1
Democracy in policy-making	1
Gender equity	1
Security of land tenure and ownership	2
Contribution to the GDP	3
Employment as a proportion of labour force	3
Investment in forestry development	N/A
Mean Score (FCI)	**1.9**

N/A = Not available

Chapter five

Zambia

5.1 Executive summary

The Zambian case study like the previous cases aims to evaluate the implications of forestry policy for the sustainability of the country's forest resources. Therefore, the conservation properties of Zambia's existing forestry policy have been assessed. This policy like the Tanzanian one was developed unilaterally by the state, and the subsequent reviews were also conducted in the same bureaucratic manner, sidelining rural forest-dependent communities. As a result, the law for implementing the policy does not address the participation of local communities in sustainable forest management. The law also fails to institutionalise monitoring and evaluation of the forestry policy. Zambia's forest resources like the South African and Tanzanian ones are also undervalued. Economic statistics indicate that the country's forests contribute about 3.0% to the GDP, although an estimated 90% of urban and almost 100% of rural households depend on energy derived from forest. However, the major achievement of the existing forestry policy is the reservation of about 10% of the country's landscape under forest cover, although this is being eroded by the inappropriate policies highlighted in the study.

The sustainability of Zambia's forest resources is also shaped by external policies. The most important external policy that defines forest conservation is the environmental policy which in Zambia is defined by the National Environmental Action Plan (NEAP). The 'sectoral action plans' of NEAP set the scope of all sectoral environmental policies, including forestry, and identifies deforestation as a major environmental issue. Furthermore, the signing and ratification of the multilateral environmental agreements have caused many institutional changes in the country. For example, the establishments of the Ministry of Environment and Natural Resources; the Environmental Council of Zambia; and a number of NGOs involved in natural resource conservation, *inter alia*. The National Action Programme for Desertification which lays down the foundation for implementing the Convention to Combat Desertification was initiated. Land tenure insecurity causes insecurity of forest resources and therefore discourages investment in forest conservation, especially on Traditional Lands where most of the country's forests occur. Land degradation and natural resource use conflicts are endemic in traditional areas because the costs of natural resource production and consumption are not always borne by the perpetrators.

The effects of other sectoral policies such as water, energy, population, agricultural, tourism, wildlife, macroeconomic and transport policies on Zambia's forests have been evaluated. The water policy makes no recourse to forest conservation despite the indirect role of forests in maintaining the integrity of catchment areas. Although more than 90% of Zambia's roundwood production is consumed locally as fuel by nearly 90% of urban homes and almost 100% of rural households, this importance is not reflected in the government policy, strategies or actions which seem to be directed at fossil fuels and electricity. The population policy strives to treat the symptoms of population growth rather than the underlying cultural factors which favour large families. Agriculture precedes forestry on the government political agenda; consequently, every farmer is free to deforest, as long as this is done in the name of agriculture. More importantly, the policy of agricultural market liberalisation impinges on forest resources. What appears to be a common ground between the tourism, wildlife and the new forestry policy is the 'participation of local communities' in natural resource conservation otherwise the tourism industry has proven counterproductive by discouraging forest and wildlife conservation. The structural adjustment programme influences deforestation through devaluation and trade liberalisation; and also through reductions in the public sector investments. There is no intersectoral policy co-ordination either during policy formulation or implementation.

5.2 Introduction

Zambia has extensive forests, covering about 42% of its total land area. Economic statistics indicate that these forests contribute about 3.0% to the GDP, although more than 90% of the population uses energy derived from forest ecosystems. The country's forests also maintain key environmental assets such as biological diversity and land, in addition to providing commodity products such as wood and non-wood forest products and services. Forests sequester CO_2, ameliorate extreme climatic/weather conditions and shield agricultural crops against desiccation. This promotes sustainable agriculture upon which the majority of the population depends. They are essential for tourism, since tourism in Zambia is wildlife-based and the majority of the country's forests are in national parks and game management areas {GMAs}. Furthermore, forests protect catchment areas of river systems, indirectly safeguarding fishery production. Most Zambians live along these rivers and depend on them for various uses. For example, all major agricultural schemes, hydropower and other major industrial establishments are situated along these main rivers, especially the Kafue. However, in Zambia, public decisions are not influenced by the pervasive nature of forest resources, but by the contribution to the GDP that appears to be rather conservative. Consequent to this undervaluation is the high rate of forest loss that occurs at about 851,000 ha/annum.

The Zambian Case Study like the South African and Tanzanian Cases aims to evaluate the consequences of forestry policy for the sustainability of the country's extensive forest resources. Worth mentioning, forest conservation policy does not operate independently of other policies; it is defined by overarching and crosscutting policies, while it hybridises with other sectoral policies to yield important results for forest conservation. Thus, the conservation properties of Zambia's existing forestry policy have been assessed. This policy like the Tanzanian one was developed unilaterally; and the subsequent policy updates/reviews were also conducted in the same manner. These reviews represent incremental policy formulation, and one of the important objectives grafted onto the policy during this process is the objective dealing with the 'participation of local communities in SFM'. However, this objective has not been translated into practice, since the Forests Act of 1973 does not reflect the same concern. Consequently, the mode of policy formulation is also echoed in the policy implementation. The insecurity of forest resource tenure to the state and forest-dependent communities threatens forest conservation; for example, deforestation occurs both in reserved and unreserved forests. Currently, gender equity and equality is a myth in Zambia's male dominated society, and there is no statement on comprehensive policy evaluation. Nevertheless, the most important characteristic of the existing policy is the reservation of about 10% of the country's total land area as production and protected forests. Current campaigns to add more forest reserves are unlikely to succeed because the Forestry Department has failed to manage the existing forest reserves in a

sustainable manner to convince both political and public interests about the need for more reserves.

Furthermore, the conservation properties of the new forestry policy that was formulated to level out the weaknesses of the existing policy, and that of its corresponding instrument, the Forests Act of 1999, have also been assessed. Unlike South Africa, forest conservation in Zambia is not enshrined in the country's 1991 supreme law, the constitution. However, there is a strong indication in the National Environmental Action Plan {NEAP} that a new constitution would certainly define forest and environmental protection. The NEAP is a comprehensive environmental policy document, identifying five major environmental issues that need to be addressed: air pollution, *deforestation, soil degradation*, water pollution and *wildlife depletion*. To tackle these issues, the government commenced the implementation of an Environmental Support Programme as the first step of a long-term effort to strengthen environmental capacities.

Zambia is a party to the multilateral environmental agreements {Convention on Biodiversity, Convention to Combat Desertification, Convention on Climate Change & CITES} which alongside the land policy constitute its crosscutting policies. The signing and ratification of the multilateral environmental agreements have caused many institutional changes in the country; for example, the establishments of the Ministry of Environment and Natural Resources; the Environmental Council of Zambia; and a number of NGOs involved in natural resource conservation, among others. The government with assistance from donors initiated the steps leading to the National Action Programme for Desertification during 1998. This Programme lays down the foundation for implementing the Convention to Combat Desertification. Conversely, Zambia's stance on the use of forest as a sink for CO_2 appears dubious. The large disparity between the annual rate of deforestation and that of forest recruitment indicates that more CO_2 emissions occur from forest harvests. The CITES ban on the international trade in elephant and rhino products has been counterproductive by *first*, removing the incentives for managing these big game species and *second*, by fuelling the demand for elephant and rhino products. Yet, the country has developed a stronger institutional capacity to control poaching in its national parks and GMAs than before the ban. Land tenure insecurity causes insecurity of forest resources and therefore discourages investment in forest conservation, especially on Traditional Lands where most of the country's forests occur. Traditional Lands are characterised by insecure communal tenure which is certainly the most important factor for depletion and degradation of forest resources in Zambia. Land degradation and natural resource use conflicts are endemic in traditional areas because sustainable management of natural resources is practised by those to whom they belong.

The effects of other sectoral policies such as water, energy, population, agricultural, tourism, wildlife, macroeconomic and transport policies on Zambia's forests have been evaluated. The water policy makes no recourse to forest conservation despite the indirect role of forests in maintaining the integrity of catchment areas. Although more than 90% of Zambia's roundwood production is consumed locally as fuel by nearly 90% of urban homes and almost 100% of rural households, this importance is not reflected in the government policy, strategies or actions which seem to be directed at fossil fuels and electricity. The population policy strives to treat the symptoms of population growth rather than the underlying cultural factors which favour large families. The heavy workloads and the severe time-pressure faced by women increase the need for child labour. 'Land tenure' also factors in encouraging large families in rural areas. Agriculture precedes forestry on the government political agenda; consequently, every farmer is free to deforest, as long as this is done in the name of agriculture and in consultation with a village's competent authority. More importantly, is the policy of agricultural market liberalisation which penalises the smallholder sector and therefore impinges on forest resources. Removal of subsidies on agricultural inputs, particularly chemical fertilisers and improved seed varieties puts them outside the reach of many smallholders, forcing them to maintain increased levels of agricultural output at the *extensive margin*.

Logically, tourism, wildlife and forestry policies are expected to reinforce each other. However, this is not the case for Zambia, where the tourism industry has proven counterproductive by discouraging forest and wildlife conservation; for example, seven national parks and 20 GMAs have been degraded as a result of tourism pressure. This should be blamed on the lack of intersectoral policy co-ordination between the three interrelated sectors during policy formulation process. What appears to be a common ground between the tourism, wildlife and the new forestry policy is the 'participation of local communities' in natural resource conservation. Nevertheless, community-based tourism projects in Zambia's GMAs, for instance, in the Lupande GMA tend to benefit only men, as it has been assumed incorrectly that women would naturally benefit from such male-centric developments.

The IMF/World Bank's structural adjustment programme {SAP} influences deforestation through *first*, exchange rate policy which results in devaluation and trade liberalisation; and *second*, through reductions in the public sector investments. The inability of the government to shield itself against the dynamics of the global economy that caused the collapse of copper prices yields the same consequences for forests like the SAP, especially by increasing the dependence load on forests. It is noteworthy that there is no document at hand that defines clearly the government's direction on transport, although there is a strong tendency to upgrade the existing dilapidated

road network, and to maintain the current rail transportation system in the country. Well-developed road network is essential for encouraging responsible tourism, sustainable agriculture and fisheries, and many other activities that may relieve pressure on forests. The chapter also draws attention to the apparent lack of intersectoral policy co-ordination, while it concludes by a brief glance at certain indicators which have been developed to assess the performances of the respective forestry policies.

5.3 Geography and climate

The landlocked Republic of Zambia shares borders with eight other sub-Saharan countries: Malawi and Mozambique to the east; Zimbabwe, Botswana and Namibia to the south; Angola to the west; and the Democratic Republic of Congo {formerly Zaire} and Tanzania to the north. Zambia covers a land area of 75.3 million ha (Persson, 1975:234; CSO, 1997:2 & Moyo *et al.*, 1993:270). FAO (1995a:13) puts this value at 74.1 million ha, while WRI (1987:256) estimates the total area at 75.3 million ha, with 74.1 million ha of land area and 1.2 million ha of inland waters.

Zambia is roughly situated in central Africa; and as a result, the majority of the country consists of the central African plateau with hills ranging in altitude from about 1,000 m to nearly 2,000 m above sea level. The Zambian plateau is deeply incised by four large rivers: the historically significant Zambezi, Kafue and Luangwa which belong to the Zambezi catchment and flow from north to south; and Luapula, in the Congo catchment and runs from south to north. The alluvial plains of the Kafue and the Zambezi with an elevation of about 300 m constitute the lowest-lying parts of the country (Moyo *et al.*, 1993:270). Although Moyo and others have categorised the climate of Zambia as tropical, the temperatures have generally been moderated by the height of the plateau over much of the country. Thus, Persson (1975:234) describes the climate of Zambia as mainly subtropical. The rainfall is highest in the northern and north-western parts of the country and falls mainly from November to April which marks the hot and wet season. The cool and dry season commences in April and ends in mid-August, while the hot and dry season is between mid-August and about early November (CSO, 1997:2).

The average annual rainfall during the hot and wet season is 600 mm to 900 mm in the south and over 1,250 mm in the north. The high rainfall areas are the Copperbelt, Luapula, Northern and North-western Provinces. Despite the observation of above-normal rainfall in the Northern and Luapula Provinces, the rains have diminished and are becoming increasingly erratic in the Southern Province which until recently has been termed the 'breadbasket' of the country (MFED, 1999:52). This also earned the Province a nickname of 'Maizebelt'[u]. Today, the Southern

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Province is still an agriculturally productive area, although expectations for increased agricultural production to keep pace with the rapidly increasing human population are shifting away to the Central and Eastern Provinces. Generally, soils are not a limiting factor to tree establishment and growth when placed under a good management regime.

5.4 Forest resources

The size of Zambia's forest resources is as controversial as presented in the following Table 5.1.

Table 5.1: Area of forest and woodland resources in thousand (000) ha

Source	Forest & other wooded land	%	Natural Forest	%	Plantations	Annual Reforest.
FAO (1995a:13)	60,337	81	32,301	43	48.0	7.9
FAO (2001:150; [1])	n.a	n.a	31,246	42	75.0	n.a
Cromwell (1996b:136)	n.a	n.a	n.a	45	n.a	n.a
Akapelwa (1996:527-8, 542)	57,613*	78	n.a	n.a	65.0	n.a
Chenje & Johnson (1994:139)	67,606	91	n.a	n.a	62.9	2.0
Moyo *et al.* (1993:285/6)	60,240	81	37,555	51	n.a	n.a
WRI (1991:292)	29,510	40	n.a	n.a	n.a	3.0
Simson (1985:56)	n.a	n.a	37,000	50	n.a	n.a
Persson (1975:234)	n.a	n.a	34,000	46	8.6	2.4

Legend

n.a Not available

* 4,832,035 ha of closed forests which represents 6.5%; and 52,780,690 ha of *miombo* woodlands.

With the exception of World Resources Institute's estimate, all sources indicate that Zambia has extensive forest and woodland resources, covering more than three-quarters of its total land area. Although the FAO's estimate may not readily be accepted by many investigators due to its economic orientation, the state-of-the-art technology employed in abstracting the information gives more authority to its estimate than any other source. At 42% of

natural forest coverage, Zambia has more intact forest and *miombo* woodland than any other country in the region[33]. These resources can broadly be classified into seven types.

5.4.1 *Miombo* woodland

Miombo woodlands are generally considered to be deciduous, but they are neither strictly evergreen nor deciduous. They are best regarded as semi-evergreen. A typical *miombo* woodland is defined as any woodland which is dominated by species of three related genera in the family Leguminosae: *Brachystegia, Isoberlinia* and *Julbernadia* species. Unlike most other leguminous species, these do not possess nitrogen-fixing abilities. The *Brachystegia-Isoberlinia-Julbernadia* combination covers large areas in the northern part of the country, in the border with the DRC. It is this forest type that is used for shifting cultivation and tobacco farming, and it is from this kind of bush that the mining timber and woodfuel used on the Copperbelt are extracted (Fanshawe, 1962:1). In the wetter north, riparian evergreen forest occurs along streams, however, the best area of *miombo* is found in the North-western Province, where the maximum yield is 15 m^3/ha of sawnwood and 50 m^3/ha of fuelwood, otherwise the normal yield for sawnwood varies from 2-5 m^3/ha. The Province also has some limited evergreen gallery forests along watercourses. An inventory of 108,000 ha in the Copperbelt area gave a total mean value of 125 m^3/ha (Persson, 1975:234).

5.4.2 Mopane woodland

In Zambia, the amount of rainfall decreases from north to south; and as a result, the quantity of *miombo* woodlands decreases progressively as one leaves the north and approaches the agricultural frontier in the south. The heavy clay soils of the major river valleys in the Southern, Central and Eastern Provinces where rains are a limiting factor carry open woodland savanna with an abundant presence of *Colophospermum mopane*. *Mopane* is a very distinctive species in the Luangwa and Zambezi valleys, where it forms extensive pure stands on the valley floor and lower escarpment slopes. Whilst most people associate mopane with the hot dry valleys, it also occurs quite extensively on the southern plateau on particular soil types which are alkaline and contain high concentrations of sodium salts. The clays in these soils swell on absorbing water, and rapidly become impervious. These conditions restrict the growth of most trees, and as mopane develops a superficial root system which is capable of suppressing perennial grasses, it is not uncommon to see isolated trees in a circle of taller perennial grasses with only sparse annual grasses and herbs under the trees. The suppression of perennial grasses enhances surface runoff and soil erosion. This makes gully erosion a common feature of mopane woodlands (Persson, 1975:234).

5.4.3 *Baikiaea plurijuga* (Zambezi Teak) forest

Baikiaea plurijuga forest, commonly known as the 'Zambezi teak forest' occurs mostly on the Kalahari sand in the Southern and Western Provinces in association with *Pterocarpus angolensis — mukwa*. *Baikiaea plurijuga* forest is deciduous and thrives in areas of much lower rainfall in Sesheke, Senanga and Kalomo Districts, from where it extends to the adjacent areas of neighbouring countries. This forest type has a dense understorey of thorny growth, including *Acacia* species. It has been noted that the Zambezi teak covers an expanse of 650,000 ha. The productivity of the stand on better *barotse* soils where it is known to establish well is estimated at 15-20 m^3/ha; the stocking rarely exceeds 70 m^3/ha. The merchantable timber was expected to run out in 1990, if the level of exploitation during the 1970s was maintained. On the other hand, the available exploitable quantities of *Pterocarpus angolensis* may now be in the order of only 100,000 m^3. There is no efficient utilisation of *mukwa* timber, particularly in the sawmills because the demand is mainly for the brown heartwood (Persson, 1975:234-6). *Burkea africana, Dialium engleanum* and *Colophospermum* species are also found in the Western Province (Moyo *et al.*, 1993:285).

5.4.4 *Cryptosepalum exfoliatum* forest

This forest type occurs mainly in the northern higher-rainfall areas, especially in the northern parts of Northern Province[v]. However, it has also been recorded in the lower-rainfall areas of the North-western and Western Provinces. It is classified as a dry-evergreen forest type, consisting of a very dense evergreen shrub matrix, mostly about four metres in height, with a fairly light overwood in which *Cryptosepalum exfoliatum* subspecies *pseudotaxus* is the dominant tree, with *Guibourtia coleosperma*, over a wide area of Kalahari sand in the lower rainfall areas of Zambesi, Kabompo and Kaoma Districts. *Cryptosepalum* forest can attain a canopy height of 10 and 20 m, depending on the local environment (Storrs, 1995:140). The two main blocks of *Cryptosepalum* forest, occurring to the north and south of the Kabompo River respectively, constitute the largest area of tropical evergreen forest in Africa {and in the world?} outside the Equatorial zone[33].

5.4.5 Montane forest

With only four mountains exceeding an altitude of 2,000 m above sea level, Zambia lacks the spectacular mountains of most of its neighbours. These four are the Nyika Plateau which is mostly in Malawi; the Mafinga Mountains, also on the Malawian border; Mukutu, an isolated block in Isoka District to the west of the Nyika Plateau; and another isolated peak called Sunzu which is located in the south-eastern Mbala, according to the above website. These mountains form the basis of Zambia's limited montane forest which is characterised by a

[v] *Cryptosepalum exfoliatum* subspecies *exfoliatum* which occurs in the Northern Province, is a shrub or a small tree.

three-storeyed forest with a closed, evergreen canopy of about 27 m high. The understorey is also evergreen and ranges from nine to 18 m in height, and below this is an evergreen shrub layer. Storrs (1995:xi) confirms the patchy occurrence of montane forests on the Nyika Plateau, near the top of the Mukutu Mountains in Chama District and on the Mafinga in Isoka District. Specifically, these montane forests are found at heads of streams and on valley sides on deep sandy soils, and are very sensitive to fire which characterises the lower mountain edges.

5.4.6 Swampy forest

This forest type occurs around Lake Bangweulu that is jointly shared by the Northern and Luapula Provinces, and also around Lake Mweru, in Luapula Province. Swampy forest consists of a distinct mixture of tree growth which is characterised by species such as *Erythrophleum africanum, Pterocarpus angolensis, Parinari curatellifolia, Afzelia quanzensis, Albizia* and *Amblygonocarpus* species. Small trees such as *Terminalia, Combretum* and others are also available around these lakes (Moyo *et al.*, 1993:285; Fanshawe, 1962:1). This may be a three-storeyed evergreen, closed or open canopy forest. Many of the dominant trees in a swampy forest have developed conspicuous buttresses and stilt roots to give stability in their damp environment. They occur throughout the higher-rainfall areas from Mwinilunga District in the North-western to Luapula and Northern Provinces, where they grow at stream heads, along the upper reaches of streams and estuaries of the northern lakes where the water table is near or cuts the land surface throughout the year. Riparian forest which occurs in narrow strips along streams and on wide flats beside rivers and lakes (Storrs, 1995:xii; [33]) may be classified as a swampy forest type.

5.4.7 Plantation forest

In Zambia, exotic trees were introduced as early as 1935; however, it was not until the early 1960s that plantation forestry was fully initiated, primarily to supply timber to the mining industry in the Copperbelt. The non-native species introduced into the country for this purpose were mainly *Pinus kesiya* and *Eucalyptus grandis*. Today, nearly four decades later, the Copperbelt area still has the country's largest proportion of plantations, making up to 85% of all the artificially propagated forests. It has 55,000 ha of plantations, while the other provinces jointly have a total of 10,000 ha (Akapelwa, 1996:542; Persson, 1975:236).

5.5 Utilisation of forest resources

Zambia's forest resources are important both for local and international consumers. To many Zambians forest is a source of employment, energy, timber, fodder, medicine, food and recreation. Around 32% of Zambia's forests are inside protected areas, serving as wildlife habitats; these are important to overseas tourists who travel thousands of kilometres to enjoy game viewing and hunting. Protected forests play important role in hydrological cycle, regulate stream flow and prevent soil erosion due to the binding effects of tree roots and the overlying litter. Equally significant is the ability of trees and forests to immobilise CO_2 which is generally recognised as an important GHG, with implications for global warming. These functions are imperative to a female smallholder in rural Luapula Province who is concerned about depletion of soil fertility due to erosion as they are to a Canadian industrialist who wants to see elephants in their natural environment in the Luangwa Valley. Unfortunately, such and many other indispensable functions of forests are not captured by the existing systems of resource accounting. Zambia is not immune to this flaw, as briefly discussed below.

5.5.1 Contribution to the GDP

Economic statistics suggest that the contribution of forestry to the GDP is about 3.0% (FAO, 1995b:120). However, this does not agree with some previous estimates for the period ranging from 1987 to 1991, when the sector's contributions to the GDP were enumerated as 0.7, 0.7, 0.7, 0.9 and 0.9% despite all its abundant resources. Ironically, for the same period, fisheries which may indirectly be a by-product of catchment forests, contributed 1.2, 1.3, 1.3, 1.2 and 1.2% (Akapelwa, 1996:532). These estimates misrepresent the position of forestry in the Zambian economy. Consequent to this undervaluation is the resultant underfunding of the Forestry Department.

The important contribution of forestry to the national economy should draw an unwavering support from the government budgetary to increase and sustain the sector's socio-economic, cultural and ecological performances. Unfortunately, this is not the case for Zambia, where the government has failed to allocate adequate resources for sustainable forestry development, although its contribution to the economy is steadily increasing. Table 5.2 shows the financial resources availed to the Forestry Department in relation to other government departments in the field of natural resource management (Akapelwa, 1996:540).

Table 5.2: Government allocation of funds to selected natural resources management departments (million US$).

Department	1988	1989	1990	1991	1992	1993	1994	1995
Forestry	3.1	2.1	2.1	1.1	0.8	0.8	1.1	0.9
Agriculture	13.4	18.1	13.4	16.6	7.4	18.4	22.0	-
Wildlife	2.6	1.9	5.0	3.4	2.1	2.1*	4.1	4.5
Fisheries	2.3	2.0	2.9	2.0	1.4	1.6	1.8	4.2
Water	7.0	6.8	3.1	4.9	5.3	6.7	20.4	30.4
Energy	3.2	1.6	4.1	1.7	1.4	2.8	4.0	6.1

Source: Akapelwa, 1996:540.

* Does not include capital expenditure.

The Forestry Department is the least funded of government departments. The above table also reflects the amount of support that the Zambian forestry has received from the international community. Forest constitutes a natural habitat to wildlife and maintains the integrity of riverine systems which are essential for fisheries production. Paradoxically, the government invests more resources in water, wildlife and fishery resources than in forestry that forms the natural resource base. More perplexing is the issue of energy in Zambia, where nearly 90% of urban homes and almost 100% of rural homes use energy derived from wood (FAO, 1995b:120; the Netherlands Ministry of Foreign Affairs, 1997:63). Table 5.3 shows the relative use of different household energy sources. Accordingly, rural households consume 59 terajoules, of which approximately 99% are derived from woodfuel; households in small urban areas utilise 6.0 terajoules, with 92% of the amount being wood-based; while 93% of urban areas' 15 terajoules are also forest-dependent.

