Edited by
M. A. Mohamed Salih and Shibru Tedla

ENVIRONMENTAL PLANNING, POLICIES AND POLITICS IN EASTERN AND SOUTHERN AFRICA

Foreword by J. B. Opschoor

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Environmental Planning, Policies and Politics in Eastern and Southern Africa

Edited by

M. A. Mohamed Salih
Senior Lecturer in Environment and Sustainable Development
Institute of Social Studies
The Hague
The Netherlands

and

Shibru Tedla
General Manager
Eco-Consult
Addis Ababa
Ethiopia

Foreword by J. B. Opschoor
Rector, Institute of Social Studies
The Hague
The Netherlands

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Foreword

The book in your hands is important. It assesses the scope and performance of politics, policies and planning in an area that will increasingly penetrate the development agenda in the decades to come: environment and natural resources. It does so by concentrating on one of the regions of our planet in which these issues are especially problematic as it is also plagued by other problems: Eastern and Southern Africa. One outstanding feature is, that the book is written by scholars who are all of African origin, which adds to the profundity of the analysis and the relevance of the recommendations. The book is the product of an activity organised by the Organization for Social Science Research in Eastern and Southern Africa (OSSREA). I was involved in research on environmental issues while at the University of Botswana, and, last but not least, as one of the editors is a colleague and friend of mine at the Institute of Social Studies in The Hague. For all these reasons, it is an honour and a pleasure to introduce this book.

In making reference to problems other than environmental ones that Africa has to face, I think of issues of ethnic and cultural strife, governance failure and persistent poverty. In a way, Africa is well endowed with some natural resources – though far from everywhere – but ecosystems and the human life support systems embedded in them typically are rather vulnerable. The book mentions, *inter alia*, desertification, erosion, deforestation, water problems and sanitation issues So much is abundantly clear: poverty and environmental degradation have common root problems in Africa. This means that on these a priori grounds alone, environmental policies must be intertwined with efforts addressing the poverty issue.

In his Introduction, Mohamed Salih mentions a set of environmental policy principles, such as the Polluter (and User) Pays Principle, the Precautionary Principle, Cost-Effectiveness, Subsidiarity and the like. These come from a manual derived from experiences in the OECD. Are suggestions coming from such a specific context relevant outside it? In Africa, for instance. At the global level, these notions have gained some recognition as important foundations for efforts towards sustainable development, as is testified by their inclusion in e.g. the Rio Declaration (UNCED, 1992) and the framework Conventions on Biodiversity and Climate Change. But, to be honest, the book shows that in practice it may – as yet – be difficult to apply these ideas in Africa. Studies of environmental policies in Eastern and Southern Asia and Latin America show that in these settings they are being tested with a good measure of success.

The contributions to the volume analyse experiences in nine countries. These tell a revealing tale of a lack of policies, a lack of resources to effectively implement policies, fragmented policies or agencies' mandates, incoherent overall approaches, a lack of participation in policy formulation and subsequent ownership of policies, and other set-backs. The book holds

the promise that understanding the impediments to formulating and implementing adequate policies will help in tearing down these barriers.

This book elucidates something else, too. It explains the importance of policies and instruments being developed, polished, adapted and implemented in a way that does justice to the specifics of the contexts in which they are to be applied. Furthermore, it suggests that this development and implementation is best done by people from and in these settings. In other words, this book reveals how tremendously important it is that there should be an adequate intellectual and institutional infrastructure in African countries and in the African region, to understand and handle society-environment interactions and ways to modify these interactions through environmental policy interventions. I say this as someone who 30 years ago belonged to the plethora of expatriates that was brought into Africa to look at environmental and resource problems, as at that time that capacity was not available domestically. I say this also as the leader of an institution that tries to help in constructing it, in Africa Latin America and Asia.

The book demonstrates the challenge of deteriorating society - environment relationships, and suggests that the capacity to meet it may be in place soon. As they say in Botswana: *pula e etla*, the rain has come.

Professor Dr. J. B. (Hans) Opschoor
Rector
Institute of Social Studies
The Hague, the Netherlands

Notes on Contributors

Hassan Ahmed Abdel Ati (PhD in Development Studies, University of Wales, Swansea, UK). Previously, he was lecturer at the Department of Geography, University of Khartoum, Sudan. His books include *Managing Scarcity: Human Adaptation in East Africa* (OSSREA 1996) and *Survival on Meagre Resources: Hadendowa Pastoralism in the Red Sea Hills* (Scandinavian Institute of African Studies, Uppsala 1996).

Nadir Mohamed Awad (PhD in Biology, Colorado State University), was lecturer in Biology at the Faculty of Sciences, University of Khartoum, Sudan.

Harry N. Chabwela (PhD in Zoology, University of Guelph, Canada). He was Permanent Secretary at the Cabinet Office, responsible to the Prime Minister. Presently he is lecturer at the School of Natural Sciences, University of Zambia. As senior administrator of research, Chabwela had directed several international research activities for organizations such as the Southern African Development Community (SADC), the International Union for the Conservation of Nature (IUCN) and the Commonwealth Secretariat

Michael B. Kwesi Darkoh (PhD in Geography, University of Wisconsin, Madison) is Professor of Geography at the Institute of Environmental Sciences, University of Botswana, Gabarone. He conducted extensive studies on problems of land degradation, desertification and environmental management in Eastern and Southern Africa. His books include *African River Basins and the Dryland Crisis* (Scandinavian Institute of African Studies, Uppsala 1992) and *Tanzania Growth Centers* (Peter Lang, Frankfurt 1993).

Mesheck L. M. Kapila (MSc in Applied Remote Sensing, Silsoe College of the Cranefield Institute of Technology, UK). Presently he is land resources conservation officer at the Department of Land Resources and Conservation. His main research and publications are in land use planning, soil and water conservation and land use/cover mapping.

Kifle Lemma (MSc, Wyoming State University, USA, in Water Resources and Natural Resources), (LLB, Haile Selassie I University, Ethiopia 1970), is presently head of the Environmental Protection Policy and Legislation Department of the Environmental Protection Authority (Ethiopia) and Director of the National Conservation Strategy Secretariat. He was intimately involved in the formulation of National Natural Resources Development and Environmental Protection Policies and Strategies.

Makoala V. Marake (PhD in Water Management, University of Nebraska, USA). He served at the University of Lesotho and the Ministry of

Agriculture. His research interests focus on soil sciences with special emphasis on nutrient recycling, tillage systems and nitrogen management for sustainable productivity and environmental quality.

Polile A. Molumeli (MSc in Agronomy, South Dakota State University, USA). He is a lecturer at the National University of Lesotho, Lesotho. He served as a lecturer in Lesotho Agricultural College, Maseru, Lesotho, and also a Conservation Assistant in the Forestry and Soil Conservation Division of the Ministry of Agriculture (Lesotho). His research work is focused on the improvement of small holder agriculture. He serves in many voluntary organizations.

Welbon M. Kasweswe Mwafongo (MSc in Rural Resources and Environmental Policy, Wye College, University of London, UK). He is Senior Lecturer in Environmental/Social Geography at Chancellor College, University of Malawi. He published widely and conducted policy research on land use and environmental management for the Organization for Social Science Research in Eastern and Southern Africa (OSSREA) and the African Centre for Technology Studies (ACTS).

Raphael B. B. Mwalyosi (PhD in Conservation Biology, Agricultural University of Norway, Aas). He is professor of Ecology at the Institute of Resource Assessment, University of Dar es Salaam, Tanzania. His current research interests include environmental impact assessment, biodiversity conservation and rangeland management.

Justus Inonda Mwanje (PhD in Mathematical Statistics, University of British Columbia, Canada). He is senior lecturer at the Department of Environmental Science, Kenyatta University. He carried out policy research for several international organizations, including the World Bank and the United Nations Environmental Programme (UNEP). He published widely, and is currently preparing two books on natural resource conservation and participatory methodology for poverty alleviation.

Paul K. Musali (MA in Land Use and Regional Development, Makerere University, Uganda). He taught at Makerere University, served at the Ministry of Environment and was a member of the Biodiversity Conservation Committee and the Uganda National Report for Habitat II (1996).

M. A. Mohamed Salih (PhD in Economic and Social Studies, University of Manchester, UK, majoring in Development Anthropology). He was Associate Professor in social Anthropology, University of Khartoum and the Scandinavian Institute of African Studies. Presently he is Senior Lecturer in Environment and Sustainable Development, Institute of Social Studies, The Hague, the Netherlands. His books include *Ecology and Politics* (Scandinavian Institute of African Studies, Uppsala 1989), *The Least Developed and the Oil-Rich*

Arab Countries (Macmillan Press Ltd. 1992), *The Role of Social Science in Conflict Analysis* (Helsinki University Press, 1993) and *Inducing Food Insecurity: Perspectives on Environmental Policies in Eastern and Southern Africa* (Scandinavian Institute of African Studies, Uppsala 1994).

Hannington Sengendo (PhD in Urban Planning, Nottingham University, UK). He is the Head of Geography Department, Makerere University, Uganda and Deputy Managing Director of Eco-Shelter and Environmental Consultants. He conducted consultancies in the urban environmental field for international organizations, including the United Nations International Labour Organization (ILO).

Hussein Sosovele (PhD in Sociology, University of Bremen, Germany). He is a research fellow at the Institute of Resource Assessment, University of Dar es Salaam, Tanzania. He is the co-author of *Structural Adjustment and Sustainable Development in Tanzania* (Dar es-Salaam University Press, Dar es-Salaam).

Shibru Tedla (PhD University of Waterloo, Canada, 1969) in Ecology/Parasitology, MSc, University of Liverpool, UK, 1965, in Applied Biology), is presently the General Manager of ECO-Consult, an Environment and Development concern. He was a Professor of Biology at Addis Ababa University, Ethiopia. Presently he is the President of the Ethiopian Wildlife and Natural History Society, President of the Ethiopian Society for Appropriate Technology, member of the Board of Directors of *lem* (an Environmental and Development Society of Ethiopia). He is Life Member of the Ethiopia Heritage Trust. He was the team leader of several missions including those for the review of Ethiopia's Fifth Country Programme (sponsored by the United Nations Development Programme, UNDP) for environmental sensitivity; the Trust Fund for Conservation (Ethiopia) sponsored by the World Wide Fund for Nature (WWF); and the Environmental Protection Program of the Economic Commission for Africa (ECA). Professor Tedla is an author of four books, of which one is in Amharic on natural resources and conservation; *What do we hear from Anjeri*, Published by the University of Bern, Switzerland, and the remaining three are published by Addis Ababa University Printing Press, Ethiopia: *Schistosomiasis in Ethiopia*, 1989; *Freshwater Fishes of Ethiopia*, 1972; Introduction to Parasitology, 1985.

Davison D. Theo (PhD in Mathematics, Aberystwyth University, Wales). He is the Dean of the School of Natural Sciences at the University of Zambia and a Board Member of the African Academic of Sciences and Arts. Theo is a member of the Southern African Mathematical Sciences Association, the London Mathematical Society, the American Mathematical Society and the New York Academy of Sciences.

Wellington Nguya Wamicha (PhD University of Giessen, Germany, 1991). He is the Chair of the Department of Environmental Science, Kenyatta University. Wamicha contributed several publications on resources surveys and management.

MAP 1: EASTERN AND SOUTHERN AFRICA

Chapter 1

Introduction

Environmental Planning, Policies and Politics in Eastern and Southern Africa

M. A. Mohamed Salih

This volume contains the first results of a research programme on National Environmental Action Plans (NEAPs) and National Conservation Strategies (NCSs) conducted by African researchers from Eastern and Southern Africa. The research culminated in a regional conference organized by the Organization for Social Science Research in Eastern and Southern Africa (OSSREA) in April 1997. The volume draws together case studies on Botswana, Ethiopia, Kenya, Lesotho, Malawi, Sudan, Tanzania, Uganda and Zambia financed by the Norwegian Royal Overseas Development Authority (NORAD) and the Swedish Authority for Research Cooperation (SAREC). OSSREA and the African researchers are grateful to NORAD and SAREC for having given them the opportunity to conduct this research, increase inter-regional collaboration and develop home-grown and informed materials for policy, reference and teaching. This volume might have not seen the light of day without Professor Shibru Tedla's dedication, academic excellence and superb regional coordination of the project.

The upsurge of research and studies on the causes and consequences of environmental degradation in Africa and elsewhere is not accidental. It is part of a growing global awareness of the dire consequences of unchecked environmental degradation for the well-being of humans and animals alike. Recent major works such as *Conservation in Africa: People, Policies and Practices* Anderson and Grove 1987), *Africa: Geography and Development* (Mountjoy and Hilling 1988), *African Environments and Resources* (Lewis and Berry 1988), *The Greening of Africa* (Harris 1989), *Ecology and Politics: Environmental Stress and*

Security in Africa (Hjort and Mohamed Salih 1989), *People and Environment in Africa* (Binns 1995), *Crisis and Opportunity: Environment and Development in Africa* (Falloux and Talbot 1993), *Toward Sustainable Development in Sub-Saharan Africa* (World Bank 1996), *Tropical Environments* (Kellman and Tackaberry 1997) and *Environment and Sustainable Development in Eastern and Southern Africa* (Ahmed and Mlay 1998) are all part of this welcome trend. They have not only sharpened our understanding of the socio-economic and policy context in which people and the environment interact, but also our comprehension of the complex issues and concerns involved. While drawing on the findings of these works, this volume intends to distinguish itself by dealing with the context, evolution, process and implementation of National Environmental Action Plans (NEAPs) and National Conservation Strategies in Eastern and Southern Africa, specifically in the nine countries under review. It is primarily meant to be a reference book for students, policy-makers and NGOs working in the field of environmental conservation in this subcontinent and other parts of Africa.

To be more precise, this volume is about whether African National Conservation Strategies and National Environmental Action Plans (NEAPs) have worked. What constraints and impediments have they confronted? Are these problems surmountable? This introductory chapter attempts to synthesize these issues, while in the rest of the book each individual contributor deals with a specific country. In view of the considerable influence of global, regional and sub-regional agreements, conventions and treaties on African environmental management policies, I introduce these in order to delineate how they have contributed to the policy processes, their successes and their failures.

ACCESSION TO REGIONAL AND GLOBAL ENVIRONMENTAL POLICY ENDEAVOURS

Africa's experience with international and regional environmental conservation efforts, particularly in the area of fauna, dates back to the colonial days. A good example is the Convention for the Preservation of Wild Animals, Birds and Fish in Africa, signed in 1900 by the colonial powers in London. This convention bound its signatories to control and protect wildlife in their respective African colonies. In 1933, the Government of the United Kingdom convened the second London Conference for the Protection of African Fauna and Flora as a pioneer effort to promote the establishment of national parks, game and forest reserves, and various other measures for the conservation of wildlife and its habitat in Africa (Ogot 1979; Anderson and Grove 1987; Enghoff 1990).

Colonial concerns with the environment have left their marks in the policies of post-colonial African states. The colonial legacy includes the non-participatory character of environmental measures and the neglect of the interest of surrounding communities, as opposed to the interests of the expanding tourist industry. For example, in 1961, the International Union for the Conservation of Nature (see UNESCO 1963) organized an international conference co-sponsored by the Food and Agriculture Organization (FAO) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) to put conservation on the planning and development agendas of the emerging African states. The concern of the conference was not limited to parks and wildlife. It also focused on broad environmental issues in an effort to place development within the African ecological and cultural heritage.

Africa's awareness of transboundary environmental resources and the need to control pests and epidemics was galvanized during the early years of independence. Several bilateral and regional conferences were organized to draft environmental or related conventions (see UNEP 1991). Here are some examples of African environmental conventions:

- Convention on the African Migratory Locust, Kano 1962.
- Convention and Statute Relating to the Development of the Chad Basin, Fort-Lamy, Ndjamena 1964.
- African Convention on the Conservation of Nature and Natural Resources, Algiers, 1968.
- Agreement on the establishment of a Commission for Controlling the Desert Locust in North-West Africa, Rome 1970.
- Convention concerning the status of the Senegal River and Convention establishing the Senegal River Development, Orgasatton 1972.

These were followed in the 1980s by a number of conventions that came out of the multilateral environmental movement and the African countries, efforts to avoid disputes over river basin water resources. Some examples of these are:

- The convention creating the Niger Basin Authority and the Protocol Relating to the Development Fund of the Niger Basin, Faraah, 1980.
- The agreement on the Action Plan for the Environmentally Sound Management of the Zambezi River System, Harare 1989.

Two political/economic sub-regional groupings such as the Inter-Governmental Authority for Drought and Development (IGADD) and the

Southern African Development Co-ordination Conference (SADCC), now the Southern African Development Community (SADC) have clear mandates to promote environmentally sensitive development. IGADD (now the Intergovernmental Authority on Development IGAD) was established in 1988 as a response to the reoccurrence of drought and famine in the Horn of Africa (Djibouti, Ethiopia, Kenya, Somalia, Sudan and Uganda) contributed to its establishment. It was joined by Eritrea after her independence from Ethiopia in 1993.

SADCC countries (Botswana, Lesotho, Malawi, Tanzania, Zambia, Zimbabwe), stated in the Lusaka Declaration (1980), that the livelihood of the majority of the people of Southern Africa is threatened by environmental degradation, which undermines both crop and animal husbandry, the mainstay of rural livelihoods in the Region. SADCC was joined by South Africa after the dismantling of apartheid. The Declaration considered Lesotho to be the country most seriously affected by ecological imbalance in the region. Hence, the SADCC Council of Ministers in November 1981 assigned to Lesotho the role of co-ordinating regional soil and water conservation projects within SADCC.

In December 1985, having realized the severity of environmental degradation and chronic food shortages in some countries, as well as the socio-economic benefits that could accrue to them by being integrated into the global environmental movement, African states convened the African Ministerial Conference on the Environment (AMCEN) in Cairo, in a concerted effort to face the challenge posed by environmental degradation. This was the first all-African regional conference concerned with the environment. As such it symbolized the continent's commitment to conservation and sustainable development. AMCEN adopted a programme of action for regional cooperation on the environment with the main objectives of fighting the degradation of natural resources, ensuring environmental rehabilitation and securing self-sufficiency in food and energy. This was to be achieved by mobilizing Africa's human, scientific and technical resources and the application of sound, economically feasible and socially acceptable environmental management methods.

In addition to these initiatives, the Organization for African Unity (OAU) at its 21st Ordinary Session of the Assembly of Heads of State and Government adopted Africa's Priority Programme for Economic Recovery 1986–90 (APPER). The African Heads of State themselves deplored the fact that little progress had been made in environmental conservation measures. The assembly nevertheless recommended the intensification of the struggle against drought and desertification and the implementation of measures for improved food security and the rehabilitation of agriculture and the

environment. These recommendations were to be implemented at the regional, sub-regional and national levels.

Despite these efforts, Africa's experience with national environmental planning, "a process designed to provide a framework for integrating environmental considerations into a nation's overall economic and social development programmes" (Garew-Reid et al. 1994:4), is short. It is a result of the growing global environmental awareness marked by several events. First, the Stockholm Conference on Human Settlement (1972). Second, the establishment in 1977 of the United Nations Environmental Programme (UNEP) and its location in Nairobi, Kenya. Third, the World Conservation Strategy (WCS 1980) and the call for the establishment of national conservation strategies (IUCN 1984) which subsequently laid the foundations for National Environmental Action Plans (NEAPs). According to Garew-Reid et al. (1994:36), "National Conservation Strategies are closely associated with the World Conservation Strategy and they were meant to identify the country's most urgent environmental needs, stimulate national debate and raise public consciousness, help decision makers set priorities and allocate human and financial resources, and build institutional capacity to handle complex environmental issues. Fourth, the United Nations Commission on Environment and Development (UNCED 1987–92) which culminated in the *Environmental Perspective to the Year 2000* (1990), *Agenda 21* (1992) and more than 100 or so environmental conventions, treaties and declarations.

National Conservation Strategies (NCSs) and National Environmental Action Plans (NEAPs) have strongly influenced the African environmental policy process. These have often been undertaken by national governments, coordinated by a ministry (or ministries) with technical and financial support by the World Bank and other international organizations, as well as bilateral donors. NCSs and NEAPs were originally designed to transcend conventional development planning and to usher in an interactive policy process which involves not only national governments and donors, but also national and transitional environmental NGOs, civic associations, and business interests.

With a few exceptions, the majority of African countries are signatories of the major conventions dealing with global environmental issues. However, very few African countries are signatories to the Tropical Timber Agreement, the Hazardous Waste Convention and the Desertification Convention (Table 1). Due to the nature of the African physical environment and its endowment with rich biological diversity and endangered species, the African states are more hesitant to sign these conventions. The tactics of using specific agreements to gain advantages over other countries in conventions closely associated with their socio-economic development and pollution rates is a familiar phenomenon in

international environmental politics (Thomas 1992; Sjostedt et al. 1993). As regards the countries discussed in this volume, they have been at the forefront of global environmental conventions. These are highlighted in bold in Table 1.

By and large, African countries reflected the sentiment of the global environmental conventions and agreements which they signed in their NCSs and NAEPs. As a matter of fact the environmental policies of the countries reviewed in this volume are informed by the strategic imperative of sustainable development advocated by *Our Common Future* (WCED 1987) and *Agenda 21* (1992).

At least four observations can be made:

First, the similarity of the environmental problems and the linkage between environmental degradation and poverty. For instance, soil erosion and degradation contribute to low farm productivity. Linked with high population growth rates they contribute to food shortages and malnutrition Subsequent environmental problems include, desertification, deforestation, biodiversity loss, infectious and parasitic diseases, air pollution in major cities, the erosion and pollution of coastal ecosystems and a shortage of adequate drinking water and sanitation facilities.

Second, the African continent has long been integrated in the global environmental movement, with a long history of regional and sub-regional institutions concerned with environmental management.

Third, the continent is not short of plans, policies or concerns about the environment, as has been demonstrated by its long history of sectoral environmental policy proclamations.

Fourth, due to Africa's specific historical experience, i.e. four centuries of colonial domination and underdevelopment, her regional and sub-regional environmental policy efforts are still externally-driven and reactive rather than proactive.

Table 1: African signatories and parties to conventions (as of July 1997)

Convention	Signatories
Biodiversity	Algeria, Benin, **Botswana**, Burkina Faso, Burundi, Cameroon, Cape Verde, Cent. African Rep., Chad, Rep. Congo, Rep. of Congo, Côte d'Ivoire, Djibouti, Egypt, Eritrea, **Ethiopia**, Gambia, Ghana, Guinea, Guinea Bissau, **Kenya, Lesotho, Malawi**, Mali, Mauritania, Mauritius, Morocco, Namibia, Niger, Nigeria, Senegal, Seychelles, **Sudan, Tanzania**, Togo, Tunisia, **Uganda, Zambia** and Zimbabwe.
Desertification	Algeria, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Côte d'Ivoire, Djibouti, Egypt, Eritrea, **Ethiopia**, Gabon, Gambia, Ghana, Guinea, Guinea Bissau, **Kenya**, Mali, Mauritania, Mauritius, Morocco, Namibia, Niger, Nigeria, Senegal, Seychelles, **Sudan, Tanzania**, Togo, Tunisia, **Uganda** and **Zambia**.
Climate Change	Algeria, Benin, **Botswana**, Burkina Faso, Burundi, Cameroon, Cape Verde, Cent. African Rep., Chad, Rep. Congo., Rep. of Congo, Côte d'Ivoire, Djibouti, Egypt, Eritrea, **Ethiopia**, Ghana, Guinea, Guinea Bissau, **Kenya, Lesotho, Malawi,** Mali, Mauritania, Mauritius, Morocco, Namibia, Niger, Nigeria, Senegal, Seychelles, Somalia, South Africa, **Sudan, Tanzania**, Togo, Tunisia, **Uganda, Zambia** and Zimbabwe.
Hazardous Waste	Burundi, Congo Dem. Rep, Côte d'Ivoire, Egypt, **Malawi**, Mali, Morocco, Namibia, Nigeria, Senegal, Seychelles, South Africa, **Tanzania**, Tunisia and Zambia.
Endangered Species	Algeria, Benin, **Botswana**, Burkina Faso, Burundi, Cameroon, Cent. African Rep., Chad, Côte d'Ivoire, Rep. of Congo, Djibouti, Egypt, Eritrea, **Ethiopia**, Ghana, Guinea, Guinea Bissau, **Kenya**, Liberia, **Malawi**, Mali, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Somalia, South Africa, **Sudan**, Swaziland, **Tanzania**, Togo, Tunisia, **Uganda, Zambia** and Zimbabwe.