There is still a heavy reliance on biomass energy now, although the observations were made for 1980. It is plausible that this dependence has even increased, as the population increases, causing many people to rely on woodfuel extraction for sustenance. Thus, the MENR (1994:45) stated that the charcoal industry in 1991 constituted 2.3% of the GDP, while the rest of the forestry sector inputted 3.0%. This contradicts the Central Statistics Office's {CSO} data that was quoted by Akapelwa (1996:532); and throws doubt on the ability of the organisation to compute the value of the country's biological resources. Obviously, the opportunity cost of woodfuel or its import parity has not been taken into account in any of these calculations; otherwise the country's forests would educe more political support.

Table 5.3: Relative use of different household energy sources in Zambia.

Source sources	Rural areas	Small urban areas	Urban areas
Total amount Consumed	**59 TJ**	**06TJ**	**15TJ**
Electricity	0.2%	4.0%	1.2%
Kerosene	0.9%	4.0%	2.4%
Charcoal	1.4%	63.7%	89.2%
Firewood	97.5%	28.3%	7.2%
	100%	100%	100%

TJ=Terajoules

Source: SADC (cited in Moyo *et al.*, 1993:291).

5.5.1.1 Forest products

Woodfuel is still the most important source of energy in Zambia. Most of the households depend on it as a primary source of energy, either in its raw form or after carbonisation. Charcoal is mainly used by urban households, especially the low and middle-income, who form the largest portion of the country's labour force. Increased charcoal consumption in the urban sector is due to its transport cost advantage over firewood and also due to its low smoke content. The low and middle-income urban folks also find it cheaper to use woodfuel than electricity because it is difficult to accumulate sufficient money to buy electrical appliances, as the country has no hire-purchase system. Estimates of per capita annual energy consumption in the household sector in 1980 confirm the significance of woodfuel in the Zambian economy, as illustrated in the following Table 5.4.

Table 5.4: Per capita annual energy consumption levels in the household sector.

Source	Rural areas	Small urban areas	Large urban areas
Electricity (kWh)	13.0	36.0	90.0
Kerosene (litre)	4.1	6.5	8.0
Charcoal (kg)	8.0	68.0	161.0
Firewood (m^3)	2.5	1.4	0.3

Source: SADC (cited in Moyo *et al.*, 1993:292).

It is apparent that the majority of Zambia's roundwood is consumed locally, as woodfuel which accounts for about 93% of all the wood extracted from natural forests. This is elucidated in the following Table 5.5.

Table 5.5: Roundwood[w] production and consumption during a five-year period in thousand (000) cubic metres.

Year	1991	1992	1993	1994	1995
Production	13111	13560	14055	14598	14613
Consumption	13111	13549	14026	14569	14583
Woodfuel component	12322	12707	13093	13465	13465
Percentage*	94	94	93	92	92

Source: FAO Forest Products Yearbook 1991-1995 (45-75, 413-414).

* Woodfuel consumption as a percentage of total roundwood production.

In addition to woodfuel which forms the bulk of the country's wood harvests, Zambia exports utility timber and general joinery to Namibia (Siyambango, 1996:404), and to some unspecified countries. There are 28 government, parastatal and private sawmills to convert timber for both domestic use and export. A timber export record for 1992 to 1995 indicates that Zambia exported 11,000 m^3, 29,000 m^3, 29,000 m^3 and 30,000 m^3 of roundwood equivalent of timber (FAO, 1997:51). It is clear that there has had been successive increments in the quantity of timber harvested; and according to Akapelwa (1996:537), this is in response to the lifting of a ban on export of timber and timber products in 1993. This has created a 'rush to export attitude' in timber producers. There are also two plywood plants, one particleboard plant and another paper recycling plant operating in the country. In addition to timber, Zambia's forests supplied around 1,531 tons of honey and 120 tons of beeswax products between 1965 and 1993. About half of Zambia's honey and beeswax production comes from the Western and North-western Provinces (Akapelwa, 1996:543). Exports of these products to other countries are a strong incentive to increase their production. The natural forests and woodlands widely permit hunting of wildlife, fishing and collection of supplementary food such as edible berries, roots, caterpillars and other insects, in addition to medicinal herbs (Moyo *et al.*, 1993:287).

Furthermore, Moyo *et al.* (1993:287) indicate that the utilisation of indigenous forests is patchily distributed throughout Zambia. In the south-western corner of the country, *Baikiaea plurijuga* and *Pterocarpus angolensis* are extensively felled along a private railway in the Livingstone area and are used for construction, flooring, railway sleepers, furniture and mine props, while some are exported. A low quality timber is also produced in the

[w] Roundwood is wood in the rough, that is, wood in its natural state as felled or otherwise harvested with or without bark, round, split, roughly squared or in other form.

north and larger quantities of wood, mainly from the Copperbelt Province are used for mine construction and pit props.

5.5.1.2 Forest services

Zambia's forests are natural habitats for wild fauna and flora, i.e., they are important media for biodiversity conservation, since the majority of the country's forests are in national parks and GMAs. These protected areas have both material and intrinsic values to Zambians and non-Zambians alike. Forests protect soils from degradation and shield crops against desiccation, thereby promoting sustainable agriculture upon which the majority of the population depends. Akapelwa (1996:531) reports that Zambia's forests also protect catchment areas of river systems. Most Zambians live along these rivers and depend on them for various uses; all major agricultural schemes, hydropower and other major industrial establishments are situated along these main rivers, especially the Kafue. It is essential to note that this is not a comprehensive catalogue of forest services in Zambia. Most forest functions pass uncaptured by the existing resource valuation techniques.

5.5.2 Employment

There is no estimate of the proportion of Zambia's labour force formally and informally engaged in the forestry sector as a whole. The only figure is for the charcoal industry that is reported to have provided fulltime employment to about 41,000 people in suburban and rural areas, and another 4,500 in charcoal transportation, marketing and distribution (MENR, 1994:45). The new forestry policy whose formulation was supposed to invoke forest benefits, including those accruing from employment fails to disclose the number of Zambians employed by the sector. Rather, it concedes that it is unfeasible to appreciate the extent of employment opportunities in the forestry sector because figures on employment are frequently given as aggregates for Agriculture, Fisheries and Forestry. The policy document asserts that "forestry's contribution to the national economy is grossly under-reported. The value of the natural forests is unknown..." (MENR, 1998:6). Forestry has traditionally failed to attract government investment on the magnitude needed to expand and protect forest resources. The onus for the Zambian Forestry Department is to translate needs into terms attractive to decision-makers; for example, quoting numbers of people who enjoy employment opportunities with forestry and wood-based industries, *inter alia*. Politicians need figures for decision-making and without good statistics Zambian forestry professionals have failed to lift forestry higher up the government political agenda. It is understandable now why forest depletion and degradation due to illegal operations lack political appeal in the country.

5.6 Rates of forest depletion and recruitment

Complete prevention of forest degradation and loss is both unrealistic and ridiculous. Rural homesteads, agricultural holdings and other economic infrastructures such as transport, industrial complexes, towns and cities need land for establishment that entails deforestation, particularly in a heavily forested area. Implicitly, a certain amount of deforestation should be allowed. However, the suitability of such forested areas for conversion to the respective uses must be established and that they be released in an orderly manner. This is where CBA/EIA becomes a potent tool in forest conservation. However, the situation is different for a country where there is plenty of treeless land that could be afforested with appropriate trees to compensate for forest loss that occurs in another part of the country. In this case, forest conservation at a national scale is achieved when the annual rate of afforestation with environmentally relevant species and/or reforestation cancels the annual rate of forest loss. In Zambia, SFM should therefore result in narrowing the gap between forest loss and recruitment; otherwise recurring cycle of deforestation indicates lack of sustainability, as discussed in the following sections.

5.6.1 The annual rate of deforestation

Although there are many estimates concerning the rate at which Zambia's forests are deforested as shown in the following Table 5.5, the most authentic estimate is the FAO's most recent one, i.e., 851,000 ha/annum. Zambia's annual rate of deforestation exceeds the annual rate of forest depletion for Africa which has been put at 0.8%. This exceeds the world rate of about 0.3%/annum by far (FAO, 2001:154; [1]).

Table 5.6: Estimates of rates of deforestation

Source	Extent (ha)	Percentage
FAO (1995a:18); FAO (1995b:120)	363,000	1.1
FAO (2001:154; [1])	851,000	2.4
Akapelwa (1996:538)	300,000	0.9[a]
Cromwell (1996b:136)	900,000	2.6
Chenje & Johnson (1994:145 & 137)	480,000[b] 43,000[c]	-
WRI (1992:292)	70,000	0.2[d]

Legend

[a] Charcoal burning and agricultural component of deforestation.
[b] Trees consumed by the mining industry in the Copperbelt area alone.
[c] Charcoal burning alone.
[d] Estimated for a total forest and woodland area of 29.5 million ha.

5.6.2 The annual rate of forest establishment

In many African countries, the annual rate of forest establishment through afforestation and/or reforestation is influenced by the size of forest resources. Countries that have extensive forest cover are reluctant to invest in forest regeneration, while those with limited or no forest invest more in plantation establishment. The robust afforestation programmes in Libya and other Near East countries with scanty forest resources are classical examples. South Africa is heading in the same direction, although the choice of tree species is inappropriate, dampening the opportunities for SFM. It is therefore expected that there should be a wider gap between the annual rates of afforestation and/or reforestation and forest loss in Zambia. For example, Zambia has 65,000 ha of plantations (Akapelwa, 1996:539) which is less than one-twelfth of the annual rate of deforestation, although plantation forestry commenced in the early 1960s. Conversely, FAO (1995a:18) reports the annual rate of afforestation at about 2,100 ha. At this rate it would take Zambia at least 400 years to reforest a year's deforestation, using indigenous species. This suggests unsustainable forest management; and the factors leading to this scenario are probed below.

5.7 Policies influencing the conservation of forest resources

Although the country data on deforestation differ widely, as portrayed in Table 5.6, it is clear that forests in Zambia are being deforested. The underlying factors leading to the country's forest loss include forestry, overarching, crosscutting and sectoral policies. The 'separate' and 'synergistic' effects of these complex

meshwork of policies on the sustainability of forest resources often defy rational analysis, although they are generally known to embody incentives to establish land uses and other practices that are economically as well as ecologically inviable. The most important overarching, crosscutting and sectoral policies which control forest use and management, are examined in the following sections that commence with the forestry-specific policy and legislation.

5.7.1 Forestry policy

This is the policy specifically designed for the forestry sector to encourage forest conservation. Consequently, it is expected to encompass sufficient regulatory and incentive-based instruments that could mobilise forest-dependent communities to indulge in sustainable forest use and management. Currently, there are two such policies in the country: the existing and the new forestry policies. This study is primarily focused on the existing policy that has influenced forest conservation since the 1960s, when it was first implemented. However, the conservation strengths and inadequacies of the new forestry policy is also assessed, although only in an awareness heightening manner, since it is too premature to hold it accountable for the existing forestry practices in the country, even if it had come into effect two years ago.

5.7.1.1 The existing forestry policy

Zambia's existing forestry policy dates back to the early 1960s, when the country's first forestry policy was formulated. Since then, the policy has remained largely the same because for the first 27 years of the country's independence it was under the same government which saw no need to change it as long as the actors and the environment in which the policy operated remained the same. Moreover, the current forestry policy was derived from the UNIP[x] manifesto of 1959, which called for designation of 15% of the national land base as gazetted production and protection forest reserves (Akapelwa, 1996:534). This proportion is in access of the 12% limit which has become a goal of many nations after the Brundtland Commission and the Convention on Biological Diversity signed at the Earth Summit, in Rio de Janeiro, in June 1992 (Van Kooten & Vertinsky, 1999:17). The second factor which hindered the development of the forestry policy, is the lack of information on which to base a revised or new forestry policy.

[x] United Nation Independence Party ruled from independence in 1964 to 1991, when it was replaced by the Movement for Multi-party Democracy {MMD}.

5.7.1.1.1 Policy formulation

The existing forestry policy was formulated in the 1960s soon after the country's independence and has not been reviewed substantially since then. The policy was formulated at a time when the Forestry Department was the only key stakeholder; consequently, it was devised as a set of instructions that the Department must follow. This continued until 1991, when a major change concerning the participation of civil society in forest conservation was introduced (Akapelwa, 1996:533). The participation of civil society was encouraged as a result of change in the government — the existing government appears to embrace democratic values. However, the participation of non-state stakeholders was introduced into the policy incrementally by the bureaucracy, rather than by consultation with the concerned parties.

5.7.1.1.1.1 The government

The existing forestry policy was formulated unilaterally by the state. The reviews which took place were also bureaucratically incremental in nature and therefore did not leave any room for other interest groups. Incrementally formulated policies become more complex through time and often become imprecise, causing confusion in their implementation. An imprecise policy creates negative effects within the government agency responsible for executing it. This best explains the origin of Zambia's new forestry policy.

5.7.1.1.1.2 The salient features of the policy

The existing forestry policy consists of seven primary objectives. The resource conservation characteristics of each policy statement are examined below.

1. **To carry out in each forest district surveys to determine the extent and quality of forest resources to facilitate setting aside forest areas needed to be managed for land protection and for local and industrial uses**

Regular forest surveys and assessments are essential to provide data for effective management of forest resources. These data enable forestry scientists to locate and quantify forest resources which are vital in preparing management plans and harvesting regimes, in addition to deciding on the location, number and levels of timber exploitation operations. Forest surveys also assist in pinpointing areas where interventions such as enrichment plantings are needed (Akapelwa, 1996:533). Miller (1990:391) has emphasised the importance of forest inventory as the beginning of the management process. The purpose of an inventory and assessment team is to get information about past growth, site quality and projected future growth. A forest survey determines the species present, age classes, and relationships of commercially viable species with other plant and animal

species and soil conditions. Scientists also consider the best sites for logging roads {if roads are the viable options} and evaluate their effects on scenic and historic resources during the inventory. Nicholas *et al.* (1998:332) have also stressed that forest resource inventory provides a critical benchmark from which to judge the degree of change occurring in the system.

Despite the importance of forest surveying and the relative ease with which it is performed due to the development of computer-aided remote sensing, Zambia had surveyed its forest resources only once, and that was in the 1970s. A district-by-district survey of Zambia's forest resources which began in the early 1950s, was completed in 1967, however, the compilation of the data was still continuing (Persson, 1975:236). That single forest survey impeded the development of Zambia's forestry policy, because when revising, reforming or reformulating a forestry policy, it is important to understand fully the quality and the extent of the resource, and the factors influencing it. Survey data for the 1960s or 1970s are obsolete and unreliable as a basis for a new forestry policy. Akapelwa (1996:539) reiterates that instances can be found when *a would-be* concessionaire has been referred to a particular forest area on the basis of the previous inventories only to discover that the forest is no longer there. This calls attention to not only surveying, but also specifying the regularity with which it is undertaken. The importance of forest resource data has clearly been emphasised by the European Commission which points out that "sound information on which to base appropriate decisions is necessary for people at all levels in the forest sector, including politicians, administrators, farmers, forest-dependent people and foresters" (European Commission, 1996:143).

2. To place under government control and to manage forest areas needed for the protection of land against floods, erosion and desiccation and for watershed protection

The second aspect of the policy deals with the designation of state forest patrimony for environmental protection. The implementation of this objective has resulted in the reservation of about 10% of the total land area. This is equivalent to 7.6 million ha (Akapelwa, 1996:542). A recent report has indicated that 9.9% of the total land area has been gazetted as forest reserves. Forty-four percent of the total forest estate has been set aside for production, 30% for production and protection, respectively, while the remaining 26% has solely been designated for protection (MENR, 1998:5).

3. To conduct all necessary research work on the various aspects of indigenous and exotic forests

This seeks to establish and strengthen research in the various aspects of forestry, including growing, management, protection, harvesting and utilisation of both indigenous and exotic forest resources. This will

improve stocking, composition and quality of the country's forest resources which will in turn increase their productivity and utilisation to enhance conservation of the natural resource base. Clearly, forestry research in Zambia has been centred on exploitation of natural forest resources and the establishment of industrial plantations. Research into fuelwood and charcoal which account for more than 90% of total wood consumption has been ignored in the above policy statement. For example, Akapelwa (1996:542) has reported that Zambia has two well-established Forestry Research Divisions. The first deals with research into silviculture, soils, genetics, mensuration, pathology and entomology, while the second division deals with the utilisation of timber products. Thus, research to enhance the development of non-wood goods and services has also been sidelined. Although forestry research in the country has been narrowed down to timber production, it has not been active enough to make an impact on forest management for this purpose.

4. To place under government control land for plantation forestry for both domestic and industrial uses

This deals with setting aside of natural forestland for plantation forestry. This was introduced in 1963, when the Forestry Department started a pilot project of planting exotic trees, mainly pine and eucalyptus species. Today, 55,000 ha of plantations have been established in the Copperbelt Province, while 10,000 ha have been established in the other provinces to meet the country's domestic wood requirements (Akapelwa, 1996:542). However, it is worth noting that policy objectives relating to the establishment of plantations in Zambia, where forest has never been in short supply frequently encourages deforestation. For example, the World Bank staff called off a World Bank-financed woodfuel plantation project for Lusaka City when they witnessed the devastation of an indigenous forest for this purpose[y]. This situation has not come by chance, but under the prevailing economic analysis, it is far cheaper for the government and other institutions to replace natural forests with plantations due to the fertile soils under natural forests and the timber extracted from the site to be afforested. However, replacement of indigenous forests with plantations is in practice, 'deforestation by another name', as far as biodiversity conservation is concerned.

Therefore, policy objectives relating to afforestation should aim at restoring degraded or marginal lands, rather than undervaluing native forests. FAO (1985:119) suggests that plantations should be developed on non-directly productive lands. Nevertheless, curing degraded ecological systems is expensive and time consuming. This should, however, be attempted to avoid a further *reactive* policy, moreover, a country must pay its environmental debts to enable policy-makers adopt *anticipatory* environmental policies. Alternatively, plantations can be

[y] Mwitwa, J. (1999). PhD Forestry Science student at the University of Stellenbosch. Mr. Jacob Mwitwa worked for the Zambian Forestry Department before he joined the Copperbelt University where he is currently a lecturer.

established using local species. The battle against invasive alien species in some Southern African nations should serve as a warning. Depending on the purpose and choice of species, a plantation forest can protect and restore the environment, supply energy, reduce the pressure on native forests, sequester CO_2 released into the atmosphere and serve as a source of income for rural farmers. Since the urban growth in Zambia has exceeded the national population growth rate, resulting in increased pressure directly on the forest resources surrounding urban centres and indirectly on the more distant forests that provide food, woodfuel and construction material for urban dwellers, the implementation of objectives relating to plantation forestry should result in alleviating this pressure. Woodlots, greenbelts, shelterbelts, roadside and linear plantations for the production of fuelwood, building materials, amenity and other tree products around urban centres should be the ultimate implementation of this objective than otherwise.

5. To raise awareness in people about the importance of forests and to develop manpower in the forestry sector

This underlines the importance of information to stakeholders and the training of forestry personnel. People, if informed and given the mechanisms to make a difference will act to sustain their community and environment. Every stakeholder — from grandmother collecting mushrooms and dead twigs in a forest to a child cutting down trees for *chitemene*[z] — is a decision-maker, if made aware about the problems threatening the sustainability of their life-support system. These are the people to be reached and informally educated and trained to enable them to integrate their indigenous skills with new skills and techniques, derived from scientific research. An urgent and sustained programme of awareness is therefore essential if forestry values and problems are to be understood by the forest-dependent people. On the other hand, without adequate numbers of appropriately trained and educated cadres of forestry professionals and technicians, the forestry sector in Zambia would not achieve its potential. The government line of action in this context materialised in opening the Zambia Forestry College in Kitwe for training technical and field officers — foresters and forest rangers in the last 45 years or so. Additionally, a Workers' Training Centre has been established at Chati to train general workers in various forestry skills, while a Beekeeping Training Centre has been established at Kapombo to train rural community in beekeeping skills (Akapelwa, 1996:542).

Beekeeping is a well-established traditional activity in the Western and North-western Provinces, and it has been observed that Zambia has a potential to produce approximately 3,500 tons of honey and 350 tons of beeswax

[z] A form of shifting cultivation, in which trees are cut within a selected area between July and September, laid out to dry and are gathered afterwards into a heap in the centre of the cut area where the heap is burnt to release nutrients.

annually. Furthermore, the price of a metric ton of beeswax exceeded copper, the country's major export, on the international market at the 1991/2 prices (Akapelwa, 1996:534). Beekeeping industry has the potential to contribute to the economic development of Zambia, therefore, developing the institutional infrastructure such as the establishment of Beekeeping Training Centre, is a commendable initiative.

At the professional level, Zambia lacks adequate lifeware to interpret and implement the existing forestry policy. This has been caused by the absence of a fully-fledged faculty of forestry, offering bachelor and higher degrees in forestry science. Consequently, the country depends on foreign academic institutions to train its professional staff who, according to Malaya (1996:94) emigrate to neighbouring countries for more attractive employment opportunities due to the poor working conditions in the Zambian government service. The lack of qualified personnel is a serious barrier to sustainable development of the forestry sector. This is evident when major changes in policy such as rural stakeholder involvement lead to reorganisation and new functions for the actors in the sector. In recognition of this, a 'School of Forestry and Wood Science' was opened in the 'Copperbelt University' at the end of 1995. The first batch of students graduated with Bachelor of Science degrees in forestry science in 2000. As 'human welfare' features prominently in SFM, the challenge for the school is to bring a new emphasis to forestry education and training, focusing more, among others, on developing social and managerial capabilities. Although it is too premature to judge whether Zambia's new high institution of learning has been adapted to meet the challenges facing the nation's natural forests, the implementation of the new forestry policy will test the school's credibility.

6. To encourage the participation of local authorities and communities, individuals, NGOs and private sector in forestry and to advise them about the sound practice of forestry

Encouraging the participation of local authorities and communities, individuals, NGOs and private enterprises in forestry; and advising them in sound forestry practices is an objective of SFM. As the World Conference on Agrarian Reform and Rural Development affirms: "participation by the people in the institutions and systems which govern their lives is a basic human right and also essential for realignment of political power in favour of disadvantaged groups and for social and economic development". Similarly, FAO emphasises that policies must encourage the development of various forms of people's participation to overcome structural and other impediments. In its Human Development Report for 1990, the UNDP has reiterated that a participatory approach, including the involvement of NGOs, is crucial to any strategy for successful human development[34]. People are the instruments, beneficiaries and victims of forestry development projects. Consequently, their active involvement in forest management is the key to success of these programmes. Alternatively, unless policy-

makers see the need to improve the welfare of forest-dependent people, forest conservation would fail.

Therefore, the challenge is to make stakeholder *participation* more than an empty catchword, and there are two approaches for achieving this. *First*, the forest-dependent stakeholders who tend to be the hardest hit by forest degradation, need to be involved in designing forest management strategies; and *second*, local knowledge needs to be better utilised in the design and implementation of forestry programmes (Serageldin, 1993:1993:10). Forest-dependent communities should be accorded opportunities to plan and initiate developments, and set the framework within which the other stakeholders, such as individuals, NGOs and private enterprises act. Although it has not been pursued vigorously, it has been well known for years that when a country's environmental problems are addressed, the chances of success are greatly enhanced if the local communities are involved. Such involvement is needed for four reasons (Steer, 1996:6):

i. Local people are often better able than government officials to identify the priorities for action.
ii. Members of local communities often know about cost-effective solutions that are not available to governments.
iii. The motivation and commitment of local people are often what see an environmental project through to completion. This is particularly true for soil conservation and community woodlot establishment projects. The Sahelian community-based land management programmes of the 1990s are clear messages that community *participation* works!
iv. The active involvement of local people can help build constituencies for change. For example, a destructive logging firm operating in a remote part of Zambia outside the prying eyes of the media and government supervision may not adhere to the concession terms. The local people whose livelihoods are directly impaired by the logging company may question the environmental ethics of the timber firm. This would oblige the government to introduce deposit-refund or performance bond measures to enforce environmental standards in the country's native forests.

However, to do this requires *first*, the establishment of clear government regulations that favour people's participation and encourage the establishment of people's organisations. *Second*, introduction and enforcement of legal and structural reforms — land reform, tenancy rights and other natural resource user rights. *Third*, enactment and amendment of laws to ensure equal rights and full membership for women and other disadvantaged groups in people's organisations. *Finally*, reformation or where necessary, creation of local government institutions to promote and facilitate democratic participation of rural people through organisations of

their choice[34]. Unfortunately, there is no conducive legal environment to enhance effective stakeholder *participation* in sustainable forest and other natural resource management. This has led to a situation whereby stakeholders other than the government have been relegated, at worst, to *passive participation*, or at best *functional participation*, in which case people participate by forming groups to meet some predetermined government objectives.

It is also worth noting that the *nationalisation policy* that was pursued by the same government which unilaterally formulated the existing forestry policy, did not encourage community and private investments in forestry. Akapelwa (1996:541) asserts that under the nationalisation policy successful forest industries were turned into parastatals and very soon were bogged down with inefficiencies and were no longer able to meet their goals. Zambezi Mills Ltd and Mining Timber are cases in point. Nationalisation prevented private investment in the forestry sector with the net result that the national forests remained under-utilised. This disabled the sector from making any effective contribution to the developmental goals of the country. Participatory resource management and nationalisation are antagonistic policy objectives, however, their existence for the same forestry sector reflected a complete lack of intersectoral policy co-ordination and inadequacy in priority setting.

7. To integrate the country's forests into a wise system of land use and into the development of Zambia's other natural resources

This recognises forestry as an important type of land use in Zambia and emphasises its integration with other land use types to ensure complementarity and synergy of actions for better management of natural resources. The objective also reiterates the integration of the country's forests into the development of other natural resources, such as fisheries, soil and wildlife conservation, in addition to the development of beekeeping industry. This accords with FAO (1985:16) which recommends the integration of forestry with the agricultural sector and multisectoral programmes. This requires the formulation of a comprehensive land use planning and land development policy which should draw participants from individuals and all institutions with interests in land. This should result in the creation of an overall 'Land use Planning Authority', responsible for alienating land to different categories of land use and for harmonising conflicting demands on land. Incidents, for example, can be found where the Ministries of Agriculture, Education and Health, either advertently or inadvertently subsidise illegal settlements in gazetted forest reserves by providing agricultural inputs, schools and clinics to squatters (Akapelwa, 1996:544). The creation of a single land use planning authority can rectify such mishaps. As more than a half of the country's total land area has at least some form of forest and woodland cover, forestry should have a weighted representation in this proposed establishment to reflect its ability to support the development of

other natural resources. Therefore, the land suitability or capability assessment that has been done at the exclusion of forestry personnel should be revisited with an objective of including all stakeholders.

5.7.1.1.2 Policy implementation

The implementation of the existing forestry policy denotes the mobilisation of state, public, community and/or private actions towards the achievement of the above objectives. These actions are motivated by directives, regulations and incentives which constitute forestry policy instruments for putting the policy into practice. It is necessary to realise that policy formulation process {broad-based or departmental} defines the implementation process and also the range and viability of the instruments at the disposal of policy implementers.

5.7.1.1.2.1 Policy implementers

It has been stated that the political culture of a country defines the situational context for participation of non-state stakeholders in policy-making. This means that if the policy formulation process is democratic, many stakeholder views will be imprinted in the policy which will in turn cause the relevant policy instrument to be as much broad-based as possible. A broad-based instrument also requires a wider participation in its administration, otherwise it becomes unpopular in some parts. Conversely, a narrow-based instrument requires fewer participants to administer it, as the majority who did not participate in its formulation would not understand it. Therefore, it follows that the unilateral approach to the formulation and the subsequent reviews of the existing forestry policy defines the policy implementers in the country. The Zambian government is the active implementer, while all other actors are passive implementers. For example, Wanchinga (1996:vi) notes that the main shortcoming of the 1973 Forests Act is the lack of any provision for Joint forest management {JFM} with organisations and communities outside the government. Although the existing policy appears to encourage active participation of non-state interests in forest management, the lack of clear and favourable legal conditions make people's participation immaterial. Rather, the responsibility for implementing the forestry policy and hence for managing Zambia's forest resources lies exclusively with the 'Forestry Department' in the Ministry of Environment and Natural Resources. This is the main drawback of the existing policy and its instrument. This heightened the need for a new forestry policy.

5.7.1.1.2.2 Policy instruments

Policy instruments are designed to cause people to do things which will result in meeting the goals of the forestry policy. In Zambia, there are two such instruments which are expected to function mutually in achieving the aims and objectives of the existing policy. The most important instrument is the Forests Act of 1973, which had

become blunt in many key areas, but has been updated. The second instrument is a presidential decree passed by the then President Kenneth Kaunda, whose love for environment remains unmatched by any political leader in the sub-Saharan Africa. That decree is considered as a forestry policy tool because it encourages tree-planting and remains in effect thus far.

5.7.1.1.2.2.1 The Forests Act of 1973

The main instrument that has been used in the implementation of the above policy is the Forests Act of 1973. The Act is rather comprehensive and gives the Minister of Environment and Natural Resources wide powers to protect and regulate the management and usage of the country's forest resources. The Act also empowers the Minister to delegate his powers to any individual, local/traditional authority, or organisation for the purpose of protecting, managing and utilising forest resources (Akapelwa, 1996:543). Seemingly, the participation of local authorities and communities, individuals, NGOs and private enterprises in forestry has been inferred. Nevertheless, this is left to the personal whimsies of the Minister of the Ministry of Environment and Natural Resources. This random devolution of power without any clear institutional arrangements has encouraged activities such as agricultural settlements in forest reserves which could otherwise be situated elsewhere. Another principal weakness of the Forests Act until 1994 was that the penalties, particularly fines remained at their 1973 levels. In the course of about 20 years, the fines imposed on the violators of the Act were no longer deterrent, as they had become ridiculously outdated and inappropriate. The government realised this irregularity, and as a consequence, introduced a 'sliding formula' for determining penalties for all offences.

The Forests Act is the main legal instrument for the establishment of sustainable forest management. However, as the penal clauses applicable to violations had not been deterrent for a considerable time, it is clear that the Forests Act has persistently been ignored despite the government attempt that resulted in introducing the new formula in 1994. It is incorrect to introduce a piece of legislation that cannot be enforced to impart the desired effect on the subject; otherwise the respect for law is generally undermined, as discussed in Chapter 2. It is plausible that during the 1980s up to 1994, the forestry legislation actually encouraged illegal forest exploitation, because the violators knew that the fines meted out were far below the market value of those commodities which were illegally harvested. Furthermore, the introduction of new rules to check all forest offences in 1994 could do little to discourage illicit exploitation of forest resources because these fines are heavily eroded by the high annual rate of inflation which is approximately 30%. To overcome this, the piece of forestry legislation that deals with fines should be updated regularly.

It is crucial to notice the link between the Forests Act and the National Parks and Wildlife Act. These Acts are supposed to reinforce each other, as wildlife can be poached from forest reserves and timber from wildlife sanctuaries. Ironically, a weakness in one Act is likely to transgress the other Act. It is thus fair to indicate that the weakness in the penal clauses of the Forests Act gave impetus to poaching in Zambia's wildlife sanctuaries. Moreover, a successful theft of timber from state's productive and protection forests is an added confidence to kill an animal in a national park or a nature reserve without being caught. Alternatively, as the fines for forest products were very low, a violator would discount the danger of extracting these commodities from a wildlife sanctuary. This will interfere with natural habitats, breeding and feeding habits of remote wildlife species.

5.7.1.1.2.2.1.1 Timber pricing

It has not been only the bluntness of penalties that has escalated forest degradation and loss, but also the stumpage price that appears to have been designed to encourage forest resource consumption. For example, the MENR (1994:49) contends that less than 10% of the stumpage and charcoal removal fees are collected by the Forestry Department. This promotes disinvestment in private forestry, as long as there are forests in the public sector that ensure almost free forest resources. With the open-access nature of the most of Zambia's forests, deforestation will only slacken when unreserved forests are exterminated and reserved forests are seriously threatened. Moreover, the ongoing deforestation in the country occurs in both forest reserves and unreserved forests, where post-harvest treatments to encourage natural regeneration are ignored.

5.7.1.1.2.2.2 Presidential decree as a forest conservation tool

With charcoal burning and agriculture accounting for the disappearance of about 300,000 ha of forests throughout the country annually during the 1980s, the Zambian government embarked on a set of policy initiatives. The *first* intervention has been the creation of public awareness among political leaders, local communities and NGOs about the consequences of forest and wildlife habitat loss. *Second*, the President of the Republic of Zambia, Kenneth Kaunda decreed the 15th December of each year to be a 'tree-planting day' on 21 March 1985. The period from the 15th December to the 15th January has been recognised as a tree-planting month in the country and every Zambian is expected to be involved in forestation during this time, especially in areas worst affected by deforestation. For instance, in the Copperbelt Province, where estimates in 1986 indicated that the natural forests would disappear after 20 years, if no bold interventions were made. *Third*, the government had emphasised the importance of agroforestry as an environmentally benign land use type by appointing an Agroforestry Task Force, including the National Council for Scientific Research and the Departments of Agriculture and Forestry to spearhead and co-ordinate agroforestry programmes in the country. *Fourth*, timber-exporting companies were

requested by the government to indicate the source of their timber before they would be allowed to export (Akapelwa, 1996:538-9). This would appear to reflect the government's decision to align its timber export policy with the most recently developed market instrument — timber certification.

5.7.1.1.2.2.3 Forest resource ownership

In Zambia, forest resource ownership is strictly defined by the existing land resource ownership which although is vested in the state, allows communal use and management. By implication, gazetted 'forest reserves' that amount to about 10% of the country's total land area and plantation forests are under state ownership, while communities living on 'Traditional Land' communally own the rest. In practice, the government role in unreserved forest management is limited to giving advice and disposing of forest resources in surplus of community needs. The negative effect of this type of ownership is that people have free access to unreserved forests that form the bulk of the country's forest resources. Evidently, this accelerates the rate of resource depredation. This scenario is aggravated by the inflexibility of the Forests Act of 1973 to address forest conservation outside forest reserves. For example, Wanchinga (1996:vi) complains that the Act emphasises the policing role of the Forestry Department in reserved forestlands, but does not provide any proper guidelines for the management and control of open-access forests found on 'Traditional Lands'. Thus, the open-access nature of the majority of the country's natural forests explains the high rate of forest loss and the lack of investment in reforestation.

5.7.1.1.2.2.3.1 Privatisation

Instead of privatising open-access forests and/or the underlying land with an aim of privatising the benefits and the disbenefits of forest conservation and loss, the government seeks to privatise the Zambia Forestry and Forest Industries Corporation {ZAFFICO}. ZAFFICO is a parastatal whose principal activity is the establishment and maintenance of timber plantations and harvesting of mature timber. The company has 40,000 ha of plantation reserves of pine; 10,000 ha of eucalyptus; and unspecified size of *Pterocarpus angolensis*. It is the primary supplier of poles and beams to electric power and mining industries. ZAFFICCO is based in Ndola and operates three sawmills of varying sizes in the Copperbelt, along with two sales depots[35]. A report released by the Pangaea Partners in October 1999 indicates that the privatisation of the Company has stumbled due to lack of bidders, although the process was initiated two years ago.

Privatisation of industrial forests for sheer economic efficiency is inappropriate in that it does not address the issue of land and forest degradation. Rather, it would accelerate environmental degradation. For example, Akapelwa (1996:537) challenges that as more private industries are set and the competition becomes stiffer,

there is a tendency for many companies to disregard environmental regulations, therefore causing unwarranted destruction of forest resources. Furthermore, seeking economic efficiency in the industrial forestry without restructuring the communal forestry sector in the 'traditional areas' where huge losses due to deforestation exceed that in the industrial sector reveals pursuance of absurd donor programmes without identifying their costs to the country. It is also imperative to note that the current privatisation programme affecting the forestry sector is unlikely to resolve the issue of social equity and hence poverty alleviation. Therefore, Zambia should follow a restructuring programme that guarantees means of production to individual households and empowers them to map out their future based on their available resources.

5.7.1.1.2.2.4 Lifeware

The Forestry Department has five technical divisions to execute its mandate and these include the Management and Surveys; Forestry Research; Forest Products Research; Training; and the Nine Provincial Forest Offices to administer the forest provinces (Moyo *et al.*, 1993:95-6). However, these divisions have not been fully operational due to the intrinsic shortage of professional and technical staff, as pointed out elsewhere in this report. It has been indicated that the SADC's Forestry Sector Human Resources survey of 1994, estimated the Human Resources needs of the Zambian forestry sector at 302 professional and 1050 technical staff by the year 2005. Despite the extensive natural forest cover, Zambia has 40 professional and 394 technical staff (Akapelwa, 1996:545). The country lacks adequate professional staff to interpret and implement the existing forestry policy.

The lack of professional forestry staff is reflected in the low number of technical staff, although the 'Zambia Forestry College' that offers Certificate and Diploma Programmes commenced teaching in 1947. Currently, the College is structured into five Departments of Biology; Engineering; Environmental Science; Silviculture; and Wood Science. The Copperbelt University is expected to bolster the functioning of these departments. However, Zambia's heavy dependency on donor assistance for financing education and training of both professional and technical staff is unsustainable (Wanchinga, 1996:47). This, coupled with poor salaries in the Zambian government service, will continue to create lifeware deficit in the forestry sector. It is also important to note that the Forestry Department lacks a division for planning and/or policy analysis which is an apparent indication of incapacity in policy analysis. Implicitly, the development of unique, demand-driven, innovative forest conservation tools is implausible.

5.7.1.1.2.2.4.1 Gender equity

Women are more dependent on forest resources than men. To them, forests and woodlands are the sources of employment, fuelwood, clean drinking water, fodder, fruits and nuts, medicines, mushrooms, caterpillars, basketry and many other forest and woodland products which are essential to their households. Consequently, they bear the negative effects of forest degradation and loss; and to avert this, they take to tree-planting and community forestry more readily than men. Banda (1996:2) affirms that the Forestry Department recognises the intricate relationship between women and forest resources, and supports gender equity and equality in decision-making. This should be achieved by involving women at all stages in forestry project planning, from problem identification to implementation, monitoring and evaluation, among other strategies. Wanchinga (1996:6) counters that the Forests Act of 1973 leaves little room for such participation and emphasises that gender equity in forestry should be secured by promoting adequate equity in the training of forestry professionals in key areas such as forestry extension.

While Zambia is a party to the 'Convention on the Elimination of All Forms of Discrimination Against Women', there is still gender imbalance in government institutions. This imbalance becomes clear when the proportion of female agricultural extension officers is taken as a surrogate measure for the forestry sector. For example, women constituted 5.0% of agricultural extension officers in 1980 and 1985, while they made up 6.0% in 1988 (Banda, 1996:4). In the same year 5.0% of the legislature was female; this dropped to 4.0% in 1991; and rose to 10% in 1996. In reality, systematic gender-based inequalities in decision-making exist at household, community and national levels, with women confined to the implementation of decisions made by men[36]. It is reaffirmed further that "inequality in Zambia is most evident in gender relations and in the lack of participation by the majority of people in decision-making" (Chigunta, 1999:2). The government has attempted to resolve this imbalance by institutionalising gender equality at various levels of the government structure; nonetheless, the marginalisation of women in decision-making has increased. Moreover, it has been observed that in Zambia the structural linkages between gender roles and the environment are not fully appreciated, thus leaving women out of the decision-making in the sector. "Women's contribution to managing natural resources and safeguarding the environment is not recognised and supported by government policies and programmes" (Mulenga, 2000). Finally, Hansungule (2000:2) summarises that "gender-based discrimination is still rife in Zambia". With widespread gender inequality in other institutions and inflexible forestry legislation that has no particular provision for encouraging participation of women in forest conservation, it is appropriate to conclude that the Zambian forestry sector experiences gender inequality. The ultimate solution is to reform the 1973 Forests Act and institutionalise gender equity and equality considerations.

5.7.1.1.3 Policy evaluation

There is no statement on the comprehensive evaluation of the existing forestry policy. Wanchinga (1996:29&41) suggests the monitoring and evaluation of the performances and impacts of 'forestry research' and 'extension' programmes. It is recommended that the National Forestry Planning Officer, with Provincial and District Planning Officers shall be responsible for monitoring the performance of these programmes. The monitoring data or reports produced by the officers will be subjected to external evaluation. This is a proposal which has not been institutionalised. Consequently, there is no forestry policy evaluation in Zambia.

In summary, it is noticeable that the existing forestry policy emphasises 'popular participation'. However, without clear and favourable legal and policy conditions for people's participation, the existing forestry policy has instituted the Forestry Department as the sole actor in the sector. The policy gives "explicit and implicit powers to the Department as the largest and most formidable estate agent and manager in the country. The Department has enjoyed unchallenged monopoly to grow trees, determine where and when to harvest forest produce and fix and revise prices of goods and services from the forest" (MENR, 1998:4-5). This exposes the narrow focus of the current forestry policy. Therefore, there is explicit need for a broad-based forestry policy that could appeal to the wider forest-dependent community.

Consequently, a new forestry policy, with the aim of rectifying the weaknesses of the existing policy has been synthesised. The new policy which is premised on sound socio-economic studies, is expected to harmonise the forestry sector with other sectors. The name of the national forestry institution changes from Forestry Department to Forestry Commission on the implementation of the new policy whose instrument has been passed by the Zambian Parliament.

5.7.1.2 The new forestry policy

The mission statement of the forestry sector is to *ensure* sustainable flow of wood and non-wood forest products and services, protection and maintenance of biological diversity for the benefit of the present and future generations through the *active participation* of all stakeholders. To make this statement operational, the following goals have been set:

i. to put in place effective forest management systems and operating structures;

ii. to formulate and implement appropriate forestry policies and programmes for sustainable management

and use of forest resources; and

iii. to promote sustainable, participatory management and use of forest resources such that all stakeholders, men, women and children take active and sustained interest towards effective conservation, production, management and utilisation of the nation's forest endowments.

5.7.1.2.1 Policy objectives

To meet these goals, the proposed Forestry Commission aims to enhance the quantitative and qualitative contributions of the sector towards the nation's socio-economic development in a sustainable manner. This overall objective has been decomposed into the following 13 specific policy objectives:

i. to ensure the integrity, productivity and development potential of the forest reserves;

ii. to ensure protection of forests by empowering local communities and promoting the development and use of forest and non-wood forest products;

iii. to promote investment in plantation forestry;

iv. to ensure sustainable management of forest ecosystems and biodiversity application through scientific and indigenous technical knowledge;

v. to promote the growth of forest-based industries by ensuring raw material supply, facilitating capital formation and ensuring the enhancement of new investments in forest-based and small-scale enterprises;

vi. to ensure sustainable management of forest resources for woodfuel production;

vii. to recognise and support the development of non-wood forest products;

viii. to develop research enterprise, facilities and create an enabling environment to meet research needs;

ix. to strengthen and develop extension skills and service delivery to stakeholders;

x. to develop and broaden skills of forestry personnel and strengthen existing forestry training institutions;

xi. to regulate exploitation and ensure efficient use of forest resources and products;

xii. to ensure the contribution of the forestry sector to national economy and the generation of foreign exchange for the capitalisation of the forest industry; and

xiii. to ensure gender equity in all aspects of forest management, production and utilisation of forest products, extension, training and education.

5.7.1.2.2 Conservation attributes of the new forestry policy

The new forestry policy is incontestably comprehensive, addressing all the aspects which have been ignored in the existing policy. This can be attributed to the extensive consultation that was conducted during the policy formulation process. Among other vested interests, were the representatives of rural stakeholders who participated throughout the deliberations. However, well-prepared and legitimised written statements are not sufficient conditions to ensure the conservation of Zambia's forest resources, when they are not accompanied by explicit legislation that will translate the policy objectives into activities. FAO (1985:90) recapitulates that a forestry policy provides a basis for legislation which regulates the use and management of a vitally important natural resource. Accordingly, Zambia has formulated a contemporary forestry legislation that appears to have moved away from the narrow aspects of the control of timber production to include integrated planning and management of forestland, environment and nature conservation. Stakeholder participation in the planning and management of these assets is an integral part of the legislation. The institutionalisation of other stakeholders in forest conservation has also been noted by other commentators. For example, "the law provides for the participation of local communities, traditional institutions, NGOs and other interested parties in management of forests.... The Forestry 'legislation' would ensure conservation and sustainable use of forests and trees for the management of ecological systems and biological diversity" (Times of Zambia, August 19, 1999). The government does not desire the participation of local communities as spectators, but emphasises the use of indigenous knowledge in forest management and research.

5.7.1.2.2.1 Sustainability

It is clear from the above policy objectives that sustainable management of natural resources is the central theme of the forestry sector. *Sustainable development* appears to be an unavoidable phrase when examining a government policy statement, plan and action. For example, agricultural, national parks and wildlife, tourism, population and other sectoral policies are replete with sustainable development. "It seems that sustainability is a principle deeply rooted in government bureaucracies responsible for policy formation. More recently, these principles have started to appear in the programmes of the political parties. This fact might be evidence that politicians are responding to an increasing public interest in forestry and environment" (Morell, 1998:61). This came as a result of Zambia's endorsement of the UNCED in Rio de Janeiro in June 1992, and as a consequence of pressure from donor agencies, who prescribe the integration of environmental and socio-economic concerns into the design and implementation of development programmes. Furthermore, developed world consumers are also wary about commodities produced in the south's lightly regulated environment. *Timber certification,* which is increasingly becoming a powerful market instrument, is a case in point, in which consumers want to know where

their timber comes from. "Since the Earth Summit, Zambia has signed international accords on biodiversity, climate change, and desertification"[37]. Thus, globalisation has opened up Zambia's natural resource management policies to more international scrutiny. This has influenced the country's policy intentions. Moreover, overexploitation of Zambia's forest resources is associated with international external costs and *vice versa*. As statements, Zambia's forestry policy is a clearly thought-out policy, however, declaration of grand intentions should be complemented by aggressive implementation, otherwise the policy becomes a window-dressing.

5.7.1.2.2.1.1 The use of indigenous knowledge

"The earth's remarkable cultural diversity and heritage reflect the extent of local knowledge of natural systems and how they are best managed to meet human needs" (Poffenberger, 1997:41). However, the growing pre-eminence of western systems of scientific thought, governance and modern technologies is threatening many of the older and diverse ways of managing our physical environment. Until recently, there has been a clear message that local knowledge is irrelevant, and modern technologies and scientific information are the only basis for SFM. This questions the morality of sustainable development which emphasises intergenerational equity. There is therefore an explicit need to preserve and transfer both local and scientific knowledge of forest biology, sustainable use practices and management institutions from the present to the future generation. This can *only* be achieved through national policies and programmes, and through cultures that appreciate informal community management systems. Zambia's new policy underscores the *use* and *integration* of local knowledge into forest conservation. This implies that the forestry personnel must be engaged in meaningful dialogues with forest-dependent people, especially in joint resource management areas to understand and support local institutions. Planners in the air-conditioned offices in Lusaka must understand two critically important categories of indigenous knowledge. This includes local resource management institutions and land use systems; and locally instituted mechanisms to control access, participatory decision-making processes and conflict resolution procedures. Local information regarding species utilisation is equally important. Clear understanding and appreciation of local knowledge will enable government agencies and other stakeholders to collaborate in sustainably productive use of forest and woodland resources.

5.7.1.2.2.1.2 Private ownership of land as an incentive for SFM

Private ownership of land has been recognised as an incentive for SFM and as an incentive to encourage investment in tree-planting, as ownership of land can influence people's time horizons and attitudes. Security of tenure for individuals or private owners can help conserve forests by encouraging afforestation and reforestation

of degraded and logged-over areas. This is because "management of natural resources is practised by those to whom it belongs, and as has been seen so clearly in the case of tree-planting, no serious investment of time and effort will be made unless the resource is owned" (Shepherd, 1992:113). The relationship between the type and security of land ownership, and SFM and tree-planting {which is considered as a major land improvement} has thoroughly been discussed in the preceding chapters. It is undeniable that encouraging private land ownership in Zambia will ensure sustainable land resource management, as the private costs of environmental degradation are borne by the relevant perpetrators. This will check degradation and depletion of the country's natural forests and woodlands when combined with appropriate measures that discourage encroachment of state forest reserves.

5.7.1.2.2.1.3 Revolving fund for SFM

In Zambia, the Forestry Department is the least funded, although the sector supports the economy in diverse ways, especially when positive externalities are taken into account. Undervaluation of forest resources in Zambia, which is naturally blessed with rich and extensive forests, reflects the government attitude to overexploit forest resources to finance other sectors which are considered more important than forestry. To divert forest revenue to other sectors the government requests the Forestry Department to remit all its earnings to the treasury from where it is disbursed to the departments judged needy. Although there remains an option for the Department to apply to the Director of Budget Office to retain a certain minimum percentage for running its day-to-day activities, the government bureaucracies involved have frequently rendered this option bleak, otherwise the support for forestry would not be below its requirements {see Table 5.2}. Kowero (1990:23) confirms that there is no guarantee that the central government {treasury} will allocate an equivalent sum of money {like the revenues channelled to it} to finance forestry activities. Therefore, the inclusion of the concept of *revolving fund* as a strategy "to regulate the exploitation and ensure efficient use of forest resources and products" is an excellent initiative. A self-financing revolving fund system will facilitate managing production forest reserves on a more businesslike basis by, for example, providing a direct linkage between costs incurred on management, supervision and enforcement, and revenues obtained. Plantation forestry stands a better chance to benefit from this arrangement.