Source: World Bank (1997)

These observations are reflected at the level of national environmental management, particularly when countries after signing sub-regional, regional or global environmental conventions find themselves economically, technologically and socially ill-equipped to deliver what they have promised. The problem is not that Africans lack of policies or knowledge about the environmental imperative, but that they lack the technical, financial and

human resources required to translate these global conventions and agreements into national environmental management policies and then implement them.

ENVIRONMENTAL POLICY: PRINCIPLES AND PRACTICE

In this book, we take the five main principles of environmental policy as described by Opschoor and Turner and (1994:4) and examine whether African environmental policies satisfy their requirements. They are as follows:

1. The Polluter Pays Principle – i.e. the polluters pay the cost of meeting socially acceptable environmental quality standards;
2. The prevention or Precautionary Principle, which explicitly recognizes the existence of uncertainty (environmental and social) and seeks to avoid irreversible damage via the imposition of a safety margin in policy measures. It also seeks to prevent waste generation at the source, while retaining some end-of-pipe measures;
3. The Economic Efficiency/Cost-Effectiveness principle, applied both to the setting of standards and to the design of the policy instruments for attaining them.
4. The Subsidiarity Principle: to assign environmental decisions and enforcement to the lowest level of government capable of handling them without significant residual externalities;
5. The Legal Efficiency principle: to preclude the passing of regulations that cannot be enforced.

We submit that the environmental policies analysed in our case studies can hardly satisfy all the requirements of these common environmental policy principles, particularly as far as implementation is concerned. Opschoor and Turner are at pains to explore how in an ideal world environmental policy principles could be realistically operationalized, using fiscal and legal instruments, socio-economic incentives and institutions.

Strategically, the main objective of legal and economic instruments and institutions is to ensure environmental quality control through policies pertaining to regulation, incentives and the internalization of environmental costs.

First, environmental laws are concerned with regulating activities that can cause environmental hazards, including the authorization of discharges to the environment, the containment of toxic substances, setting standards and the licensing of emission levels, manufactured products etc. Legal instruments, including customary laws, are the oldest instruments used by humankind to manage the environment. Even modern legal instruments are old and date back to the colonial period, as I have mentioned earlier.

Second, economic instruments and socio-economic incentives fall within the anticipatory/preventive, the "polluter pays" and the economic efficiency/cost-effectiveness principles. These have been recognized by governments and multilateral environmental institutions as fiscal instruments (aggregate abatement costs; user charges levied on emissions; financing emission charges; tradable permits; environmental taxes) and enforcement instruments. However, these instruments seem designed to operate in industrially advanced OECD market economies, where they can be an effective means for high environmental quality control. However, African countries with their underdeveloped economies have yet to use stringent fiscal instruments within the framework of cost-effectiveness, administrative costs, distribution impacts and policy-making, as described by some authors for the industrially advanced economies (Folmer et al. 1995:1–17; Lohmann 1994:58–62; Weizsacker and Jestinghaus 1992: 41–21).

The implication for Eastern and Southern Africa and the least developed countries in general is that wherever fiscal instruments cannot be effectively used, the distinction between control and command and economic incentive policies is apparent. Furthermore, it implies that different policy instruments are used depending on the social, political and economic context (developing or industrialized) in which financial instruments and socio-economic incentives (subsidies, affordable and efficient public transport, incentive charges on low emissions, demarcated bicycle tracks and walk paths etc.) are introduced.

Third, environmental institutions represent authority levels for decision-making such as specialized ministries for the environment, backed up by environmental training, information and research institutions, environmental regulation and quality control institutions. Some of these institutions operate as co-ordinating bodies working with the public and private sectors through environmental action plans and conservation strategies, as has been stated earlier. There are also self-regulating industries and business interests linked to environmentally compatible technologies. As will be discussed in the following section on the contributions, most African countries have developed very sophisticated environmental institutions. However, according to the studies in this volume, these institutions are not as effective as they are supposed to be.

The case studies presented in this volume reveal that, although Eastern and Southern African states are aware of the environmental policy principles and the instruments required for their operationalization, these are hardly implemented. The case studies reveal at least six common tendencies in Eastern and Southern African environmental policies:

1. Since the late 1970s, regional and national environmental policies in our region are increasingly influenced by global environmental forums, negotiations, conventions, treaties, declarations and the emergence of the concept of global environmental governance (Commission on Global Governance 1995).

2. The existence of governmental and non-governmental (NGOs) institutions involved in the environmental policy process, in implementation, and in monitoring. Most countries involve such institutions in public debate on key environmental issues and concerns. These institutions are weak and operate on a sectoral basis, with inadequate co-ordination and overlapping responsibilities. They also suffer from inadequate knowledge and limited information about the extent of resource degradation as well as the sound implementation of resource management policies.

3. The integration of environmental impact assessment (EIA) as an anticipatory-preventative environmental policy instrument. This relates particularly to the insistence of international finance institutions (such as the World Bank) and bilateral development agencies on better cost-effectiveness and distribution.

4. Owing to underdevelopment and market weakness (inadequate pricing, lack of trained human resources and institutional constraints), fiscal and socio-economic incentives are very rarely used as environmental policy instruments. This is an area where human resource development is desperately needed if African environmental policies are to be translated into powerful resource management tools.

5. Instead of economic instruments, legal instruments are used, some of which date back to the colonial period. However, regional and national environmental laws are increasingly influenced by international environmental law proposed and drafted by global environmental forums, negotiations, conventions, treaties, agreements and declarations, and the emergence of the concept of global environmental governance (Commission on Global Governance 1995).

6. The case studies also reveal that even legal environmental policy instruments promulgated within a dysfunctional regulatory framework are insufficient and suffer from inadequately trained personnel.

However it would be grossly misleading not to acknowledge the limited progress attained by National Environmental Action Plans and National Conservation Strategies in the African context.

First of all, my view, one of their main achievements is that they have raised environmental awareness and put Africa's environmental concerns high on national development agendas. The commitment of these countries to sustainable environmental management is beset more by their lack of resources than by a lack of knowledge about the environment or a lack of political will to promote sustainable development.

Second, although the contributors to this volume criticize the sectoral nature of their respective countries' environmental policies, these represent a step forward in environmental management efforts as well as awareness.

Third, attempts to enshire environmental concerns in the constitutions of Ethiopia, Malawi, Uganda and Tanzania have underscored the notion that states should consider the right to a healthy environment as a fundamental human right. For example, the revised Constitution of Malawi, following the collapse of Banda's defunct autocratic regime, in Chapter III Section 13 (d) calls upon the state "to manage the environment responsibly in order to: prevent the degradation of the environment; provide a healthy living and working environment for the people of Malawi; accord full recognition to the rights of future generations by means of environmental protection and sustainable development of natural resources; and conserve and enhance the biological diversity of Malawi" (Malawi Constitution, May 1994).

Fourth, serious attempts have been made by some states (Uganda, Malawi, Ethiopia, Zambia, Lesotho and Kenya) to develop a new generation of investment plans which integrate environmental concerns in individual investment projects, based on clear guidelines. A wide array of projects in the fields of capacity-building in environment management, enhancing resource (land and water) productivity, conservation and the use of biological resources, environmental education and public awareness, environmental health and pollution management was selected. These projects will be implemented in phases depending on the availability of funds.

Fifth, due to the democratization process which has swept through the countries of our region, except Sudan, popular participation in environmental planning and development became more acceptable than ever. Citizens organizations and development/environment NGOs are organizing for change and taking conservation into their own hands. However, the need to

create people's space must be further nurtured and supported if sustainable resource management is to become a reality.

THE CASE STUDIES

A major theme in all contributions is what Wamicha and Mwanje call, in the Kenyan case, "the politics within", i.e. institutional politics involving state and non-state actors. In other words, the contributors are concerned with the politics of the state actors and institutions, rather than with conflicts between the state and civil society over environmental resources, the subject of many recent publications. They are particularly concerned with the competing and at times converging interests inherent in sectoral environmental management policies and institutions. Contradictions in sectoral environmental policies have become more apparent due to the increasing awareness among environmental policy institutions of the consequences of popular participation in policy formulation. Because environment cuts across development/environment management policy issues, it becomes a battlefield in which social and political interests clash.

For instance, in the case of Ethiopia, Tedla and Lemma argue that sectoral contradictions and overlap are a major source of weakness in Ethiopian environmental law with respect to land tenure and administration, land utilization, fisheries, environmental health, particularly solid and liquid waste disposal, as well as toxic and hazardous waste management. The strong urban-based industrial sector is not inclined to champion calls for environmental quality standards for air, water and land pollution, which are indeed very serious in certain localities where industries and large farms with high chemical input are situated. On the other hand, peasant communities are weary of environmental management plans thrown at them by the central government without proper consultation. Tedla and Lemma take the view that the creation of a people's space is a prerequisite for sustainable resource management and better implementation of the national conservation plans.

According to Wamicha and Mwanje, Kenya's State Authority on the environment has not been clearly defined in public law. The Kenyan Constitution, on account of its prominence, is drawn up according to special legislative procedures, and can only be amended in the same manner. Other laws and by-laws are subordinate to the constitution, while a substantial portion of Kenya's natural resources are currently managed by local authorities using by-laws. The implications of real and presumed supreme authority vested in the Central Government have often led to conflicts on

environmental conservation between the Central Government and the Local Authorities.

Until recently, like in other African countries, Lesotho's concern with environmental education and awareness has mostly remained within the limited context of agriculture and targeted farming communities, argue Marake and Molumeli. The failure to provide skills and knowledge to other sectors involved in environmental programmes (grazing, mining) has cost Lesotho dearly. The current vicious cycle of population pressure, poverty, food deficits and the degradation of the environment can only be seen as an indictment of conservation planning and implementation. This is partly due to the fact that Lesotho's conservation approach and strategy were not designed to address people's immediate needs and have apparently rendered conservation unaffordable to both urban and rural communities. Neither can invest in technological solutions for long-term conservation measures. In Marake's and Molumeli's view, the legal framework of Lesotho's environmental and conservation policy has failed to inspire the protection of natural resources.

As to Uganda, praised as a success story for its rapid growth of GDP (eight percent in 1996) since the implementation of Structural Adjustment Programmes (SAPs) in the late 1980s, Sengendo and Musali argue that the Uganda Investment Plan (IP) includes a well-calculated effort to stem environmental degradation through a careful handling of the underlying causes of identified problems. The authors argue that Uganda fell prey to the double challenge of achieving sustainable economic development and at the same time conserving the country's rich and varied natural resources. In fact, Sengendo and Musali argue that the impulse to develop rapidly has resulted in serious environmental degradation which is threatening the productivity of the natural resource base on which development greatly depends. Poverty has created a vicious spiral of environmental degradation and has exacerbated the problem. It is therefore imperative that the economic and environmental strategies be reconciled and a proper balance between economic development and environmental conservation be ensured. Another serious problem in the view of Sengendo and Musali is that some colonial environmental laws are still being enforced although they are not in touch with today's reality. The laws are not only obsolete but scattered in different statutes that have been drawn up by different sectoral environmental management institutions. This again renders current efforts in environment conservation difficult, if not impossible. As a result, Uganda's natural resource management institutions lack a clear understanding of the stakeholders' attitudes towards these resources. Uganda's environmental policies and laws therefore have hardly reflected the aspirations of society.

Unfortunately, these laws and policies have often been be enforced in such a way that they can hardly benefit society, as the managing institutions still rely on authority derived from the law rather than from people's acceptance

In the Sudan, according to Abdel Ati and Awad, due to the technical weaknesses of plans and various contextual constraints, the performance of plans and their impact on the ground have been insignificant. Besides, with the exception of DECARP efforts, the monitoring of environmental changes and follow-up are hampered by the inadequate accuracy and scope of information. Furthermore, despite the long history and immense body of sectoral legislation to protect the environment and manage resource use, logistical problems, administrative weakness and corruption very much reduce the government institutions' ability to apply the law.

Tanzania has similar patterns of contradictions in sectoral environmental planning. Mwalyosi and Sosovele demonstrate that almost all strategic plans and policies in Tanzania were motivated by the government's desire to gain access to international or bilateral funds. Conditions attached by donors to such funds included the secondment of consultants or experts, usually from the funding agencies. Also, there were early deadlines for reports. The result of this has been hurriedly-produced reports without adequate local consultation. Often, the content of such reports is biased towards donor interests, with little regard for the concerns and opinions of the citizens. In the end, such policies are deemed impossible to implement.

In one of Africa's richest countries, Botswana, Darkoh argues that as a result of ill-planned livestock sector development and an inappropriate utilization of the country's grazing resources, a complex relationship between people and environment has occurred, giving rise to severe dryland degradation or desertification. In Darkoh's view, the greatest environmental policy constraint in this mineral-rich country is the void and confusion created by the breakdown of traditional structures and the lack of adequate institutional capacity and mechanisms for implementing community-based natural resource management projects. However, given the strength of Botswana's economy, the political will, the democratic governance and the environmental consciousness prevailing among the political leadership and educated elite alike, there appear to be good prospects for sustained effort and successful environmental policy.

In the case of Malawi, Mwafongo and Kapila deal with the role of market and related policy failures as crucial elements in resource degradation, including insecure property rights, limited information on resource conservation, labour market weaknesses and limited access to credit. They argue that, even in a densely populated country like Malawi, property rights regarding environmental resources are ill-defined and insecure, which results

in easy access and excessive exploitation. The contradiction between modern and traditional resource management authorities is exemplified by the fact that the powers of the chief to allocate land do not extend to enforcing sustainable use of the land. Property rights have not promoted the adoption of sustainable land use practices in Malawi, even where titled land had been granted.

Although it is a noble endeavour, the effort to put in place global sustainable development policies is contested by some of the contributors to this volume. For instance, Theo and Chabwela argue in the case of Zambia that World Bank-inspired NCSs and NEAPs were established as preconditions for releasing funds for national economic mobilization. Zambia's access to external loans has, to some extent, depended on the status of its NEAP. Usually the fate of such plans is sealed by their lack of integration in national priorities, as was the case with the NCS. In the view of Theo and Chabwela, Zambia's National Conservation Strategy (NCS) and National Environmental Action Plan (NEAP) are externally-driven from their conception and preparation to their implementation. Furthermore, they lament that such plans cannot be supported by local resources as these are quite limited and tied to other national priorities. Funds for such programmes will remain to be donor-driven under current conditions. If this is the case, then the life span of Zambia's conservation plans will obviously be insecure. It is quite unlikely that the NEAP and the NCS will be effectively implemented, for they are external initiatives supported by a questionable national commitment.

The issues raised in this volume can still be elaborated by further research. However, we hope that it highlights and fills in some grey areas in African environmental planning, environmental policies and the constraints which they have encountered. The constructive criticisms and policy proposals made by the authors are meant to contribute to the ongoing debate on the need for devising implementable policies for sustainable development. This volume will be followed by another one dealing particularly with regional environmental institutions and African civic environmental associations.

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Chapter 2

National Environmental Management in Ethiopia
In Search of People's Space

Shibru Tedla
and
Kifle Lemma

Ethiopia, situated in the Horn of Africa, has a total land area of 1.126 million per square kilometres. Its population is estimated at 58 million with a density of 90 persons per square kilometres in the highlands and 10 persons per square kilometres in the lowlands. The main physical feature of the country is the diversity in altitude and accompanying climatic and ecological variations. The altitude ranges from 120 meters below to 4500 above sea level. The climate in the highlands (areas more than 1800 masl) is moderate. Annual precipitation ranges from 800 to over 2200 millimetres. The lowlands are hot with annual rainfall varying from less than 200 millimetres to 800 millimetres. Of the total area, 60 percent is reported to be suitable for agricultural purposes. The natural forest cover is 2.4 per cent of the total area.

Ethiopia has large water resources which include 11 major lakes, with a total area of 7,400 square kilometres, 12 river basins with a total annual surface runoff of about 110 billion cubic metres and ground water with an estimated capacity of 2.56 billion cubic meters. Most of the rivers are transboundary with more than 75 per cent of the annual surface run-off draining to neighbouring countries (Sudan, Somalia and Eritrea). The water resources represent a large potential for hydro-power generation, irrigation and fisheries. Mineral resources such as soda ash are also extracted from lake brine. Water quality in urban areas is poor due to pollution from domestic and industrial wastes.

The main non-renewable resources are minerals, of which gold, rare minerals like potash, platinum, marble, phosphates, high quality coal, shale oil and iron are important. Natural gas and hydrothermal potential are also substantial.

Ethiopia has a varied ecological setting which has facilitated the evolution of various forms of life. As a result, Ethiopia is one of the twelve Vavilov centres of primary plant domestication in the world. It has a very high genetic diversity in four of the world's widely-grown food crops (wheat, barley, sorghum and peas), in three of the world's most important industrial crops (linseed, castor and cotton), in the world's most important cash crop (coffee), in food crops of regional or local importance (teff, finger and millet) and in forage plants of world importance (clovers and oats). Ethiopia has also a high level of endemicity in its wild flora and fauna (NCSS 1994a).

Agriculture is the main economic activity, accounting for 45 per cent of GDP. The main products are *teff*, sorghum, barley, field peas, chick peas, niger seed, linseed, *enset*, cotton and coffee. Small-holder farming is predominant, accounting for more than 90 per cent of the agricultural area and 95 per cent of total area under crop.

MAJOR ENVIRONMENTAL CONCERNS

Despite its natural riches, the Ethiopian ecological crisis is deepening, as is apparent if we examine the documents produced by the National Conservation Strategy (NCSS 1994a, 1994b, 1994c). These reveal that the environmental crisis is deemed to be the result of "misguided and unregulated modification of the Ethiopian environment, in particular the vegetation, soils and natural ecological processes". Increased human and animal population, whose livelihood is based on the use of natural resources, in particular renewable natural resources, has led to their fast depletion and serious degradation.

Since the livelihood of 85 per cent of the population is dependent on natural resources (particularly renewable natural resources), depletion and deterioration of these resources have resulted in reduced agricultural productivity and in turn in reduced quality of life. In addition, droughts have become more frequent. Since 95 per cent of the cultivated land is under small-holder peasant agriculture (average 1.5 hectares), it is clearly the cumulative impact of the actions of these land users that has eventually led to the degradation and depletion of these resources. As a result, forests and woodlands and, generally, biomass cover is shrinking

so rapidly that out of the now remaining 2.4 per cent of high forest 45 per cent is facing pressure from ever expanding agriculture.

It is not only land clearing for agriculture which contributes to land degradation, but also the reliance on biomass for household energy. A 1984 estimate indicates that 94.8 per cent of total energy consumption in Ethiopia was made up of biomass fuels: wood, animal dung and crop residue. Fuel wood accounts for 81.8 per cent, while animal dung and crop residue make up 9.4 and 8.4 per cent, respectively. Traditional fuels make up 99.9 per cent of rural energy consumption and the rural population consumes 86.7 per cent of total net energy (EFAP 1993).

It is in the highland areas of Ethiopia where the largest number of livestock are found; they are also the areas which are heavily cultivated for crops. The expansion of cultivated land leaves limited pasture land; and as a result there is an increased reliance on crop residues as animal fodder. According to one forecast, all pasture land in these areas will be fully utilized by the year 2005 (Hurni 1988).

Food production is so inadequate that it does not satisfy even the minimum calorie requirement per capita. For example, in 1988/89 production was only 151.1 kilograms per person which is about 25 per cent below the minimum requirement. Figures for 1979–83 show a sharp decline in grain production. This decline in productivity and the high rate of population growth (3.1 per cent) forced the country to import 285,000 tons of grain per year between 1980 and 1984. Major causes for this poor performance of the agricultural sector were recurrent droughts, civil war and erroneous policies and priorities. This figure has grown higher still during the 1990s.

Thus, land degradation is the major environmental problem in Ethiopia. Land degradation is expressed in many ways, such as soil removal by sheet and gully erosion, and nutrient depletion by biomass burning, including dung and crop residues, resulting in a break of the nutrient cycle. Dung and crop residues are burned because of a lack of wood for fuel.

Excessive soil erosion is a phenomenon which mainly occurs in the highlands. Here the surface is rugged, steep and deeply dissected, and slopes exceeding 15 per cent are commonplace. The latest land degradation estimates indicate that out of the 52 million hectares of land making up the highlands of Ethiopia, 14 million are severely degraded, 13 million hectares are moderately degraded and 2 million hectares have practically lost the minimum soil cover needed to produce crops (Hurni 1988).

Deforestation is a major issue since it is one of the main causes of the prevailing land degradation. It is attributed, among other things, to tree-

cutting which is a common occurrence taking place over the centuries for more farmland and fuelwood, charcoal production and house construction purposes. Centuries ago, some parts of Northern Ethiopia, which are today suffering from land degradation, were covered with forests (EFAP 1991).

In addition to the deforestation caused by understandable needs, negligent as well as wanton destruction (such as by fire), contribute to the destruction of forests. These types of deforestation have become increasingly frequent in the last 20 years or so. This has been a period in which security of land tenure and access to natural resources were undermined by unpopular policy measures such as frequent redistribution of land and restrictions in cutting and utilizing trees, even in one's own back yard. Serious destruction of forests occurred between the fall of the previous government and the stabilization of the present government (EFAP 1993).

More specifically, the destruction of habitats, the introduction of a narrow spectrum of crop varieties, recurring droughts, as well as wars and conflicts could be mentioned as the most common causes for the erosion of biodiversity in Ethiopia. When the need for biodiversity and needs of agriculture clash, there is a danger that biodiversity will lose. Ethiopia's largely poor rural population, driven by poverty, attempt to satisfy their survival needs by clearing more forest land for agricultural purposes.

NATIONAL CONSERVATION POLICIES AND LEGISLATION FROM THE 1970S ONWARD

Although national conservation policies in Ethiopia date back to the late 1940s, we intend to concentrate on the period following the fall of the monarchy in 1974. Our point of reference is the Fourth Five-Year Plan prepared in 1974 for the period up to 1979/80, which was never implemented in its original form. 1977 saw a revised version of the Fourth Five-Year Plan under the Provisional Military Government which came to power after the fall of the monarchy. The original Fourth Five-Year Plan had a forestry part which dealt with state forest protection, state commercial and multi-purpose forestry as well as private (commercial), communal and household forestry. It also raised soil erosion issues. Based on this Fourth Five Year Plan, a National Forestry Program for Ethiopia was prepared in 1974 to serve as a guideline up to 1977/78. Following that, an initiative was taken to undertake a three-year project for the elaboration of a program of nation-wide scale. This in turn was transformed into the revised plan of 1977, which was expanded

and adjusted to fit the new situation created by the change in government, which brought with it a "socialist" ideology. This meant taking into account the nationalization of land, as well as the prohibition of market-oriented private interests in forestry.

Other major forestry conservation plans were reflected in the Ten-Year Perspective Plan 1984–94 (GOE 1984) and in the Ethiopian Highland Reclamation Study (FAO 1986). These plans set targets, again, for the survey and demarcation of natural forests, for inventory and management, for community forestry, for fuel wood plantations and for industrial plantations.

Once again, the part in the Ten-Year Perspective Plan, which deals with the issue of conservation of natural resources indicates the failure in the past to address the issue of deforestation and soil and water conservation. For the 10 years between 1976 and 1986, the Ten-Year Perspective Plan had ambitious targets to be accomplished in the area of land use studies, terracing, planting of seedlings, forest surveys and demarcations, forest inventory, and closures for rehabilitation and the expansion of forested land (GOE 1984). However, the plan proved abortive since, besides being unrealistic in terms of targets to be attained in the conservation field, its implementation was affected by the emergence of a major drought in 1976 and the continuing civil war. Nevertheless, the plans prepared since 1974 were accompanied by significant actions of afforestation and reforestation.

Another area of effort to control land degradation was through soil and water conservation programs. Soil and water conservation began to be incorporated as a distinct government effort in Ethiopia around 1970, following the recommendations of the Ten Year Plan. A department was established under the Ministry of Agriculture to deal with the problem. It was, however, only in 1980 that a large-scale programme to combat soil erosion was launched. This program was assisted by UNDP/FAO and WFP (the World Food Program). The activities carried out under this programme concentrated on the rehabilitation of degraded areas found in the parts of the country frequently affected by drought and famine. Ethiopia suffered from chronic food deficits. The measures of conservation stressed physical soil conservation and afforestation.

However, the results of these efforts were modest compared to the magnitude of the problem. The huge amount of input cannot be said to have had any significant impact. Around 1989, the lack of improvement in the conditions of the soil appears to have led to an initiative designed to formulate and implement a soil conservation strategy. Success was impaired due to various factors at all levels, from policy at the highest level of government, down to practical issues at field level.

Lack of strategy and plan, and consequent ad hoc selection of projects and provision of resources indicated that the government relied on "revolutionary" means of achieving objectives rather than on well-thought-out policies, strategies and action plans. In the meantime, the physical causes of soil erosion (i.e. outmoded farming techniques and land use practices, overcultivation and grazing) remained the same. While the impact of these physical causes could have been minimized by appropriate soil and water conservation measures, this was not possible because of the reluctance of farmers to adopt the measures and because of government failure to improve the motivation of the farmers. Along with these general reasons, more specific reasons, such as the lack of security of land tenure, the limited realization of the gravity of the soil erosion problem, weak extension services, the absence of participation, a lack of immediate benefits to farmers and the requirement of significant labour inputs, as well as the impact of "food for work" programmes which began being practised around this time were pointed out.

Regarding land use plans, the same uncoordinated situation dominated. However, soon after the military government came to power in 1974, the Land Use and Regulatory Department was established under the Ministry of Agriculture, once again because of the rising concern about the worsening land degradation and plummeting land productivity. One of the by-products of such concern was the formulation of a draft legislation for land use planning and regulation. That draft legislation, however, was never enacted into law. As a result, at one time or another, Ministry of Agriculture (MoA), Ethiopian Ministry of Valleys Development Studies Authority (EVDSA), Ministry of State Farms Development (MoSFD), and Relief and rehabilitation Commission (RRC) were developing land use plans for their own specific purposes. The Land Use Planning and Regulatory Department of the MoA with assistance from UNDP/FAO produced a Master Land Use Plan as well as indicative and semi-detailed land use plans for a few areas (three former Awrajas in Shewa and one Awraja each in Gojam and Wello as well as for settlement areas in the West and South-western lowland areas). The various plans carried out by the other organs of government as well as Non-Governmental Organizations (NGOs) included settlement plans, state farm plans, sugar-cane plantation development plans, peasant agricultural development project plans, watershed rehabilitation plans and urban fuel wood plantation plans.

The period between 1974 and 1989 had generally been a period of action, when huge conservation activities were undertaken. For example, between 1976 and 1985, it has been estimated that 600,000 kilometres of soil and stone bunds on crop land and some 500,000 kilometres of

terraces on hill sides were constructed. In addition, 500 million seedlings were planted for reforestation purposes and 80,000 hectares of hillsides were closed for regeneration. These measures, however, have been found to have had no impact on the land degradation process in the country, since the physical conservation works deteriorated due to lack of maintenance and the results of the afforestation and closed areas were disappointing because of poor care, illegal cutting as well as deliberate large-scale destruction (Shawl Consult 1989).

It is no wonder, therefore, that as late as 1991 (on the eve of its demise), the government was planning to embark upon a National Programme for the Conservation and Development of forest, wildlife, soil and water resources. While an uninterruptedly increasing economic development could have acted as a major means of arresting such degradation, inappropriate socio-economic policies which were applied particularly in the period between 1974 and 1991 exacerbated the problem. However, the realization on the part of the government came too late, since by that time, the long civil war was coming to a close with victory for the insurgents imminent.

POST-1991: AFTER THE DERGUE

After the fall of the Mengistu Regime, a sweeping tide of events changed Ethiopia from a unitary state to a federal one. This change has had an impact in terms of radically changing the mode of governance in the country. It commenced immediately after May 1991 when the previous regime was ousted and the Ethiopian People's Revolutionary Democratic Front (EPRDF) forces took over power. We have seen that the military/PDRE government which had ruled the country since 1974 was highly centralist and authoritarian. The Ethiopian peasantry were forced into collectivization and villagization. A land tenure system which, in its application, created insecurity for the farmer was put in place. The price of farm products became totally controlled and farmers were denied reasonable access to natural resources. Although the government appeared to take measures which would lead to decentralization and devolution of state power within a unitary Ethiopia, they remained superficial, because democracy and genuine participation were missing. The Kebelle peasant associations, which were supposedly the lowest grassroots peasant institutions, were used as mechanisms of control, rather than for the free expression (political or otherwise) of the peasants. They were rather mechanisms of mobilization to carryout what the centre

had already decided was appropriate, rather than for genuine participatory decision-making.

However, a very important policy document, which intends to change the sectoral and unintegrated manner in which the management of natural resources has been carried out in Ethiopia, is the National Conservation Strategy (NCS). The NCS is designed to serve as an umbrella strategic framework for the management of the environment under which sectoral and Cross-Sectoral policies and strategies, programmes as well as projects will be elaborated, and in the case of already existing policies, strategies, programmes and projects will be adjusted.

This umbrella strategy, which has recently been approved by the government, is expected to be of immense assistance for a coordinated, harmonized and integrated approach to natural resources development, and indeed for sustainable development as a whole.

Among the sectoral and cross-sectoral issues identified by the NCS as needing policy and strategy for better environmental management, the following are prominent:

- People's Participation in Sustainable Development and the Management of Natural, Human-Made and Cultural Resources and the Environment ;
- Rural Land and Natural Resource Tenure and Access Rights;
- A National Land Resource Use Policy and Strategic Policy Land Use Planning;
- Integration of Social, Cultural and Gender Issues in Sustainable Resource and Environmental Management;
- Environmental Economics, Macro-Economic Policy and Economic Development.

The overall policy goal of the NCS is to improve the health and quality of life of all Ethiopians and to promote sustainable social and economic development through sound management and use of natural, human-made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. Hence the goal is clearly sustainable development.

This overall policy goal is to be attained by working towards the following specific objectives:

- To ensure that essential ecological processes and life support systems are sustained, biological diversity is preserved and

renewable natural resources are used in such a way that their regenerative and productive capabilities are maintained and if possible enhanced so that the satisfaction of the needs of future generations is not compromised; where this capability is already impaired, to seek through appropriate interventions a restoration of that capability;

- To ensure that non-renewable resources are exploited in such a way that the benefits are extended as far into the future as can be managed, and to minimize the negative impacts of their exploitation on the use and management of other natural resources and the environment;
- To identify and develop natural resources that are currently under-utilized by finding new technologies and/or intensifying existing uses;
- To incorporate the full economic, social and environmental costs and benefits of natural resource development into the planning, implementation and accounting processes by a comprehensive valuation of the environment and the services it provides, and by considering the social and environmental costs and benefits which cannot currently be measured in monetary terms;
- To improve the environment of human settlements to satisfy the physical, social, economic, cultural and other needs of their inhabitants on a sustainable basis;
- To prevent the pollution of land, air and water in the most cost-effective way so that the cost of effective preventive intervention would not exceed the benefits;
- To conserve, develop, sustainably manage and support Ethiopia's rich and diverse cultural heritage;
- To ensure the empowerment and participation of the people and their organizations at all levels in environmental management activities; and
- To raise public awareness and promote understanding of the essential linkages between environment and development.

It is clear that the NCS is an all-embracing strategic framework for bringing about development which is keen on ensuring that the natural resources, which are the basis for such development, are managed sustainably.

In the implementation of the Agricultural Development Lead Industrialization (ADLI) as well as the NCS, the government will give priority to:

- rectifying policy failures which have caused or exacerbated market failures resulting in unsustainable management of environmental resources as well as environmental damage;
- restructuring institutions and reforming the legal system to become democratic, transparent, participatory and generally empowering to the people by providing clear and secure access and tenure to natural resources.

THE LEGAL FRAMEWORK

Since the 1940s, consecutive governments of Ethiopia had enacted legislations dealing with natural resources management *per se*. Although the ancient book of law known as the "Fet'ha Negast", which was apparently applied around the 15th century, contained some provisions which are akin to the concepts of nuisance, trespass and negligence and the right to water resources use, they were more for purposes of regulating social behavior rather than managing natural resources. Of these laws, those pertaining to wildlife and forestry were, more or less, "resource-oriented" because they were concerned about natural resources to which they pertained and included provisions designed to bring about a mode of utilization which would not lead to degradation and depletion. The mining legislation, however, was more "use-oriented", emphasizing, as it did, conditions which were believed to create attractive situations for the exploitation of the country's minerals. It was intended to regulate use of the mineral resources among people, in this case among mining companies as well as between such companies and the government. All these laws have been the subject of review after 1974, some of them more than once. For example, the forestry and mining legislations were each revised twice: the first time to accommodate ideological considerations when the Provisional Military Government came to power in 1975, and for the second time after the establishment of the Transitional Government in 1991 and the installation of policies which favour a market-oriented economic system (Kifle Lemma 1991; Belaineh Olana 1995a, 1995b).

Furthermore, the passing in 1993 of new legislation to regulate the use of water resources has brought the number of relatively comprehensive sectoral laws dealing with the management of natural resources to four,

as outlined above. It should be noted, however, that there are also other laws and regulations, which, if looked at from the broader concept of the environment, of which natural resources are a sub-set, do have relevance to the condition of the basic natural resources (i.e. land, water, forests and wildlife) on which the economic and social activities of Ethiopians are based. Legislation pertaining to environmental health, including the working environment may be included in such categories. Among them are plant quarantine, management of the production, distribution and use of seeds, water, land and air pollution standards and the management of waste. In the present context, however, the major focus will be on the laws that deal with what we have designated as the basic natural resources, although reference will be made to the second category as and when necessary.

PEOPLE'S RESPONSE TO CONSERVATION POLICIES

The conservation plans that were formulated at various stages in the period between 1957 and 1989, as we have seen, had very little, if any, impact on environmental management. Generally, 1957 to 1974 can be said to have been a period of unfulfilled proposals. The concern for natural resource conservation was getting more pronounced at each of the Five Year Planning cycles. This concern, however, appears not to have spread outside the small circle of development planners of the time to the politicians who had the power to change things. Many of the issues which today dominate natural resource management in Ethiopia can be said to have been identified during that time. Prominent among such issues are the need for participation, decentralization, security of land tenure, and access to natural resources, as well as a need for intragenerational and intergenerational equity. The effort to resolve these issues has been, however, feeble and half-hearted. An example was the draft legislation to regulate landlord-tenant relationships which had gone as far as being discussed in parliament in 1972. This draft legislation, which would any way have only served to further entrench the tenancy and sharecropping practice of that period, never passed the discussion stage because of concerted opposition from vested interests which did not want things to change at all. Again, the idea of decentralization in the form of "Awraja Self-Administration" was not successful since it did not, in practice, result in a genuine devolution of power from the centre, particularly to the grass roots. The concept of participation never went beyond the collection of funds by local authorities from the poverty-stricken population for the alleged purpose of building schools and

clinics, many of which never materialized. Besides, failure to solve the major issues discussed above, and a lack of appreciation of the need for an overall integrated and holistic approach to development were in evidence.

The period between 1974 and 1989, was dominated by the commandist centralist Provisional Military Government (later the People's Democratic Government of Ethiopia). Notable among such policies were the nationalization of all land, the abolition of private forests, the creation of mass organizations such as peasants' associations, urban dwellers' associations, decentralization and devolution of state power to sub-national levels, including the grass roots, within the dictates of what was called "Democratic Centralism" the establishment of producers' cooperatives and the implementation of huge resettlement and villagization programmes. Since these macro policies had such enormous negative impacts on natural resources conservation, they need to be discussed in some detail.

The military regime of 1975 brought about a radical change in land tenure. By virtue of Proclamations 31 and 47, both of 1975, all rural and urban land was nationalized to become the collective property of the Ethiopian people. Under the new land tenure regime, the general criteria of a maximum of ten hectares of rural/farm land and 500 square meters of urban land per family were laid down. The administration of rural land was basically vested in the Peasant Associations which had the power to distribute land and, generally, administer it. This mandate of the Peasant Associations with respect to land was strengthened even more by Proclamations 71 of 1978.

The Peasant Associations did not have any elaborate directives or guidelines to follow in the administration, of rural land, and the measures they took were basically ad hoc and arbitrary. Frequent reallocation of plots of farm land led "to reluctance of farmers to invest their time and effort in land improvement". It is probably the problems created during this period that led to a law in 1980 (Proclamation 179) which empowered the Ministry of Agriculture (MoA) to issue regulations and directives regarding the tenure, distribution, utilization and administration of land.

In addition, the land tenure policy denied farmers the right to lease in or out land, to transfer land by inheritance, to use or hire labour for work on one's farmland, or to be compensated fully in case of expropriation. Farmers were also not allowed to freely sell their produce since there was a policy of price control.

The constitution of the PDRE stressed only the duty of the state and citizens to ensure the maintenance of the ecological balance through

conservation and development of natural resources, particularly land, water, forest and wildlife (Arts. 10 (e) and 55 (3)). There was no clear constitutional provision regarding citizens' rights to natural resources. Rather the provisions made it clear that it was the obligation of citizens to help the government in its efforts for conservation.

Regarding forestry, private forests were abolished totally and, instead of community forests, Peasant and Urban Dweller Associations forests came into existence. A policy which led to the alienation of peasants from the natural resources in their communities was implemented. Examples are the designation of national parks or protected forest areas from which the surrounding communities did not get any benefits. For instance, trees planted on communal lands by forcefully mobilized peasants were not for the use of such peasants, and communities did not exercise any authority whatsoever over such areas. This situation led to loss of initiative, both individual and communal, in planting trees. In fact, it has led to the destruction of trees planted through the forced mobilization process.

The immediate impact of the abolition of private forests in 1975 was that man-made forests lost the care and protection they received from their former private owners, leading to a situation where people cut the trees for various uses, and cleared land for farming in these areas. The compulsory resettlement program of the military government also contributed to the devastation of forests, as hundreds of thousands of dwellers from the drought-stricken North were resettled in the virgin lands elsewhere, mostly in the Southwest. The resettled peasants had to destroy the forests and other vegetation in their endeavor to establish their dwellings as well as to grow crops to meet their food requirements. Similar happenings took place during the unpopular villagization program carried out in many parts of the country.

Peasant farmers also expressed their resentment of an approach to forestry management which did not take their interests into consideration. As a consequence, during the period of instability, which existed at the time of the fall of the previous government and the coming into power and stabilization of the present regime, fire was set to national parks and forests, and several types of wildlife were killed. Forest and vegetation clearance was carried out in many parts of the country, and the unstable situation was used as an opportunity to acquire more land for cultivation.

Before the establishment of the PDRE in 1987, what we had in Ethiopian administration below the national level was sub-national (zonal), or in some cases regional branch offices of the central organs of government. Of course not all the central organs of government relevant to environmental management established sub-national and regional

offices. Those organs whose activities were not operational (i.e. confined to research and policy) did not usually establish such offices. On the other hand, those central organs of government which were engaged in operational activities had such offices.

For example, the MoA (which at that time was the single most important organ of government dealing with several aspects of environmental management) had an extensive network of offices at sub-national and regional levels from which field activities were launched, including forest, wildlife and fishery management. Similarly, the Water Resources Commission (WRC) had achieved (through the various agencies established under its umbrella) bureaucratic decentralization of some of its activities to sub-national levels and, in a couple of cases, to regional levels.

However, apart from the fact that this did not amount to a real devolution of power, there were indications that even this manner of decentralizing was not thorough. For example, land use management, which was one of the primary responsibilities of the MoA, seems to have had no linkage with such lower level offices. Again, the WRC was able to adequately decentralize activities related to water resources management. The institutional mechanism required to integrate and coordinate the various environmental management and operational activities of the various branch offices (e.g. water resources and land resources conservation measures) did not exist. In fact, there seemed to be some lack of coordination of operational activities carried out by even the sub-regional offices of a single institution such as the MoA.

The system of governance established under the PDRE, and dominated by party stalwarts, turned out to be a means of imposing the will of the only political party, the Workers' Party of Ethiopia, ending up in a top-down authoritarian approach. Coercion rather than persuasion was the instrument to obtain the compliance of the populace. Under such a system, the people did not have any mechanism through which they could air their disagreement to government policies, plans and programmes and force the government to change its ways or, failing that, change the government and elect another one. In effect, as far as the people were concerned, the system catered for disempowerment rather than for empowerment.

Whether the process of devolution should have ended up in the surrender of important functions and responsibilities pertaining to the environment to the organs of self-government and administration existing during the pervious government is another question. In the unitary state that Ethiopia was at that time, there was a conviction that policy and planning, as well as certain aspects of control and regulation, should be

exercised centrally or at the national level to attain the effective integration and coordination so essential for successful environmental management. Even as regards implementational activities, the idea of devolving them wholesale was found questionable. For example, in view of the lack of financial resources, manpower, materials and equipment in a poor country such as Ethiopia, would the regional organs of self-government and administration have been able to carry out effectively (in the then foreseeable future) all operational activities? Again, certain aspects of environmental management activities (e.g. water resources administration, control and regulation) were perceived as requiring a watershed approach because of the mobile nature of water resources and the hydrological unity of the basin. There was certainly a feeling at that time that, even though devolution would bring about advantages in terms of more efficient environmental management at the grass roots level, care should be taken in deciding what mandates should be devolved in order to avoid ending up in a situation of confusion and anarchy.

Participatory development emanates from the conviction of development experts that governments alone cannot solve problems of development. Thus, they advocate strengthening civil society and its institutions as well as a broad multi-level popular participation in the management of resources. They recognize that such participation is unthinkable without community control of political and economic resources. Empowerment i.e. equipping citizens with the political, legal and economic means to participate meaningfully in measures that affect them, requires a multi-faceted approach. Major areas can be the creation of awareness and the access to information, security of land tenure and access to natural resources to ensure equity and nurture the development of democratic institutions, through which communities exercise their right to participation. A genuine effort at participatory development must involve legitimate community organizations through which the collective will of members is expressed. Community organizations need not necessarily be traditional social organizations. New ones can be created. The essential element is the self-involvement of the community as a collective in the creation of such organizations. Self-involvement ensures the development of institutions in accordance with the wishes of its members. Traditional or newly-created community organizations which have evolved through self-involvement are a *sine qua non* for genuine participation.

One would have thought that the purpose of establishing the various mass organizations such as the Peasant Associations and Urban Dweller Associations was to provide the people with the organizational or institutional means for, among other things, participation in the

development endeavors, including natural resource management. Indeed in the first year or two of the establishment of the Peasant Associations, they seemed to have gained legitimacy among those peasants who saw themselves benefiting from the land reform and its implementation for which the Peasant Associations were responsible. As a result, the members of such associations did willingly get "mobilized" by the leadership for local development as well as for conservation activities. However, the system and policies of the government were authoritarian. It did not take a long time for the peasants to recognize that the mass organizations were established to replace community institutions by government-designed ones. The public was not given the opportunity to involve itself in their creation. These associations were seen by the peasants as symbolizing a government presence for purposes of political control. Thus the peasants soon became alienated as they discovered that the leadership did not represent their interests.

It is apparent that the allegedly "socialism" path to development that the regime imposed on the country despite of a lot of rhetoric failed to bring democracy and development to the people of Ethiopia. The regime's effort to create, by decree, a "socialist society" and "socialist man" failed miserably. Although there were certainly several reasons why that regime failed, the most outstanding and critical reason appears to have been its disregard of, and total contempt for, the people to whom it purportedly wanted to bring democracy and development. The people's culture, institutions, and system of production were changed to what the regime deemed to be socialist culture, socialist institutions and a socialist system of production. The regime failed because it perceived itself as the repository of all the correct ideas. Anyone who did not subscribe to the regime's way of thinking was either ignorant and needed to be saved from the consequences of his ignorance by force, or was an anti-revolutionary who wanted to undermine the gains made by the "masses" under the leadership of the regime.

To be sure, lessons can be learned from failure, provided the willingness to learn. Thus, the 17 year rule of the military regime should serve as a lesson not only for Ethiopian governments subsequent to the Dergue and for all the peoples in Ethiopia but also for other governments and peoples elsewhere.

CONSTRAINTS TO ENVIRONMENTAL POLICY IMPLEMENTATION

Natural resource management legislation in Ethiopia continues to suffer from a number of serious shortcomings. A summary of some evaluations and assessments of Ethiopian environmental laws made between 1990 and 1993 indicates that there have been several problem areas. For instance, Ethiopian environmental legislation has been criticized for its purely sectoral nature and its inability to provide a broad framework in which the enactment and implementation of sectoral legislation (both substantive and institutional) could be carried out in an integrated and holistic manner. This lack of a broad framework led to situations in which the cross-sectoral impact of activities were not taken into consideration by sectoral agencies. Since there was no overall framework, legislation or institutional mechanisms which required the integration of cross-sectoral issues into sectoral legislation and provided the necessary integrative and coordinative machinery, there was no means of ensuring a harmonized approach to the drafting and implementation of laws. The lack of a coordinating and integrative mechanism also led, in a number of instances, to jurisdictional conflicts between institutions or to tasks being neglected because none of the institutions felt responsible. Attempts to bring about such integration and coordination appear to have been made during the 1980s. The first of such attempts is reflected in Proclamation 262 of 1984 which established the Organization of the National Committee for Central Planning (ONCCP). This proclamation charged the ONCCP with the responsibility for policy formulation and issuance of directives regarding environmental management.

The ONCCP could establish regional planning offices responsible for, among others things, the integration of environmental considerations into development planning. The second attempt is reflected in Proclamation 318 of 1987 which established Ethiopia's Valley Development Study Authority (EVDSA). This Proclamation charged the EVDSA with the responsibility to initiate policy and devise means for the protection of the environment (EVDSA 1989)

These responsibilities regarding environmental policy were, it appears, simply added to the other tasks of these institutions which were to a significant degree incongruent with the coordination or integration of environmental management. For example, to expect the ONCCP, whose major task was to bring about rapid overall economic growth through central planning, to attach adequate importance and devote enough time, to the formulation of environmental policies and subsequently legislation, is wishful thinking, to say the least. Even EVDSA which was primarily

established to study and carry out research concerning natural resources as regards their quantity and distribution, as well as to develop master plans for such natural resources, was incapacitated as far as coordinating and integrating natural resource management was concerned. It was hampered by a jurisdictional conflict with ONCCP, as well as series of confrontations with the Ministry of Agriculture, the Ministry of Mines and Energy and the Water Resources Commission, on the other. There were also conflicts within the latter group.

Apart from these problems in the horizontal division of responsibility between national institutions, the absence of a real devolution of responsibility regarding natural resources, from the national level to sub-national levels, including the grass roots, has led to serious problems of alienation and apathy at those levels. Although the centre tried to overcome these constraints through bureaucratic decentralization (i.e. creating branch offices) and even through creating some sort of local government structures as well as "autonomous" administrative areas, the attempt failed to bring about the desired results. The branch offices were still directly accountable to the centre and were considered as external entities doing the business of the central government in far away Addis Ababa. Similarly, since the local government and autonomous structures were designed to provide a means of control from the centre, while pretending that there was genuine devolution, it was not long before the communities recognized their worth. Thus, in both cases, it was impossible to create among the grass roots a feeling of being empowered and to allow them to identify themselves with branches of offices and local government structures.

Of course, in a situation like this there was no clear vision of the need for a holistic approach to be reflected in legislation (both substantive and institutional); that such a need existed was not even recognized. Overlaps and duplications between and among various laws were inevitable.

Thus the assessments and evaluations made in the past raise this issue as an important constraint existing in legislation pertaining to wildlife, minerals, land use and water. On the other hand, what is termed a "piecemeal" approach to the drafting of environmental legislation resulted in legislative instruments which did not have a consistent and comprehensive content. Thus, fragmentation of laws dealing with a sectoral subject area was found to be equally common.

More importantly, practically all natural resource management laws in Ethiopia have been criticized for ineffectively supporting the achievement of their objectives for a number of other reasons. For example, some of the laws were considered outmoded because they were not revised to incorporate new ideas and concepts, such as several

problems in environmental health fields. Inadequate consideration given to the problem of the generation, transport and disposal of toxic wastes and materials. Outdatedness is also reflected in some of the laws which retained a "use-oriented" approach to nature in an era when "resource-orientedness" was the mode. The fact that virtually none of the laws provided for genuine participation made them even more out of tune with current thinking. Of course, there was, as has been discussed earlier in this chapter, lip service paid to the concept of participation in some of the laws dealing with state and government structures. However, none of the more directly relevant natural resource laws had any provisions which can be, even remotely, interpreted as dealing with or facilitating participation.