However, a self-financing revolving fund system without a transparent and accountable financial structure in the host institution is likely to encourage financial mismanagement or corruption. For example, previous attempts aimed at securing the independence of Beekeeping and Sawmilling industries from the parent department had been counterproductive. The government sought to establish these economically viable industries by supplying them with a starting capital. Accordingly, the mandate for managing this capital was placed into the hands of the

competent heads of these units/divisions. Thus, people who had no financial experience were permitted to operate the capital and the subsequent revenues from Beekeeping and Sawmilling industries. The heads of these divisions and their juniors who could access these funds had *carte blanche* to slice as much as they could from the capital and revenues to meet personal needs. Consequently, today these industries have failed to take off the ground due to misappropriation of government funds[a1]. It is cautioned that this does not mean that superiors should not delegate responsibilities to their subordinates, but that the latter must be competent and responsible enough to execute their duties to meet the policy goals in a transparent environment. Transparency is a check in any institution.

5.7.1.2.2.1.4 Gender equity considerations

To ensure gender equity in all aspects of forest management is another donor-prompted objective, although Zambia is a party to the Committee on the Elimination of Discrimination Against Women. For example, the European Commission (1996:36-7) emphasises that the full participation of women, as both agents and beneficiaries in all development activities, is a core aspect of achieving the goals of socially and economically sustainable development. The Commission maintains that EC-funded projects should seek to ensure that women are afforded an equal role to men in designing projects and in decision-making. This applies to all projects using land, forests, water, soils and all other resources necessary to manage and improve forests and other tree-based systems. In adopting this stance the EC recognises that conserving the environment and revitalising forest and woodland resources depends largely on the active participation of men and women at the local level. Other international development agencies such as the World Bank and UNDP hold the same view. However, many development planners still tend to overlook the crucial role women play in forestry. They are responsible for food production and preparation; for collection of fuelwood, fodder and water; and are the ones who plant and nurse trees, although they hardly have a *say* in their utilisation and profit-sharing. This has led a Lusaka-based gender activist to conclude that 'gender equity' is a fallacy in the male-dominated Zambian culture and society.

It is explicit in Zambia that development strategies over the past 40 years have mainly been aimed at men, as it was assumed that an economic improvement in the position of women would be realised from the benefits of this development process. However, this has not been the case, as women bear the costs of development such as deforestation which invariably results in declining soil fertility, shortage of fuelwood and increasing scarcity of clean water. Today, the majority of Zambian women still find themselves increasingly underdeveloped as a result

[a1] Kabwe, G. (1999). M. Sc. Community Forestry student at the University of Stellenbosch. Ms Gillian Kabwe is a lecturer at the Zambia Forestry College.

of this asymmetry, perpetuated by the male-dominated culture and society. Indeed, Zambia is a typical Third World country where male dominance has been identified as one of the most formidable obstacles to inclusion of women in development projects. Thus, it is not surprising in the Lupande GMA that there are social restrictions on the participation of women in community meetings and discussions, and on education of girls. As a result, women are further displaced and marginalised within the community, as their male counterparts are more educated, exposing them to outside opportunities. This cultural barrier, hindering the active participation of women in planning and decision-making in the country's GMAs is pernicious to the policy of CBNRM. This compromises the goal of economically, socially and environmentally sustainable development, as CBNRM programmes tend to focus on and benefit only a half of Zambia's population, that is men (Wainwright & Wehrmeyer, 1998:941).

The only solution to this imbalance is to address the fundamental socio-cultural obstacles that militate against women, and to develop and enforce systems that recognise women as partners and equal constituents of the rural community, otherwise community development projects will continue to fail in meeting their goals of societal welfare. In addressing gender concerns in conservation, Wickramasinghe (1997:22) emphasises this point by stating that women's autonomy over natural resource management should be treated as a key issue if resources and communities are to be sustained. Unless a transition is accepted, powerful, male-dominated institutions will control the resources and deepen the problems faced by rural women. But how can this happen in rural Zambia where cultural constraints exclude women from decision-making structures? A preliminary solution is recognition of equal rights to resources, especially household land to enable women to benefit from technologies such as agroforestry to which they respond positively. Particular attention should also be paid to access by women to credit facilities as these can empower them to purchase land and hold it in their own right, if socio-cultural impediments become insurmountable. Credit can also facilitate land improvement measures. Zambia's strategies on gender equity do not embody these basic prerequisites, and therefore, must become inclusive of them since women form the majority of agricultural labour force. This should not be theorised, but rather practised.

5.7.1.2.2.1.5 The need for additional forest reserves

The new forestry policy enunciates the importance of "environmental protection and forest ecosystem preservation". Although Zambia's protected forestland base is below the international target of 12%, the need to identify and reserve additional representative or unique ecosystems is likely to exceed or meet this goal. However, care must be exercised in designating these unique ecosystems lest the mistakes of the previous

governments will be repeated, when such areas had resulted in expropriation of local inhabitants from their resources. Rural Zambians had not been consulted when decisions were made about the *situation* and *use* of existing protected areas[b1]. These unilateral decisions resulted in forced relocation, triggering a series of negative events between local communities and conservation authorities. Recently, this has raised the issue of equity in conservation, as discussed below.

Jodha and Russell (1997:32) have warned that conservation activities can cause an uneven distribution of costs and benefits both spatially and temporally. This is inescapable because conservation measures imply changes in the existing pattern of resource access, use and management. These changes are likely to affect different social groups in different ways, and can create or accentuate cultural, social and economic inequalities. For example, implementing biodiversity conservation in the headwaters of Kafue, Luapula or any other local river may restrict resource use in the uphill communities, while downstream communities are the recipients of more and clearer water, less sediment, increased fishery production and so on. Therefore, the knowledge of the *uniqueness* of an ecosystem alone does not qualify it for conservation. Detailed knowledge of the people whose lives will be affected by the establishment and management of protected areas is as important as the information about the plant and animal species to be conserved. "The cultural and socio-economic characteristics of local people form the basis for measures to promote the sustainable use of natural resources, alleviate poverty, raise the quality of human life and create positive support for protected areas" (McNeely, 1994:4). This will help in resolving conflicts among different interest groups. Additionally, the government should not only be preoccupied with designation of new areas at the expense of biological resource conservation in the existing demarcated areas. To contribute more effectively to conserving biological diversity, it is advisable for conservationists to review their protected areas to identify ecologically unique sites of critical importance for conserving biological diversity. Apart from the visibly big game and woody species, the knowledge base of other faunal and floral species is rather sketchy and fragmental.

It is worth noting that deforestation occurs in both forest reserves and unreserved forests, where deforested areas are not managed properly to enhance natural regeneration. The failure of the Forestry Department to control deforestation by managing the existing forest reserves in a sustainable manner works against the campaign to increase the area under forest reserves. To the contrary, there is a growing political and public pressure to reduce the area under the forest reserve (MENR, 1994:47&49). Therefore, unless the Forestry Department

[b1] In this context, protected areas include all the different categories of resource conservation areas, ranging from forest reserves to national parks and game management areas {GMAs}.

proves that forest reserves are well managed to meet the aspirations of society, the country's forests would be consumed by more pressing uses.

5.7.1.2.2.1.6 Myths of market prices for environmental goods

It has been strategised in the official policy document that timber prices in Zambia should reflect environmental, economic and social costs. Ironically, the MENR (1996:4) states that: "In the spirit of liberalised economy[c1], the pricing of timber for export is not expected to be influenced by the government, but by the open market forces". To contradict this further, it has been indicated that the government interference is limited to setting prices that can compete favourably on the 'world market' and at the same time to contribute optimally to the regeneration fund. If properly implemented, the concept of regeneration fund is attractive, in that timber prices reflect the replacement costs of timber trees, and will go a long way in initiating SFM. However, the need for the government to fix timber prices to facilitate favourable competition on the international market is incompatible with the concept of regeneration fund. Global commodity prices are not regulated by environmental concerns, but by the demand and supply law. Therefore, the market price for each timber tree is likely to fall below its replacement cost. Moreover, markets fail to allocate environmental resources such as forest products and services. Ambitious intentions to meet certain targets in terms of timber quantity or revenues can lead to forest degradation and loss.

Inclusion of environmental cost in timber prices to demonstrate the worth of forest resources {social value} appears to be an empty catchword, especially where market liberalisation has become a condition for obtaining structural adjustment loans from the IMF/World Bank. Although, competitive markets have been celebrated since the days of Adam Smith's description of the 'invisible hand' that would guide the actions of independent, profit-seeking individuals to an outcome that serves the public interest[d1], property rights, public goods, common property resources and external costs play a key role in limiting the effects of competitive markets on forest resources.

Property rights relate to the rights of an owner to use and exchange property as the owner sees fit. A well-functioning market economy assumes:

[c1] Price liberalisation is one of the tenets of SAP that the country has been implementing. The government has pledged itself to implement all the prescribed measures. Therefore, any diversion from this course is highly suspect.

[d1] 2 "Every individual endeavours to employ his capital so that its produce may be of the greatest value. He neither intends to promote the public interest, nor knows how much he is promoting it. He intends only his own security, only his own gain. And he is led by an invisible hand to promote an end which was no part of his intention. By pursuing his own interest he frequently promotes that of society more than he really intends to produce it" (Adam Smith, cited in Ortolano, 1997:111).

I. that all resources are privately owned, and all entitlements completely specified;

II. all benefits and costs accrued as a result of owning and using the resources should accrue to the owner, and only to the owner, either directly or indirectly by sale to others;

III. all properties should be transferable from one owner to another in a voluntary exchange; and

IV. property rights should be secure from involuntary seizure or encroachment by others (Tietenberg, 1996:41).

Forest resource ownership in Zambia does not entail this bundle of rights, and even in countries like Sweden, where forestry is a profitable business both to public and private owners, the right to exclude is impossible. *Nonexcludability* makes forest resources as a public good in areas where customary tenure is exercised. Consequently, access, use and management of forest resources in the traditional areas approach 'the tragedy of the commons', whereby each person seeks to maximise his/her own welfare.

In economic terms, when all benefits and costs of resource *use* do not accrue to the owner, either directly or indirectly, it is said that the producer has imposed external benefits and costs {externality}. An externality can be defined as an activity most of whose fruits are not captured by the producer {external benefits} or most of whose costs are not borne directly by the perpetrator {external costs} (Convery, 1995:15). External costs can be illustrated by a commercial farmer whose poor farming practices result in erosion of silt and chemical fertilisers into Kafue, compromising water quality downstream; or by a wood carver who destroys the game meat and biological diversity potential of Livingstone area. The timber logger, who imposes external costs, harvests more trees than he would if he accounted for the full cost {social cost} of his production. In reality, resources are not allocated efficiently when externalities arise.

Externalities reflect the failure of the *invisible hand*, implying that markets alone cannot oblige the timber logger or the reckless farmer to account for both his private and external costs. For a government concerned with efficient allocation of resources, the main issue becomes that of improving the incentives of local communities to participate in forest resource conservation. This can be done by converting the current customary tenure system into a leasehold tenure and finally, into private title deed on indicating that natural resource management meets certain requirements. For instance, adoption of soil and forest conservation measures, including tree-planting. Traditional chiefs can supervise smallholders, enforce land conservation measures and recommend transfer of land from leasehold to private title deed for those who have successfully demonstrated that they can manage

their land resources in a sustainable manner. The idea is to develop a sense of land scarcity among land users, however, as land scarcity develops, there is tendency for some chiefs and their headmen to become corrupt as powerful individuals will attempt to influence decision-making process through illicit ways, such as bribery. Therefore, chiefs who command authority now because of their ability to sanction conversion of land from customary to leasehold tenure, should not be allowed to operate without government guidance and intervention, given the magnitude of the externalities involved.

With secure, exclusive and transferable land rights in the rural sector, the government should then proceed to levy an extraction fee/tax on per tree and species basis, taking into account the damage inflicted on non-target vegetation. This should be sufficient enough to reflect import parity price, replacement or the opportunity cost of the timber species. This will determine the end-product price, rather than the market which has failed to capture the worth of forest resources. Market prices for forest resources are below the social opportunity costs of those resources, inasmuch as market allocation of biological resources has often led to collective loses in well being. Therefore, leaving fuelwood and charcoal, and other forest products to the myth of market forces, without active government intervention is bound to increase the consumption of these resources without any positive or modest gain in the economic, social and environmental status of the country. If the status quo is allowed to continue, environmental degradation, poverty and misery will be a large order.

As timber from indigenous forests become expensive due to government intervention, smallholders will seize the opportunity to grow trees on their farmlands to dismantle the government monopoly of forest product prices. However, the state should continue with its price-support policy for forest products obtained from native forests in the public and traditional domains to attract individuals, community organisations and NGOs to tree-planting. The forest products market that develops out of this scramble, though imperfect, is an improvement over the existing one, insofar as it relieves pressure on the country's indigenous forests which are essential for societal welfare, environmental protection and for conservation of biological diversity.

5.7.1.2.3 Forests Act of 1999

This is the instrument for implementing the new forestry policy. It establishes the Zambia Forestry Commission to replace the Forestry Department, as the legitimate, semi-autonomous authority to administer the use and management of the country's forest resources. The Act recognises National and Local Forests, and sets the procedure for establishing them. The purpose of a National Forest is to ensure the security of forest resources of national importance. National Forests are also important for conservation of ecosystems and biological diversity;

sustainable utilisation of forest resources; and for the management of major water catchments. On the other hand, Local Forests are important for security of forest resources; protection of ecosystems, particularly the protection of land and water resources of local strategic importance; sustainable utilisation of forest resources at local level; and are equally vital for meeting the social, cultural and economic needs of local community (*Sections 9, 12, 17&20*). Zambia's Local Forest may approach 'extractive forest reserves' functionally.

Another important feature of the Forests Act is the declaration of Local Forest, plantation forest, or open area as a Joint Forest Management Area {JFMA} with the consent of local community, owners or occupiers of the forested land (*Section 25*). The Act also requires the setting up of Forest Management Committee for JFMAs, and such a committee must comprise a representative of the chief of the area and three village representatives. Typically, this is where gender equity considerations should feature! The purpose of the committee, among other things, is to manage and develop the JFMA and to distribute the benefits among local communities. Furthermore, the Act makes the development of 'management plans' for National and Local Forests, JFMA or for a plantation forest mandatory. An occupier of a forestland may also be subjected to a Conservation Order (*Sections 21{1}&35{1}*). The rest of the Act deals with the protection of flora, forest produce in state and customary areas and with more traditional aspects of forestry such as licensing, trade in forest products, law enforcement and offences and penalties.

5.7.1.2.4 Lack of capacity in policy analysis as a threat to the new forestry policy

Zambia's Forestry Department has no clear or implied reference to policy formulation and implementation. The country lacks institutional capacity to formulate, analyse and develop implementable forestry policy. For example, in reference to the National Conservation Strategy and the National Environmental Action Plan, it has been stated that there are inadequate skills in Zambia for policy analysis, especially for crosscutting issues. Thus, it is warned that unless a rapid and bold initiative is made to correct this deficiency, the existing policy will remain largely unimplemented due to lack of lifeware and financial resources, since the country is pursuing a donor-guided economic policy. The donor-organisations, particularly the IMF/World Bank can advise against investment in forestry, therefore rendering the new forestry policy redundant. Moreover, structural adjustment loans are not supposed to benefit all the government departments. This is where the concern for the concept of revolving fund becomes critical for running the forestry institution in general, and a 'Planning and Policy Analysis Division' in particular. This Division can be created within the proposed Forestry Commission to initiate capacity building in forestry policy and to align forestry policy with other economic and natural resource use policies. Sectoral policies which impinge on forest resources, or result in the multiplicity of institutional activities and jurisdictional problems,

emphasise inadequate capacity in policy formulation, implementation and co-ordination. The shuttling of Forest Bill between Parliament and the Forestry Department for more than a year indicated the lack of institutional capacity in forestry policy, and unclear understanding of its interaction with extra-sectoral policies.

It is important to note that the nature and characteristic of many forestry issues are such that they will not disappear just by being properly analysed. For example, analysing and pinpointing that customary tenure is detrimental to forest conservation does not guarantee an end to deforestation in the traditional areas. Adopting land tenure system that is capable of internalising most of social costs that pass uncaptured now can check deforestation. Analysis must therefore be succeeded by creation of an enabling environment for policy implementation and subsequently, monitoring. As a society is never static, new issues and problems often arise calling for decision-makers attention and analysis. This is where the need for a continuous policy analysis division becomes imperative. Forestry policy analysis should become an integral part of the Forestry Administration and the government's day-to-day activities. Furthermore, the development of Zambia's forestry policy has been *reactive* with analysis and actions coming only after problems have escaped out of control or have reached a certain degree of crisis. "There is 'therefore' a need for a more *anticipatory or proactive* approach with more attention being paid to monitoring, performance assessment and scenario preparation, that will allow for a greater degree of early detection of emerging trends and issues and the planning and identification of actions before crisis dimensions are reached" (Morell, 1998:71).

5.7.2 External policy influences on forest conservation

There are three categories of external policies that influence SFM either in a negative or a positive manner. These include the overarching framework legislation and policy; and the crosscutting and sectoral policies which have all been defined in the preceding chapters on South Africa and Tanzania.

5.7.2.1 Effects of overarching framework policies

Normally, there are two primary institutions that shape natural resource policies and hence the sustainability of natural resources such as forests and woodlands. These consist of the constitution, which is certainly the supreme law in a land guiding all national policies and legislations; and the environmental policy that in turn is defined by the framework legislation, but orders the scope of all other policies and instruments designed to safeguard the management of environmental resources.

5.7.2.1.1 The constitution

Environmental conservation is not enshrined in Zambia's 1991 constitution. MENR (1994:8) has clarified this further by stating that "the right to clean and healthy environment should be included in the constitution" to increase the participation of the public in environmental management. This reaffirms that environmental issues acquire prominence in many African countries only after the Earth Summit in June 1992. Therefore, it is expected that a new Zambian constitution is likely to contain a clause or a section informing the protection of environmental resources.

5.7.2.1.2 The environmental management policy

The National Conservation Strategy {NCS} that Zambia adopted in 1985 forms the foundation of its environmental policy because it led to the establishment of environmental legislation and institutions. The NCS was developed to manage environmental resources in a centrally planned economy. However, the policy of economic liberalisation that Zambia pursues requires its update. Consequently, the National Environmental Action Plan {NEAP} was developed. This was also conditioned by the World Bank as a prerequisite for 'International Development Association' loan. This is how a multilateral financial institution influences a developing country's planning horizon. The main preoccupation of the NEAP is to identify environmental problems and issues, isolate their causes and recommend actions needed to resolve those problems. This has been done for major environmental sectors such as Agriculture, Energy, Environmental Education, Forestry, Human population, Industry, Tourism, Water, Wildlife, among others. The interactions of environmental sectors cause some recommendations to cut across sectors. The recommended actions to resolve identified environmental problems are drawn into an 'implementation strategy' for each sector. The strategy proposes the 'action' to be taken, accords a 'priority ranking', a 'timeframe' for its implementation and finally, the responsible 'agency' for implementing the recommendation (MENR, 1994).

The structure of the NEAP is essentially the same as the South African National Forestry Action Programme {NFAP}, except for the 'risk' to implementation which the South African NFAP tries to identify, while the Zambian NEAP does not. The NEAP is a comprehensive environmental policy document, highlighting five major environmental issues that need to be addressed: air pollution, *deforestation*, *soil degradation*, water pollution and *wildlife depletion*. To tackle these issues, the government commenced the implementation of an Environmental Support Programme {ESP} as the first step of a long-term effort to strengthen environmental capacities. During the first phase of the ESP {1998-2002}, the programme is envisaged to:

i. strengthen the institutional and regulatory framework for environmental protection and natural resource management;

ii. create a community-based Pilot Environmental Fund to support community-based micro projects;

iii. facilitate the establishment of an information exchange forum for stakeholders at all levels; and to

iv. raise public awareness on environmental issues and support community-based initiatives (MFED, 1999:102; [38]).

It is appropriate that the magnitude of dependence on environmental resources in Zambia for self-provisioning requires community participation. Indeed, community participation features prominently in Zambia's new forestry policy; an effect that can be traced to the ESP which in turn is rooted in the NEAP. The power of information to solicit environmentally friendlier attitude is acknowledged. Nonetheless, its value is discounted when a condition like poverty constrains community's planning horizon, i.e., when people live for today, rather than for tomorrow. For example, widespread quarrying has negative environmental effects; consequently, a law regulates it. However, quarriers do not heed the law in Lusaka area and a survey conducted among them indicates that they are aware of the social costs of their activities, but for them survival comes first. As one quarrier indicates: "it is not that we are ignorant about the harm we do to the environment. We are well aware of it. But there is nothing we can do to avoid this problem. Some of us, when we began to experience hunger..., we turned to stone quarrying since the business does not require capital of any sort" (Chipungu, 2000). Clearly, the ability to exploit environmental resources without investment or the ability of environmental criminals to escape the social costs of their activities defines environmental conservation in Zambia. Strengthening the capacity of environmental institutions to resolve such problems and involving communities to share the costs of their activities will certainly check the country's environmental mayhems.

In summary, the NEAP is a comprehensive environmental policy document whose recommendations are based on a sector's environmental problems. It will resolve Zambia's environmental problems, if adequate resources are mobilised to secure its implementation strategies. It is also a sound overarching framework policy because its 'sectoral action plans' define the scope of sectoral environmental policies. Most importantly, the NEAP makes independent EIA obligatory in any environmental sector and authorises the appointment of environmental officers in line ministries and local governments to oversee its implementation (MENR, 1994:7).

5.7.2.2 Effects of crosscutting policies

Crosscutting policies are simply policies whose objectives on certain environmental issues cut across environmental sectors. For example, the concern for biodiversity conservation is indicated in the agricultural, wildlife, tourism, population, coastal, fisheries and industrial policies, among others. The UN Convention on Climate Change influences the forestry, agricultural and industrial policies; the same holds for the UN Convention to Combat Desertification. Similarly, the CITES ban on the international trade in elephant and rhino products and now on the broader-leafed mahogany is likely to influence wildlife, tourism, forestry and international trade policies. It is also important to note that Zambia's land policy is posited to affect agricultural, wildlife, water, housing, transport, industrial and other land-based policies. These are the crosscutting policies that will be considered in the following sections.

5.7.2.2.1 The biodiversity policy

Zambia signed the UN Convention on Biodiversity on 11 June 1992 and ratified it on 28 May 1993. However, the government did not submit information regarding the 'natural resources aspects of sustainable development' to the fifth session of the UN Conference on Sustainable Development like South Africa, Tanzania and many other African states. This makes it difficult to decipher Zambia's stance on biodiversity conservation, although the MFED (1999:105) admits that the government with assistance from the Global Environmental Facility embarked on the preliminary steps needed to draw up the Biodiversity Strategy and Action Plan for Zambia {BSAP}. The aim of the BSAP is to identify the existing factors that militate against the various options for biodiversity conservation, and to isolate and prioritise actions that would promote the conservation of biological resources in the country.

In reality, many institutional and legal changes have taken place in Zambia since the Earth Summit in Rio de Janeiro in June 1992. These changes have been facilitated by Agenda 21, rather than by a single multilateral environmental agreement such as the Convention on Biodiversity. Such changes include the establishments of the Ministry of Environment and Natural Resources; the Environmental Council of Zambia; and a number of NGOs involved in natural resource conservation, among others. Noteworthy is the formulation and adoption of the National Environmental Action Plan and the Environmental Support Programme. Institutional changes in the forestry sector include the updating of the Forests Act of 1973, emphasis on joint forest management, and the formulation and adoption of Zambia Forestry Action Programme. Further changes in the sector encompass the formulation and adoption of the new forestry policy with its corresponding instrument, the Forests Act of 1999 that establishes the Zambia Forestry Commission.

5.7.2.2.2 The UN Convention to Combat Desertification

Zambia signed the UN Convention to Combat Desertification on 15 October 1994 and ratified it on 19 September 1996, giving it the 47th position on the ratification list. Desertification is a major environmental issue in Zambia; the need to control its escalation in the Central, Eastern, Lusaka, Southern and Western Provinces is a priority. Consequently, the government with assistance from donors initiated the steps leading to the National Action Programme for desertification during 1998. This Programme lays down the foundation for implementing the Convention. Although the contents of the programme have not been available at the time of this analysis, tree-planting to offset increasing demands for fuelwood and timber, and also for retarding soil erosion and maintaining soil fertility will feature in the programme. It is implied that community forestry will become a major forest conservation tool in the five priority provinces.

5.7.2.2.3 The UN Framework Convention on Climate Change

Zambia signed and ratified this Convention in 1993[39]. This was expected to be reinforced by the Kyoto Protocol that Zambia signed on 5 August 1998, but its ratification is still outstanding as of 12 September 2000. While Zambia has identified air pollution as a major environmental issue in the National Environmental Action Plan and is implementing the Environmental Support Programme to resolve it, the country's stance on the use of forest, as a sink for CO_2 appears dubious. The large disparity between the annual rate of deforestation and that of forest recruitment indicates that more CO_2 emissions occur from forest harvests. Conversely, a pragmatic climate change control approach would be for forest recruitment to exceed forest depletion so that the extra tree-plantings tackle the CO_2 that comes from the industrial sector. Seemingly, Zambia's implementation of the UN Framework Convention on Climate Change is slow, since attempts to incorporate the Convention into domestic legislation has just commenced (Panafrican News Agency, 2000).