Ethiopian environmental legislation has also been criticized as being too management-oriented, meaning that it was biased towards rehabilitation and restoration of already degraded areas. Thus, the legislation did not contain adequate provisions for deterrence, defining crimes and offenses against natural resources and penalties for those who commit such crimes or offenses. Mere references in natural resource legislation to the Penal Code in order to enable the punishment of persons who contravened what is set out in them were simply ineffective. This was so because the Penal Code referred to, being old and outmoded, does not contain provisions and penalties which can serve as a deterrent. Some laws do specify offenses and penalties which could be considered, in some respects, to be better than the Penal Code provisions but are, nevertheless, inadequate.

However, the problem is not only the lack of adequate legally recognizable offenses and penalties. The inability to enforce even existing regulations was also a serious problem. Obviously, even if natural resource laws were revised to include adequate provisions of deterrence, they would still be of no use unless they were enforced. Among the reasons identified as causing this inability to enforce legislation could be found such commonly-cited problems as a lack of funds, skilled manpower, material and equipment. Frequent changes in the mandates of enforcing institutions are also cited as a problem which led to a situation where they could not operate effectively. Such a situation is not conducive to the development of effective administration and management capacity. Last, but not least, a major source of weakness in the body of Ethiopian environmental law is considered to be the existence of gaps which left certain natural resource sectors uncovered. Such areas included land tenure and administration, land utilization, fisheries, environmental health, particularly solid and liquid waste disposal, as well as toxic and hazardous waste management.

The entire area of environmental quality standards and environmental management tools is not covered. There are no environmental quality standards for air, water and land pollution, which are indeed very serious in certain localities where industries and large farms with high chemical input are situated. There are also no laws, guidelines or procedures for the environmental impact assessment (EIA) of development projects, although there are government institutions mandated to take care of both pollution and EIA. The lack of a framework for environmental legislation is considered one of the most serious gaps which need to be filled as urgently as possible, to create the legislative mechanism which will ensure a holistic and integrated approach towards a better management of the environment.

PROSPECTS AND CONCLUSIONS

In addition to institutionalizing the decentralized federal system of government, the new Constitution of the Federal Democratic Republic of Ethiopia (FDRE) contains extremely important provisions of relevance to the management of natural resources. Sub Article 1 of Article 44 of this Constitution provides that every person has the right to live in a clean and healthy environment. Article 92 provides that the government has the responsibility to make an effort to provide to every Ethiopian a clean and healthy environment. Article 92 also makes it clear that the right to live in a clean and healthy environment carries with it the obligation to protect the environment. Art. 43 of the Constitution provides that citizens have the right to be consulted on policy and projects relevant to their respective communities as well as the right to participate in national development. The Constitution also contains provisions which will help in strengthening the security of land tenure. Art. 40(4) and (5) ensure both the right of farmers and pastoralists to acquire land and the right not to be evicted from such land. Art. 50 (4) of the Constitution also requires that people at the lowest level of the administrative hierarchy be empowered. Moreover, Art. 37 of the Federal Constitution, which deals with the right to justice, opens up the possibility for citizens to take action in courts against persons (be they natural or legal) who cause damage to natural resources. This article provides that every person has the right to submit any justifiable matter to a court or other tribunal which has the power of decision or judgment. This right can also be used to by any association representing the common or individual interests of its members or any individual or member of a group representing any group or people with common interests.

Thus, the current Constitution addresses issues related to the environment much better than the previous ones. The Constitution of the Monarchy had only one provision, declaring natural resources a state domain. Even though the Constitution of the PDRE had more provisions related to natural resources, it focused on obligations of citizens regarding natural resources rather than their rights to such natural resources.

Some of the higher-level laws issued during the Transitional Period, still in effect (except in cases where they contradict the Constitution) define in some detail the powers and responsibilities of both the centre and the regions. These laws, set out to establish decentralized federal structures, provide for revenue-sharing arrangements between the centre and the regions and elaborate the responsibilities of the respective executive organs at the two levels. Most importantly, this legislation emphasizes the requirement of people's participation in all aspects of development through their grass roots institutions.

Sectoral laws have also begun to be revised to reflect the new approaches to environmental management such as participation, co-management and benefit-sharing (in the case of forestry legislation), and to become more resource-oriented (in the case of mining legislation). For example, the present forestry legislation emphasizes people's participation and benefit-sharing by communities in the management of forest resources. The same legislation also recognizes private forests, thus facilitating tree planting by private persons. It is also possible under the law for communities to organize and involve themselves in forestry development. The old approach of simply going out into forest areas and designating them state forests has been discarded by this legislation in favour of consulting and getting the agreement of the communities living in the adjacent areas, particularly if such designation results in their eviction. Even in protected forests, it is possible for local communities to practice bee-keeping as well as to harvest forest products such as fruits, with permission from appropriate authorities.

The recent mining laws are more pertinent than the previous ones because they demonstrate more environmental sensitivity. The licensing system established by the legislation puts an obligation on persons involved in the prospecting and operation of mines to ensure that their activities do not have a harmful impact, or at least to ensure that negative impacts are minimized. The present legislation also demonstrates that it is moving with the current thinking by ensuring that the cost of restoration of land, such as filling, closing, blocking or taking other measures to ensure that mining installations are safe, is tax deductible.

Improvement in the quality of other laws is apparent in the obvious incorporate environmental concerns. One such example is the legislation on investment. It requires investors to adhere to laws pertaining to land use and other environmental concerns and requires the cancellation of investment licenses in the area of mining if the operations pollute the environment. These laws also specify that the development and preservation of natural resources qualify for investment incentives such as tax exemptions.

The post-1991 period has also brought about changes in institutional mechanisms. The most important development in this area is the establishment of the Environmental Protection Authority (EPA) as a federal agency responsible for the co-ordination of the formulation and implementation of environmental policies, strategies, action programs and legislation. The EPA has a Council comprising representatives of Federal organs which are deemed to have relevance for appropriate natural resource management. This Council is chaired by a person designated by the Prime Minister. Obviously, there is a need for institutional legislation serving similar purposes at the regional, zonal and *woreda* (district) levels besides the existing sectoral bureaus and departments, to ensure inter- and intraregional co-ordination of the implementation of natural resource management activities. The NCS has proposals of institutional mechanisms or arrangements for those levels, such as Environmental Co-ordinating Committees and Secretariats to serve as the executive arms of such committees. It remains to be seen whether legal instruments without socio-economic incentives, institutional integration and a genuine people's participation, will satisfy the requirement for sustainable development.

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Chapter 3

National Resource Management Policies in Kenya
The Politics Within

Wellington Nguya Wamicha
and
Justus Inonda Mwanje

INTRODUCTION

Environmental and development challenges for Kenya include ensuring an equitable and sustainable pattern of development to meet people's needs and aspirations for better standards of living. There is also the challenge to develop sustainable industrial production while maintaining an environmentally sound resource base. However, while development planning has been accorded high priority throughout the history of Kenya, environmental planning has received far less emphasis. Efforts to develop environmental planning at a sectoral level have met with varying degrees of success. For instance, although Kenya has one of the most sophisticated soil conservation programmes in Africa, sedimentation is still a major threat to its dams and lakes. Kenya derives an enormous income from wildlife through tourist trade, yet some of the large mammals, notably the elephant and the rhinoceros, are threatened with extinction. While the Ministry of Environment and Natural Resources would like wetlands preserved in order to maintain biodiversity, the Department of Land Reclamation would like the same wetlands reclaimed for agricultural expansion (Wamicha and Mwanje 1997).

This chapter reviews sectoral environmental planning in Kenya and suggests how a comprehensive plan can be developed. It deals with the

politics within and the contradictions inherent in discordant sectoral environmental policies and their negative consequences on people, the policy process and implementation.

THE NATURAL RESOURCES

Kenya has an area of about 580,367 square kilometres, situated on the Eastern coastline of Africa. The equator bisects the country into almost equal halves the country lies between latitudes 4° 40" N and 4° 04" S, and, longitudes 33° 50" E and 41° 45" E. This area is populated by an ever-growing population which has increased from 11 million in 1969 to 21.4 million in 1989, and 25 million in 1995. The general population density was 27 per square kilometre in 1979 and 37 in 1989. However, there are patches of very high density (300 - 500 persons per square kilometre) in the high potential areas, whereas density is as low as 5 persons per square kilometer in the arid and semi-arid lands (ASALs). Currently the population growth rate is about 3.4 per cent per annum, one of the highest in Africa. In some of the areas with very high population density, there has been an over-exploitation of land resources with a consequent decline in agricultural productivity and an increase in land degradation (deforestation and overgrazing).

From the Indian Ocean seaboard to about 200 meters above sea level, marine sediments of various ages (Cretaceous to recent), which constitute a plain, underline Eastern Kenya. Then between about 200 to 1500 meters, there is a vast erosional plateau which is underlain by metamorphic rocks of the Mozambique Belt that are more than 500 million years old. In the central parts of Kenya, the plateau is interrupted by the Rift Valley and a complex of high volcanic mountains. The spectacular Rift Valley runs the entire North-South length of the country and has characteristic lakes from Turkana in the North to Magadi in the South, of which only Lake Naivasha and Bogoria have fresh water. Inside and on either side of the Rift Valley there are volcanic rocks dating from the Miocene to recent times. To the West of the Rift Valley are metamorphic rocks similar to those of the East of the Rift Valley on plateaus which descend gradually into the Lake Victoria basin. This basin is underlain by the Nyanzian (Sedimentary and Igneous) System of rocks that are more than 2000 million years old.

Since Kenya lies within the equatorial zone, seasonal temperature variations resulting from latitudinal changes are minimal. However Nairobi, at about 1900 meters above sea level, has a mean annual temperature of about 20° celsius, while Mombasa (at sea level), has about 30°C. The hottest areas are to the North-East (Mandera) and North-West (Lodawar) with mean annual temperatures of more than 30°C.

As to rainfall, there is a narrow humid to sub-humid belt along the Indian Ocean due to the maritime influence. In the hinterland, rainfall, like temperatures, are determined by altitude. So the humid and sub-humid hinterland areas are the highlands above 1800 meters above sea level. Typical rainfall distribution in Kenya is bi-modal, whereby the long wet season is mainly from March to June and the short one from October to December. To the West of the Rift Valley, the wet seasons may be longer due to the influence of Lake Victoria. Lack of rainfall over long periods, culminating in droughts, has also occurred also in the recent past, for example in 1960, 1966, 1974, 1983, 1994 and 1997. Finally, about 80 per cent of the land surface of Kenya consists of arid and semi-arid lands (ASAL).

As to biodiversity, indigenous terrestrial and mangrove forests, coastal and inland wetlands, coral reefs, gardens and other ecosystems are important genetic resources. These ecosystems are suffering severe exploitation and degradation, resulting in high economic costs, due to the increasing human population pressure. In this respect, some of the most affected ecosystems in Kenya are the forests. At first, forests covered a narrow coastal strip (about 10 kilometres wide) along the Indian Ocean of high-potential land in terms of rainfall and soils. These forests have now given way to agricultural production, urban settlements and tourist hotels. There are also mangrove swamps along the coast, which are threatened by pollution. Furthermore, in Central Kenya, forests used to cover most of the humid and sub-humid areas above 1800m above sea level in the Rift Valley volcanic complex, extending westwards to the shores of Lake Victoria. Everywhere except on the high mountains (Kenya, Aberdares, Mau and Elgon), these forests have now been cleared to give way to farmland. Hence forest cover in Kenya has declined from 30 per cent of the country's total land surface to 3 per cent in 1963 and 2.5 per cent today. The principal pressures on forests include clearing for agricultural land, responsible for 75 per cent of the energy (fuelwood, charcoal) consumed in Kenya today, as well as the production of timber and wood products. This has led to deforestation in many regions of the country, resulting in an instability of ecosystems.

Other areas of Kenya are not as richly endowed with forest resources. For example, most of the land between 100 and 1800 metres above sea level has poor scrub vegetation near the coast which gradually changes to a desert in the Chalbi region near Lake Turkana, to the North. Similar conditions, but less severe, occur in the north-west part of Kenya to the West of the Rift Valley.

Apart from biodiversity on land there has been a significant drop in the recorded fish output in most inland lakes and along the Indian Ocean. Possible reasons for this may be the high siltation of the lucustrine environments and ocean pollution. Also the quantity of water entering lakes

Naivasha, Turkana and Victoria has declined rapidly due to irrigation. Another factor that could be of importance is the over-exploitation of the diminishing fish stocks. However, in the case of Lake Victoria, the invasion of the dreaded and rapidly-spreading water hyacinth is thought to have destroyed rich fishing grounds in the region. Serious conservation issues are therefore experienced within the lucustrine and littoral environments of Kenya. In the first case the problem has been compounded by a lack of water. Furthermore due to lack of marine police, it has become increasingly difficult to monitor activities of foreign vessels which are often engaged in poaching.

The high to medium potential land surface of Kenya accounts for about 5.2 million hectares or about 20 per cent of the country and is very precious aesthetically and in monetary terms. In short, the quest for land has caused a variety of problems and conflicts between various resource users in Kenya.

Such conflicts occur due to a lack of land-use policy and the absence of a system of laws, rules and regulations on land ownership. Also lacking is a land- use or zoning plan based on the suitability of land resources to different uses and socio-economic aspects. Furthermore, there is a lack of rules for the transfer of public land to private ownership. In other words, land management remains chaotic.

By consequence, rural settlements in Kenya are rarely planned prior to their implementation. Noteworthy are the permanent settlements (market centres) throughout the ASAL, especially situated around the administrative centers for reasons of security. Also, the need for water leads to the establishment of settlements at water points, depending on the security situation. Similarly, in the urban areas, the destitute establish slums characterized by high unemployment. Furthermore, squatters occupy government and private land. Slum and squatter settlements are characterized by environmental health problems due to the lack of proper sanitation.

The growth of the population and the spreading of human settlements lead to resource conflicts between human and animal, between agriculture and forestry, between urban and agricultural land, etc. The wild animals often stray out of the National Parks or Game Reserves and damage crops and sometimes cause a loss of human life. These conflicts are more severe during the drought period, when elephants cause havoc to crops and water installations. Land and water-use conflicts have also been experienced in many areas. As the demand for land for settlement schemes continues to rise, the traditional grazing areas are being taken up by ranchers and settlers from other areas or districts, as is the case with water catchment areas. This process has pushed pastoralists into more marginal areas, where their activities may lead to rapid land degradation.

The extensive degradation of resources in Kenya is due mainly to soil erosion and partly to pollution. Soil erosion is a consequence of overgrazing in the ASAL and poor land management in cultivated areas. Initially, erosion results in the loss of topsoil, which is usually the richest in plant nutrients. This leads to the degradation of the land and, hence, to reduced agricultural productivity. With the increasing intensification of agriculture, an emerging concern is that of the pollution of water bodies by agro-chemicals and industrial/urban effluents. Furthermore, underground water aquifers are polluted and destroyed by petrochemicals like motor oils and other substances. In some cases, pollution has made drinking water a health hazard to human beings, livestock and wildlife, even around the Nairobi National Park.

Land degradation also occurs due to mining. There are several small-scale and large-scale sand harvesting enterprises in Kenya. The most affected district is Machakos, especially along the Athi River and its tributaries. Stone quarrying, too, is a problem in rural Kenya. This unplanned mining is increasingly threatening the water courses. Coral rock mining in coastal areas is creating instability in coastal ecosystems. The recent discovery of large deposits of titanium in the Magarini Sands of Mamburui and Sokoke areas of Malindi District is likely to adversely affect the vulnerable coastal ecosystems when exploitation commences. Proper and thorough Environmental Impact Assessment (EIA) studies could be helpful.

Most Kenyans rely on rain-fed agriculture for food production. However, given the poor soil fertility in two-thirds of the country and the fact that 80 per cent of the country is somewhat arid to very arid, there is sometimes insufficient food production, resulting in famines. The hoarding of prime agricultural lands by the rich also contributes to the incidence of famine. These conflicts of interests, as will be shown later, have a very negative impact on Kenya's environmental plans, because sectoral interests are served or undermined by cross-sectoral environmental policies. The "politics within" refers to the sectoral institutional politics which is marred by overlapping and contradictions as regards resource management, control and ownership.

RESOURCE MANAGEMENT CHALLENGES

Resource management challenges in Kenya can be generally summarized in the following four major interrelated factors, which are not necessarily exhaustive:

Land Resources in General

Land-use legislation in Kenya has been based on the assumption that land-use types are mutually exclusive. In this context, the statutory machinery regulates agricultural land, urban settlements, forestry, wildlife conservation, water catchments, etc. What is missing however, is a land-use master plan, compiled on the basis of an inventory of natural resources (or ecological assessment), a comprehensive land-use policy and an integrated environmental law. The consequences have mostly been, and continue to be, negative.

The evolution of a land-use and land-tenure strategy that allows for sustainable utilization of natural resources can only be achieved through some existing or specifically and appropriately tailored legislative/institutional policy framework. Therefore, land tenure and land utilization are interrelated, since ownership affects use and vice versa. Land in Kenya can be owned by the Central Government, Local Authorities, communally and by individuals. Of late, the transfer of ownership has presented problems, with government land being taken illegally by individuals. This occurs despite a public outcry and indicates serious loopholes in the existing legal framework for land management.

The Arid and Semi-Arid Lands (ASAL)

The dry areas of Kenya cover approximately 80 per cent of the country's total area and are characterized by very fragile environments. Their problems include ecological vulnerability, the growing sedentarization of the ASAL populations, destructive land-use practices, and more importantly a lack of comprehensive (or indeed any) planning for the exploitation of the ASAL resources. As far as land use conflicts are concerned, the ASAL therefore require greater attention and closer monitoring than the rest of Kenya.

An operationalized Development Plan for the ASAL is lacking, and Environmental Action Plans (EAPs) developed for the ASAL in a World Bank initiative have yet to be implemented. So according to the 1988–93 National Development Plan (NDP), ASAL development was to be realized within the administrative framework of the District Focus Strategy for Rural Development (DFSRD). Therefore, the still highly-centralized planning-oriented District Development Plans (DDPs), coupled with the equally centralized DFSRD frameworks appear to be the only valid, national and district policy frameworks for, respectively, the overall development and conservation of natural resources in the ASAL of Kenya. To be sure, both are equally defective. This is because the DDPs have never been fully integrated into the NDPs, as was initially intended. Both Plans are usually

prepared concurrently at different levels with limited consultation and liaison. The DFSRD does not provide an adequate institutional or statutory framework for the operationalization of a district-based self-sustainable development process (i.e implementation of the DDPs).

The National Development Plans (NDPs) have followed the same objective of the *Sessional Paper No. 1 of 1986* which emphasized the need to integrate the ASAL into the mainstream of the national economy, thereby raising the standard of living of their population. The NDP acknowledged that as a result of rapid population growth, the area of medium and high-potential land cannot generate enough income using current technologies. Population pressure is therefore gradually compelling people to cultivate more marginal lands every year. It is therefore government policy to increase productivity on all types of land. To prevent further deterioration of ASAL areas, it may be necessary to curb population movements, further sub-division of ASAL into uneconomic units, as well as the growing of unsuitable crops, and by doing so check any further environmental deterioration.

Pastoralists are being denied access to pasture by settled farmers and the establishment of conservation areas for wildlife and forests. Hence the growing pastoral population is increasingly finding dry-season grazing curtailed and ends up concentrating on alternative grazing and watering points, which leads to the degradation of pasture land. Agriculture is also often not successful due to low rainfall levels, shallow soils and poor farming techniques. The results are unsustainable resource utilization and environmental degradation.

The problems of agricultural development in ASAL are further compounded by the fact that small farms do not produce adequate food for the household. Therefore, most able-bodied men and women move away to look for employment in the urban centres to obtain cash to supplement their farming revenue. This has resulted in poor farm management, which in turn contributes to low productivity and environmental degradation.

Most of the key production areas of dry regions have been designated as National Parks or Forest Reserves in an attempt to resolve conflicts in favour of wildlife or forest preservation, as opposed to livestock husbandry. It is estimated that between 65 and 80 per cent of Kenya's wildlife lives outside the designated conservation areas, seasonally migrating in and out of the Parks. This mobility has created conflicts with all the other land users in place. Wildlife consumes or destroys agricultural crops to the extent that in some areas up to 50 per cent of agricultural produce does not reach maturity. Conflicts between wildlife and pastoralists also arise due to the predatory nature of some wildlife species such as the lion, leopard, hyena and the jackal, and due to the transmission of diseases to livestock.

Water

Since water is consumed by humans, livestock, wildlife and industries, its use, availability and quality are important aspects in the sustainable development of Kenya. Water use in Kenya is generally regulated by the Water Act (Cap 372) which is the primary water law. It contains two important provisions: (a) It confers proprietary control of water on the State and (b) it defines the mechanism for controlling the use of water both surface and ground water. Hence the Water Act (Cap 372) regulates water abstraction and use. The regime of this law is based on the assumption that water is readily available. Its concern is therefore access, distribution and conservation of the resources.

In the high-potential areas, farming enterprises use large amounts of water to irrigate crops, often with serious impacts on the environment. In theory, the water law in the sedentarized ASAL is the same as in the rest of the high-potential areas. However in other ASAL, the Water Act (Cap 372) cannot function since most of these areas lack the resources. An administrative law regime called the Chiefs' Authority Act (Cap 128) has therefore emerged as the basis upon which access to and use of water is regulated. The Chief controls the watering of animals, grazing around water points and any other consumption of water. It is on the basis of the same administrative rules that the location of water points (boreholes and wells) is determined. Therefore at this stage in the process of the development of transient communities it is difficult to determine the precise content of water rights in the sedentarized ASAL communities.

Forests

By 1966 the declared forest reserves of Kenya occupied slightly less than 3 per cent of the country, a figure which was well below the optimum for a "developing country in the tropics". By 1997 the country had experienced 32 years of wanton and reckless destruction in its forests. Consider for example the predominantly indigenous Zaina forest, which forms part of the Nyandarua (Aberdares) Mountain Ranges' forest system in Nyeri District. Here a part of the forest planted between 1922 and 1948 with exotic trees such as cedar, *Pinus patula*, *Cypresus spp*, and *Podocarpus spp*, has been virtually cleared in recent times. The government officials responsible for the management of this vital national heritage appear to be hardly concerned by the deteriorating status of the forest.

An approach to forest management that allows squatters to tend the young seedlings for a period of 3 years and then move on to newly logged sites to repeat the process, has been very effective. But since 1987 this has

been curtailed by a dubious government policy of evicting all squatters from areas gazetted as forest land. The result has been that regeneration rates of new plantations have fallen to very low and unsustainable rates. This state of affairs does not suggest a consistent interpretation of the task entrusted to the ministry concerned.

POST-INDEPENDENCE CONSERVATION PLANNING

The Era of President Jomo Kenyatta

During the Kenyatta era, between 1963 and 1978, development plans were made centrally, just like during the colonial era. These National Development Plans (NDPs) included those of 1964–1968, 1969–1973, 1974–1978, and 1979–1983. During these planning periods, a lot of emphasis was focused on rural development. Therefore land played a major role in economic development and environmental planning. This was the period that saw massive land transfers from the former colonial White Settlers in the so-called White Highlands to Africans. The transfers were to large groups which received about 191 large-scale farms covering 165,000 hectares, and to individuals who obtained about 600,000 hectares.

There was a significant increase in agricultural production in most areas, as opposed to the stagnation that had been expected. However, in some cases the Africans could not cope up with the local environmental conditions. Those who came from humid areas with red soils (*Nitisols*) found it difficult to manage the dark cracking clays (*Planosols*) which are extensive in the Plateau areas of the former White Highlands. This was mainly because the settlement policies did not go hand-in-hand with the creation of awareness of the "new" agricultural production techniques suitable for specific localities.

The Era of President Daniel T. arap Moi

President Moi's government began work in 1978, and for four years carried out all development planning at the national level. However, from 1983 onwards, the District Focus Strategy for Rural Development (DFRSD), was introduced to go hand-in-hand with the Central System of Planning. By this strategy, more emphasis has been laid on the district becoming the focal point of all planning in Kenya. This planning period spans several National Development Plans, including those for the 1984–1988, 1989–1993 and 1994–1998, as well as the Sessional Paper of 1986. It should be noted that the period was preceded by various economic problems in the country such as domestic inflation, world recession (which began in the 1970s) of the early

1980s, and the devastating drought of 1984. These economic hardships drained funds destined for resource development.

During this period, development planning was mainly geared towards the stabilization of rural and urban populations. The growth of secondary towns and smaller centres was to be encouraged throughout the country to avoid an excessive concentration of the population in the largest cities of the country. Such cities are usually associated with environmental health and pollution problems. The growth of secondary towns was to be stimulated and financed by agriculture-based industries. During the period under consideration, the key development planning aspects included the following:

First, the improvement of land resource management to reduce the negative consequences of ill-planned agricultural expansion and intensification on the physical environment. Only about 8.6 million hectares of the land surface of Kenya are of high to medium potential and devoted to agriculture. Of these, 3.4 million hectares are still devoted to extensive grazing, National Parks, and Game Reserves. It is therefore in 5.2 million hectares that most agricultural production is based. This puts a lot of stress on the high potential land, resulting in high rates of soil erosion and plant nutrient mining.

Second, the policy pledge mentioned above has also been operationalized by a constant effort to promote irrigation (to reduce dependence on rainfed agriculture) and Land Reclamation in order to expand the area under crop production. However, large-scale (more than 9000 hectares) irrigation schemes had to receive government subsidies. Hence, of the large-scale irrigation projects, only Mwea Tabere saw a positive cash flow.

Land reclamation targeted lowland areas, bottomlands and flood plains. But the aesthetic and monetary values of biodiversity in these wetlands were not adequately considered (as there was no EIAs) before draining was carried out. Hence, in the case of the Tana Delta, flood control led to conflicts between environmentalists and developers.

Third, in addition to irrigation and land reclamation in Arid and Semi-Arid Lands (ASAL), which constitute about 80 per cent of Kenya's land surface, development has been a major feature of environmental planning. About 20 per cent of human and 50 per cent of the livestock populations are found in these ecologically fragile areas, and both populations are increasing rapidly. These lands therefore represent a potentially important resource which, if well-managed, can improve incomes, employment and food sufficiency in the country. During the 1984–1996 planning period, livestock development and the breeding of sheep and goats suited for ASAL were to receive high priority. Also to receive more emphasis was the control of livestock diseases. The infrastructure elements planned included water supply and livestock routes. Concerning crop production, the breeding of

drought-resistant crops and pasture grasses was proposed. Soil and water management was to include soil conservation, irrigation and water harvesting.

Fourth, energy requirements and problems were addressed particularly in the rural areas, where agriculture is the main economic activity and fuelwood is consumed, while in small urban centres, charcoal becomes important. In the ASAL especially, tree growth and regeneration is very slow and can lead to depletion of forests and/or bushlands. Measures to curb this include transporting fuelwood to the ASAL and agroforestry development. Reforestation and fuelwood plantations were suggested as means of fulfilling the demand for wood.

Electricity generation using hydro-power was considered as a suitable alternative to the use of fuelwood. However, its distribution is still very much limited to the urban centres. Also dams along the Tana River, for example, have contained the flood waters and reduced the irrigation potential in the lower parts of the basin, thus leading to highland-lowland conflicts in water resource use. Petroleum products with their associated problems of high costs and pollution were being used widely. Plans to reduce their consumption included the improvement of the public transport system and energy conservation by industries, all of which have not worked out well.

Finally, the line ministries and local authorities were to be instructed to adopt and follow more appropriate engineering technologies and standards for the construction of roads, water supplies and sewage systems. It has been noted that many roads, even in urban areas, cause accelerated soil erosion as well as the sedimentation of water bodies.

THE LEGAL FRAMEWORK OF ENVIRONMENT PLANNING

The constitutional mandate of the legislative authority and the kind of constitution in place play a significant role in nature conservation. The traditional African Cultural constitutions (often unwritten) were supreme during the pre-colonial period. Such constitutions governed the management of natural resources and ensured sustainable conservation practices. With the advent of colonialism, the Imperial masters in a way suspended the essence of these traditional governance systems and in their place imposed Western-style legal frameworks for natural resources management. In some areas, the consequences have been severe.

Colonial Laws

The colonial laws which significantly affected on the Kenyan scene with respect to environmental management were the Indian Lands Acquisition

Act (1894), the Crown Lands Ordinance (1902, 1915), the Native Lands Trust Lands Ordinance (1938), Crown Lands (Amendment) Ordinance (1938) and the National Parks Ordinance (1945). These Laws were, among other things, designed to facilitate the forceful acquisition of productive land from the Africans for exclusive use by the White farmers, thereby marginalizing Africans. Perhaps this period could be seen as the epitome of environmental degradation in the areas occupied by the Africans.

Hardly any policy or law designed for comprehensive environmental management existed in the early colonial period prior to the 1940s. Furthermore, it is noted that even after this period, any legislation with a bearing on natural resources remained fragmented. Perhaps the Royal National Parks of Kenya Ordinance (Cap 377, 1962) was a modest attempt at addressing selected environmental issues related to the management of Park Areas in Kenya.

Kenyatta Era Legislation

Following independence, the government introduced a unitary constitution with a unicameral legislature. Some of the laws enacted during the colonial era were also amended by post-independence Parliaments. Thus a plurality of sectoral laws resulted, each dealing with specific and scattered conservation issues. There were laws such as the Agriculture Act (Cap 318), the Food, Drugs and Chemical Substances Act (CAP 254), the Forests Act (Cap 385), the Plant Protection Act (Cap 324), the Grass Fires Act (Cap 327), the Public Health Act (Cap 242), the Water Act (Cap 372, 1972), the Merchant Shipping Act (Cap 389), and the Factories Act (Cap 514). Arguably, each of these laws had some stake in the management of natural resources, though not a comprehensive one.

So the Kenyatta administration (1963–1978) saw a proliferation of natural resource-related laws. Unfortunately, these still maintained the sectoral format perfected during the pre-independence period. The only specialized environmental agency created in this period was the National Environmental Secretariat established in 1974 under the Office of the President. The Secretariat was later moved to the Ministry of Environment and Natural Resources, which reduced its significance.

Moi Era Legislation

The Moi administration epitomizes the consolidation of some of these laws as well as the proliferation and creation of specialized bodies to deal with special interests in the management of natural resources. Examples of such laws include the Kerio Valley Development Authority Act (Cap 441, 1980),

the Pest Control Products (Act No. 20, 1982), the Lakes and Rivers Act (Cap 409, 1983); the Government Lands Act (Cap 376, 1985), the Lake Basin Development Authority (Cap 442), the Coast Development Authority Act (Cap 449), the Ewaso Nyiro North River Basin Development Authority (Cap 447), the Tana and Athi Rivers Development Authority Act (Cap 4430; the Irrigation Act (Cap 434), and the Radiation Protection Act (Cap 243). Among the specialized bodies or agencies created during the Moi administration are the Presidential Commission on Soil Conservation and Afforestation (established in 1981) and the Presidential Commission on Drought Monitoring and Relief.

One important resource in Kenya is land. The controversial aspect of this resource has resulted in the enactment of specific and focused legal instruments which include the Land Control Act (Cap 302), the Land Consolidation Act (Cap 283), the Land Adjudication Act (Cap 284), and the Land (Group Representatives) Act (Cap 287). Other related legislations are the Land Disputes Tribunal Act (No. 318, 1990), the Land Planning Act (Cap 303) and the Land Titles Act (Cap 282).

Attempts to develop consolidated environmental management plans were also made in line with developments in other parts of the world. For example, the World Bank-sponsored Environmental Action Plan (EAP) for ASAL areas was based on needs at the grassroots level. The bio-physical and human characteristics of the ASAL districts were discussed and analyzed, considering the key environmental problems and their underlying causes and constraints. The overall long-term (1994 to 2010) goal of these EAPs was that the utilization of natural and human resources for sustainable development be improved. In the short-term period, the reports aimed at ensuring that environmentally-friendly techniques to improve food security and proper utilization of resources be adopted. In each case, priority projects were identified for action during the short-term period of five years, with an emphasis on the promotion of conservation practices. Each ASAL district was summarized in a report published by the World Bank for the ASAL Ministry, which existed till 1993.

Later on, the NEAP process, also funded by the World Bank, commenced at a national level in 1993. One of the highlight efforts of NEAP is the publication of an Environmental Bill. This aims to integrate and harmonize all the 77 statutes touching on issues of environment. The coordination of the new law will be entrusted to a special body known as the National Environmental Management Authority (NEMA). This could enhance the status of natural resource conservation in Kenya. However, one may also note the continued funding of various Action Plans (APs) by the World Bank which were not followed by concrete reciprocating implementation projects.

Shortcomings of the Legal Framework

In retrospect, laws affecting the conservation of genetic resources and environment over the years, have been developed on a piecemeal basis, with the original purpose not necessarily being conservation. Thus there exist numerous glaring gaps in this legislation, making it rather cumbersome to implement. The problem has been exacerbated by the lack of a comprehensive national policy on genetic resources and the environment. Worse, there is no law that regulates the collection and marketing of plant genetic resources, or even their utilization by traditional medical practitioners. The same can be said for all other natural resources.

In essence, some culture and social systems as they touch on natural resource conservation, have been adversely affected through the interpretation of laws. Whereas the spirit of the Kenyan constitution is meant to promote such an interest, it in reality denies indigenous communities their social rights and dismiss traditional practices and regulatory norms as repugnant.

CONCLUSION

The State Authority on the environment has not been clearly defined in public law. The Kenyan constitution, on account of its prominence, is drawn up according to special legislative procedures, and can only be amended in the same manner. Other legal norms such as City or Municipal (local authority) by-laws are subordinate to the constitution. But it is worth noting that a substantial part of Kenya's natural resources are currently managed by local authorities using by-laws. The inherent implications of real and presumed supreme authority vested in the Central Government have often led to conflicts on environmental conservation between it (Central Government) and the Local Authorities.

Environmental law aims at providing a regulatory framework for those human activities which may undermine the vital natural assets that support normal economic, cultural and social life. But in Kenya there is a lack of a solid National Environmental Policy and a National Environmental Management Act. However, an environmental and development policy was recently adopted, following approval by the Cabinet and Parliament. Indications are that the recently published Environment Management and Co-ordination (Draft) Bill of 1995, which has yet to be discussed by Parliament, could fill the gap. The Bill seeks to provide parties aggrieved by any aspect of environmental destruction or degradation with a means to seek redress within the legal system. The Bill also provides for mandatory

Environmental Impact Assessment (EIA) of all development projects and programmes in order to ensure that they do not inflict any damage to the environment.

Local participation in the identification and implementation of development projects is essential since the complex interaction between social, cultural, economic and environmental factors is best understood by those involved. Their contribution to the planning process would promote the preparation of appropriate development strategies. Participation entails the involvement of communities in designing, planning, implementing and the evaluating of their resource development programs.

A major hindrance to community participation has been the attitudes and behaviour of the public sector's development workers. Save for the ASAL Program sponsored by the Netherlands Government, which appears to encourage community participation in the process of project development and implementation, such efforts are rarely promoted by agencies concerned with environmental conservation. The Kenya Wildlife Services (KWS) only adopted this approach after community-based controversies on the management of certain natural resources, especially in the Masai Mara Region of Kenya. Essentially, the encouragement of local communities to participate in conservation practice should be given priority so as to ensure a sound foundation upon which relevant environmental policies could be effectively implemented.

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Chapter 4

Environmental Management in Malawi
Lessons from Failure

W. M. Kasweswe Mwafongo
and
M. L. M. Kapila

INTRODUCTION

After delineating the context of environmental policy in Malawi, this chapter proceeds to explain the factors which contributed to the development of these plans and assesses the extent to which they have been implemented so far. The main argument we intend to make is that there is an increasing awareness of the magnitude of an environmental problem exemplified by soil erosion and deforestation, and an unabated degradation of water and wildlife resources. There is also general awareness that in the context of overall land degradation, soil loss poses the greatest threat to sustainable agricultural production as well as physical contamination of water resources. However, the present knowledge about the extent and significance of soil erosion is essentially qualitative. Results from spot trials of soil erosion under various cover and farming practices have shown that soil loss in Malawi ranges from zero to 50 tonnes per hectare per year(Amphlett 1986; Kasambala 1984; Machira 1984).

The World Bank (1992) estimated the aggregate soil loss in Malawi at 20 tonnes per hectare per year. Erosion rates were found to vary significantly throughout the country. However, it should be emphasized that quantitative data on various aspects of soil erosion, including data for predicting the

potential of soil loss and for determining critical land use management alternatives, are not readily available (Chimphamba 1993).

Forest resources are being rapidly depleted. As in other developing countries, biomass provides most of the total wood and energy needs. Thus, about 90 per cent of the population residing in the rural areas depends on fuelwood as a source of energy. At the national level, fuelwood is in short supply. The World Bank (1992) estimated the overall wood deficit in 1990 at 2.8 million cubic meters. The Department of Forestry estimated that the fuelwood deficit in 1983 and 1990 was 1.6 and 4.9 million cubic meters, and the figures projected in 1994 for 1995 and 2000 were 7.6 and 7.8 million cubic meters (Department of Research and Environmental Affairs (DREA 1994). The most striking thing is that the gap is widening, probably an indication that the current afforestation programs have not yet made a significant impact. In particular, the Southern and Central Regions are presently facing critical fuelwood deficits. Wood serves many purposes. These include and industrial requirements, construction poles, curing of tobacco, tea-processing and brickmaking. Increasing wood and fuel demands have depleted the country's forest cover, leading to a deforestation rate of 1.6 per cent in 1970 to 3.5 per cent per annum between in 1990 (DREA 1994). It is argued that the decline is due to the fact that there are no more than small forest patches to be exploited. Deforestation generates externalities that raise social costs and adversely affect social welfare in various ways.

At present Malawi is not confronted with an absolute scarcity of water. However, drought can render water scarce, as was demonstrated from 1992 to 1995. The quality of water is deteriorating. Silt and increased quantities of suspended solids adversely affect the downstream water quality. The National Water Resources Master Plan of 1986 shows that Malawi's principal rivers, the main source of potable water, carry suspended loads which exceed the World Health Organization guidelines in the range of 100 milligrams per litre to over 400 milligrams per litre River catchments with very high deforestation rates show to increased turbidity and suspended loads in river flow discharge. The bacteriological quality of the major rivers in the country is poor. Most rivers contain faecal coliform in excess of 500 per 100 ml of water in the dry season, which is far more than the WHO guideline of zero faecal coliform. This is a result of unplanned settlements and improper waste disposal. An increase in the use of agro-chemicals, particularly of nitrates due to expanding estate and subsistence agriculture, is causing the eutrophication of some water bodies. Furthermore, the chemical contamination of stream water in peri-urban areas is becoming common due to the improper disposal of industrial waste.

Poaching, including illegal fishing, is rampant in all protected areas. The trade in wildlife products encourages poaching. Encroachment in National Parks and Game Reserves in general has been reported to vary between 0.4 per cent and 2.1 per cent (World Bank 1992). Illegal fires by hunters and firewood gatherers are common in the parks and reserves. There are noticeable illegal settlements in parks and reserves.

The estimates of the threat to fish resources unfortunately are not based on any conclusive data on the actual level of fish depletion in the lakes. However, it has been noted that fish production has dropped from 10,000 tonnes per annum in 1986 to between 200 and 300 tonnes per year at present (MOREA 1995). Such a decline has been observed in Lake Malombe and Malawi as unacceptable fishing practices continue. The number of fishermen has increased considerably over time and they line their nets with mosquito netting and fail to comply with off-season regulations, aggravating the situation. This has threatened some fish species such as the Ntchila, formerly a major commercial species but now on the brink of extinction.

Malawi's livestock population has been rising steadily, compounding the problem of land degradation. Thus, in 1985 there were 1,079,959 heads of cattle, 799,094 goats, 322,413 pigs and 1,884,711 sheep (Malawi National Statistical Office 1988). Overstocking in some areas has resulted in overgrazing. Some areas of Ngabu, Liwonde, Lilongwe and Karonga show signs of land degradation due to overgrazing. There are also threats to biodiversity in general. Malawi is rich in biodiversity. While a rich genetic pool is necessary for research, agriculture and medicine, the fauna and flora in national parks, game and forest reserves are diminishing due to encroaching and poaching.

The critical environmental components of human habitat in Malawi are generally poor. In rural areas in particular, housing structures are made of temporary building materials. The demand for shelter in urban areas is acute. Rapid urban growth has brought to the fore various environmental problems. These include squatter settlements which are disorderly, unsightly, poorly developed, crowded and cramped and lack infrastructural facilities. They are health hazards. It is estimated that 60 to 70 per cent of the total population in the four major urban areas of Blantyre, Lilongwe, Zomba and Mzuzu live in the traditional housing areas and unplanned squatter settlements (DREA 1994). The plight of urban dwellers is exacerbated by their inability to afford adequate housing. The responsible agencies, such as town or district councils, have not succeeded in providing adequate and appropriate infrastructures, e.g. waste disposal systems. Some of the solid waste collection and disposal methods are rudimentary and inadequate. For example, there are no established landfill sites. Usually, waste is dumped in

open quarries, forest reserves and open roads, and uncontrolled burning of waste occurs. All these methods cause serious environmental problems, such as pungent odour, scavengers, the pollution of surface and groundwater sources and smoke and fire hazards.

Industrial waste is regularly disposed of in increasing quantities, complexity and toxicity, in urban areas. Unfortunately, most of the liquid industrial waste is discharged in sewerage systems or rivers, while solid waste is dumped in landfills or on tips on the factory premises. A study by Mvuma (1993) on the extent of the pollution of the Mudi River in Blantyre from industrial waste effluent reveals that the quality of the water in the river has been greatly affected. For example, the nitrate concentration levels at certain sampling points near the Optichem fertilizer plant, Cold Storage Abbotoir, and David Whitehead Textile plant ranged from 8.0 to 12.1 ppm (although these levels are acceptable according to WHO guidelines).

The metal element concentration was also analyzed. High concentrations of lead (Pb) were detected at certain sampling points, with values ranging from 0.23 to 0.3 ppm. The lead originate in printing, dyeing, photography, batteries and paint industries. Mercury (Hg) was also found in alarmingly high concentrations, with a median value of 1.55 ppm and a maximum concentration of 4.1 ppm. This causes a serious health hazard, because the water downstream is most frequently consumed untreated. The presence of several other metal elements such as copper, chromium and zinc was also tested. The highest average COD value of 690 ppm at the last downstream sampling point clearly indicates that there is significant industrial discharge of non-biodegradable lignocellulosic organic material. In terms of air pollution, in major urban areas gaseous emissions from industries and car exhaust fumes occur, while quarrying and coal-mining activities are another source of air pollution.

LAND-FOCUSED POST-INDEPENDENCE CONSERVATION PLANS

Assessments of the colonial conservation programme as a management instrument tend to be subjective. However an obvious colonial achievement is the introduction of contour-farming in the late 1930s: the use of ridges has almost universally replaced the traditional farming practice. Large ridges were accepted in various parts of the country, except in the Lakeshore area, where cassava is the staple crop. The rejection of the contour ridges was based on the deep-seated conviction that contour ridges would cause waterlogging, and would cause the crop to rot. The acceptance of contour ridge cultivation was a result of compulsion. The colonial administration

could boast that in 1956 an estimated three-quarters of a million acres had been saved from erosion with virtually all sloping arable or land cultivated in contour ridges (Kettlewell 1965). However, it is questionable whether the mere use of contour ridges increased crop yields.

It has been argued elsewhere that there was an over-emphasis on these mechanical measures, at the expense of agronomic methods. Colonial experts explicitly assumed that soil erosion was caused mainly by run-off. Yet raindrop splash is another major factor. Colonial experts should also have been concerned with combating raindrop splash by encouraging interplanting and intercropping to increase crop cover and thus effectively minimize the impact of the raindrop splash (Morgan 1986). Obviously, monoculture has disadvantages, in that it encourages soil erosion. Robert Chambers correctly noted that "Perhaps the best experts are those who recognize the many ways in which rural people themselves are the best experts" (1980: 98–99).

It is obvious from past experience that laws have limitations. It is easy enough to force people to adhere to prescribed conservation measures, but unless people see the value of such measures, the impact will be meagre. Due to increased resistance to the colonial conservation policies, the use of compulsion had to be moderated in the late 1950s. Thus, though in 1960 hardly any offenders to agricultural legislation were registered anymore, the very legislation had become the focus of African nationalist sympathies (Dequin 1969: 87). Indeed, farmers must feel the need and assess the relative effort required. It is therefore not surprising that farmers readily accepted ridging as opposed to bunding, which was expensive, both in terms of time and labour. There is no reason to believe that top-down conservation programmes, which were not based on an understanding of local farmers' interests and preferences, would succeed.

THE CONSTITUTIONAL BASIS FOR ENVIRONMENTAL MANAGEMENT

Innovative environmental management in Malawi is related to the constitutional reform process. Malawi has achieved a remarkable transition from a one-party state to a multi-party democracy. The process, however, was not smooth (Nzunda and Ross 1995). According to Ojwang (1996), development, no matter how it is defined, is the most basic issue determining policy choice, legislation, adjudication and mediation within the constitutional framework. The development agenda is closely interlinked with the environment. Bright prospects for sustainable development were thus envisaged through constitutional reform in Malawi. Unfortunately, in

the Malawi experience, the constitutional basis for environmental conservation is fundamentally contradictory.

As regards the national commitment to environmental protection, there was virtually no constitutional basis for this aspect of development in the old Constitution. Chapter 1, Section 2 (ii) of the old Constitution reads: "The paramount duty of the Government shall be to promote, safeguard and advance the welfare of the people". Development activities were thus unfettered, and environmental concerns totally disregarded. However, in the present Constitution, there are clear pronouncements as regards environmental protection. In Chapter III, one of the Fundamental Principles relates to the environment. Section 13 (d) calls upon the state "to manage the environment responsibly" in order to:

- Prevent the degradation of the environment;
- Provide a healthy living and working environment for the people of Malawi;
- Accord full recognition to the rights of future generations by means of environmental protection and sustainable development of natural resource; and
- Conserve and enhance biological diversity of Malawi

Furthermore, Section 14, concerning the application of the principles of national policy, grants courts the power to consider these principles when "interpreting and applying any of the provisions of this Constitution or of any law or in determining the validity of the decisions of the executive".

At face value, this looks good. However, a critical analysis of other constitutional provisions, in particular the human rights and duties in Chapter IV, give rise to skepticism. Thus, Section 29 in Chapter IV reads: "Every person shall have the right freely to engage in economic activity, to work and to pursue a livelihood anywhere in Malawi". Section 30 states that all persons and peoples have a right to development and therefore to the enjoyment of economic, social, cultural and political development, and that the state has the responsibility to respect the right to development and to justify its policies in accordance with this responsibility. Section 46 (2) of Chapter IV reads:

> Any person who claims that a fundamental right or freedom guaranteed by this Constitution has been infringed or threatened shall be entitled (a) to make application to a competent court to enforce or protect such a right or freedom; and (b) to make application to the Ombudsman or the Human Rights

> Commission in order to secure such assistance or advice as he or she may reasonably require.

Obviously, Sections 29 and 30 are more elevated than Section 13 (d), because the former can be enforced under Section 46. The absolute rights to freely pursue an economic livelihood anywhere in the country and development stand opposite the cherished goal of sustainable development. It is difficult, if not impossible, to separate the management of production from the management of the environment. One could speculate that the apparent lower rating of Section 13 (d) in comparison to Sections 29 and 30 is intended to parry in advance any likely suit against the Government.

INSTITUTIONAL DEVELOPMENT OF ENVIRONMENTAL MANAGEMENT

To coordinate and ensure consistency in the various environmental regulatory regimes, the National Committee for the Environment (NCE) was established in 1982 as a high-level institution composed of senior officials from government departments, statutory bodies and the university. The NCE was responsible for ensuring that all economic and social activities in the country were consistent with sustainable development goals and for resolving inter-departmental conflicts in environmental management. It was chaired by the Secretary to the President and Cabinet.