5.7.2.2.4 The CITES ban as an international conservation tool

The implications of the ban for this study are that elephant and rhino conservation befits designation of vast wild habitats as nature reserves and national parks. This increases the proportion of the country's land area under forest cover. Conversely, relentless killing of the country's big game species would result in loss of conservation status of protected areas. This would encourage encroachment and hence reductions in the forest cover. Nevertheless, elephants contribute to forest degradation and loss by knocking down trees and simplifying the forest habitat and its ecological processes. It is also important to note that the recent attempts to expand the scope of the ban to cover certain woody plant species, for instance, the larger leafed South American mahogany

will protect the integrity of forest resources. Furthermore, Zambia's realisation during the ban that interventions to combat environmental crimes should be pursued multilaterally and that the policy of 'keep out or you will suffer' does not work, is likely to benefit forest conservation.

Threatened with extinction, the African elephant in general, and the Zambian elephant in particular, is protected from international trade by their listing on the CITES Appendix I, since 1989. Zambia voted against this blanket ban, and went further by founding the Southern Africa Centre for Ivory Marketing {SACIM} which included Botswana, Malawi, Namibia and Zimbabwe. The primary objective of SACIM was to ensure the continued survival of elephants in large numbers and continued economic benefits from them without supporting the illegal trade. This, the elephant-range states of Southern Africa argued could be achieved by strict management of elephants in the bush and control of trade in elephant products. Basically, SACIM wanted to demonstrate how environmental conservation and development needs could be reconciled (Chenje & Johnson, 1994:49). This reflects the viewpoint of the critics of the ban, who agreed to the need to implement measures to halt the process of the extinction of the African elephant, but criticised the means by which support for the ban was achieved. They believe that the Western media were used to impose "Western" values on the rest of the world. The critique in favour of Africa is that the voices of the rural African societies, who compete with wildlife for scarce resources, were not a part of the debate surrounding the issue of elephant conservation and ivory trade. Many Africans {with the exception of pro-bans} feel that Western nations control decision-making, but do not have to deal with the consequences.

However, the African rhinos and elephants are *theoretically* protected because the illicit trade continues, causing continued decline in elephant numbers. Consequently, Zambia decided to abandon SACIM before the 1992 CITES meeting in Kyoto, where SACIM member states were to adopt a common ground in persuading CITES parties to reverse the ban for Southern African states. Zambia's U-turn on the elephant policy was demonstrated not only by words, but also by burning its eight-ton ivory stockpile (Chenje & Johnson, 1994). In the Middle East and eastern Asia, this would have fetched around $7.9 million at $450 per pound (Gibson, 1995:63), sufficient enough to boost enforcing antipoaching laws.

Having cited continued decline in elephant population as its reason for pulling out of SACIM, Zambia launched an antipoaching campaign that led to the arrest of over 1,500 poachers and the confiscation of nearly 1,200 weapons used to poach rhinos and elephants, in 1992. Although this drive, in conjunction with the CITES ban on international trade was expected to have reduced the onslaught of the country's big game species, a report

released in the early 1994 concluded that poaching was on the rise. This is because the conservation policy sought by the CITES and the Zambian government is a characteristic of an economic theory that a complete ban on a valuable commodity can never wholly eliminate the demand. To the contrary, complete ban is counterproductive because it removes the incentives for managing these big game species; and it fuels the demand for elephant and rhino products. The latter phenomenon is reflected in high price rises in the aftermath of the ban, thereby serving as a strong incentive to poach and smuggle elephant and rhino products into CITES party and non-CITES party states. Accordingly, the total ban has achieved three results: a price rise of ivory and rhino horn; people who have comparative advantage for avoiding detection, particularly government officials and organised forces, have taken over the previously legal market; and the resources have been poached to extinction or have nearly disappeared (Ajayi, 1994:91).

Nonetheless, Zambia, with support of other countries and international agencies, such as the USAID which is supporting 'community-based wildlife management programmes', or the Administrative Management Design {ADMADE}, has attempted to halt the continued poaching of rhinos and elephants in a variety of ways. For example, the government has been able to evaluate the magnitude of the damage that the country's big game species have sustained. This has obliged the government to reconsider its initial position to the CITES trade ban, and as a consequence, it has adopted its own programmes to check the misuse of the country's wildlife resources. Today, almost 12 years after the CITES trade ban, Zambia has developed a comparatively stronger wildlife legislation enforcement capacity than before the ban. Zambia has also signed treaties with other Southern African states to control transboundary poaching. Most importantly, the government has learnt that the policy of 'keep out or you will suffer' does not guarantee the security of wildlife and their habitats. Consequently, the Ministry of Environment and Natural Resources has pursued the active involvement of local people in wildlife management in some of the country's protected areas. ADMADE, which is strictly a wildlife utilisation programme in the Lower Lupande hunting block, is a clear example of the need to encourage local participation in natural resource management. Barbier *et al.* (1990:144-5) note that this is beginning to be replicated in 15 of the remaining 31 GMAs throughout Zambia.

Therefore, there has been some modest success in reducing poaching of the country's elephants through the CITES 1989 ban on ivory sales. The ban has directly reduced the demand for ivory, while indirectly, it has served as a launching pad for Zambia's initiatives towards wildlife conservation. The recent attempt to unban international ivory trade between Botswana, Namibia and Zimbabwe as suppliers and Japan as a sole buyer will serve as a strong incentive for Zambia to restock its elephant population to compete in international ivory trade.

Moreover, many African countries have long perceived ivory as a hedge against rising inflation which runs over 30% in the country.

5.7.2.2.5 Land policy

Land tenure system in Zambia, as elsewhere, lies at the heart of SFM. Currently, there are three categories of land in the country: *State, Reserve* and *Trust* Lands. The State Land constitutes 6.0% of the Zambian land area and is mainly found along the railway, Trust Land constitutes 37% and the Reserve makes 57%. The second and third categories of land are now commonly referred to as Traditional or Customary Land (Akapelwa, 1996:535). The three classifications are strictly a vestige of the colonial land use policy, for instance, native reserves had been created in the East Luangwa District in 1928, on the pretext of protecting the rights of indigenous people, while the original purpose of these subdivisions was to clarify what areas could be expropriated by the colonial administration (Okoth-Ogendo, 1993:251). What used to be called Crown Land in Northern Rhodesia has become State Land in present day Zambia.

Reserve and Trust Lands are for the sole use of the indigenous population and are administratively under the customary land tenure system which mainly allows for communal use and management, and a limited individual ownership. Secure individual ownership is being disallowed by traditional leaders due to the reversion of Reserve and Trust Lands to State Land on acquisition of title deeds. Traditional leaders fear losing land and the accompanying prestige and power in this manner, as the chiefs and their subordinates exercise overall jurisdiction and responsibility over user rights on such lands. In customary areas, Moyo *et al.* (1993:76) emphasise that the principle of a common interest is most evident in the use of land for grazing, drawing of water, collecting firewood and construction timber, hunting and fruit gathering. This does not, however, preclude the individual right to cultivated crops, although these rights are withdrawn during the period after cultivating and before the new planting season when the land reverts back to the common pool. The communal land ownership and use may be beneficial in that it acts as security insofar as one can easily return to the rural area of one's origin and work on family land upon retirement or failure to secure employment in the towns or in the mining industry. However, this militates against investment in land resource conservation on communal land in the manner outlined below.

The major hindrance to communal land ownership and use concerns the existing pattern of land use and management, where the question of land ownership, including security, excludability and transferability is left unattended. This is evident in the cattle-rearing areas of southern Zambia, where extensive tracts of land are

overstocked and consequently overgrazed. Mismanagement of land resources in traditional areas can be attributed to three main factors:

i. No one is prepared to conserve or improve the pasture used communally, since no one farmer can be held responsible for overgrazing the land that is communally exploited.

ii. The birthright notion attached to communal land. This can lead to under-utilisation or the total neglect of land, since the family or clan members are aware that there would always be a parcel of land for them to work, as long as they can readily be traced to some ancestors who occupied a given rural area.

iii. Land disputes have arisen, where peasant farmers wish to return to their ancestral land that was confiscated by the colonial authorities. Traditional norms imply that they have a share of the land where they were born. In cases where such land has been formalised as a state property, peasant farmers resort to squatting on state land that might have been designated for a different use (Moyo *et al.*, 1993:276-7), such as biodiversity protection. For example, following a recent appeal by the Ministry of Environment and Natural Resources to remove squatters from Zambia's forest reserves, the Minister for the Copperbelt area refused to comply, saying, "I cannot see any forest here. All I can see are cassava, groundnut, and cabbage forests" (Cromwell, 1996b:132).

A former Chief Conservator of Forests has noted that the negative effect of the country's land tenure system, in terms of forestry and forest resources, is that under the Forests Act of 1973, the people who live on Reserve and Trust Lands have free access to forest resources for agriculture and domestic use. This means that on about 94% of the total land area of the country, people are licensed to clear forests as long as they do so in the name of agriculture and domestic use. Domestic use which can also be interpreted to mean *own use*, has far reaching implications for the country's forests. It is this aspect of land use {biased in favour of agriculture} that has caused extensive tracts of forests to be destroyed in areas where *chitemene* and other forms of shifting cultivation are practised. Another factor militating against the conservation of natural resources in communal areas is the lack of security of tenure for all the parties involved. Both situations demonstrate market failure. As a result, people are reluctant to partake in long-term forestry projects such as tree-planting on agricultural holdings because there is no guarantee that they can remain on the same land parcels for an indefinite period (Akapelwa, 1996:536). The MENR (1994:6) has echoed this by pointing out that tenurial arrangements under customary system have been

an obstacle to investment in land resources, including land conservation measures and/or tree-planting on farms and degraded areas.

Communal tenure is an obstacle to technical progress. For example, it is argued that overstocking would not occur if peasant farmers were allocated individual grazing units because individuals who overexploit their lands would suffer the resulting consequences (Moyo *et al.*, 1993:276). In the same vein, it is hardly conceivable that a farmer can invest labour and capital such as land improvements, fertilisers, terracing and irrigation outside private and hereditary property. Without legal title to it, a communal land is a no-man's land. Peasant farmers' tenure is uncertain and as a consequence, they cannot offer their holding as collateral for loans, because it is not fully theirs to forfeit if they default. Furthermore, they cannot be sure that they will be farming the same areas after a decade or two, and so they do not have incentive to invest in permanent improvements to the land, varying from tree-planting to soil conservation measures (Paul Harrison, cited in Bassett, 1993:14). Therefore, it is correct to assert that communal tenure and use is one of the most important factors for depletion and degradation of forest cover in Zambia.

As communal tenure system is posited to be a structural feature of environmental degradation, the need for private ownership of land with secure, exclusive and transferable rights becomes necessary. This is tenable in Zambia, where the population is highly urbanised and the rural people are sparsely distributed on approximately 94% of the country's total land area. To make this happen requires removal of certain institutional barriers which impede transfer of land from the traditional sector to the private sector. For example, the bureaucracy and, especially the costs involved in the issuance of title deeds makes it almost impossible to the vast majority of rural farmers to acquire land with secure rights. Nevertheless, there is a provision for smallholders to obtain title deeds to land that they currently occupy under the customary tenure. To acquire a title deed, an applicant is required to apply to the 'Commissioner of Lands' for a lease, but before the lease is granted the land is to be surveyed by the 'General-Surveyor', as most of the land on the Reserves and Trust Lands has not been surveyed because of the prohibitive cost imposed on the person whose land is under consideration. In practice, the picture that emerges is unambiguous: the *haves* have secure tenure of the land, while the *have-nots* do not have secure tenurial rights of the land they live and work on (Moyo *et al.*, 1993:276). Additional obstacle to land tenure security in traditional areas is the reversion of Reserves and Trust Land to State Land on the acquisition of title deeds. Traditional chiefs who wield power in rural areas fear losing land and the accompanying prestige and power in this manner. As a result, they are unwilling to give their consent, denying smallholders the opportunity for obtaining credit using title deeds as security.

5.7.2.2.5.1 Lands Act of 1995

The Lands Act of 1995 vests all land in Zambia in the President and shall be held by him in perpetuity *for* and *on* behalf of the people of Zambia. This land law empowers the President to alienate land vested in him to any Zambian or non-Zambian, however, he shall not alienate any land situated in a district or an area where land is held under customary tenure without {among other things} consulting the chief and the local authority in the area in which the land to be alienated is situated. It is evident that the Act empowers the President to alienate *only* State Land, over which he has an uncompromising control[40].

The customary tenure system in Zambia, where land is administered by the traditional chiefs and the village headmen who control land allocation, does not *ensure* exclusive rights to land owners, as the land reverts between individual and communal management. For example, when an individual has been parcelled a land, the security of ownership is perpetuated only through cultivation, since resources in cultivated areas can temporarily revert back to communal use and management between periods of cultivation. Fallow periods during which soil nutrients are recharged are discouraged under this tenurial arrangement, as there is no guarantee that such areas cannot be exposed to communal grazing, where the trampling effects of animal hoofs will destroy the soil structure. Moreover, land, forest and wildlife resources in uncultivated areas are communally utilised (MENR, 1994:6). This is an incentive for each communal resource user to maximise his own gains as long as there is an opportunity to do so. *Transferability* of land from one user to another voluntarily was impossible under the previous land legislation and appears to remain so under the new Lands Act of 1995. For example, "a person shall not sell, transfer or assign any land without the consent of the President and shall accordingly apply for that consent before doing so"[40]. This applies to all the categories of land in Zambia.

While customary holdings are recognised and are to be continued in accordance with the most recent Lands Act, conversion of customary tenure into private holding is made impossible. However, conversion of customary tenure into leasehold tenure is favoured. It is stated that "any person who holds land under customary tenure may convert it into a leasehold tenure not exceeding 99 years...". Such conversion can be effected by way of a grant of leasehold by the President; any other title that the President may grant; and by any other law. The point of intersection between the old and the new land legislation is that "the conversion of rights from a customary tenure to a leasehold shall have effect only after the approval of the chief and the local authorities in whose area the land to be converted is situated" (ibid.). The thorny question is whether the chiefs could undermine their own authorities by approving the transfer of lands from their hands to where they would have no influence and respect.

Sustainable land resource management will encounter numerous difficulties, as there are many incentives for creating external costs. Alternatively, natural resource management will not be sustainable under the prevailing tenurial arrangement, where smallholders have been induced to produce for the market and subsistence; firewood cutting and charcoal burning are profitable enterprises; and where bushmeat is essential for the pot and petty trade, yet they are open-access resources. Thus, the benefits and costs of consuming these resources must be internalised to promote their conservation.

5.7.2.3 Effects of sectoral policies

It is evident that natural resources interdepend, though mainly in an indirect manner. This means that policy decisions taken outside the forestry sector can encourage or discourage forest conservation. For instance, policies that promote wildlife conservation may be a major determinant for forest conservation outside the forestry sector; likewise, wildlife-based tourism may be seen as a non-consumptive use of forest resources. Nonetheless, such environmental conservation policies would transfer productive forestland to non-forest uses, with a consequent reduction in the availability of forest products to dependent communities. This would increase pressure on remaining productive forests, causing their overexploitation in the absence of efficient mechanisms for transaction of forest depletion costs; otherwise, this would create resource scarcity, encouraging forest conservation on non-industrial private lands. On the other hand, transportation policy that encourages construction of transport infrastructures in forested areas may promote migration into forested areas and cause deforestation. However, well-developed transport network is essential for intensive agriculture in Zambia's rural areas where extensive farming practices threaten forest resources. Similarly, energy policy that is centred on provision of conventional fuels and lacks clear strategies for fuelwood, although the majority of people depend on it, is far detached from the country's macro-energy realities. Furthermore, a country's economic policy and political philosophy define its forest conservation policy.

Noteworthy, it is difficult to produce a complete catalogue of policies that bear important results for forest conservation. Those included in the following sections affect forest conservation at a macro-scale. However, with growing pressure on land and forest resources, many policies whose effects may only be described as a scenario now, are likely to affect forest productivity in a dramatic manner in the nearest future.

5.7.2.3.1 Water policy

The National Environmental Action Plan {NEAP} which was expected to inform the water policy, recognised the role of forest in maintaining the integrity of catchment and riverine areas. It is acknowledged that loss of trees causes an increase in surface runoff and soil erosion. This increases flooding and reduces rivers to annual status by the increased rate of sedimentation. Deforestation increases surface runoff by 10-20%. However, in the Copperbelt area, where there is intense deforestation surface runoff has increased by 50% (MENR, 1994:42). Accordingly, the link between forest and Zambia's extensive surface water is established.

The water policy "is aimed at promoting a sustainable water resources development with a view to facilitate an equitable provision of adequate quantity and quality of water for all competing groups of users at acceptable costs and ensuring security of water under varying conditions. This entails establishing a well-defined institutional structure..." (MEWD, 1994:14). This broad aim is decomposed into seven specific policy statements, but none of them makes any recourse to halting or controlling deforestation in water catchment areas. The only statement that may have some implications for forest conservation is the need to undertake EIAs prior to implementation of development projects that are likely to impair water quality (MEWD, 1994:15). Furthermore, the 'action plan' for the water sector {NEAP} which is normally expected to shape the contents of the water policy fails to elicit any connection between forest and water resource conservation in Zambia.

Zambia's position on water appears to be influenced by the sheer magnitude of water resources in the country. Instead of creating a natural resource conservation ethic in the country now, the government is deferring it to some future time, when the scarcity of surface water resources develops. This is the general attitude that governs natural resource allocation in Zambia, Tanzania and Mozambique, where the existing governments do not see an end to the exploitation of their renewable natural resources. Moreover, most Zambians contend that they have extensive forests that will always be there irrespective of their activities (Akapelwa, 1996:535). South Africa contrasts sharply with these countries, confirming the simple law of demand and supply.

5.7.2.3.2 Energy policy

The shrinkage in Zambia's forest resources is partly due to the growing need for woodfuel by the increasing population. Woodfuel is an important source of energy in the traditional sector and for low and middle-income urban households. Biofuels supply an estimated 46% of the country's total fuel consumption, as shown in the following Table 5.7 (Simson, 1985:55). The previous Tables 5.3, 5.4 and 5.5 illustrate the significance of biomass energy in the Zambian economy.

Table 5.7: Energy consumption by sources

Source	Percentage
Petroleum	16.5
Coke	1.3
Hydroelectricity	30.4
Coal	6.1
Woodfuel	45.6
Total	100.0

Source: World Bank Report No. 4110-Za (cited in Simson, 1985:55).

The significance of biofuels to the majority of Zambians is unequivocal, for instance, the FAO (1995b:120) emphasises that nearly 90% of urban homes and almost 100% of rural homes use energy derived from wood. The Development Co-operation of the Netherlands Ministry of Foreign Affairs (1997:63) has reaffirmed this by pointing out that nearly 90% of urban households and even larger proportion of rural ones depend on firewood and charcoal as energy sources. A recent observation has concluded that the government does not have the finances to energise suburban and rural areas, and this explains their heavy dependence on woodfuel. "Right now, in rural Zambia, only 2.0% of the people have access to energy" (Earth Times News Service, 16 Dec 1998). In this context, *energy* refers to electricity and fossil fuels.

Many experts and institutions have attempted to quantify the effects of woodfuel extraction and consumption on the nation's forests. For example, 7.0 million m^3 of woodfuel, equivalent to 135,000 ha, is cut annually, most of which is converted into charcoal (Simson, 1985:56). Moyo *et al.* (1993:279-80) assert that the consumption of biofuels by the rural societies and a significant proportion of the urban households adds to the problem of deforestation. It is estimated that 200,000 ha of forest and woodland are lost each year in this manner. For the urban poor, who depend entirely on biomass energy, there is a serious economic consequence. As charcoal-collecting points near the major population centres are depleted, forests and woodlands further away become new collection sites. Transport costs to collect fuelwood further afield rise, causing increases in the price of woodfuel. This makes the trade in fuelwood and charcoal a lucrative business, attracting many urban, peri-urban and rural people to clear forests. It is essential to note that the use of off-road vehicles to collect woodfuel initiates soil erosion in this semi-domesticated environment through runoff collection along wheel prints. Deforestation through biomass energy extraction is so dramatic that widening areas of land degradation ring

many of the country's major towns. Woodfuel resources within a radius of 150 km from Lusaka have seriously been degraded (Simson, 1985:57). Although Zambia is a net exporter of electricity, the majority of Zambians still depend on woodfuel. The Forestry Department approximates that 97% of the country's population rely on biomass energy as their domestic source of energy. Despite the availability of electrical energy in urban areas, 83% of the people living in towns and cities still use woodfuel. This amounts to the clearance of about 300,000 ha of forest annually for woodfuel and agriculture (Akapelwa, 1996:536). Charcoal and fuelwood remain the main sources of energy supply for cooking and heating purposes for most people in both urban and rural areas (Van Buren, 1999:1144).

Whilst there are discrepant estimates which can be attributed to the differences in energy survey techniques, it is logical to point out that more than 90% of the population uses woodfuel. Naturally, the significance of biofuels would be reflected in the government's energy policy, clarifying its importance, the policy goals and objectives designed to supply and sustain it indefinitely. If the colonial rule in Zambia had failed to lay down guidelines for provision of woodfuel and the means for perpetuating it, then such a policy should have been formulated immediately after independence, when almost 100% of the population depended on biomass energy. However, this did not appeal immediately to the indigenous government that deferred woodfuel issues until 1986, when objectives concerning sustainable supply of woodfuels were included in the 'National Development Plan'. Very little mention was made of the traditional energy problem in national development plans prior to the 'Fourth National Development Plan' that spanned from 1986 to1990. This plan has included some objectives and strategies aimed at solving the problems of rural and household energy demand and supply. The specific objectives for biomass fuels are as follows:

i. to improve the supply and utilisation of woodfuels, for both industrial and domestic uses;
ii. to minimise the environmental damage caused by energy production and consumption, with particular emphasis on woodfuel; and
iii. to promote research and development in new and renewable sources of energy (Moyo *et al.*, 1993:292-3).

These objectives reflect a government reaction to evidence that the problem of deforestation is inclined to deteriorate in the near to medium term, if no concerted efforts are made to reverse the trend. However, unfortunately, the problem of rural and suburban energy does not seem to be well-defined and as a result, there is no comprehensive rural energy development plan, although Moyo *et al.* (1993:293) argue that this problem is

recognised and steps are being taken to address it by launching a study aimed at the formulation of a comprehensive strategy for rural energy, *inter alia*. Hierarchically, the National Commission for Development Planning {NCDP} in the Ministry of Finance and Economic Development {MFED} is charged with the responsibility of preparing comprehensive policies and plans for all sectors of the economy. For energy policy, the NCDP depends entirely on the contribution of the Department of Energy {DoE} in the Ministry of Energy and Water Development. In terms of woodfuel, the brief of the DoE is to advise on policy and formulate a comprehensive strategy for rural household energy problems. The National Energy Council that was established in 1982 by an Act of parliament, two years before the creation of the DoE operates in the same ministry. Its role is to advise the Minister of Energy and Water Development on key issues pertaining to the development of an appropriate energy policy and its implementation. There are also NGOs which play an important role in the development of the rural energy sector.

However, there is an apparent lack of co-ordination between the institutions involved in energy development, although this responsibility lies with the Ministry of Energy and Water Development {MEWD}. According to the Fourth Development Plan, "lack of effective overall co-ordination has led to a situation where the above institutions have not worked closely with each other. The need for effective institutional set-up for policy harmonisation and co-ordination of the energy sector institutions is a matter of priority" (Moyo *et al.*, 1993:294). It is conspicuous that woodfuel suffers from intra and interdepartmental policy co-ordination, and institutional misplacement. Realistically, the responsibility for formulating a policy for sustainable woodfuel supply should be entrusted to the Forestry Department because it is the national institution mandated to manage the country's forests that constitute the woodfuel resource base. Under the prevailing arrangement biomass fuels have slipped into the gap between the MEWD and the Ministry of the Environment and Natural Resources. Neither the Forestry Department nor the DoE has a clearly defined mandate, responsibility, or authority to supply woodfuel. This is likely to result in a situation where either both ministries ignore the issue or, if there is external funding from international development agencies, such as the World Bank, UNDP, Swedish Eco-Institute, both claim proprietorial rights (Soussan, 1993:51).