A decade later, in 1991, the technical secretariat of the NCE, renamed the Environmental Unit, was merged with the National Research Council to become the Department of Research and Environmental Affairs (DREA) under the Office of the President and Cabinet (OPC). The former Environmental Unit was reorganized to become the Environmental Affairs Division (EAD) of DREA, with wide-ranging functions for overseeing, directing and coordinating environmental activities. In 1994, DREA became an autonomous Ministry for Research and Environmental Affairs (MOREA).

Malawi participated in the UN Conference on Environment and Development, and later, in June 1994, produced the National Environmental Action Plan (NEAP). The NEAP, for which preparations began in November 1992 and which involved participation right from the grassroots level, involved 18 task forces, each for a specialized sector, comprising 185 persons from 51 institutions (292 civil servants, 299 chiefs, 55 NGO representatives, 90 women and income-generating activities representatives, 72 politicians, 65 people from local government authorities and 19 journalists). During the formulation of the NEAP, 1,300 people

from 87 institutions were allegedly consulted. This is the most elaborate procedure ever followed in Malawi to produce a policy document.

The production of the NEAP policy document was elaborately planned. The strategies and policy proposals are based on a logically structured analysis based as much as possible on available knowledge. The NEAP seems to put excessive blame on rapid population growth, illiteracy and poverty as the sources of the environmental crisis. Why would the poverty of peasants cause resource mismanagement, and not the tobacco estates of while the educated elite? Laxity in design and enforcement have been responsible for rapid environmental degradation. The elimination of illiteracy was not a priority. During the Independence struggle the draconian colonial measures were used to discredit the colonial regime. After Independence, those regulations were not replaced by good alternatives. Instead, the colonial regulations and their makers were ridiculed. In fact, in some ways, the new leadership encouraged environmental degradation. It may not be justifiable to blame population growth, poverty and the illiteracy of the masses. The NEAP is presented as a substitute for an overall socio-economic development strategy, but it is not clear how the NEAP will be complemented by other development effort. This will hinder implementation, especially when rural communities are overburdened with unco-ordinated demands from various quarters.

Reference to international donors and conventions aside, the NEAP is largely inward-looking. For example, the NEAP is silent on or inadequately recognizes trans-border causes of Malawi's environmental problems. Scant attention is paid to the negative impact of atmospheric pollution on Malawi's socio-economic activities. The role played by neighbouring countries in soil erosion, land degradation, deforestation, and the degradation of water and aquatic life is not taken into account. It has yet to be established whether Malawi is the major source of this environmental deterioration.

Based on the NEAP, a more integrative National Environmental Management Policy (NEMP) was prepared by MOREA in 1995. The NEMP was considered necessary to foster harmony among environmental protection and management, the quality of life, and sustainable development for the present and future generations. The NEMP also establishes guiding principles and strategies to be applied in the formulation and implementation of all conservation programmes or projects.

The mandate for the NEMP is derived from the Constitution of Malawi. It specifically covers both cross-sectoral and sectoral policy objectives, principles and strategies, legislation, environmental planning, environmental impact assessment, audits and monitoring, environmental education and public awareness, private sector and community participation,

environmental human resource development and research, women and gender demographic planning, human settlements and health, air quality and climate change, the conservation of biological diversity, land tenure and land use. On the sectoral level, agriculture and livestock, forestry, fisheries, national parks and wildlife, water resources, energy, and other sectors related to industries, transport, tourism, and infrastructure are included in the NEMP mandate. The NEMP further addresses macro-economic policy issues and instruments, focusing specifically on the alleviation of poverty and economic incentives for improved environmental management.

The NEMP is not intended to usurp the powers and responsibilities of sectoral ministries, but instead to reinforce them and highlight national priorities. The institutions responsible for environmental management will play a facilitating, coordinating and advisory role. The NEMP addresses almost all issues outlined in Agenda 21 of the United Nations Conference on Environment and Development (UNCED). Although the NEMP is mainly derived from the NEAP, it was much less informed by consultation than the NEAP was. The workshop organized to deliberate the draft NEMP produced by a foreign consultant was open only to government technocrats, and it wholly neglected the views of the poor majority at the grassroots level. Again, the policy document is silent on how co-operation at the international or regional levels can be attained.

When the NEAP was implemented, the government embarked on an Environmental Support Programme (ESP) whose overall objective is to integrate environmental concerns into the socio-economic development of the country. In particular, the ESP is a collaborative framework within which donor support, it is hoped, will contribute effectively towards improved environmental protection and management for sustainable development. It is intended to reduce the fragmented approach in which each donor has provided support on a project-by-project basis, and sometimes in competition with others. The ESP will thus promote an integrated sector investment approach for project formulation, financing, implementation and co-ordination, monitoring and evaluation. The MOREA is coordinating the ESP. The preparation of the ESP was based on key environmental problems identified in the NEAP, utilizing the Task Force approach of the NEAP process. The ESP lays particular emphasis on local communities which should participate in planning, designing, implementing and monitoring the projects.

It is obvious that environmental institutions have been established with a strong constitutional backing. The process has been participatory, involving state and non-state actors. As has been demonstrated, ESP and NEAP have been fostered by the introduction of the Environmental Management Act in 1996. This is an important move since until recently, Malawi had no

comprehensive national environmental legislation ensuring consistency in the management of natural resources. In 1996, the Environmental Management Act (EMA) was promulgated to fill that lacuna. Unfortunately, this legislation is weakened by its emphasis on urban-industrial environmentally related problems, e.g. waste management, industrial pollution, etc. It ignores the key environmental problems in Malawi, namely soil erosion and deforestation. There is a total neglect of community involvement in the formulation of these new laws. In other words, the revision of environmental legislation has been basically a top-down process.

EMA offers some hope, however in that Sections 4 and 5 appear to supersede the Constitution, granting Malawi citizens the right to bring suits against anyone, including the government, whose activities or omissions have or are likely to have an adverse effect on the environment.

COMMUNITY-BASED RESOURCE MANAGEMENT

Like most countries in eastern and southern Africa, Malawi has witnessed a significant growth in civil society activities, particularly regarding issues of environmental governance. Non-Governmental Organizations have grown rapidly over the past decade, both in numbers and in level of activity. This phenomenal growth has been stimulated by "a series of natural and man-made disasters that have afflicted Malawi, mainly the adverse climatic conditions and the civil war in neighbouring Mozambique" (Simukonda 1992:299). Besides, unlike the previous development plans, the current Statement of Development Policies (1987–96), is abundantly clear on the fact that social welfare is a direct public policy objective. Unfortunately, the government alone cannot adequately provide human and financial resources to achieve this goal. Hence, NGOs have naturally emerged to fill the gap, aiming to improve social welfare, as most of their programmes indicate.

The participation of people and communities in the decisions which govern their well-being has been identified as a key to sustainable natural resource management (Western and Wright 1994; Uphoff 1993; Murphree 1994). The Malawian government has recognized community management as one of the best approaches to environmental conservation, as stipulated in the ESP document. This new approach has great potential, particularly in addressing degraded communal lands, afflicted forests, game reserves and the protection of communal areas vital to the national interest, such as fish breeding grounds, catchment areas for power generation and biodiversity. Community management is possible where sufficient benefits or incentives for participating communities can be identified. These conditions result in greater community commitment to and ownership of improved

management systems. However, the management capacity of most communities being limited, the need for Non-Governmental Organizations (NGOs) to provide technical and material support is clearly highlighted.

A number of NGOs are directly involved in environmental management. The Christian Service Committee of the Churches in Malawi (CSC), founded in 1965, implements a number of social development projects of various types throughout Malawi. Its programmes are largely self-help programs in rural areas. These projects must originate from and be owned by the people themselves, at the grassroots level. The CSC agricultural programme mission statement is:

> to enable low resources farmers, especially women, to become self- reliant by using the rural animation approach, and facilitating churches' involvement at the grassroots in the implementation of the programme. The approach aims at promoting farming systems that can be sustainable under low resource circumstances (Banda 1993: 1-2).

Soil and water conservation and soil fertility maintenance through agroforestry technology are primary activities. In particular, the CSC has been at the forefront in encouraging the use of vertivar grass for moisture conservation and soil erosion control.

The Wildlife Society of Malawi (WSM) stresses the importance of environmental education, and is mainly geared towards youths. To encourage people and especially youths to conserve the environment, the WSM has developed links throughout the country. At present, the WSM is affiliated with over 1,500 wildlife clubs which promote the need to protect and conserve the environment. The WSM has established a forestry programme. The society established the Mudi Tree Nursery in 1992 in the City of Blantyre in conjunction with community nurseries in nearby Chiradzulu District:

> From July 1994 to January 1995 the WSM Forestry Programme launched the school tree nursery pilot project with the aim of involving 20 urban schools in the development of nurseries. This programme focused on indigenous tree species and some other useful exotic tree types. As of January 1995, 20,400 seedlings have been produced comprising 17 different species. The project involved 22 schools and a total of 640 active students. The schools planted, sold and distributed the seedlings during the 1994/95 rain season, all according to their own needs and decisions (Mauambeta 1996: 7).

The Agricultural Research Extension Trust (ARET), formerly known as Estate Extension Service Trust (EEST), was created to improve the efficiency, diversity and sustainability of agricultural production on all types of estates, and to preserve the estate sector's natural resource base via sound land use planning coupled with soil and water conservation techniques and reforestation. The ARET runs an extension service which provides expert advice to the majority of estate farmers on forest management as well as soil and water conservation. To achieve the above objectives, the ARET has established four sections, namely Land Husbandry, Forestry, Land Management and Extension and Training. It is hoped that in the future, livestock and marketing sections will be established.

The Evangelical Lutheran Development Programme (ELDP), Concern Universal, Habitat for Humanity, Action Aid and Marie Stoppes International are other NGOs directly involved in environmental management. There is no doubt that NGOs have a special place in the field of nature conservation and environmental protection. In addition to technical capacity, NGOs have commendable abilities to mobilize, organize and motivate communities to comprehend crucial issues that influence them. In Malawi, by combining environmental education programs with community mobilization, NGOs are raising community awareness. To some extent, this promotes sustainable agriculture and natural resource management.

NGOs in the country are particularly strong in training in environmental issues. For example, in early 1996 a training course entitled "Community-based Environmental Projects: An Introductory Training Course" was conducted by CURE in collaboration with the Ministry of Research and Environmental Affairs (MOREA). It was attended by NGO delegates from WVI, CSC, WSM, Africare, Concern Universal, EVARD and SCF-Malawi. The UNDP Multidisciplinary Environmental Rehabilitation Pilot Project has offered a course, ("Training in Social Forestry and Land Husbandry") targeted to extension staff drawn from NGOs, the Department of Forestry and the Ministry of Agriculture and Livestock Development (MOALD). However, the efficacy of NGOs in Malawi in sustainable natural resource management needs to be evaluated.

Community or local participation in the development process has a history of success in Malawi. Some take the view that this particular grain of participatory development is based on coercion rather than on genuine selfless conviction. During President Banda's authoritarian regime, the failure to be involved in self-help projects was interpreted as an act of rebellion, and people who dared not to participate faced severe punitive measures. Today, a participatory spirit is being rejuvenated by the government, which has initiated what it calls the Malawi Social Action Fund

(MASAF), based on local initiatives. People are expected to organize themselves by forming committees to discuss with the responsible government agency their proposed projects. One of the requirements of the project proposal is that there should be a clearly stated self-help commitment. Unfortunately, in a more democratic era people are increasingly becoming reluctant to participate in programmes that seem to originate from the government. This makes the role of NGOs in advancing sustainable development even more important.

LESSONS FROM FAILURE

Malawi is relatively small, with a total land area of 9,430,000 hectares. The population is growing very rapidly, at 3.5 per cent per annum (Malawi NSO 1987). In 1990 more than 55 per cent of the households had, on average, less than 1 hectare, and 26 per cent of these households held less than 0.5 hectare (House and Zimalirana 1992). Further projections indicate that by 2010 about 82 per cent of households will have less than 1 hectare, and 55 per cent of households will have smallholdings of less than 0.5 hectare (Ng'ong'ola et al. 1992). This rapid population growth threatens the sustenance of humankind simply because the means of subsistence are constrained by the availability of land. Already, population growth has led to fragmentation and hence to scarcity of land for cultivation. Marginal and steep lands are increasingly used in many parts of the country, inducing high surface run-off, widespread deforestation and serious land degradation.

Malawi is among the poorest countries in the world, with about 55 per cent of its population living below the poverty line of US$ 40 per capita. That poverty is endemic (UNICEF 1990). The factors that lead to poverty are the same as those that promote unsustainable land use practices. The vast majority of the rural poor is in the smallholder sector. The yields from their major crop, maize, averages between 0.9 and 1.2 tonnes per hectare (World Bank 1992). This greatly inhibits their capacity to adopt improved technologies such as hybrid maize and fertilizers. Difficulties in producing enough maize lead the poor to sell their own labour to better-placed farmers at critical moments when they should be planting and weeding their own crops. The poor are the most vulnerable, have uncertain future incomes and tend to take sub-optimal consumption decisions for survival, leading to environmental degradation.

Active environmental management policy began in the 1940s as part of a package of agricultural farming methods. Strict regulations were enacted to prevent soil erosion and to ensure compliance. Unfortunately, in post-Independence Malawi these measures were watered down, in favour of a

persuasive approach. Sectoral policies were to integrate environmental management in socio-economic development planning. Unfortunately, most of these government policies and institutional arrangements have been weak. For example, in an attempt to promote agricultural export earnings, particularly through tobacco, the government supported a policy of alienation from customary to private land, resulting in small landholdings. The Special Crop Act (Cap. 65) had negative implications on environmental management, which have already been alluded to.

The role of the market and related policy failures are crucial in resource degradation. These factors include insecure property rights, limited information on resource conservation, labour market weaknesses and limited access to credit. It has been argued that property rights regarding environmental resources are ill-defined and insecure, meaning that they are easily exploited. For example, the powers chiefs have to allocate land do not extend to the power to enforce the sustainable use of the land. Property rights have not promoted the adoption of sustainable land use practices in Malawi, even where title to land was granted, e.g. in the case of the Lilongwe Land Development Programme. Indigenous woodlands are openly exploited as common property resources. This is also true for wildlife resources outside protected areas. Probably these resources would be better managed under chiefs as long as benefits accrue to the community.

Studies have indicated that only about one-third of the population (mainly men with large landholdings) has access to agricultural extension services. Staffing is severely limited, with one field assistant to 900 farm families for general extension and one for every 10,000 farm families in soil conservation extension (World Bank 1992). Furthermore, most of the extension time is devoted to credit administration and recovery, and very little time is spent on the education of smallholder farmers. The Acting Head of the Department of Land Resources within the Ministry of Agriculture and Livestock Development argues that his department could have done much better and had a greater impact in soil and water conservation training if the prioritization of activities of extension staff in the past had been correct. Unfortunately, the "staff used to place crops first, animals second and the land last" (Wildlife Society of Malawi 1996: 24). He compares this, and rightly so for a nation whose livelihood is soil, to repairing the roof and walls but doing nothing about the foundation of a building.

In the agricultural estate sector, the adoption of sustainable land management has been negligible. This has led the government to create the Agricultural Research and Extension Trust (ARET). Inadequate staffing in the Forestry Department and a failure to include appropriate agricultural management messages in the general extension service have inhibited the

adoption of forest technologies by small-scale and large-scale farmers. Also, the objectives and benefits of wildlife conservation have not been disseminated to the communities.

Smallholder farmers with limited financial resources have no ability to employ or spare labour for their gardens. This is exacerbated by seasonal employment, which brings many smallholders to forgo working on their land in favour of wage labour. Credit facilities are restricted to members of farmers' clubs. This group loan system, which repays loans at the end of the harvesting period, discriminates against the least resourceful farmers. Smallholder agriculture credit does not lend directly for land conservation investments, but, rather, provides loans in kind, e.g. fertilizer, seed, or machinery. The net effect is a disregard for conservation, as farmers aim to maximize productivity, at the expense of the land, in order to meet loan requirements. Long-term loans for environmental conservation measures are not readily available from financial institutions.

Government failure to enhance resource productivity include inefficient pricing, inadequate regulations, inappropriate technologies and institutional constraints. Generally, pricing policies for land, water, forestry and wildlife resources tend to encourage over-exploitation or under-utilization of these resources. High prices for selected crops encourage monocropping of poor cover crops such as tobacco and hybrid maize. In the forestry sector, equalized pricing policy has distorted incentives to grow and manage standing forests. The stumpage rates for indigenous and plantation wood, used to be MK25 and MK60 per cubic metre respectively, while the long-term average production cost for government plantations was about MK100 (Mwafongo 1997). The government considers the equitable provision of clean potable water for domestic use to be a social service. Thus, the pricing framework does not lead to efficient cost-recovery. The result is inadequate repair of existing supplies. In wildlife, poaching penalties are extremely low compared to the returns from trophy sales. Fines amounting to only 10 per cent of the market value, in the case of elephant tusks, are too low (World Bank 1992). Similarly, national parks charge fees lower than those of other SADC countries.

The government ability to impose and collect penalties is weak. There are many laws, but these are fragmented, and enforcement agencies lack personnel and political support. In estate agriculture, in particular, the covenants are not adhered to. In a survey (1992) of 250 estates in the country, it was found that only 50 per cent of burley tobacco estates rotated tobacco as regulated. Three estates admitted to tobacco monoculture (Estate Extension Service Trust 1992). The inadequate enforcement of regulations for indigenous woodlands has led to excessive degradation. The government

restriction of commercial cutting of ecologically fragile or heavily depleted areas is not effective.

Under traditional land management, very few smallholder farmers adopted conservation measures. It has taken three decades of relentless efforts by the Land Resources and Conservation Department (LRCD) to persuade farmers to adopt them. Previously, large-scale earth works and graded physical structures were undertaken either by the government or by the farmers themselves. The current policy encourages farmers to establish contour ridges on their land. In addition, farmers are encouraged to supplement physical conservation measures with biological ones. However, the adoption of conservation measures is limited largely because the low-cost solutions advocated are labour intensive. Some general recommendations, such as the use of marker ridges, have been on the extension programme since Independence, but they are not accepted or appreciated in certain areas. In other words, suitable and area-specific conservation measures must be developed and disseminated.

The Department of Agricultural Research of the Ministry of Agriculture and Livestock Development is mandated to carry out research on all agriculture-related activities. Until now, very little research has been done on conservation technologies. The Department of Land Resources and Conservation has long followed a "trial and error" approach. New technologies have been copied from elsewhere without first assessing their suitability for Malawi. This demonstrates a lack of vision. Effective environmental management is also hampered by capacity constraints at central and departmental levels, including staffing, logistical and budgetary constraints (DREA 1994).

Constraints faced by implementors of conservation plans are many and varied for the various resource sectors in Malawi. There are shortages of finance and trained manpower, and responsibilities overlap. Since Independence the main objective of the agricultural policy has been self-sufficiency and surplus production. Agricultural experts have been preoccupied with increasing food production, especially maize. A lot of budgetary support was in the form of fertilizer subsidy, farm input loans, breeding for agronomic factors and extension supervision for loan-servicing and recovery. Very little money was spent on research on conservation technology or support services to promote conservation. Modern agriculture was synonymous with the use of hybrid seeds and the application of inorganic fertilizers. Farmers spent a lot of their financial resources to fertilize the crop and not to fertilize the soil.

The vast majority of forest land (97 per cent) is composed of indigenous woodlands, of which three-quarters are held under customary land tenure by local communities and one-quarter is held by the government in Forest

Reserves. While the Forestry Department is technically responsible for the management of customary woodlands, these areas are essentially unmanaged resources, due to limited staffing and budgetary support. The Forest Reserves are actively managed by the Forestry Department, mainly for the purpose of protecting river basin and water catchment areas. The government's investment strategy has relied heavily on large-scale public expenditures in peri-urban fuelwood plantations, to the detriment of environmentally fragile areas or degraded watersheds. However, having recently recognized the gravity of forest degradation, the government has implemented several programmes in the past decade to promote a more efficient use of wood resources. For example, fuelwood and building-pole plantations have been established around Blantyre, Zomba and Lilongwe. The largest government plantation has been established in the Viphya Plateau, and a network of retail nurseries and supporting services to promote smallholder tree planting has been developed. Furthermore, extensive research on agro-forestry systems is being conducted at the Forestry Research Institute of Malawi (FRIM). On the whole, financial and technical support for smallholder extension in agricultural management is severely limited.

Manpower development in land resource management has been adequate. Chancellor College and the Bunda College of Agriculture, both constituent colleges of the University of Malawi, have been instrumental in training manpower at the senior level. Four-year studies in Geography and Earth Sciences at Chancellor College and five-year studies at the Bunda College of Agriculture qualify students for positions as Land Husbandry Officer. The Department of Agriculture Extension and Training of the Ministry of Agriculture and Livestock Development has a vocational training centre which specializes in professional training in Land Resource Inventory, Land Resource Evaluation, and Land Resource Management. Diploma-level staff from the Bunda College of Agriculture are also appointed as Land Husbandry Field Officers. They are trained in land resource management and soil and water conservation. They are based at the district level offices of the Ministry, called Rural Development Projects.

Furthermore, staff are trained at the Natural Resources College (NRC). In addition to a two-year training at the NRC, staff joining the Land Resources and Conservation Branch (LRCB) undergo specialized training in soil and water conservation at the Land Husbandry Training Center (LHTC). These staff are most crucial in the implementation of conservation programs. They are in direct contact with land users and stakeholders. Based at Extension Planning Areas (EPA), Land Husbandry Assistants are in charge of more than 125,000 farm families, so the effective implementation

of conservation programmes in impossible. The result has been the failure of most conservation programmes.

In a similar vein, the Forestry Department in the Ministry of Natural Resources has drawn its professional staff from Chancellor College and the Bunda College of Agriculture. However, more specialized training is still obtained from outside the country. Upon their return, these staff are based at Ministry Headquarters, Regional Forestry Headquarters, the FRIM and in forestry plantations throughout the country. The department also manages the Malawi College of Forestry for the training of Forestry Assistants and Technical Forestry Officers.

The bottom line is that there is not enough trained manpower in forestry to be able to give advice regarding silvicultural management to smallholder farmers. The small size of the Forestry Department extension staff and the lack of integration of silvicultural messages in the Agricultural Extension Service have impeded smallholder adoption of forestry programmes.

Many organizations are involved in resource conservation. However, due to the multi-facetedness of natural resources, there is considerable overlap of responsibility. In the field of agriculture, the LRCB's objective is to ensure the balanced and sustainable utilization of land resources, mainly soil and water. The LRCB provides guidance and creates awareness among government departments and the general public of the scarcity and vulnerability of resources in the country. Relevant training is provided in all aspects of land husbandry. However, frontline staff, who are involved in day-to-day extension services, have been left aside in conservation programmes. Conservation was not seen as part and parcel of the farming system.

CONCLUSIONS

This chapter has analyzed the intricate structures, institutions and mechanisms of environmental management in pre- and post-independence Malawi. It argues that the state has, for a long time, adhered to a command and control approach, using sectoral legal instruments and regulations for the management of natural resources. Thus, the promotion of environmental management practices has been typically top-down, with the crucial role of local communities in environmental management only recently being recognized. Unfortunately, no serious attempts are being made to understand and learn from traditional or indigenous environmental conservation systems. This, in our view, renders all efforts towards sound environmental management ineffective. The strengthening of legal and institutional arrangements for sustainable development is obviously a critical

factor, but this must be carried out in a bottom-up approach which bestows real proprietorship over resources on communities. There is a need for a comprehensive investigation of the "variables that affect the supply side of human ingenuity in response to environmental change" (Field-Juma 1996). In Malawi customary natural resource management instruments and institutions may provide a better starting point for sustainable environmental management policies and programmes than the more familiar technocratic/bureaucratic models hitherto used.

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Chapter 5

Environmental Management in Lesotho
The Limitation of Legal Instruments

Makoala V. Marake
and
Polile A. Molumeli

INTRODUCTION

Central to most discussions on the state of the environment in Lesotho is the accelerating degradation of the productive base. For more than fifty years, land degradation and related soil erosion have been acknowledged as serious problems in Lesotho. Some important contributory factors include: (a) over-grazing of rangelands involving the selective removal of palatable climax species, leaving behind a modified habitat; (b) soil loss in the form of gully erosion and biomass removal; (c) loss of organic content and nutrient loss; (d) reduced water holding capacity and lowering of water tables; (e) general damage to soil structure and quality.