5.7.2.3.3 Population policy

Zambia has one of the fastest population growth rates on the African continent. However, with at most 15 people/km^2, about one-half of whom live in urban areas, land pressure should not yet be an issue. Unfortunately, rapid population growth in unfavourable conditions such as limited employment opportunities, persistent poverty and insecure land tenure mean that the available option for subsistence for many people is to cause

deforestation. While on average some 40% of the net population increase in the country is absorbed by migration to urban areas, the rest is the net increase in rural and agricultural population. A consequence of population increase in the urban sector is the accelerated *overcutting* for timber, fuelwood and charcoal which completely eliminates forest growth around major population centres. *Urbanisation* also increases pressures for expansion of land under human settlements, although land loss to human settlement appears not to be a substantial threat. However, as much urbanisation tends to be in areas with high quality soils and the population continues to grow losses of further areas with agricultural potential will stimulate the possible cultivation of poorer quality or ecologically sensitive sites (Alexandratos, 1997: 352-3). In rural areas, increase in population size exerts a greater pressure on forest resources — the traditional farming sector normally requires only two to four persons/km^2. Overgrazing of rough pastures in the Southern, Western, North-western and Central Provinces, combined with the high dependence on biomass energy make the effects of Zambia's rapid population growth rate of about 2.7 to 4.0%/annum on land resources much obvious.

Table 5.8: Population data

Source	Size (millions)	Growth rate (percent)	Density Inhab/km^2	Urban %
World Bank in Williams (1999:1134)	9.2[a]	2.8[b]	12.2	41.0
CSO in Van Buren (1999:1146)	9.3[c]	-	12.5	-
CSO (1997:3)	7.8[d]	2.7	10.4	38.0
Akapelwa (1996:535)	8.2	3.2	11.0	39.4
FAO (1995a:3)	8.3	4.0	11.4	-
Chenje & Johnson (1994:47)	-	-	-	>50.0
Moyo *et al.* (1993:270)	10.5	3.7[e]	14.0	>50.0

Legend

[a] Also confirmed by http://www.statehouse.gov.zm/features.htm;
[b] 1986 to 1996;
[c] official estimate at mid-1995;
[d] according to the 1990 national census; and
[e] 1980 to 1990.

It is clear that Zambia is on a high demographic growth path. However, making food availability to grow at an equal rate with population growth to reflect sustainable development is currently a myth. Realistically, population growth is accompanied by increases in the number of persons living off the exploitation of forest resources with

the consequence that the natural resource base diminishes. This means that population change in the country is a significant explanatory variable of changes in the country's forest area, and that Zambia is a case where SFM and economic development in general are likely to be threatened by rapid population growth. Consequently, the neo-Malthusian government {which maintains that population growth is the major threat to the environment and sustainable development} declared a national population policy in May 1989. This was revised in December 1996. The goal of the population policy is "to influence the country's population dynamics and their determinants so as to enhance the attainment of sustainable development" (MFED, 1997:14), while the policy objectives are:

i. to ensure that population issues and other development concerns are mutually integrated in the planning and implementation processes to attain development;
ii. to ensure that all couples and individuals have the basic right to decide freely and responsibly the number and spacing of their children and to have the information, education and means to do so in order to enhance the health of families;
iii. to establish and continuously update a national population-related database and information system that will pool pertinent data and information from various sources with a view to ensure availability of timely, population-related data;
iv. to enhance participation among opinion leaders and the general public in population and development issues in order to generate and sustain commitment;
v. to contribute to the reduction of maternal, infant and child mortality in order to increase life expectancy;
vi. to contribute to the reduction of HIV/AIDS infections and other sexually transmitted diseases so as to improve the general health status of the population;
vii. to promote fair distribution of the population between rural and urban areas so as to ensure balanced development;
viii. to promote productive employment opportunities for women in order to promote gender equality;
ix. to improve the population's access to appropriate, affordable and quality reproductive health services, including family planning and sexual health in order to have a healthy nation;
x. to promote the incorporation of population and gender education into school curricula at all levels in order to increase the knowledge and understanding of population and gender issues; and
xi. to promote and maintain equal access to education for both sexes at all levels in order to raise literacy (CSO, 1997:4-5).

It should be clarified that population policy does not only require investment in information about the benefits of

reduced family size, gender issues, education and contraception, but also a major effort to understand and modify the underlying cultural factors which continue to favour large families. Implicitly, the policy should target the bundle of economic incentives that cause peasant families to want more children. For example, the demand for more children can partly be explained by the insecure patterns of land tenure that prevail on Reserve and Trust Lands. In rural societies children are needed on a daily basis for labour-intensive farming and for the remittances migrant children could return. Having more children is therefore one of the ways of coping with economic insecurity that faces many Zambians, particularly in old age (Barraclough & Ghimire, 1995:85). The following quotation from Sharma and Rowe (1992:32) explains the need for more children in rural areas:

> Poor 'rural' families feel obligated to have many children to provide household help, protection, and old-age support, thus increasing the reliance on natural resources for household food and energy. They also rely on forests for income and subsistence needs and unless given *property rights* or offered better economic opportunities, will continue to exploit forests. An inadequate government response to increasing land scarcity, especially in densely populated areas, does not help, as it encourages the clearing of forests.

Land also features in the rapid population growth because under the traditional system of tenure, in which all members of a local tribe or clan have access to clear land for agriculture, a man obtains more land by marrying more wives and getting more children. This is because, a man with two wives will be assigned two plots by the local chief who controls the tribal tenure, while a man with one wife will get one. The same follows for adult sons. Consequently, land resource limitation does not feature in a communal farmer's planning horizon. Rural women also need many children to help them in their double role as agricultural workers and housewives. For example, in Zambia, farmwomen contribute more hours daily than men to farm work — 8.5 hours versus 7.4 hours — and to non-agricultural tasks — 5.0 hours versus 1.1 hours. The heavy workloads and the severe time-pressure faced by women increase the need for child labour (Cleaver & Schreiber, 1992:34). Therefore, children are considered as wealth rather than consumers of it (Boserup, 1981:180).

The potent tool to control the country's rapid population growth rate is to empower people to respond to increasing land resource scarcity and degradation. *Space limitation* for both human settlement and self-provisioning can put parents of large families at a relative disadvantage and will create a brisk demand for contraceptives. This, when combined with poverty alleviation schemes which may require different policy instruments for different categories of poor people, will go a long way in controlling the high fertility encountered throughout the country.

An additional drawback of the policy is the vagueness of its goal. Unless a quantitative target to be met within a

certain period of time is set, it is very difficult for policy-makers to see that the policy meets its goal. The Population and Development Planning Unit of the Ministry of Finance and Economic Development should set clear targets, for instance, to reduce the birth rate from say 50/thousand in 2001 to 25 in 2010. Monitoring and evaluation will inform the decision-makers about the effectiveness of measures employed in attaining this target. However, without such a clear goal, it is almost impossible to measure the performance and progress of population programmes which are directed at sustainable development.

5.7.2.3.4 Agricultural policy

Agriculture plays a major role in Zambia's economy, providing 2,807,176 and 57,529 jobs in the informal and formal sectors, respectively. The formal sector is dominated by employment offered by the Ministry of Agriculture, Food and Fisheries (MAFF). Preliminary estimates for 1998 indicate that agriculture contributed 6.3% to the GDP (MFED, 1999:21&24). This indicates a poor performance, as previous estimates indicated high GDP figures. For example, the FAO estimates that agriculture accounted for 11% of the GDP in 1970, and for 18.8% in 1996, while it employed 73.5% of the labour force at mid-1996 (Van Burren, 1999:1141). The Official SADC Trade, Industry and Investment Review (1998:312) indicates that agriculture had recovered in the mid-1990s where it accounted for 20% in 1996. Moyo *et al.* (1993:273) state that the sector accounted for 13% of the GDP, and provided a livelihood for about 50% of the population. It is noted further that agriculture's share of the GDP has risen from 13% in 1985 to 17% in 1990. The sector employs about 67% of the labour, while approximately 60% of the population is currently dependent on it[1]. Contrary to the recent economic report produced by the MFED, the sector had witnessed a steady growth. It is indisputable that agriculture is the backbone of the economy, especially if the contribution to rural livelihoods is considered.

5.7.2.3.4.1 Policy objectives

The goal of the MAFF is "to facilitate and support the development of a sustainable and competitive agricultural sector that assures food security at national and household levels and maximises the sector's contribution to GDP with the immediate goal of attaining growth through increased productivity and production" (MAFF, 1998:6). This will be achieved through the pursuance of the following policy thrusts which unlike broad policy objectives are more specific, providing better understanding of the consequences of the agricultural sector for forest resources.

i. liberalising agricultural markets;
ii. developing the livestock sector;
iii. supporting private sector development;

iv. promoting agricultural diversification;

v. placing emphasis on service delivery to smallholders;

vi. expanding opportunities for outlying regions;

vii. improving the economic status of women;

viii. improving the use of available water resources;

ix. encouraging the full utilisation of land suitable for agriculture;

x. helping farmers deal with natural disasters; and

xi. placing emphasis on sustainable agriculture.

5.7.2.3.4.2 Effects of agricultural policy thrusts

Agriculture and livestock are primary competing uses for forestland, so the official government policy to stimulate countrywide agricultural and livestock production in the face of poor performance of the country's once robust mining industry has important implications for the forestry sector. The priority accorded to agriculture has been reflected recently in the proportion of the government development budget for agriculture which rose from 11% in 1974/76 to 30% in the mid and late 1980s. This figure is expected to have increased. Although, it is evident that each of the above policy thrusts is likely to influence forest conservation, this analysis will focus on the first two thrusts which are judged to control forest conservation in a more dramatic manner than the rest.

5.7.2.3.4.2.1 Agricultural market liberalisation

Zambia's government has strategised to withdraw from direct involvement in agricultural marketing and input supply. It also strategises to free prices, remove subsidies, privatise agricultural parastatals, and rent or sell public storage facilities to the private sector. These interventions {market liberalisation} are to promote the development of the private sector because it is believed that the sector could handle agricultural input distribution and marketing better than the inefficient parastatals. Furthermore, the government seeks to encourage export of agricultural produce, while penalising its import.

The effects of the latter strategy on Zambia's forest resources will be discussed exhaustively under the effects of structural adjustment programme that follow. However, it is worth noting that removal of subsidies on agricultural inputs, particularly chemical fertilisers puts it outside the reach of smallholders, forcing them to maintain increased levels of agricultural output at the extensive margin. Even if it were to be argued that the days of extensification were over in Zambia, as areas available to expand farming had disappeared and as a consequence, peasant farmers would turn to labour-led intensification, this would not avert land degradation.

MENR (1994:32) notes that 10% of Zambia's land surface has a high soil erosion hazard. Low crop outputs due to lack of fertilisers would render such areas vulnerable to conversion, moreover, there are indications that land degradation has affected the Southern, Western, Central and Lusaka Provinces, as highlighted elsewhere in this report. It is also unlikely that the Eastern Province will escape land degradation in the near future, as farmers in the affected areas begin to search for pristine or better agricultural lands.

Labour-led intensification embraces reducing fallow periods, planting seeds more densely and pushing the land harder. However, few can afford to offset the mining of land by applying fertiliser and manure to protect soil fertility and prevent soil exhaustion. "Extracting more without giving more back is one of the most important environmental issues in Africa — and at the backbone of the agricultural crisis" (Reardon & Shaik, 1995). The big problem hindering sustainable intensification is using *too little* to *no* fertiliser and manure. This undermines the peasant and emergent farmers' abilities to intensify and forces them to seek new forestlands to encroach. Therefore, what Zambia's smallholders need is not labour-led intensification, but capital-led intensification, where farmers crop more intensively, nevertheless, they offset harmful effects on the soil fertility by enriching the soil with fertiliser, manure, or compost, and protecting it with bunds, terraces and windbreaks.

Cuts in subsidies on agricultural inputs, mainly fertilisers can be held accountable, *inter alia*, for the ongoing destructive farming practices of about 700,000 farming families, using tools such as hoe or ox for cultivation of both food and cash crops (Moyo *et al.*, 1993:273). These farmers practise *chitemene* — a form of shifting cultivation, in which trees are cut within a selected area between July and September, laid out to dry and are gathered afterwards into a heap in the centre of the cut area. Generally, the area of a heap is around 0.4 ha, while the size of the cut area depends on the quantity of woody biomass in that area. Where the fallow period is as long as 30 years, it may be around 4.0 ha, but for shorter fallow periods, the cut area can be as high as 11 ha[41].

It is estimated that at least 900,000 ha of woodland is cultivated using the *chitemene* system; consequently, it is termed as a principal cause of deforestation, especially in the northern part of the country where lush vegetation predominates (Moyo *et al.*, 1993:279). The effects of traditional agriculture on Zambia's forests have also been emphasised by Akapelwa (1996:536), when he states that it results in large areas of forest being cleared every year in those provinces where *chitemene* and other forms of shifting cultivation, such as *fundikila* are practised. *Fundikila* or 'grass-mound' system of cultivation is a culmination of the breakdown of the *chitemene* system due to increasing population. Unlike the *chitemene* system, in which felled trees are burned to release absorbed

nutrients back to the soil, *fundikila* involves the formation towards the end of the rainy season of mounds of grass covered by earth on a previously fallow site. The grass rots within the mound during the dry season, and at the start of the next rains, the mounds are levelled and the desired crops are sown. The field may be mounded every second year or cultivation may continue for four consecutive years, when alternated with legume crops, such as groundnuts and beans which have the ability to fix nitrogen, replenishing soil nutrients. Chemical fertilisers which have become inaccessible to these resource-poor farmers, would have been an additional ingredient to sustain desired agricultural productivity.

With the *chitemene* system supporting between two and four persons/km^2, it is indisputable that the traditional agricultural sector constitutes a major source of deforestation. This can also be referenced to the country's land use policy which gives priority to agriculture — peasant farmers have free access to forest as long as forestland is cleared for agriculture after consultation with a village headman (Akapelwa, 1996:536).

It is comprehensible that Kenneth Kaunda's government had erred in its blanket subsidisation policy in which subsidies had appeared to be the characteristic feature of the time. However, the correct solution to this would not be the blanket removal of subsidies, since this is likely to hinder the sustainability of agriculture as well as forest resources. The present government should have evaluated the role of input subsidies for the agricultural sector and re-route it to enhance sustainably intensive agriculture in the smallholder sector. It is in rural areas where Zambia's forest reserves and wildlife sanctuaries are intruded upon, mainly to maintain food and cash crop production. The approximately 1,000 heavily capitalised commercial farmers along the line of rail do not need subsidies on agricultural inputs to maintain desired levels of production, although extension services and research are pertinent to their development. It is apparent that the government is preoccupied with the burden that subsidies exert on the national economy, without examining their beneficial effects of encouraging better land husbandry and adequate maintenance of natural vegetation.

5.7.2.3.4.2.1.1 Market pricing for agri-food

While the market price might have improved the affordability of food, it does not reflect the social cost of production, as it fails to incorporate many of the soil and environmental costs of production. These costs, i.e., deforestation and its attendant problems, are passed onto society as a whole, rather than being incorporated in the agri-food balance sheet. A sustainable development in the agricultural sector should result in these costs becoming more explicit and would almost certainly result in some increase in food prices. This would also apply to non-food agricultural produce whose production and consumption have a significant impact on the

environment, and so carry high social and environmental costs (Baldock *et al.*, 1996:34). For example, tobacco which is one of the regular exports places much stress on the forest ecosystem, both in terms of land and fuel for curing. The production of tobacco rose by more than 170%, representing an areal increase of about 3,932 ha during the 1996/7 and 1997/8 agricultural season (MFED, 1999:51). Equivalent areas of forest are needed to cure the crop annually. Cotton also belongs to this non-food category that requires government intervention to correct its price. It registered a production increase of more than 47% during the same period.

5.7.2.3.4.2.2 Development of the livestock sector

Zambia has approximately 5.0 million head of cattle (The Official SADC Trade, Industry and Investment Review, 1998:312). More than 80% of Zambia's livestock are found on small-scale farms (MAFF, 1998:11; MFED, 1999:53), with about 90% of them concentrated in the Central, Lusaka, Eastern, Southern and Western Provinces. There is an intense pressure on rangelands in these provinces because off-takes from the traditional sector are low (MENR, 1994:33). This reflects the need among traditional herders to preserve wealth in form of livestock. Livestock production in the large-scale commercial sector is also concentrated in the Southern Province, where Zambezi Ranching rears livestock on over 80,000 ha of land. The same company has recently acquired an additional 20,000 ha in other livestock producing parts of the country. About 25,000 cattle graze in this 100,000 ha holding (Van Buren, 1999:1142).

Moyo *et al.* (1993:280) have established the relationship between livestock production and land degradation in animal rearing areas. Overgrazing-induced soil erosion is severe in the reserves around Mazabuka, Pemba, Monze, Gwembe Valley and around Choma, in the Southern Province; and around Mongu, in the Western Province. In addition, parts of the Central and Eastern Provinces are affected. Overgrazing and land degradation in Reserve and Trust Lands can be explained by the customary management of land resources in these areas. In the customary system, herders have equal rights to graze any number of livestock in a communal rangeland — no one individual has a full right over a grazing unit. This makes it impossible to hold any farmer responsible for overstocking and overgrazing that characterise communal lands in livestock producing parts of the country.

Although there are reciprocal externalities involved in this customary system, the unequal distribution of livestock among local herders prevents them from devising and implementing a strategy for the common good of resource users — transaction costs are high. Interestingly, Hardins's seminal thesis on 'the tragedy of the commons' describes events in an imaginary grazing area, 'the commons', that is open to *all*. "No constraints exist on how many cattle an individual member of the community may graze. If a limited number of cattle per year are grazed,

the commons can renew itself and provide a satisfactory grazing area indefinitely" (cited in Ortolano, 1997:112-3). However, as each herdsman seeks to maximise his own gain by adding more animals to his herd due to lack of restrictions on the size of an individual's cattle, the *commons* are overstocked and eventually overgrazed. Hardin's prophecy of 1968 has come true in Zambia's communal rangelands!

The reluctance of herders to sell or cull their animals to maintain the carrying capacities of communal rangelands is directly attributed to the communal property use. Realistically, a communal grazing land is an 'open-access' resource to all the vested interests in a given community. The unequivocal solution to this problem is allocation and enforcement of individual grazing units. This will guard against overstocking because individuals who abuse their pastures will suffer the resultant consequences. The livestock in the traditional sector should contribute to the economic development of the country. However, as livestock among peasant farmers are kept more for prestige rather than for an economic welfare, they must individually be made to bear the full consequences of their decisions. It is only *resource limitation* that will make them respond positively to environmental degradation and adopt environmentally benign technologies. Herdsmen should not impose external costs on other Zambians — environmental justice must prevail. It has been noted that, in communal areas, livestock tend to destroy field crops, nevertheless, during the time that the fields are under crops, animals are not supposed to trample and graze the agricultural field crops (Moyo *et al.*, 1993:274). Another reason to internalise the social costs caused by overstocking and eventually overgrazing concerns the *uncertainties* about the needs of future generations. The future generations may wish to put the areas currently undergoing overgrazing to uses other than livestock production.

Allocation and enforcement of separate grazing units is expected to put the owners of large herd sizes at a disadvantage. This will result in disposal of some animals through sale and culling, in view of improving the quality of the remaining animals and their range. If the government avails support services, such as credit to smallholders, as amplified in the national agricultural policy (MAFF, 1998:11), they will have the opportunity to purchase draught animals from such sales. On the other hand, small herders will find it unprofitable to devote all their resources to livestock production and will develop new techniques of incorporating livestock into crop production — agrosilvopastural system. Instead of using hoes, smallholders have opportunities to use oxen.

Agrosilvopastural system is a highly sustainable and reasonably productive system in which soil fertility is maintained by optimum application of livestock manure, domestic refuse and crop residues. This system involves the integration of crop-livestock in varying degrees and facilitates the occurrence of permanent, intensive

agricultural production for both self-provisioning and cash in areas of high population density. Densely populated areas of Kano, Ibibo and Igbo, in Nigeria; Ukara Island, in Tanzania; Nyabisindu, in Rwanda; Ituri, in eastern DRC; and Machakos, in Kenya illustrate good examples of this system. The sustainability of the system can greatly be improved by cultivating improved crop varieties, using efficient cropping system and soil conservation technique such as terraces and bunds (Watts, 1996:42).

Integration of big and/or small livestock into crop cultivation systems is ecologically, biologically and socio-economically viable, especially where animals graze fallow land to provide fertilising benefits from manure. Animal manure is essential for maintaining soil fertility, particularly in those intensively cropped, remote parts of Zambia where chemical fertilisers are expensive or their distribution is hampered by inadequate road network. A major portion of valuable plant nutrients consumed by ruminants is returned to the soil via faeces and urine. It has been observed that of the plant nitrogen and minerals consumed by grazing, lactating cows and finishing lambs, 75% of nitrogen and 95% of minerals is returned to the soil (Parker, 1990; cited in Watts, 1996:63). Because of this high degree of nutrient cycling, animal forage grazing systems are among the most efficient for maintaining soil fertility. For example, in describing the farming techniques in Kissidougou, Guinea, Fairhead and Leach (1995; cited in Watts, 1996:62) state that long-term farming entails the use of gardening principles, such as green manuring and dung from tethered cattle to restore soil fertility for five or more years. Farmers searching improved bush fallows may target where large numbers of cattle graze. Furthermore, livestock serve as biological agents for distribution of resistant tree seeds. Therefore, livestock can be managed to play a major role in the rehabilitation of marginal and degraded lands.

In summary, to lessen the impact of livestock production on the environment requires reforming the livestock production system in the traditional sector. This should result in producing big and/or small livestock in a responsible manner, i.e., livestock owners must bear the full costs of livestock production.

5.7.2.3.5 Tourism policy

Zambia's current tourism policy is "to make a meaningful and expanding contribution to the national economy through privatisation and the provision of investment incentives". The role of the government in the industry is to construct and maintain basic infrastructure such as transport and communications (MENR, 1994:64) in the country's 19 national parks and 31 game management areas {GMAs} that cover about 32% of the total land area (Simson, 1985:57; Moyo *et al.*, 1993:270; The official SADC Trade, Industry and Investment Review, 1998:313). An important element of the tourism policy is the recognition of the negative effects of the industry and the need

to minimise them by rigorous EIA. Since Zambia's tourism industry is largely wildlife-based, one of the overriding tasks for the government is the protection of wildlife resources against poaching and encroachment. This is where the tourism and the wildlife policies interact and become important to this study, especially the mode for achieving the protection of the extensive national parks and GMAs.

Although the tourism policy incorporates scrupulous EIA as a conservation tool to promote sustainable tourism industry through sustainable management of wildlife resources, the industry continues to affect wildlife habitats more negatively. This is mainly through safari operations and other tourism infrastructural developments. For example, road construction has adversely affected the Kafue and Mweru Wantipa National Parks through habitat alteration and loss of microhabitats. Roads also have the ability to attract human settlements or activities, thereby opening up pristine ecosystems to fishermen, timber loggers, honey collectors whose activities are likely to torch protected areas, and both to wildlife and timber poachers (MENR, 1994:54-5). Harvesting and production of woodfuel which is a profitable trade in Zambia, is generally carried out as close to roads as permitted by existing supplies. In Zambia, distances have been found to range from 5-15 km from main roads, although the location of production sites for charcoal varies (Brigham *et al.*, 1996:140). Infrastructural developments, such as hotel complexes attract local people. Consequently, local population pressures intensify competition between tourism and other land uses, such as agriculture and other industries. This type of pressure is reported to have threatened Mosi-oa-Tunya National Park, in Livingstone. The recent proposal to relocate people from the Lake Kariba area to give way to further tourism establishments, if allowed to proceed will result in settling the evacuees in a forested area to access woodfuel, grazing and agricultural lands (MENR, 1994:65).

Woodcarvings and sculpture are the dominant trade directed at tourists in Mosi-oa-Tunya National Park and in the nearby Mukuni village in Livingstone. This business commenced in 1905 and has now overexploited the desired tree species. The trees badly affected include *Diospyros mespiliformis*, *Combretum imberbe*, *Colophospermum mopane*, *Ricinodendron rautanenii*, *Afzelia quanzensis* and *Phoenix reclinata*. These timber resources are scarce in the Livingstone area (ibid.). The blunt Tourism Act that does not address the question of natural resource conservation exacerbates overexploitation of biological resources in Zambia's national parks and GMAs. The Act undermines the courts by making the Minister of Tourism the final authority to hear appeals (ibid. 12). Human encroachment on the peripheries of protected areas, and unplanned settlements which can be blamed on the lack of a comprehensive land use planning policy and on weak law enforcement, pose a serious challenge to wildlife conservation. Seven national parks and 20 GMAs have already been degraded as a consequence of this pressure (ibid. 54).

There are also instances where conservation has successfully been integrated with economic development, although these projects are known to improve only the position of men in the rural sector. One such project is the Luangwa Integrated Resource Development Project {LIRDP} which is responsible for managing the South Luangwa National Park and the Lupande GMA that borders the park to the east. This project demonstrates participatory resource management approach to promote conservation and development for rural welfare. It is a coalition between the local residents and the Department of National Parks and Wildlife Service. This state-community partnership has seen wildlife resources freeing people from the twin bondage of poverty and helplessness. In so doing, the project is conserving wildlife at the same time.

South Luangwa National Park is large {approximately 905,000 ha}, wild and remote, and is studded with wild animals. There are at least 13,000 elephants; 7,500 zebras; 1,200 giraffes; 2,200 cookson's wildebeest; 1,600 waterbucks; 2,500 roans; 1,500 hartebeests; and high densities of lions and leopards in the Central Luangwa Valley which is about 3,570,000 ha in size. Records indicate that there were almost 100,000 elephants in the Valley in the 1970s. Serious poaching of about 10 animals per day in the South Luangwa Park alone depleted these to less than 10,000 elephants by the late 1980s. The most pre-eminent achievement of the project has therefore been to bring this onslaught under control, with less than 20 elephants being killed each year. This is unlikely to decimate the elephant population that has steadily been recovering in the Park. On the other hand, the Lupande GMA which is approximately 500,000 ha, accommodates 35,000 people, in addition to diverse wildlife, consisting of elephant, buffalo, lion, leopard, zebra, kudu and so forth. In Lupande, wildlife is enumerated annually to facilitate setting quotas. Quotas are then sold to safari operators, who package them for sale to overseas clients, mainly from Europe and the USA. For example, to hunt a lion, the client pays $6,700 for both area and license fees; $900 each for a buffalo and hippopotamus; and $250 for an impala. The meat is delivered to the residents of the GMA, while the revenue from the sale of quotas is paid out directly to these communities at the end of the year. Involvement of the people in deciding how to use the money derived from wildlife is an example of real grassroots democracy. Village Action Groups that protect the interests of Lupande people represent democratic institutions, rural assemblies or fora[42].

To realise the full contribution of this natural heritage to the nation's welfare, the new policy of participatory resource management must be extended to the other parts of the country where wildlife resources abound to develop community-based wildlife management such that it becomes a competitive and sustainable form of land use. The animals must prove to local communities that they are of more value alive than dead to enhance their

protection in the country's protected areas. With inherently poor law enforcement in protected areas due to lack of financial resources, Zambia's national parks should be managed to become financially self-sustaining systems. This means that tourism must be developed to pay for the protection of natural heritage areas, including wildlife resources. However, to do this the government must commit resources to develop transport network to connect all sites of natural tourist attraction. Other infrastructure for tourism industry must also be developed to make the country's industry compete with other African countries, where tourism is deeply rooted. The main difference between Zambia and other African nations is that Zambia has the wildlife and unspoiled natural scenery, but lacks the political *will* needed to develop these resources to improve the standard of living of its masses who are caught up in a vicious cycle of poverty, while other nations have the political *will* to market what would not ordinarily have been perceived as a resource in Zambia to support their economic growth.

However, the development of tourism infrastructure in Zambia's national parks and GMAs must be properly regulated to minimise negative effects on the environment. For example, although the stated government policy is to promote high quality, low-density tourism throughout the country, this policy is not being implemented in the Luangwa Valley, especially in Mfuwe, within the Lupande GMA. Mfuwe is the only area within Luangwa Valley with any significant wildlife-based development and where people see possibilities to earn money. Consequently, anyone is able to develop a lodge or camp in Mfuwe in the Lupande GMA with permission from the local chief, and without any effective screening or land use planning. The growth of tourist facilities around Mfuwe has been haphazard. "One large plot at the entrance, secured from the chief for an individual residence is now being subdivided for private housing and other developments. Another plot secured from the chief to build a house has instead been used to construct a 30-bed tourist unit" (Roe *et al.*, 1997:47). Apparently, the use of EIA, as an environmental management tool in the country's national parks and GMAs is fictitious!

A growing population of about 4.0% due to immigration and a high birth rate has witnessed a rapid rise in deforestation for agriculture and for poles, timber, fuelwood and charcoal production for sale and export from the Valley. Approximately 100 large trees were felled in just one location over a two-week period and stacked for export out of the Valley. The pressure on the land is so intense that certain families fail to secure agricultural land, and opt to trapping wildlife. Consequently, there has been a large increase in the snaring of wild animals, particularly for the pot, to sell, or to exchange for maize and other essentials. This has been indiscriminate and a recent survey in the nearby Malama found one snare with an impala, another with kudu and yet others included two lions, a young elephant and a hyena. Noteworthy is the increasing number of fishing camps on the Luangwa River. Many of these camps are sited at elephant crossings, channelling animals into particular areas of

concentrations and causing extensive local damage to crops and property when re-routing (Roe *et al.*, 1997:47). This unnecessary competition for land between wildlife and smallholders is likely to rejuvenate people's hatred for wildlife, if it is allowed to escalate; moreover, they are much more dependent on their agricultural field crops than on wildlife resources.

Thus, the success stories of conservation and development in Zambia's GMAs are subjective to interpretation, as it is clear from the preceding discussions that the race is for sustaining human livelihoods, rather than the environment, or a compromise solution integrating the two. This discussion also exposes the incompetence of traditional chiefs to sanction natural resource management, without adequate government backup. It is appropriate to summarise that Zambia's tourism industry is littered with both market and policy failures.

5.7.2.3.6 Wildlife policy

Historically, African traditional societies had unwritten resource conservation policies. These policies guarded against overexploitation of natural resources for their and our own sakes, and were deeply enshrined in the traditional values of those societies. For example, "Traditional societies in Southern Africa practised and enforced conservation measures with varying degrees of effectiveness, through seasonal hunting and trapping of animals and birds for home consumption. This practice discouraged indiscriminate hunting, and encouraged selectivity in capturing wildlife" (Chenje & Johnson, 1994:2). When snares were used, the type, size and location determined which animals were being sought. In Zambia, the *Ila*-speaking peoples had a traditional wildlife management system, widely known as *chilla*. It was a system of seasonal hunting expeditions organised to hunt *lechwe*, particularly in the Kafue Plains, and was carried out once a year or at intervals of two to three years, depending on the population density of the animals and hence on the carrying capacity of the Plains. There were strict regulations governing these seasonal hunting expeditions, and as a consequence, chiefs and elders were the only people to sanction *chilla* after ascertaining that the animal populations had multiplied.

Despite its environmental benignity, the colonial administration condemned and subsequently banned *chilla*. In so doing, the colonial administrators had disrupted the delicate balance that existed between traditional communities and their environment. The successors to the British rule stepped into the same shoes, triggering further hostilities between rural population and the wildlife.

The prohibition of seasonal hunting expeditions caused wildlife populations to increase dangerously around rural settlements. This initiated a sharp competition for resources between people and wildlife. Moreover, some

wildlife species are dangerous pests. For example, there are regular reports of elephants devastating fields and leaving people hungry. Elephants sometimes knock down grain barns and mud houses. Each year crocodiles kill about 10 people and in 1996 lions were responsible for two deaths. The relationship between wildlife and people has had been bad. Consequently, in the Luangwa Valley, a poacher is seen as a Robin Hood figure[42]. Due to this, many local farmers complain that the establishment of protected areas, such as the Luangwa Valley do not benefit them, including the very lucrative tourism industry. Tourism industry has been criticised by many people on grounds that the owners of wildlife-related companies defraud the government consistently by under-reporting their foreign exchange earnings {resulting in under-paying their employees} and overcharging tourists and hunters. Rural people have viewed the wildlife-based tourism industry negatively because they felt excluded from wildlife management. This has led a number of conservationists to argue that unless revenues from wildlife tourism are returned to local communities, there will be *little* to *no* incentive for local residents to conserve potentially endangered species (Cohn, 1994:74). Lack of incentive for local residents to participate in wildlife conservation can be traced to the national wildlife conservation policy that alienated the group with the greatest power to reduce the future desecration of wildlife, including rhinos and elephants. This group consists of people, who border protected areas (Gibson, 1995:51-2).

To pacify the hostilities between Zambia's peasants and wildlife, the government undertook the preparation of National Environmental Action Plan {NEAP} in September 1993. This environmental master plan was completed in July 1994, and one of the key policy objectives relevant to wildlife concerns the "participation of local community and private sector in natural resource management". The NEAP underlines the importance of community involvement in the development and the identification and design of environmental strategies. It is now widely accepted that by making wildlife directly productive to local communities, the wildlife-people relationship will improve and people will produce wildlife just as they produce agricultural crops and livestock, thereby ensuring the sustainability of wildlife resources[42]. This realisation has resulted in the formulation of the following policy objectives which are strongly embedded in the recommendations of the NEAP. Accordingly, the objectives of Zambia's National Parks and Wildlife policy are to:

i. facilitate the active participation of local communities in the management of the wildlife estate;
ii. promote and develop tourism;
iii. enhance the recognition of the economic value of wildlife resources amongst the public and private stakeholders; and
iv. to educate the general public in the socio-economic aspects of wildlife resources to safeguard their

sustainable management (MOT, 1998:8).

It is worth noting that the conservation attributes of these policy statements have already been assessed in the preceding discussions.

5.7.2.3.7 Macroeconomic policy

These are policies which are oriented towards promoting, expanding or stimulating national economies. In Zambia, the current macroeconomic policy that influences forest conservation has been the IMF/World Bank's SAP. This is a contentious programme that has not only failed to put the economies of many sub-Saharan countries on the right course, but has deepened the level of poverty to the extent that the dependence on forest and wildlife resources becomes a necessity. For example, Maathai (1996:145) complains that "local currencies are devalued, state-owned enterprises are privatised and the civil service is reduced. Without revenue, governments are forced to reduce forest budgets, manpower and incentives. One effect of these actions is that civil servants are unlikely to protect forests from illegal overexploitation and encroachment or from pressures of a liberalised private market because they are poorly paid and demoralised". An additional macroeconomic policy that defines forest conservation has been the collapse of copper prices. It is a macroeconomic policy failure because the choice for unconditional dependence on copper without diversifying the economy was a government economic stance. The effects of SAP and the reduction in copper prices on Zambia's biodiversity are similar.

5.7.2.3.7.1 Structural adjustment programme

The IMF/World Bank-based structural adjustment programme {SAP} can be defined as "the process of helping an economy respond effectively to market signals, to reach the point at which producers and consumers confront prices that reflect resource scarcity and adjust their production and consumption decisions accordingly. Once this has been achieved, resources will be applied where their payoff is greatest and a country's competitiveness will be enhanced accordingly" (Convery, 1995:32). Although the precise package is likely to vary from one country to another, the following can be recognised as some of the interventions that characterise structural adjustment:

i. devaluation of the currency to bring it closer to market value and the associated setting up of currency auction mechanisms;
ii. removal or relaxation of price controls or subsidies of certain consumer products such as fertilisers, kerosene, electricity and food products, or some combinations of these;
iii. reduction in the proportion of total export revenue captured by government through excise duties or other

means. This increases the proportion captured by the producers;

iv. removal of some or all monopoly power from parastatals to buy and sell particular inputs and commodities, for instance, farm machinery, fertilisers, seeds and pesticides;

v. reduction in subsidisation of farm inputs, such as fertilisers, seeds and irrigation water;

vi. improved efficiency of resource allocation, involving redirection of resources to priority areas and reduction of administrative overhead to allow an increase in the direct provision of goods and services, such as redirection of expenditure can occur between sectors;

vii. liquidation, restructuring, privatisation of state-owned companies, or any combination of these;

viii. institutional development in sectors favoured by sectoral adjustment loans {SALs} and cutbacks in other publicly funded areas and institutions;

ix. particular attention to reform of financial institutions and budgetary and planning systems; and

x. most importantly, the prevailing ethos of decision-making will be based on performance, rather than possession (Convery, 1995:32-3).

These are the structural adjustment measures that Zambia has been undergoing since 1975, when the IMF approved the first payment of structural adjustment loan to the country, though the implementation had been intermittent during Kenneth Kaunda's presidency. Consequently, relations with the IMF were broken in May 1987, when the government initiated its programme of "Growth from our own resources" which entailed a return to economic control. Relations were restored in July 1989, when running the country without structural adjustment loan became virtually impracticable. Since then, structural adjustment policy has been on the track in Zambia. The implications of SAP for the country's living resources {from 1975 to date} are evaluated in the following paragraphs in both awareness-heightening and factual manner.

5.7.2.3.7.1.1 Exchange rate policy

The ways in which changed currency values are transmitted to the environment are complex. The underlying premise of devaluation and trade liberalisation is that adjustments to external market conditions will provide incentives to increase international competitiveness of tradable goods and shift production to export sectors. It is also believed that exchange rate reform will shift internal terms of trade in favour of farmers and away from urban consumers who have until recently enjoyed subsidised imports. Therefore, the cumulative effects of exchange rate policy changes on the agricultural sector are increased export and domestic earnings on agricultural produce. This is assumed to stimulate on-farm investments, resulting in creation of employment opportunities and reduction in poverty. Accordingly, devaluation is expected to have beneficial environmental effects (Reed,

1996:303). However, this is incorrect because if increased export and domestic earnings are passed back to farmers, more farmers would be encouraged to grow export, cash and food crops at the expense of forest and wildlife habitat. For example, smallholders numbering about 700,000 grow most of Zambia's cotton crop which registered a production increase of more than 47% from 1996/7 to 1997/8. The production of tobacco which is also an export crop rose by more than 170%, representing an areal increase of about 3,932 ha during the same period (MFED, 1999:51). These increases were in response to favourable producer prices.

Similarly, devaluation encourages consumption of forest products, especially timber and as a consequence, more people would be involved in timber and woodfuel production and trade. For example, the volume of timber exports has increased steadily since 1991, when the government pledged a full implementation of SAP: 11,000 m^3 in 1992; 29,000 m^3 in 1993 and 1994, respectively; and 30,000 m^3 in 1995 (FAO, 1997:45-75). Although the data for 1996, 1997, 1998 and 1999 are missing, the trend is unmistakable. Convery (1995:33) has clarified that "the export of goods that have a low import content, such as logs, will be particularly encouraged". Reed (1996:311) has also noted that structural adjustment has the ability to increase timber extraction significantly due to increases in the exporting companies' profitability. Increased profitability of logging relative to other export crops leads to accelerated deforestation. Additionally, trade liberalisation increases the relative prices of imported energy sources such as fossil fuels, especially kerosene in the Zambian context. In response to this, kerosene-dependent urban and rural households switch back to biofuels. The net effect has been an increase in the rate of land clearance.

Exchange rate reforms are deliberate interventions aimed at encouraging exports and penalising imports. This has increased the prices of imported agricultural inputs and machinery. The price changes are serious enough to place agricultural inputs beyond the reach of many smallholders, who are the backbone of Zambia's agricultural sector. Although fertiliser use was limited to only about 10 kg/ha even in the heyday of subsidisation (Cromwell, 1996b:138), farmers recognise the fact that their pre-SAP productivity gains were linked to chemical inputs. Moreover, crop production in 1997/8 season was negatively affected by low utilisation of chemical inputs which was attributed to high prices and irregular delivery due to shrinking government support to input distribution (MFED, 1999:50-2). Without access to subsidised chemical inputs and improved seed varieties, there are no incentives to intensify agricultural production. To increase yields smallholders have frequently expanded their agricultural holdings, resulting in deforestation as well as in cultivation of marginally productive lands, or *fundikila* replaces *chitemene* with concomitant land degradation. For example, Moyo *et al.* (1993:278) noted that pressure on land in some areas has created conditions causing the cultivation of steeply sloping land.

5.7.2.3.7.1.2 Reductions in the public sector investments

Reductions in government spending are aimed at improving the efficiency of resource allocation. It involves redirection of resources to priority areas which may occur between or within sectors and privatisation of some government institutions. The net effect of reductions in the public sector investments is to reduce state control of the economy. This results in cuts in jobs and services in both the urban and rural areas, leading to increases in petty trade in game meat and alliances with ivory and rhino horn poachers. For example, between 1960 and 1985, when SAP was not fully implemented due to President Kenneth Kaunda's policy of *humanism* or political patronage, elephant numbers fell only by 3.0%/year, but between 1985 and 1993, when the SAP was in force, they fell by 9.0%/year. It is clarified further that "The increase in urban unemployment and erosion of farm incomes resulting from structural adjustment have clearly increased incentives for poor people to collaborate with the organised poaching gangs. It is also the case that public spending reductions have reduced the effectiveness of national parks administration" (Cromwell, 1996b:134-6). The continued failure to enforce antipoaching laws reflects a decline in funding for the National Parks and Wildlife Service. Funding for the sector fell two-thirds in real terms between 1975 and 1990, hovering at about 0.4% of the total government budget. The low costs of poaching has made it a profitable response to Zambia's SAP, more importantly to a household's economy.

Redirection of government resources away from wildlife conservation to other needy sectors related to reviving the depressed economy relegated wildlife resource management to a low profile. This phenomenon makes wildlife *conservation* to be viewed as a luxury, not only in Zambia, but also in other African countries, where wildlife conservation is seen in the same manner in the face of mounting external debt and high inflation ushered by structural adjustment. Studies on wildlife conservation have concluded that there is a correlation between *patrolling* of protected areas and *enforcement* of antipoaching laws, and the *level* and *amount* of poaching. For example, a study on elephant and rhino poaching has concluded that effective law enforcement could have a positive impact on reducing elephant and rhino poaching, but that limited law enforcement personnel {due to lack of funds} would dramatically reduce its effectiveness (Leader-Williams *et al.*, 1990:1055-6). Adequate wildlife protection, consequent to funding, is but one vital resource that Zambia lacks in its efforts to curtail rampant poaching that threatens its wildlife resources. Budget cuts mean that many animals are left at the mercy of poachers. There are also criticisms that the lack of resources to extend protection activities outside protected areas, such as the Luangwa Valley has led to the continued poaching in these areas (Ridley, 1994:40).

SAP dictates upon governments to freeze, if not seriously cut back, funding to institutions involved in antipoaching

activities. It is therefore common sense to attribute the increase in poaching to the waning capacity of the Zambian government to protect its wildlife sanctuaries against trespass.

Liquidation, restructuring and privatisation of state-owned companies to loosen government control of the economy have created unemployment in the urban sector. It has been observed that the formal sector employment declined from 24% of the labour force in 1980 to 10% in 1990, as a result of retrenchment (Cromwell, 1996b:141). The informal sector has been unable to absorb all the unemployed. A proportion of the urban unemployed has returned to rural areas, adding to existing agricultural population pressure. Cromwell (1996b:138) has shown that there is a positive correlation between urban unemployment and the area under maize cultivation. Urban unemployment has also intensified pressure on forests through increased extraction of forest products. For example, charcoal production now employs about 45,000 people, and Lusaka alone consumes about 5.0 million bags/year, contributing significantly to deforestation. Given that this estimate is for full-time employment, the actual number of rural and suburban people working in charcoal production is likely to be higher than this figure (Brigham *et al.*, 1996:140).

SAP has increased poverty in Zambia, forcing many unemployed people to seek self-employment in forestry or depend on it for self-provisioning in a direct manner. Home beer brewing which is an important source of income in suburban and rural areas has increased in recent years. There is a ready market for homemade beer because the price of commercial beer has increased sharply in response to liberalisation. Home brewing requires large quantities of fuelwood for the five-day process, increasing the magnitude of deforestation. Consumption of wild foods, traditionally reserved for famines, has also been increasing (Cromwell, 1996b:141). Structural adjustment has disempowered many Zambians by rendering them jobless. The unemployed often discount the future by becoming more preoccupied with living for today rather than for tomorrow. "In the struggle for food, shelter, warmth and water, the values of the poor are tied to immediate use of the land and its resources to meet their pressing needs" (Chenje & Johnson, 1994:41). Insistence on macroeconomic stabilisation at the expense of the social sector has aggravated poverty, unemployment and social misery. "IMF programmes have caused poverty, misery" (the Post of Zambia, 1999).

5.7.2.3.7.1.3 Fallacy of short-term environmental effects of SAP

Many African countries have embraced the fallacy of short-term environmental effects of SAP, because these poor nations need the structural adjustment loans for mere economic survival. This assumption is incorrect from the standpoints of the *irreversibility* and *magnitude* of the environmental damage, the *underlying theme of*

sustainable development and the *uncertainties* about the effects of environmental disturbances and ecosystem functions. For example, in Zambia, rhino has been poached to extinction, however, the damage that has been done has not been reversed. Even if the National Parks and Wildlife Service attempted captive breeding or reintroduced rhinos into the Luangwa Valley and fitted them with telemetry, this would not be the same. Similarly, the elephant populations in Zambia's national parks and GMAs are not the same as in the 1970s, although rigorous attempts have been made to control poaching that has depleted the *jumbos*. Furthermore, deforestation and overgrazing which lead to land degradation in the Southern, Central, Lusaka and Copperbelt Provinces cannot be reversed with the present level of resources, particularly when afforestation, let alone reforestation is less than 1.0% of the annual rate of deforestation. This results in postponement of costs which is incompatible with the underlying theme of sustainable development. The concept of sustainable development is premised on the understanding that the future should be compensated by the past, otherwise the future will be worse off than the present and the resultant development becomes unsustainable (Pearce *et al.*, 1991:9).

Finally, to argue that the environmental effects of SAP are short-lived reflects gross misconception of the workings of environmental problems. "Environmental problems 'should not be treated' as if they are some minor deviation in the working of an economic system" (ibid.). To the contrary, they are pervasive. For example, loss of forests consequent to excessive demand for agricultural land and woodfuel, increases surface runoff which may be heavily laden with silt to interfere with fishery production, or built infrastructures, such as dams. Increased runoff may wash enough chemical fertilisers and pesticides from commercial agricultural fields to cause fish kills in the Zambezi, Kafue or Luapula River. Heavy dependence on woodfuel due to higher prices for imported fuels can also contribute to global warming due to combustion of woodfuel and the absence of trees to sequester CO_2. This pervasiveness creates uncertainties about the separate and combined effects of environmental disturbances. To these uncertainties must be added the scientific uncertainty about how ecosystems function. It is therefore incorrect to assume that structural adjustment has short-term effects on the country's environmental resources such as forest.

5.7.2.3.7.2 The collapse of copper prices

The dynamics of the global economy that resulted in the collapse of copper prices in the mid-1970s impacted negatively on Zambia's forest and wildlife resources. The fall of copper prices has had a devastating effect on Zambians as the government embarked on redirection of resources to priority areas. Cuts in jobs and services in the public sector have made many people to live off forest and wildlife resources. The effects of the fall of copper prices and the SAP on Zambia's forest and wildlife resources are fundamentally the same.

5.7.2.3.8 Transport policy

Although there is no document at hand that defines clearly the government's direction on transport, there is a strong tendency to upgrade the existing dilapidated road network, and to maintain the current rail transportation system in the country. This has been confirmed by a joint report released by the Zambian authorities and the IMF in March 1999. Accordingly, the government aimed to adopt a national transport policy by mid-1999, and an important component of that policy would be a World Bank-supported 10-year road sector investment programme {RoadSIP} whose task is to improve and rehabilitate the road network and to eliminate the maintenance backlog[38]. There is also a strong need to construct new roads into inaccessible areas that hold potential for economic growth. For example, Zambia's national parks and game management areas require well-developed transport network to promote nature tourism. Moreover, it has been reported that "poor roads hamper growth of tourism in Zambia". This is described further below.

> Travelling anywhere in Zambia, one cannot avoid but notice the pathetic state of roads. It cannot be disputed that people in rural areas want to participate in governance. They want to be mobile, develop themselves and market their produce, but poor road networks often cut them off from centres of administration and development...As about 78% of Zambians is classified as poor and the incidence of poverty is higher in rural areas, there is, therefore, a direct relationship between people's accessibility to a good road network and poverty reduction (Chipungu, 2000).

This reverberates the well-known strong correlation between 'mobility' and 'economic growth'. It is axiomatic that Zambia needs improved road network to improve the material standard of living for the rural poor; to generate the greatest possible improvement in their quality of life; and to promote equitable economic growth throughout the country. Although road construction has negative environmental effects, "a policy for sustainable transport is one that both identifies and implements win-win policy instruments and explicitly confronts the tradeoffs so that the balance is chosen rather than accidentally arrived at. It is a policy of informed, conscious choices"[43]. Unlike Tanzania, Zambia stands a better chance to pursue sustainable transport policy since it employs EIA to screen development projects. For example, the co-ordinator of the Environmental Management Unit at the RoadSIP in Lusaka affirms that "before any major road development project is undertaken by any contractor, there is need to conduct a comprehensive EIA. The assessment is aimed at integrating environmental considerations into projects so that there is increased dialogue between contractors and the communities earmarked for such development" (Chipungu, 2000). Therefore, there is a strong temptation to conclude that Zambia is likely to pursue transport policy that encourages SFM, at least, in terms of the RoadSIP.

5.7.3 Intersectoral policy co-ordination

There is a widespread lack of policy and activity co-ordination among Zambia's public institutions. For example, "poor co-ordination among relevant state bodies is hampering effective implementation of environmental legislation in Zambia" (Chipungu, 2000). There are also many institutions such as National Commission for Development Planning, Department of Energy {DoE), National Environmental Council, Forestry Department and a number of NGOs that are involved in the formulation and implementation of appropriate woodfuel energy policy. However, "lack of effective overall co-ordination has led to a situation where the above institutions have not worked closely with each other. The need for effective institutional set-up for policy harmonisation and co-ordination of the energy sector institutions is a matter of priority" (Moyo *et al.*, 1993:294). There is neither intersectoral policy harmonisation nor co-ordination between the forestry sector and other major sectors such as land and agriculture, or between the forestry and macroeconomic policies like the IMF/World Bank's SAP. Consequently, the land policy and legislation promote forest degradation and loss; the agricultural policy undermines forest conservation; and macroeconomic policies are institutionalised without examining their effects on the country's natural resources.