The overall index of production for major crops in Lesotho declined by at least five percent per annum between 1973 and 1986 (World Bank 1987). This is largely attributed to reductions in yields by about four percent per annum. Furthermore, the following factors compound the agricultural production crisis in Lesotho: (a) a small arable land base – only nine percent of the total land area of the country is cultivable; (b) land degradation and severe erosion of arable and range lands compounded by recurrent drought; (c) urban encroachment on prime agricultural lands; (d) the existence of alternative employment

opportunities in the migrant labour markets in South Africa which provide a higher return for labour.

Animal husbandry practices are basic to everyday life. Estimates of stocking rates vary widely when compared with estimated carrying capacity. Regardless of the true stocking rate, it is apparent that the range lands are degrading at an intolerable rate. The communal grazing system also makes livestock breeding and health control difficult. The current legislation governing stocking levels is ineffective due to the weakness of enforcing institutions, and historically, the erosion of the power of the chiefs, compounded by a lack of political will.

Causes of land degradation include the following: (a) a harsh climate with variable rainfall, high-intensity storms, frequent hail and frost damage, and a series of drought years during the 1980s; (b) the combination of a population growth rate in excess of 2.6 percent, stagnating employment opportunities in South Africa and a limited absorptive capacity in the local non-farm employment sectors. The World Bank's Agricultural Sector Report (World Bank 1986a) projected that rapidly increasing numbers of people would have to find employment in agriculture. There is, however, very little evidence that this is happening. Cultivated areas appear to be decreasing. There is an increase in fallow and under-used lands. Consequently, the number of households with agriculture as their main occupation has stagnated. In an economy where people are, for both socio-cultural and economic reasons, heavily dependent on livestock, population growth has led to a significant increase in the total number of livestock on the range. It has also reduced the area of range land available by increasing the land area committed to other uses. Energy consumption boosted by population growth has put a strain on the forest sector and hence the environment. Eighty percent of the residential energy supply comes from the use of fuel wood, shrub, cow dung and crop residues. New fuel wood plantations at about 900 hectares per annum have not kept pace with the expansion in energy demand, so the vegetation and soil are depleted (Lesotho Energy 1988).

The Laws of Lerotholi, the traditional legal system, prescribe that all land belongs to the Basotho people as a whole and is held in trust by the King on behalf of the nation. Authority to allocate rights to land use is delegated to various levels of chiefs: (a) village chiefs have the authority to open and close grazing land in the areas surrounding villages; (b) Principal and Ward Chiefs control the opening and closing of mountain grazing lands.

In general, the communal land tenure system in which individuals have almost unrestricted access to rangelands contributed to overstocking

by enabling individuals to ignore the environment. The result is an increased and widespread rangeland deterioration. The communal land tenure system also makes it difficult for individuals to raise loans for investment in high-quality breeding stock, nutrition and veterinary requirements. This threatens the genetic pool of livestock and makes it necessary to increase the size of herds and flocks to yield a given income.

The aforementioned environmental impediments have directly affected the wildlife of the country and its conservation as little attention has been given to wildlife conservation (Stephenson 1988). Over the last 100–200 years of increasing exploitation, the fragile mountain environments have been degraded and bio-diversity has declined. Today, lowland ecosystems have been more or less converted into game-deficient rangeland and poor-quality agricultural land. The net result is that the fauna of Lesotho has become impoverished by the general loss of larger species, particularly antelope. There can be no doubt that there has been an overall reduction in the numbers of most species of reptiles, as a direct result of uncontrolled hunting and a loss in habitat diversity.

SOIL CONSERVATION POLICIES

The history of soil conservation in Lesotho is well documented (Chakela 1973; World Bank 1978; Turner 1979; Wenner 1982; Chakela and Cantor 1987). This section will be based mainly on the reviews of Chakela and Cantor (1987) who have summarized the previous reports on the history of conservation in Lesotho. In the early colonial period, Lesotho's farming systems were characterized by large tracts of land available for agriculture with simple implements and a high degree of involvement by the people. There was a general realization that rain storms caused damage to agricultural land. Consequently frequent inspection and maintenance of the diversion furrows used to divert run-off from crop land were needed. Mixed cropping was also a common conservation practice. Fallow practices were also wide-spread, regenerating and improving soil cover and fertility.

The major participants in conservation during this period seem to have been farmers. There was little government intervention. Government participation in soil erosion control was limited to tree planting, gully control and crop management advice, and the regulation of pastures and the use of indigenous trees, reeds and thatching grass. In this period, Lesotho was a net exporter of grains to South Africa and was commonly referred to as the granary of Southern Africa. Changes in market opportunities reinforced by new socio-political conditions in

South Africa altered the attitude of the Basotho towards farming, and Lesotho gradually lost her grain exporter status. These negative trends were compounded by a severe drought in the 1930s which dramatically changed the landscape of Lesotho.

These social and ecological forces drew the colonial authorities' attention to agriculture, and soil conservation became a major colonial preoccupation which involved the construction of mechanical structures to control erosion and reclaim badly eroded areas. The objective was to cover the whole country with mechanical conservation structures over a period of ten years. The project was implemented primarily by the Department of Agriculture, with the help of manual labour from locally employed workers. Work on the conservation structures was thus the responsibility of the agricultural authorities with a somewhat coerced participatory involvement of the farming communities. This coercive practice cultivated a negative attitude towards the conservation structures on the part of the communities with occasional outright hostility to the programme.

While the project ended without a clear policy on how the conservation works were to be maintained, in the late 1950s emphasis was put on public relations to solicit the collaboration of the farming communities in the maintenance of the conservation works. In addition, the element of integrated village-based conservation was introduced in selected pilot project areas in order to seek closer cooperation with farmers. Subsequently, an agro-ecological plan for the whole country was drawn up to recommend specific land uses to each zone. Nevertheless, the major participant in the conservation efforts during this period was the government with little involvement by the farmers.

The post-independence period was marked by renewed efforts to involve the villagers in conservation activities. This was mainly done through the formation of village committees which were later combined into soil conservation committees. These latest efforts at participatory conservation activities were divided into two groups: a) area-based projects run jointly by the Lesotho Government and/or donor agencies; b) non-area-based projects which were generally national in scope covering several agro-ecological zones. The objective of the latter was to improve agricultural productivity or to facilitate the marketing of agricultural products and to strengthen the dissemination of sound farming methods.

The primary institution responsible for soil and water conservation was the Soil Conservation Division of the Ministry of Agriculture, which took a watershed management approach to conservation. Serious

attempts were made towards a less project-oriented and a more service-oriented approach in which area-based, village and individual farm conservation plans were drawn up by the Division upon request. However, until the late 1980s the general policy focus remained on structural conservation, with minor emphasis on farmer participation and/or people's involvement in conservation activities.

FORESTRY CONSERVATION POLICIES

Despite the limited extent of Lesotho's forest resources, both indigenous and exotic, they are extensively used by local people and make a significant contribution to their livelihoods. Forest resources can be categorized into four main types which essentially reflect patterns of ownership.

Indigenous Trees and Shrubs: No comprehensive survey of the extent and composition of indigenous forest and woodland has ever been conducted. However, much of the indigenous vegetation is evergreen or semi-deciduous shrub land usually attaining less than three meters in height. Whether this small size is a function of natural or anthropogenic factors is unclear, but in undisturbed sites tree species can reach large dimensions. Leslie (1990) identifies three categories of indigenous woody vegetation: *Leucosidea* woodland, mixed forest and thicket, and open shrub land with forest or isolated trees. Although the extent of natural forest and woodland is low, it remains a valuable resource to many rural people, providing fuel, wood for tools and house construction and other socio-cultural needs.

State Forest Reserves: No area of indigenous forest or shrub has yet been designated a reserved area. The government forest estate consists entirely of land reserved and afforested by the government as State Forest Reserves (SFR). The vast majority of these state reserves were established between 1973 and 1987 under the Lesotho Woodlot Project. Over 300 SFR were gazetted between 1973 and 1986 when the Lesotho Woodlot Project ended. The exact extent and condition of the plantations is unknown. However, the impact of theft, fire, grazing and, in recent years, drought has affected the productivity of the forests.

Private Treelot (Individual and Community): No comprehensive survey of private tree planting or ownership has ever been conducted. Many lots comprise small groves or patches of grey poplar (*Populus canescens*) or silver wattle (*Acacia dealbata*) often in gullied areas established under the Tree Planting Scheme of 1942–47, and from government-sponsored planting for soil conservation undertaken as part of the wider

soil and water conservation programme. Individually owned trees in homesteads are a valuable forest resource. The undisputed tenure of the homestead has provided individuals with security to plant trees for ornamentation, shade and fruit. Hall and Green (1989) reported that 86 percent of all rural households had at least a tree; 66 percent of these were fruit trees mostly planted around the homestead.

EVOLUTION OF FOREST POLICIES

Forestry has been actively promoted in Lesotho for almost 150 years, with five distinct phases of forestry promotion identifiable. The earliest recorded forestry interventions in Lesotho can be traced back to 1855, when the church missionaries obtained and distributed tree seed for local people to grow. The efforts intensified in 1876 when the Protectorate Government commenced a programme involving the distribution of seed and planting material and the awarding of prizes. The success of these early ventures is not documented. However, several decades later, a number of private tree plantations (grey poplar) had been established. Indeed, to-date private grey poplar plantations are still in place throughout Lesotho. Around the turn of the century, tree planting was pursued as a method of conservation, in particular in the reclamation of dongas. Thus government became increasingly involved in tree planting for erosion control, using contracted labour.

Pursuant to the control of soil erosion and land degradation, in 1936/37 the government initiated a Soil Conservation Programme with a forestry component to plant a range of tree species in gullies and severely eroded sites. There is little documentation of the success of these early initiatives. In 1942, the government introduced a Village Tree Planting Scheme which initially proposed that every rural family plant trees in individually owned woodlots. This concept was, however, rejected by the Paramount Chief, who directed that trees be planted communally in gullies or in other blocks of non-productive land using traditional self-help labour. Records show that 6.7 and 8.2 million trees were planted in the first and second years of the programme respectively. However, the inadequacies of the approach soon became apparent: standards of planting were low protection of planted areas was minimal and consequently survival rates were dismal. The scheme, and with it the concept of tree planting by traditional self-help schemes, were declared a failure and abandoned in 1947.

Following the termination of the Village Tree Planting Scheme, no other major forestry interventions were undertaken until 1973 and the

start of the Lesotho Woodlot Project (LWP). In terms of service provision, Soil Conservation staff continued to promote tree planting for conservation and the Department of Agriculture continued to promote it within the mainstream of agricultural extension. Responsibility for communal forestry activities was, however, transferred from the national to the district level where it fell under the jurisdiction of the finance committees of the district councils.

The Lesotho Woodlot Project (LWP) (1973–1986) marked a major shift in emphasis in forestry development. Conventional wisdom had concluded that community-based initiatives had failed. Thus the LWP embarked upon a programme of establishing State Forest Reserves (SFR). This initiative was effected by subcontracting land from the community for exclusive management by the project. In return, the project provided all necessary inputs and undertook to employ community members in afforestation operations with payment made in kind by food-for-work arrangements. In addition the project provided the community with the first option to buy wood produced and a share (20 per cent) of the gross revenue generated by the SFR. The mechanism for the declaration of SFRs, and the authority for managing them and sharing revenues were subsequently legally codified in the 1978 Forest Act. During the term of the Project, 320 SFRs were established, covering a planted area of well over 7,000 hectares. In addition to its plantation activities, the LWP provided extensive training and infrastructure, which subsequently formed the basis of a Forestry Division, and undertook an extensive amount of basic forestry research.

In 1987, funding for the project from its principal donors came to an end. Three major facts cast doubt on the sustainability of the LWP: (a) long term financial sustainability: The Plantations had been established using food-for-work provided by World Food Programme. Financial analysis revealed that in the absence of food-for-work, it was unlikely that the plantations could break even; (b) a shift of paradigm towards people's participation: the LWP was a contemporary of most forestry development projects of its time. The philosophy of increasing the overall supply of wood to meet people's needs without considering issues of access, ownership and ability or willingness to pay for the product was replaced by social forestry; (c) community attitudes towards forest reserves: it was also clear that despite the promise of 20 percent shares in gross revenues, increased access to firewood and considerable legal penalties, many SFRs suffered from uncontrolled grazing, theft, fire and vandalism. There was, therefore, an apparent dissatisfaction with what many considered an imposed development option for forestry.

In subsequent years, there was a policy shift towards social forestry concepts. The Forestry Division provided direct extension services through its network of district staff who were later absorbed within a unified extension system of the Ministry of Agriculture. The conceptual development of social forestry was supported by a number of donor agencies. The last ten years have also seen a major increase in the number of non-governmental organizations involved in social forestry initiatives.

Implicit in the history of forest development in Lesotho are the aspirations and objectives of the energy sector. In Lesotho, wood is the main domestic fuel. The rural population is dependent upon biomass resources: firewood, shrubs, animal dung and crop residues to meet their energy needs (Lesotho Energy 1988). In addition to the normal uses for cooking, brewing and lighting, people also need fuel for space heating during the harsh winter season. A detailed energy survey conducted for the Lesotho Energy Master Plan (LEMP) revealed that fuel wood and shrubs account for about 60 percent of domestic fuel consumption. Given the high cost of alternatives such as fossil fuels and electricity, the Energy Master Plan predicts that fuel wood, shrubs and dung will still need to satisfy more than 80 percent of the energy demand in the rural areas in the year 2010. Furthermore, in view of the growing population, the demand for wood from trees and shrubs is predicted to increase overall by over 50 percent by the year 2010. The Energy Master Plan recommends a massive afforestation campaign to improve the energy supply situation in the rural areas and to reduce dependence on external energy supplies. This campaign would require the planting of about 10 million trees per annum until 2010.

The importance of biomass fuel to rural households, the vulnerability of the biomass resource base, and the use of dung and crop residues as alternatives with adverse implications for soil fertility have provided the justification and focus of development efforts in the forestry sector since they began in the nineteenth century. The extent of biomass use and dependency was clearly demonstrated in the Lesotho Energy Master Plan of 1986. Household fuel use accounts for 90 per cent of the total energy consumption, while biomass accounts for 88 per cent of total demand. Wood is most extensively used in the lowlands and foothills where tree resources are most abundant. Dung and shrubs are most extensively used in the mountains and the Senqu Valley because of the limited availability of other fuels.

In overall terms, two-thirds of rural households' energy needs are met by firewood and shrubs. Shrubs remain the most important biomass fuel

resource, but in terms of the supply situation it is apparent, although to an undetermined extent, that the present rate of consumption exceeds the rate of natural regeneration. In addition to reducing the growing stock available for future consumption, this net loss of vegetation cover contributes to soil erosion and environmental degradation.

LEGAL AND POLICY CONTEXT

The existing legal framework for natural resource management comprises a combination of traditional and modern legislation, with the latter increasingly taking precedence over customary law. In the traditional context, the Laws of Lerotholi attempted a codification of the customary laws of the Basotho. They were promulgated by the Paramount Chief in pursuance of the powers instituted by Proclamation No. 61 of 1938. The Paramount Chief was authorized by Section 9 of the said Proclamation to issue orders, among other things, to prohibit, restrict or regulate the burning of grass or bush. He could also issue orders to prevent the pollution of water in any stream, water course or water hole and prevent the obstruction of any stream or water course. Consequently, chiefs were empowered to introduce and enforce conservation measures.

Forestry and the Laws of Lerotholi[i]

In the Laws of Lerotholi, chiefs and headmen are empowered to allocate land for tree planting. The rules stipulate that, wherever possible, land allocated should be in blocks adjacent to gullies or below dams. Trees planted on such land belong to the family which planted them as long as they live in the jurisdiction of the local chief. This rule forbids any person to cut down or destroy any trees other than their own personal property. Secondly, trees established in the past by communal self-help labour are considered to be the property of the community. They can be utilized by the community free of charge, but harvesting is controlled by the chief or headman under the discretion of the Paramount Chief.

The Laws of Lerotholi did not extend to the management of indigenous vegetation other than to provide some measure of protection through controlling their use. One of the early actions of King Moshoeshoe II, in his capacity as Paramount Chief, was to declare all indigenous trees and shrubs *lireno*, i.e. plants of economic value which, though not cultivated, are a commonly owned resource, the use of which is controlled by the chief directly or through appointed headmen. This was later codified as Rule 31 (5) of the Laws of Lerotholi. Although this

rule was superseded in 1970 by the *Liremo* Control Order (LCO), which reduced the range of trees and shrubs controlled by chiefs to just one species, many chiefs act as though rule 31 (5) remains in force and continue to exert authority over the use of indigenous trees and shrubs.

MODERN STATUTORY LEGISLATION

The Forest Act (No. 11 of 1978) and its associated Forest Regulations (No. 36 of 1980) are the only specific pieces of forestry legislation. The Act provides for the establishment, management, maintenance, control and utilization of SFRs. Some important elements of the Act are that: (a) a SFR can be declared by the monarch; (b) the Forestry Division has the sole authority to plant and manage trees within the gazetted reserves; (c) use of the SFR by people is restricted and certain activities are prohibited outright whilst others such as grazing and the collection of products are controlled; (d) officers of the division and chiefs are empowered to arrest individuals involved in damaging the SFR and to undertake activities such driving out, seizing or impounding trespassing livestock; The Act does not apply to forest and trees outside of gazetted SFRs.

Forest development is also influenced by more general legislation including:

a) The Land Act of 1979 which provides for the acquisition of rights to use land for agricultural activities including forestry by any individual, group or authority and for those rights to be registered. Although the right to use land to plant trees can be acquired by individuals through the mechanism of traditional law, some people prefer to acquire use rights through the Land Act of 1979, believing that an allocation is less likely to be revoked, once granted.

b) The Land Husbandry Act of 1969 which gives the Minister of Agriculture powers to general agriculture to ensure that land is used in the most beneficial manner. The extent to which forestry is covered within the Act is, however, unclear.

c) The Historical Monuments, Relics, Fauna and Flora Act of 1967 which contains provisions for the protection of indigenous trees and shrubs and other flora. However, these provisions apply only to a few gazetted species, some of which are inevitably used by rural people, but not to management of areas of indigenous vegetation. The Development Order of 1991 under the

> Chieftainship Act of 1968 requires the establishment of Village Development Councils and various committees including village tree planting committees to oversee environmental development at village level.

Nonetheless, the existing legal framework fails to provide a supportive base for forestry development in a number of important ways (Kumar and Kulundu-Bitonye 1995; Lesotho Forestry 1996). For instance, The Forest Act of 1978 is restrictive in coverage and prescriptive in nature, being promulgated to provide legal sanction for the establishment and protection of exclusively state-owned forests. The Act contains no provisions relating to trees outside the SFRs. Although private groups and individuals can secure rights to use land for tree planting under the Land Act, existing legislation and practice should provide sanction against theft or wilful damage of privately-owned trees. The Act does not deal with areas of indigenous forest and shrubs which are a vital and in some cases endangered resource.

The Act (through the 1980 regulations) hinders the development of the private sector by proscribing the resale of forest products by entrepreneurs from the SFRs. By effectively denying local communities access to the SFRs, the Act provides a legal framework for the alienation of people from the resource and does not allow direct participation of local people in the management of SFRs. This constitutes a legal impediment to any form of joint management. Within a strict reading of the Act, the nature of tree tenure is uncertain. Although land can be allocated under the Act for tree growing, the Act fails to clarify whether the allottee has the right to deny access to community livestock in order to protect those trees. The customary law principle maintained within the Act, namely that the allottee has only a usufructuary right to the land, loses its meaning if applied to land allocated for tree growing. More importantly, the poor communication of laws remains problematic in Lesotho. All laws are drafted in English, with only few specific elements ever being translated into Sesotho. Many people, consequently, have a limited and often imperfect understanding of their rights. This is perhaps the most acute in the case of the 1979 Land Act.

A formal forestry-sector policy has never been adopted by government, although a draft policy was drawn up in 1987 and later revised for submission to the Ministry of Agriculture in 1995. Nonetheless, the overall direction of forestry in Lesotho's development has followed a number of consistent themes as demonstrated in the review of past development efforts: (a) government has played a primary

role in the implementation of forestry development. Consequently, resources and emphasis have been directed primarily towards the development of SFRs; (b) the establishment of government-run forest enterprises has proved to be a net cost to government and a disincentive to the development of the private sector; (c) the creation of a legal framework which supports and justifies this role of government to the detriment of the private sector and people's spontaneous forestry development efforts. While the existence (or non-existence) of a forest policy means little in itself to the efforts of local people, it is of critical importance in terms of defining the role of the government in the sector and for shaping the services it offers.

The Land Husbandry Act No.22 of 1969 is referred to as an enabling statute, authorizing the minister to make regulations for a variety of purposes relating to agricultural land. A progressive aspect is that the said regulations may be changed or amended by the minister without recourse to parliament. Some of the provisions of the 1969 Act relate to regulation, control and restricting grazing permits by number, species or breeds of livestock on designated land, to controlling grazing and the introduction of range management and to conferring powers upon any society, co-operative or association and imposing duties on such bodies to carry out the provisions of the Act and regulations made thereunder.

The Land Act No. 17 of 1979 attracted a lot of controversy when it was introduced. It repealed, among others things, the Land Act 1973 and the Administration of Lands Act 1973 and introduced concepts of Leases and Licenses in land matters. Some of its salient provisions relate to: (a) Societies registered under the Societies Act No. 20 of 1966 being qualified to hold land; (b) holding land under a lease or license entitles the holder to the exclusive possession of the land leased; and (c) sections 50 and 51 as amended by the Order No.6 of 1992 authorize the Minister of Home Affairs, acting upon the recommendation of the Minister of Agriculture, to declare by Notice in the Gazette any area of agricultural land a selected agricultural area. Such a title shall be in the form of a lease. This statute (Land Act No.17 of 1979) is comprehensive and could well provide another alternative for effective range management activities. It is possible under this statute for a Grazing Association to hold title to land and seek further statutory protection by lobbying for the area it operates within to be declared a selected agricultural area. This could be an alternative to the Land Husbandry Act of 1969 under which the minister promulgates regulations and enforces them. With the Land Act of 1979 leasees can enforce their rights directly.

Range Management and Grazing Control Regulations are made in pursuance of the Land Husbandry Act No. 22 of 1969 as amended by the Act No. 19 of 1974 and appear as Legal Notice No. 39 of 1980, No. 144 of 1986, No. 78 of 1992 and No. 150 of 1993. In essence, these regulations do not differ from the colonial Model By-Laws referred to above except in minor respects. With the exception of Legal Notice No. 39 of 1980, the regulations are amendments to earlier regulations, often dealing with increased fines and fees, whilst the substantive provisions remain essentially the same. Legal Notice No. 78 of 1992 introduced the involvement of Development Councils instead of chiefs, livestock registry books, and grazing fees per head of stock payable annually into the Development Fund. Legal Notice No. 150 of 1993 reversed the position adopted by Legal Notice No. 78 of 1992 as regards the levying of grazing fees and the involvement of Development Councils.

THE OVERALL RESOURCE MANAGEMENT POLICY FRAMEWORK

The purpose of this section is to identify the principal government policies and programmes designed to address problems in the environment-development nexus. This involves not just conservation measures in the narrow sense, but also developmental policies which have a significant bearing on the environment. Many of these policies are included in the Fourth Five-Year Development Plan. These policies are to be related to the underlying causes of environmental problems.

Government policy on agriculture is focused on increasing production and marketing of agricultural products in a manner consistent with the conservation of the land base. In the Fourth Five-Year Development plan (1986/87–1990/91), government planned to train and educate households in the proper preparation, preservation and storage of food; to develop comprehensive watershed management programmes in order to integrate water and soil conservation activities, including soil rehabilitation, through the use of improved production techniques to expand output of both crop and livestock; to promote intensive livestock production in the lowlands and to conserve the land resources necessary for crop and fodder production and to encourage controlled grazing through the creation of Grazing Associations, whose responsibility would be to prevent overgrazing and improve rangelands and, hence, livestock productivity. In order to promote people's participation and involvement, the government would mount farming systems approaches, particularly for conservation. The hope was to build on familiar concepts

which do not require large inputs of cash, labour or land and are carried out by the farmers. As a means of simultaneously increasing household incomes and relieving pressure on the land arising from the conventional cropping and livestock practices, some aspects of policy entailed technical assistance with horticultural crops and intensive livestock production, including fish and poultry.