The forestry sector is not only beset by the apparent lack of intersectoral policy co-ordination, but also by dispersal of forestry activities in different ministries and agencies. The DoE in the Ministry of Energy and Water Development is, for instance, responsible for formulating policies/strategies for biomass fuels; the Ministry of Agriculture, Food and Fisheries is responsible for agroforestry activities; the University of Zambia and the National Council for Scientific Research have been in the forefront of research and development in rural energy (Moyo *et al.*, 1993:294). These uncoordinated activities strip the Forestry Department of its legitimate responsibilities. Worse still, the lack of intersectoral policy co-ordination between the institutions involved in natural resource conservation such as forestry, wildlife and fisheries, and law enforcement organs of the state, for example, the Ministry of Home Affairs, has caused law enforcement agents to ignore environmental crimes. Chipungu (2000) reports that law enforcement officers do not prioritise or view environmental crime as being important as traditional crime. This certainly stems from the lack of institutionalisation of environmental protection in law enforcement agencies which can be traced to the absence of communication between the concerned departments.

5.7.4 Conclusions

This project aimed to assess the effects of forestry policy on the sustainability of Zambia's forest resources. Zambia has two forestry policies: the existing forestry policy and the new forestry policy. Since forest has a long

gestation period and the forestry policy has a great potential to influence people's attitudes long after its official termination, the new policy should not be blamed for the ongoing forestry practices in the country; moreover, it has not come into effect yet. Consequently, the salient features of the new policy have been examined in a scenario preparing manner, while the formulation, contents and implementation of the existing policy and its instrument have been evaluated in a way that relates policy inadequacies to the current forest loss estimated at 851,000 ha/annum. Zambia's existing forestry policy like the Tanzanian one was formulated unilaterally by the state and the subsequent reviews conducted followed a similar approach. The concern for 'participatory forest management' was included incrementally without a corresponding instrument to secure its implementation.

The Forests Act of 1973, which has been the legitimate tool for the existing policy, does not promote the participation of the Zambian civil society. Rural, forest-dependent communities whose participation in forestry policy-making process is critical for stabilising forest resources have not been involved, let alone women who bear the full brunt of the consequences of forest loss. Thus, participatory forest management in Zambia is a window-dressing. The principal weakness of the Act until 1994 was the bluntness of penalties, including fines that remained at their 1973 levels. Although an adjustment has been effected, lack of deterrence in the law for about 20 years had cultivated law-ignoring attitude in many Zambians. This explains partially the current deforestation in the country's reserved and unreserved forests and in other protected areas, especially the game management areas.

Zambia has extensive forest resources, covering approximately 42% of its landscape. However, economic figures indicate that the sector contributes about 3.0% to the GDP which is rather conservative and unrealistic because an estimated 90% of urban and almost 100% of rural households depend on energy derived from forest. It is plausible that the opportunity cost of woodfuel alone will exceed this value, let alone the contribution of timber, traditional medicines, honey and beeswax and other commodities and services. An alternative indicator for assessing the economic value of the forestry sector is through the estimate of those formally and informally engaged in the sector. This estimate is important, if forest issues are to vie for political support. Unfortunately, there is no comprehensive estimate for the sector, except for the charcoal industry that employs about 45,500 people. Consequently, there is a lack of political support to the forestry sector which is directly translated in the government investment in forestry development. In reality, the Forestry Department is the least funded, when compared to the government Departments of Agriculture, Fisheries, Energy, Water and Wildlife.

Zambia has inadequate professional and technical forestry staff, although this is expected to be atoned by the

'School of Forestry and Wood Science' at the Copperbelt University. Nevertheless, the poor employment conditions in the government service which have seen emigration of highly skilled professionals to neighbouring countries, will create almost a permanent deficit in lifeware, unless the government starts offering competitive salaries. It is worth noting that there is no statement on the overall evaluation of the existing forestry policy. Rather, the Zambia Forestry Action Programme {ZFAP} suggests the monitoring and evaluation of the performances and impacts of 'forestry research' and 'extension' programmes. Intersectoral policy co-ordination between the forestry sector, and overarching, crosscutting and other sectoral policies both at the policy formulation and implementation processes, is equally lacking.

Zambia's environmental policy, as defined by the National Environmental Action Plan, is very comprehensive; it sets the scope of sectoral policies, including forestry. It identifies five major environmental issues that need to be addressed: air pollution, *deforestation*, *soil degradation*, water pollution and *wildlife depletion*. Zambia is a party to the multilateral environmental agreements which were opened for signature during the Earth Summit in Rio de Janeiro in June 1992. Consequently, many institutional changes have taken place in the country. These changes include the establishments of the Ministry of Environment and Natural Resources; the Environmental Council of Zambia; and a number of NGOs involved in natural resource conservation, among others. The institutional changes in the forestry sector incorporate the updating of the Forests Act of 1973, emphasis on joint forest management, and the formulation and adoption of ZFAP. Further changes in the sector encompass the formulation and adoption of the new forestry policy with its corresponding instrument, the Forests Act of 1999 that establishes the Zambia Forestry Commission.

The overriding aim of Zambia's forestry policy and legislation is to conserve forest resources. The major achievement of the existing forestry policy is the reservation of about 10% of the country's landscape under forest cover. This accords with the official goal of many governments to maintain at least 10% of their land base as forest reserves since the Earth Summit in Rio de Janeiro in June 1992. However, the failure of the Forestry Department to control the current deforestation in forest reserves increases both political and public pressure to reduce the area under forest reserves. Additionally, the performance of the existing forestry policy can be determined by assessing the link between 'forest loss' and 'forest recruitment'. Typically, forest conservation is enhanced when the ratio of 'reforestation and afforestation' {using indigenous trees to restore degraded sites} to 'forest loss' approaches or exceeds one. At the current rate of afforestation of about 2,100 ha/annum, mainly using inappropriate species and forest loss of about 851,000 ha/annum, it would take Zambia at least 400 years to mitigate a year's deforestation, even if the definition of sustainability was compromised {weak sustainability}.

Therefore, there is a clear indication of unsustainable forest management. Finally, to formulate issue-centred policy requires up to-date data on forest resources. However, the existing policy was formulated and reviewed repetitively in vacuum, i.e., there were no ecological forest resource data on which the policy objectives could be based. The same holds for the new forestry policy.

The overall performance of Zambia's existing forestry policy is depicted in the following Table 5.9. Zambia has a forest conservation index of 1.6 which indicates unsustainable forest management.

Table 5.9 Estimate of Zambia's Forest Conservation Index (FCI)

Indicators	Scores
Protected forests	4
Forestation/deforestation ratio	1
Forest resources data	1
Monitoring and evaluation	1
Adequacy of external policies	1
Institutional capacity	2
Intersectoral policy co-ordination	1
Democracy in policy-making	1
Gender equity	1
Security of land tenure and ownership	2
Contribution to the GDP	3
Employment as a proportion of labour force	N/A
Investment in forestry development	N/A
Mean Score (FCI)	**1.6**

N/A = Not available

Chapter six

Conclusions

6.1 Study summary

This study aimed to assess the effects of forestry policy on the sustainability of forest resources in three Southern African countries: South Africa, Tanzania and Zambia. Consequently, the forestry policy formulation process was examined for participatory approaches. It was noted that South Africa had a broad-based policy formulation process. The same inclusive approach to policy formulation spilled over to the implementation phase and hence the formal adoption of the concept and practice of participatory forest management in the country. Contrastingly, the Beekeeping and Forestry Division developed Tanzania's existing forestry policy unilaterally without the involvement of other government departments whose activities influence forests. The civil society, especially forest-dependent rural communities were not included in the policy development process. This has lead to difficulties in policy implementation at the grassroots, resulting in rampant forest degradation and loss. The inadequacies that befell Tanzania's forestry policy were also mirrored in the Zambian forestry policy. For example, Zambia's existing forestry policy was formulated unilaterally by the state and the subsequent updates followed the same approach. The concern for participatory forest management was grafted incrementally without a corresponding tool to secure it, thereby discouraging the participation of civil society, particularly the rural, forest-dependent communities whose participation in forestry policy-making is critical for forest conservation.

Forest conservation is affected both by forestry-specific policy and legislation and also by policies that are external to the forestry sector. There is indeed a growing awareness that policy measures and activities in other sectors affect the economic, social and environmental sustainability of forests at least as much as policies set within the forestry sector. These policy decisions taken outside the forestry sector have been major determinants of forest conservation. The first category of external legislation and policy with implications for forest conservation includes overarching framework legislation such as the constitution of a country and its environmental management policy which define both the content and context of a country's natural resource use and management policies. For example, South Africa's constitution directs environmental conservation, while the Tanzanian and Zambian constitutions do not reflect the concerns for protecting the countries' environmental resources. Furthermore, the South African environmental management policy informs government agencies and state organs, including DWAF about their environmental duties, and how they could develop strategies to achieve those responsibilities. The priority of Tanzania's environmental policy is to combat land degradation which involves containment of deforestation, soil erosion, land use conflicts, overgrazing and shifting cultivation, in addition to the protection of catchment areas. However, this concern is not reflected in the forestry policy functionally; the policy also lacks practical measures to contain deforestation. Implicitly, Tanzania's environmental policy falls short of being an

adequate framework policy; it is as rhetorical as the country's forestry policy. Conversely, Zambia's environmental policy is a sound overarching framework policy because its 'sectoral action plans' define the scope and content of sectoral environmental policies, including forestry.

The second group of external policies influencing forest conservation consists of crosscutting policies. This category includes the biodiversity and land policies, and the international conventions, treaties, protocols and declarations to which South Africa, Tanzania and Zambia are parties. South Africa has achieved much in environmental conservation by integrating certain multilateral environmental agreements into its domestic natural resource conservation policies. For example, the South African biodiversity policy mimics the parent document, the Convention on Biodiversity; the Convention to Combat Desertification has also been well integrated into the National Forests Act of 1998 and also in the environmental management policy. The current land reform programme has been perceived as an important intervention for biodiversity conservation. Tanzania has commenced reaping the benefits of the Convention on Biodiversity, particularly in terms of capacity building, financial assistance, and scientific research co-operation between nations. Steps have been taken to implement the Convention to Combat Desertification. Tanzania is a party to the CITES, and is among the most vocal African countries crusading against the resumption of the ivory trade. The land policy that vests the ownership of all Tanzania's land in the state creates insecurity of land and forest resources to almost all parties: state, local people and other private interests.

Zambia is also a party to the above multilateral environmental agreements. These multilateral environmental agreements have caused many institutional changes in the country such as the establishments of the Ministry of Environment and Natural Resources; the Environmental Council of Zambia; and a number of NGOs involved in natural resource conservation, among others. The government with assistance from donors initiated the steps leading to the National Action Programme for desertification during 1998. This Programme lays down the foundation for implementing the Convention to Combat Desertification. Zambia (like Tanzania) has no explicit stance on the use of forest as a sink for cleansing the atmosphere of CO_2. The large disparity between the annual rate of deforestation and that of forest recruitment indicates that more CO_2 emissions occur from forest harvests. On the contrary, the CITES ban on the international trade in elephant and rhino products has been counterproductive by removing the incentives for managing these big game species and by fuelling the demand for elephant and rhino products. Yet, the country has developed a stronger institutional capacity to control poaching in its national parks and game management areas than before the ban. Land tenure insecurity causes insecurity of forest resources and therefore discourages investment in forest conservation, especially on Traditional Lands where most of the country's forest resources are found.

The third group of external policies bearing on the sustainability of forest resources in Southern Africa are collectively referred to as sectoral policies. They embrace policies which shape water, energy, population, agricultural, tourism, macroeconomic and transport sectors. Generally, there are synergies between South Africa's sectoral and forestry policies. However, there are intersectoral policy conflicts in Tanzania. For example, the country's water policy does not appreciate the role of catchment forests in ensuring adequate supplies of water. The energy policy recognises the primary role of forests and woodlands in the provision of energy to the majority of the population. However, the market failure which manifests itself in insecure land and forest resource tenure causes most fuelwood to be collected free of charge. The agricultural policy aims to increase agricultural production at the *extensive margin*, alongside the livestock policy that focuses on developing forested areas into pastures through bush clearing. *Ujamaa* or the 'villagisation policy' and the contentious structural adjustment programme are two macroeconomic policies with negative effects on the sustainability of Tanzania's forests. *Ujamaa* contributed to the concentration of pressures on forests and today continues to cause unnecessary deforestation as emigration from the nucleated community settlements occurs. Conversely, structural adjustment programme works on the forest resources in two main ways: *first*, through exchange rate reform, and *second*, through the reductions in the public sector investments. This erodes Tanzania's efforts to control the negative environmental effects of the private sector such as forest and wildlife poaching.

Furthermore, the Zambian water policy makes no recourse to forest conservation despite the indirect role of forests in maintaining the integrity of catchment areas. Although more than 90% of the country's roundwood production is consumed locally as fuel by nearly 90% of urban homes and almost 100% of rural households, this importance is not reflected in the government policy, strategies or actions which seem to be directed at fossil fuels and electricity. The population policy strives to treat the symptoms of population growth rather than the underlying cultural factors which favour large families. Agriculture precedes forestry on the government political agenda; consequently, every farmer is free to deforest, as long as this is done in the name of agriculture and in consultation with a village's competent authority. More importantly, is the policy of agricultural market liberalisation which penalises smallholders by placing agricultural inputs necessary for intensification outside their reach and therefore impinges on the country's forest resources. Logically, tourism, wildlife and forestry policies are expected to reinforce each other. However, this is not the case for Zambia, where the tourism industry has proven to be counterproductive by discouraging forest and wildlife conservation. For example, seven national parks and 20 game management areas have been degraded as a result of tourism pressure. However, what appeared to be a common ground between the tourism, wildlife and the new forestry policy is the 'participation of local communities' in natural resource conservation. Structural adjustment programme influences deforestation in the same manner like in Tanzania.

The aptitude of external policies to influence forest conservation establishes a strong case for 'intersectoral policy co-ordination'. However, South Africa has ineffectual institutions for conducting intersectoral policy co-ordination, while Tanzania and Zambia lack the relevant institutions for harmonising sectoral policy conflicts. The lack of intersectoral policy co-ordination is so pervasive that departmental policy conflicts are widespread, escalating forest degradation and loss.

Forest conservation index

The preceding information has been condensed into forest conservation index (FCI) as presented in the following Table 6.1:

Table 6.1 Estimates of Forest Conservation Index (FCI)

Indicators	Country Scores		
	South Africa	**Tanzania**	**Zambia**
Protected forests	3 (1)*	5	4
Forestation/deforestation ratio	2 (N/A)*	1	1
Forest resources data	3	1	1
Monitoring and evaluation	2	1	1
Adequacy of external policies	5	1	1
Institutional capacity	5	3	2
Intersectoral policy co-ordination	2	1	1
Democracy in policy-making	5	1	1
Gender equity	3	1	1
Security of land tenure and ownership	3	2	2
Contribution to the GDP	2	3	3
Employment as a proportion of labour force	2	3	N/A
Investment in forestry development	N/A	N/A	N/A
Mean Score (FCI)	**3.1 (2.8)***	**1.9**	**1.6**

Note: N/A = Not available; * FCI using local forest estimates (Low and Rebelo, 1996:4-7).

South Africa's FCI is 3 (or almost 3 using local data), while Tanzania and Zambia's indices can be rounded to 2 each. Consequently, South Africa's forestry policy and other biological resource conservation policies will certainly lead to sustainable forest management subject to satisfactory implementation. The superiority of South Africa's forestry and other support policies may be attributed to the dearth of forest resources. Limited forest resources in South Africa meant a restricted scope for forest product exports and hence less opportunity for sustainable

economic development using forest resources. Naturally, there has been a need for the South African government to diversify into mining, manufacturing, tourism and intensive agriculture, *inter alia*. Consequently, a forest resource-poor South Africa is more likely to pursue coherent and prudent economic policies than Tanzania and Zambia whose governments would expect their respective vast land and forest resources to meet the economic needs of local people. Conversely, Tanzania and Zambia's indices indicate that forest resources are exploited unsustainably. Alternatively, these countries' forestry and other resource use and management policies will not result in forest conservation at national levels. Sporadic forest conservation may occur in some parts of Tanzania and Zambia; however, the cumulative magnitude of forest loss outweighs such gains in forest conservation. It is possible that these forest resource-rich countries have always seen their forests as safety valves for economic hardships. This is evident in Zambia where investment in forestry development is typically less than in other natural resource management departments, although some of these departments such as fisheries, wildlife, tourism, water and agriculture are supported indirectly by forests. This is illustrated further by Tanzania and Zambia's energy policies which are biased in favour of fossil fuels despite the centrality of fuelwood in their energy economies.

How to enhance forest conservation

To enhance forest conservation, the study has recommended that South Africa should reform its institutions for intergovernmental and intersectoral policy co-ordination. There should ideally be national, provincial and local bodies for intersectoral policy co-ordination that ought to be hierarchically linked to each other because environmental degradation occurs at these scales. The GDP only reflects the commercial forestry sector, although many rural South Africans in the former homelands utilise indigenous forest resources. This needs to be computed to reflect the correct contribution of the sector to the national economy, as the country has pledged itself to employ 'full cost accounting' to enable a better assessment of the economic value of forest resources. South Africa also needs to assess the correct proportion of its labour force in the forestry sector: commercial, state and self-employment in forest-based rural enterprises. Furthermore, it has been argued that Tanzania and Zambia should reform their forestry and other related policy-making processes, making them as broad-based as possible. Such a concern must be institutionalised, written into statutes or framework legislation such as the environmental law or even the constitution to guarantee local people's roles in natural resource management. Framework laws should also institutionalise environmental auditing, monitoring and evaluation, intersectoral policy co-ordination, participatory approaches to natural resource management and ownership of environmental assets such as land and forest resources by local people individually or communally as the local situation befits. The study emphasises the necessity to reform the existing policies that distort markets for forest resources or create situations in which benefits are dissociated from costs, prices from scarcities, rights from responsibilities and actions from consequences.

It has been acknowledged that the survival and productivity of forest resources not only depends on forestry-specific policy and legislation, but also on what happens in other sectors and the overall national economy. The study stresses the need to cultivate *concerns* for forest conservation into these external policies during the policy formulation process and monitored during the implementation phase. Thus, 'intersectoral policy co-ordination' has been perceived as important for creating harmony between the forestry policy and all other sectoral policies. Streamlining policies to promote environmental conservation is suggested to occur in two principal ways. *First*, forestry and external policies can be harmonised by developing a comprehensive and integrated policy that covers all the economic sectors that bear on the environment. A comprehensive and integrated national land use policy that establishes criteria for decision-making, particularly in deciding when certain environmental assets should be forsaken for economic development and *vice versa*, amounts to such a master policy document. *Second*, central government agencies such as Tanzania's Ministry of Natural Resources and Tourism and Zambia's Ministry of Environment and Natural Resources could establish clear environmental responsibilities for other government departments and create institutions for intersectoral policy co-ordination. An isomeric form of this is to develop a framework policy that defines the environmental policies and practices of other government institutions with legislative mandate for the environment. South Africa's Department of Environmental Affairs and Tourism appeared to have adopted this stance in its environmental management policy.

6.2 Obstacles encountered

Both the Tanzanian Beekeeping and Forestry Division, and the Zambian Forestry Department had been uncooperative during this study. Consequently, they did not respond to the queries which were meant to elicit certain information. This may be attributed to the apparent lack of a specialised 'policy section' within these institutions. Generally, DWAF had been co-operative, although the Department could not legitimise some of the data that it supplied. This may be adduced to the ongoing 'restructuring' process within the Department. With the exception of South Africa, whose policy documents are readily accessible, many policy statements on Tanzania and Zambia had to be interpreted from reports and publications. This meant that a great deal of time was spent sifting through massive paper work which often did not yield substantive policy information in the end. Finally, the lack of financial resources to visit government forestry departments even within South Africa signified that certain policy directions indicated in the study might not necessarily portray the current government line of action. This is because governments often want to be seen adopting certain popular stances whereas in practice they pursue different goals.

6.3 Recommendations for further work

1. The uptake of the results of a study that aims to overturn ensuing resource degradation and loss by isolating the inherent policy and market failures and by recommending problem-specific remedial measures will be enhanced if the recommendations of the study are tendered in a participatory manner. Consultations with policy implementers will promote the development and/or selection of competent tools for forest conservation because their experiences with certain instruments are expected to influence policy instrument choice. It is also important to note that government forestry personnel would be more willing to adopt recommendations that they inputted into rather than recommendations which may not be founded on local conditions. Implicitly, policy recommendation studies should not be conducted remotely; researchers should have the opportunity to visit policy implementation programmes/projects and meet street-level bureaucrats to draw issue-oriented conclusions. Certainly, this will legitimise policy studies.

2. Policy impact studies conducted at community level provide more insight into the performance of a given policy intervention than at national level where a study may be susceptible to generalisations. For example, assessment of 'participatory forest conservation' in some rural locales in the Northern Province should provide more concrete information about the role of smallholders or gender equity in forest conservation. Although there may not be baseline data, resident communities may recall forestry policy interventions five, 10 or even 15 years ago more easily than randomly selected respondents at a national scale. It is therefore recommended that forest resource conservation policies should be evaluated at community level because policy queries at this level are likely to draw more definite answers.

3. This study supported community-based forest and/or wildlife management in Southern Africa insofar as community households have secure parcels of land as a basic means of production. It is implied that community members participate in community-based natural resource management programmes to augment household income. Contrariwise, many writers argue vehemently that rural communities are willing to participate in forest and/or wildlife conservation. However, with the integration of rural African communities into the global economy where private welfare influences decision-making, it is appropriate to question whether rural Africans are still interested in producing 'public goods'. Do they have the capacity for natural resource conservation in the face of receding natural resources and escalating pressure on them? Are the traditional institutions intact or fragmentary and what are their roles in natural resource conservation amid the increasing rate of environmental degradation? Answering these and other similar questions is at the heart of forest conservation in the Southern African region.

4. More researches into opportunities for improving the policy-making process are needed to make the policy product more appropriate. This may commence at the agenda-setting stage where forestry problems and

issues attract government attention. As forestry policies are developed in response to problems, it occurs that pressing short-term concerns overshadow less apparent equally important long-term concerns. Having inefficient agenda-setting mechanisms mean that socially important forestry issues may not be appreciated and progressive forestry policies may not be developed. Research into agenda-setting may typically involve identifying what shapes forestry agendas at local, state and national levels; the nature and composition of agenda setters; *why* and *how* certain issues are deferred, displaced or diverted. Other policy processes also need to be researched, for example, who are involved and who are not involved in policy formulation. Economic researchers argue that 'economic efficiency' determines the choice of forestry policies and environmentalists concede that the 'environment' does, while sociologists note that policies that create 'social equity' are likely to be selected. Thus, it is appropriate to evaluate alternative *means* by which forestry policies are selected and also to examine how these alternatives may be improved within prevailing political environments in the concerned countries.

Furthermore, it is imperative to examine the *means* and processes by which policy choices are legitimised, implemented, evaluated and terminated. It is appropriate to assess *how* policies acquire some official status — are forestry policies legitimised by a law, action plan, a regulation, a court or judicial ruling? What modes of legitimisation are more effective: forest acts or departmental regulations? Research into policy implementation will naturally query why policies fail in the implementation phase: limited financial and human resources, poor understanding of laws and regulation, etc? Evaluation is an activity that makes substantial contributions to understanding and improving policy-making. However, most forestry policy evaluations are based on a narrow set of economic indicators. Research is expected to diversify these indicators to cover all the different aspects of forestry: ecological, economic and social. Additionally, rapid and cost-effective methods of forestry policy evaluation need to be researched. Finally, forestry policies must be terminated if evaluation results indicate that they are counterproductive, fail to meet their goals, or budgetary constraints dictate upon them. Research is needed to determine the most appropriate methods for terminating policies which are assessed to be deficient, in addition to identifying the difficulties that confront termination. There is also a need to examine *how* forestry policies or programmes could be designed for termination because it occurs that although there is a weighty evidence against a policy it continues to be implemented, putting more strain on limited government budgetary.

5. Finally, there is a greater need to research the relationship between forestry policy and other sectoral policies more thoroughly to facilitate the development of a comprehensive and integrated environmental policy that blends the environment with the economy well. Legislative committees on forestry or the environment and senior bureaucrats ought to be supplied with forest—macroeconomic; forest—agriculture; forest—energy; forest—land use; or forest—tourism and forest—wildlife scenarios to make informed decisions either against or for forest

conservation. Moreover, forest conservation is about finding the appropriate balance between other societal choices and the forestry sector.

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