Land use policies are generally designed to integrate commercial cropping, livestock development and environmental conservation objectives within the agricultural sector. The policy issue is the promotion of land use best suited to the climatic zone and soil type. This would result in adapting some of the land now used for the production of maize and sorghum to other crops or to fodder production for winter feeding. As the carrying capacity of the mountain rangeland declines, intensive livestock production and stall feeding of cattle is being encouraged. At a more profound level, the achievement of these changes requires coming to grips with the historical and cultural role of land and land rights amongst the people. In the Third Five-Year Development Plan (1980/81–1984/85), an attempt was made to this effect through legislative means, principally the 1979 Land Act and the 1980 Range Management and Grazing Control Regulations. However, by the time of the Fourth Development Plan, it was apparent that despite years of experience, it was difficult to effectively implement the conservation measures. The Land Act of 1979 provided for long-term security of tenure under a lease system, where user rights were clearly defined and protected. The Act authorized the government to designate selected agricultural areas in order to consolidate and enhance economically viable units. Reallocation of land rights to landless people interested in productive agriculture would also be possible under the Act.

The purpose of the Range Management and Grazing Control Regulations, gazetted in 1980, was to control grazing on rangelands and encourage destocking. However, experience shows that area-based projects which included grazing control, pasture rotation and stock reduction did not produce the required results despite being backed by the 1980 regulations. The failure is generally attributed to social organization associated with the transhumance policy of cattle posts. For effectiveness of range use, there must be an intimate link between villages and the rangeland, whereas the current situation is one where the cattle post rangelands are located away from those who control them. Moreover, control lies not with a single village or group of villages under a single headman, but with cattle post owners and users from different

villages. The current policy framework encourages villagers to collectivize their interests in grazing associations.

Since 1935, the approach to soil and water conservation has been mainly structural, with massive effort expended on developing terraces, contour furrows, diversions, waterways and the construction of structures in gullies. The current emphasis is on biological conservation methods, applied within the socio-economic context of the communities. In the Production Through conservation initiatives (Marake et al. 1997) farmers are doing the conservation works on their own in the context of their daily farming routines. Furthermore, the government is giving special priority to the development of tree planting and management to achieve conservation and environmental protection objectives. Planting and managing trees in a social forestry context is an integral part of overall production through conservation programmes designed to increase both crop and livestock production while maintaining, for posterity, a stable soil and water resource base. The challenge is to achieve the necessary symbiotic relationship between production objectives, conservation and environment which is necessary to achieve voluntary cooperation and involvement from farmers. With the Social Forestry initiatives, local communities are encouraged to maintain an independent and direct interest in the planting, tending and harvesting of trees for community use under the advice of the Forestry Division. These policy initiatives provide the basis for self-sustained and continued growth of forestry development throughout the country under local initiative.

As to energy policy, one of the main causes of the depletion of the biomass resource is the use of traditional fuel in open fires. It is estimated that about 1.2 million tonnes of biomass consisting of wood, shrubs, dung, and crop residues are being burned every year in rural areas of Lesotho (Lesotho Energy 1988). Pessimistic estimates predict that with the prevailing level of consumption and reproduction, all indigenous firewood will have disappeared in the first decade of the next century. In response, the government is seeking to formulate and implement a consistent policy to improve the energy situation in the rural areas and reduce dependence on external energy supplies.

CRITICAL ANALYSIS

According to Chakela and Cantor (1987), four major assumptions have dominated the history of soil and water conservation in Lesotho: (a) that the severity of soil erosion in Lesotho demands the use of large-scale capital-intensive soil-conservation approaches; (b) that farmer ignorance

prevents the maintenance of conservation structures; and that if farmers were better educated they would participate more responsibly in governments efforts to control erosion; (c) that conservation efforts are not maintained because adequate legal structures and regulatory bodies do not exist; and if conservation regulations could be enforced, villagers would eventually realize the long-term benefits which will accrue to them as a result of conservation efforts; (d) that rural Basotho do not have a long-term concept of time, and that they tend to address present subsistence needs, rather than future problems or potential long-term benefits; this is thought to be a major impediment to government-sponsored conservation initiatives and one that makes regulations so necessary.

These assumptions underlie four specific problem areas which began to develop in the early stages of Lesotho's soil conservation history (Chakela and Cantor 1987): people's participation, continuity of projects, regulations concerning conservation, and biological versus mechanical conservation treatments. In particular, the issue of farmers' participation in environmental efforts is a long-standing problem. Although much has been written about the subject, people's participation remains a major impediment to the success of all government-sponsored projects in Lesotho. The early colonial government assumed that farmers are essentially ignorant about conservation. Conventional wisdom then held that stringent regulations and laws would substitute for a lack of active farmer understanding of, and participation in, conservation works. This rather coercive approach to conservation was backed up by a programme of conservation structures, destocking campaigns and grazing regulations. The basic premise was that there were neither time nor resources to waste on educating and encouraging farmers. The net result of this colonial heritage was that the effectiveness of an extensive system of soil conservation structures was vitiated by an inadequate policy for ensuring participation and understanding by the Basotho (Turner 1979). The legalistic top-down approach also resulted in open hostility being expressed by villagers towards conservation works. Trees planted by the government were often chopped down, and buffer-strips intentionally destroyed. Furthermore, some government efforts were detrimental to soil quality. For instance, monocropping was advocated, terraces occasionally increased the rate of erosion, and less effective tree species were planted.

Other reasons often cited for the failure of conservation efforts in Lesotho embrace the recognition that farmers may not participate in government-sponsored conservation works because the measures

proposed are often inappropriate, given the physical, social and the economic context of Lesotho's agriculture. For instance in the World Bank (1978) project, researchers contended that: "under present conditions the productivity of agricultural land in Lesotho is so low that neither the physical, nor the economic conditions for a conventional conservation programme exist. Agricultural practices are such that even with the best possible conservation works, the land and the works will continue to erode. Secondly, the agricultural productivity of the land is so low that it is questionable whether the net returns are sufficient to pay even the maintenance cost of the conservation works, much less their total cost".

It is apparent that until it is established why farmers respond the way they do, and until conservation projects begin to address farmers' needs, it will be futile to develop and enforce conservation regulations. To date, neither government nor local institutions have proven strong enough to effectively regulate resource management in Lesotho. Conservation efforts, which can entice farmers' participation through offering increased production, may alleviate some of the need for stringent regulations. Generally, the punitive and often didactic approach by governments towards rural people is not constructive, nor is it constructive to attribute limited farmer participation in conservation to farmers' desires to obtain short-term benefits, despite long-term losses. Obviously, more serious issues impede participation.

Despite Lesotho's limited forest resources, observers have suggested that trees are valued and that a tradition of tree cultivation and management exists (Hall and Green 1989). Traditionally, control and management of tree resources were the responsibility of local chiefs who stressed protection, hence most of the applicable rules relate to enforcing protection by punishing violators (Germond 1967). Even as pressure on the resource has increased, management systems have remained relatively intact and have even improved in some cases. There is still a management tradition and strict control over the use of indigenous trees to ensure continuity of firewood provision (Hall and Green 1989). Some protection measures are in the form of taboos on the burning of certain shrubs in the village. A number of constraints have operated against people in their efforts to develop and manage forest resources in Lesotho. Compounded by Lesotho's generally infertile soils, these natural factors limit the range of species which can be grown and contribute to low survival and growth rates even amongst well-adapted species. he low tree survival rates associated with drought, frost and other factors act as a powerful disincentive to individuals investing in tree planting.

In many parts of Lesotho, land is at an absolute premium, and the opportunity cost of tree planting (in terms of agriculture and grazing) is high. Hence people are unable or unwilling to devote part of their land resource to tree planting. Hall and Green (1989) found that the lack of tree planting sites was the single most important reason given for people not planting trees or not wishing to plant more trees. In some instances physical land shortages are compounded by poor land allocation practices. Poverty also limits the ability of very poor households or the landless to engage in tree planting, particularly in terms of the allocation of land. Efforts to afforest areas of communally owned land have consistently been unsuccessful in Lesotho. Underlying this problem is the issue of competing demand for use of the land from members of the community with legitimate access rights. Similar problems emerge in considering the management of indigenous vegetation. There are greater priorities than tree planting. For instance, tree planting and management often figure low on the list of people's priorities compared with issues such as access to water, sanitation, health and education (Hall and Green 1989).

Although government nurseries have been established in most regional centres, many people remain unaware of their existence or of the fact that they can acquire seedlings at low prices. This problem is compounded by the difficulty of transporting seedlings from the point of purchase to the planting site.

In addition to these socio-economic constraints, serious deficiencies exist in the legal framework for forestry development in Lesotho. The existing legal framework fails to provide a supportive base for forestry development in a number of important respects. The principal regulations have been amended in a piecemeal fashion, necessitating three separate legal notices. The latest Legal Notice No. 150 of 1993 repeals Legal Notice No. 78 of 1992 in part and purports to restore the situation to what it was in 1980. This is at best a confusing situation considering that in 1986, the 1980 regulations were amended extensively but no reference is made to those extensive amendments. Thus in order to make sense out of the principal regulations, they need to be overhauled and re-written in one comprehensive document, incorporating all the amendments in force currently. This would go a long way towards attaining clarity and certainty and removing ambiguity, conflicting interpretations and possible legal misdirections.

SUMMARY AND CONCLUSIONS

Lesotho can boast as having developed some of the earliest and most extensive conservation efforts in Africa, at least in terms of soil and water conservation. The output in terms of kilometres of terraces and waterways is impressive. However, the answer to the question, "have conservation planning worked in Lesotho?", remains very elusive. The successes of the conservation movement is far outnumbered by costly failures. A cursory look at the environmental conservation efforts in Lesotho shows that basic principles of Lesotho's environmental policy have not been met (National Environmental Action Plan 1989). In addition a few other principles which are indicative of successful attempts at conservation are not in place. These would include:

a) The adoption of a practice of environmental impact assessment prior to the implementation of programmes which affect the use of natural resources;

(b) The establishment of adequate environmental protection standards, monitoring systems and environmental information systems;

(c) The assurance that environmental awareness is treated as an integral part of education at all levels, and that this knowledge is used in the planning and implementation of development activities;

(d) The assurance that the true cost and total cost of environmental use and abuse are borne by the user, i.e. the "Polluter Pays Principle".

The lack of a strong people's participation in formulating and executing development programmes in conservation and environmental issues has remained a problem throughout all aspects of environmental conservation in Lesotho. Recently, however, government programmes have made a concerted effort to involve the public in the planning and need-identification stages of conservation programmes. The Production Through Conservation initiative in Southern Lesotho is a salient example. The participation of non-governmental organizations in the conservation and environmental programmes has not been utilized in relation to its potential for resource mobilization and people's empowerment through participation at local levels. It is widely recognized that in rural development and conservation of natural resources, NGOs can play an extremely important complementary role. In particular, people's

organizations, reflecting their own felt needs, such as farmers' groups and other organizations are an important focal point for community action. Overall, Lesotho's conservation programmes have failed to: (a) Explore the potential role of NGOs in the implementation of environmental programmes; (b) draw upon the ability of NGOs to marshall participatory initiatives; (c) identify the constraints and opportunities and provide for the incentives necessary to make NGOs more effective.

Experiences in other countries have shown that many of the problems that Lesotho has encountered in conservation and environmental programmes are a result of the multi-sectoral nature of the problems especially the cross-cutting of ministerial responsibilities in the implementation of policies. Many conflicts in environmental matters arise from the jurisdiction over land and water resources, competitive uses of the environment, differing priorities and time frames for environmental activities and allocations of budgets.

The current vicious cycle of population pressure, poverty, food deficit and degradation of the environment can only be seen as an indictment of the conservation planning and implementation in Lesotho. This is partly due to the fact that our conservation approach and strategy were not geared to accommodate the immediate needs of the people and lack trained financial and human resources which have apparently rendered conservation unaffordable to both urban and rural communities who could not invest in technological solutions for long-term conservation measures.

The legal framework of Lesotho environmental and conservation policy has failed to inspire the protection of natural resources. The series of existing laws relating to the environment developed individually over the past century in response to specific perceived needs has serious overlaps and inconsistencies. There also remain many areas of environmental concern which are not addressed by existing laws. In this regard, Lesotho needs a comprehensive environmental legislative framework to deal effectively with the environment and natural resource issues. Laws should be designed to promote sustainable use of natural resources, rather than just seeking to offset damage already done to the environment. It should also be recognized that many laws impact the environment or natural resources. However, as the case of Lesotho shows, legislation is neither a panacea nor sufficient in itself to create and sustain environmentally sound plans, projects and national development initiatives. The success of any legislation depends on an effective governmental structure and public acceptance which is a consequence of

their participation. It should ideally reflect people's felt and perceived needs as well as their aspirations.

NOTES

1 Excerpts from Chakela and Cantor (1987).

2 Excerpts from the *National Forestry Action and Research Plans, Division of Forestry*, Ministry of Agriculture, 1991.

3 Excerpts from *The Lesotho Forestry Action Plan. Division of Soil Conservation, Land Use Planning and Forestry*. Ministry of Agriculture, 1995.

4 Source: *Forest Action Plan. Ministry of Agriculture. Division of Forestry.*

5 Excerpts from Chakela and Cantor (1987).

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Chapter 6

Effectiveness of Environmental Planning in Sudan

Hassan A. Abdel Ati
and
Nadir M. Awad

The Sudanese state's intervention in resource management, control and administration is dictated by a number of factors. Environmental rehabilitation is sought to increase, in a sustainable manner, the output from a depleted natural resource base, and to satisfy the growing demand for food and other necessities by a rapidly growing populations. There is an urgent need to moderate or reduce poverty, which is a major cause of environmental degradation, especially the clearance of forests for fuelwood and charcoal production. Ethnic and tribal conflicts and civil strife have, to a large extent, been caused by the competition over scarce resources. Two external factors are the international and regional commitments to agreements and conventions regarding environmental conservation, and the conditionality of aid from international agencies. The compelling external pressure has resulted in a number of national environmental management plans of action or sectoral programmes.

Sudan is at odds with Egypt over the Halayib region, and with Eritrea, Ethiopia and Uganda over the reciprocal support of opposition and rebel factions. In addition to the economic and/or technical inability of the country to meet the cost of addressing its environmental problems on its own, there are several problems that require direct co-operation. For example, Sudan shares groundwater resources with Egypt, Libya, Chad and Eritrea. There are conflicts and population displacement along the boundaries of Eritrea, Ethiopia, Uganda and the Central African Republic. There is wildlife mobility across the national borders to Kenya, Uganda,

Zaire and the CAR, natural ranges are shared, and pastoralists cross boundaries, as do pests and diseases.

The civil war, armed conflict and instability along southern, eastern and western border, hamper both national interventions and regional co-operation, and cause extensive damage to resources. Defence and security concerns normally undermine the prioritization of environmental actions and other development priorities. To make things worse, national economic policies are reducing entitlements, spreading poverty and thus increasing the vulnerability of most renewable resources.

The main objective of this chapter is to assess the state of the environment in the Sudan and the attempts made by the government to protect and maintain environmental sustainability by introducing legislation and environmental planning. This chapter explores the achievements and failures of those plans, together with the weaknesses and constraints which contributed to their poor performance.

THE CONTEXT OF ENVIRONMENTAL POLICY

The Sudan has a wide range of ecological zones as well as ecological problems. It consists of extensive plains of iron stone soils in the south, clay in the central parts, and sand in the north and west. There are a few mountainous areas, of which the principal ones are the Imatong in the south, Jebel Marra in the west and the Red Sea Hills in the east.

The climate of the country is tropical, and conditions vary from hot desert in the north to a tropical belt with summer rainfall of varying intensity and duration. Because of the absence of mountain barriers or major water bodies, climatic conditions tend to change gradually with latitude. The amount of rainfall decreases from about 1500 mm in the south to less than 100 mm in the extreme north.

The large variations in climatic and soil conditions result in enormous variations in vegetation, from desert to rain-forest types. The major vegetation zones of the Sudan are: the desert, the semi-desert, the woodland savannah (on clay), the woodland savannah (on sand), high rainfall woodland, woodland recently derived from rain-forest, the flood region and the montane vegetation (Harrison and Jackson 1958). However, this classification, from 1958, needs to be reassessed because of the changes that have occurred in vegetation and soil fertility due to climatic changes.

The arid and semi-arid areas constitute about 62 per cent of the country. The arid areas have the following vegetation belts: desert, semi-desert, low rainfall savannah and montane vegetation.

The high rainfall zone contains approximately 120,000 square kilometres of the *Anogeissus, Khaya, Isoberlinia savannah* woodland and 14,000 kilo meters of woodland savannah recently derived from rain forest. The flood areas amount to 85,000 kilo meters and the montane vegetation area totals about 2,500 square kilometres.

The first forest reserves census, conducted in 1995, indicates that the total forest area at present is 218 million *feddans*, 45.5 per cent less than in the 1950s. The forest area corresponds negatively with population density. That is, 68 per cent of the forest area is in southern Sudan, where 15 per cent of the population lives (Abdalla 1995: 90). Fuelwood represents about 90 per cent of the 23.47 million cubic meters of wood consumed in northern Sudan. With an average stocking of less than 0.3 cubic metres per feddan, the fuel demands alone require the deforestation of about 70 million cubic metres annually (Mukhtar 1989).

Forests, including Gum Arabic, contribute about 12 per cent of GNP in addition to environmental benefits of soil protection, employment, fodder and - most important - 75 per cent of the energy demand (in Sudan in the form of fuelwood and charcoal) estimated to be 12.8 million cubic metres gum Arabic exports exceeded US$ 100 million in 1993/94 (Abdalla 1995: 9-10).

In addition to protecting soil and water sources, natural ranges annually provide an estimated 63.5 million tons of animal feed. Despite the absence of accurate information, it has been observed that in recent decades the biomass has changed significantly, necessitating urgent action to secure its diversity and reproductivity. In the arid and marginal areas, the biomass changes (distribution, volume and composition) are mainly the result of drought, misuse and clearance of the tree cover.

In the low rainfall savannah, the major problem is the expansion of agriculture, which reduces grazing lands, causes the reduction of vegetation, and attracts large numbers of animals, thus causing overgrazing and consequently conflicts between farmers and pastoralists. Another serious problem in these arid and semi-arid areas is the extensive damage caused by fires. According to Abdalla, fires annually destroy between 10 per cent and 35 per cent of the natural grazing area. This reduces the amount of feeder, hampers regeneration, and causes the destruction of trees, soil erosion and the destruction of genetic characteristics (Abdalla 1995: 11).

The wide variety of vegetation types in the Sudan is reflected in its fauna. Out of the 13 mammalian orders in Africa, 12 occur in the Sudan. A total of 91 genera and 224 species and sub-species of mammals other than bats and 931 bird species have been recorded in the Sudan (Hassaballa and Nimir, 1985). However, the World Resource Institute indicated that 19

species of mammals in the Sudan are globally threatened species (WRI 1988). The insect fauna of the Sudan are very diversified. It is estimated that there are at least 1000 species of insects in the Sudan.

Equally diversified are the fish fauna. The Nile is geologically old and has distinctive "Nilotic" fauna. The Nile fish fauna consist of relatively few species (24 families and 106 species) compared, for example, to the Niger's 160 species, the Congo's 700 species, or the Amazon's 1300 species.

The aerial census of wildlife in the Sudan (1977) indicated that wildlife in northern Sudan does not constitute an exploitable resource of any significance. It is believed to be disappearing at an alarming rate. The abundance and distribution of several species have decreased during the last few decades (Nimir 1983: 175). Several species have become extinct, and many others are threatened with extinction and are now restricted to a few locations.

Protected wildlife areas include the two National Parks of Dindir in the Blue Nile State and Radoam in Southern Darfur State. In both, however, conservation is unsatisfactory. In addition to problems of understaffing and mismanagement, both areas have been encroached by human settlements and modern farming. According to De Jong-Boon, the real threat facing wildlife in the northern regions of the Sudan is drought and desertification. According to Sudan's Desert Encroachment Control and Rehabilitation Programme (DECARP) in Northern Kordofan and Northern Darfur the desert has advanced 90–100 kilometres within a 17-year period, and is currently advancing at the rate of 6 kilometres per year (Jong-Boon 1990: 128).

In southern Sudan, the richest of the country's regions in terms of biodiversity and natural game reserves, modernization and 40 years of civil war have drastically reduced wildlife, even reducing some species to extinction. De Jong-Boon (1990: 127) noted the main causes of the reduction of the wildlife population as:

1. the destruction of natural habitats by uncontrolled mechanized agricultural expansion, uncontrolled burning, felling and clearance of forests for charcoal production, expansion of settlements and changes brought about by natural factors drought and desert encroachment;
2. the opening up of remote areas for the construction of roads, thereby giving better access to hunters and encouraging poachers, and interrupting wildlife migration paths and possibly isolating small pockets of game whose numbers may be below the survival value for the species;

3. The expansion of settlements and the increase in human populations, leading to a greater need for meat and therefore to more hunting;
4. commercial poaching, often in or near National Parks and Wildlife Reserves, caused by the high market value of game meat, skin and horn; tribal hunting of a wasteful kind in which whole herds of animals are destroyed with modern automatic weapons;
5. improvements in hunting equipment (firearms and means of transport);
6. epidemic disease (e.g. rinderpest) and public apathy towards wildlife.

The war in the south has affected wildlife. Various armed groups use wildlife products such as ivory rhino horn, leopard skin, etc., to fund their activities or for personal enrichment. Despite SPLA claims that wildlife conservation is among its political objectives, there have been allegations of wildlife smuggling. Further, animals move away from the war zone into neighbouring countries. As late as August 1993, the Ugandan Tourism and Wildlife Minister James Wapakhulo said that conflict in southern Sudan and eastern Zaire was driving elephants back into Uganda, where herds had been ravaged by years of poaching and guerrilla warfare. (Sudan Update 1993).

Estimates of the present animal population in the Sudan range between 27.7 and 31.0 million animal units (AUs). The numbers of the various animal species increased substantially during the second half of this century, mainly as a result of improvements in veterinary and drinking water services, the low rates of market extraction, and the predominance of traditional nomadic management systems (the strategy of animal accumulation for economic and social security and a risk aversion). The impact of the drought of the early 1980s has clearly left its marks on animals' growth rates, especially those of larger animals. The total annual forage production is estimated to be about 47 million tons, while the total digestible nutrients (TDN) amounts to 31.4 per cent of the total dry mat. On the basis of the TDN requirement, the optimum stocking rate is estimated to be 22.1 million AUs (Ali 1988), which indicates serious overgrazing.

THE MAJOR ENVIRONMENTAL PROBLEMS

In Sudan, it is estimated that 32.6 per cent of the total land area is moderately desertified, 7.7 per cent very desertified and 24.4 per cent severely desertified (SECS 1995: 7). In addition to its negative effect on land productivity, ecological balance and biodiversity, desertification causes extensive socioeconomic changes such as human displacement, loss of livestock and other means of production, conflicts and poverty.

Large quantities of insecticides and pesticides are used by farmers, especially in the irrigated sectors, without proper extension services. This has resulted in health problems and loss of life of animals and humans. In fact, some of the materials banned by the World Health Organization (WHO), such as DDT, are still in use. The coastal area of the Red Sea has been polluted by sinning activities, industrial waste and oil spillage from ships. Urban pollution is a growing hazard due to the massive expansion of squatter settlements around towns. They lack basic services of refuge collection, sewage, sanitation and health amenities.

The IUCN Red Book (1990) states that 35 species are threatened with extinction, including 17 animal species, 9 plants, 8 birds and one mammal. No action is being taken to stop that trend. Other clear indicators of the loss of biodiversity are the increase in some invader plants, the reduction in other species, and the extinction of others (SECS 1995: 67–68).

The massive expansion of mechanized farming in the medium rainfall savannah also represents a major environmental problem and has a potential for conflict because:

1. Most of the areas in which mechanized farming is expanding are intermediate climatic zones between the savannah in the south and the semi-desert zone in the north. This corresponds to other ethnic and cultural divides whose significance is usually overlooked in socioeconomic planning.
2. The expansion is mainly at the expense of agro-pastoralists who are squeezed into small areas where water is available, leading to overgrazing, competition and conflict.
3. The zone roughly represents the geographical area of interaction between the bulk of Sudanese pastoralist groups, as it is the dry season refuge for most of those from the north. Pressure on pastoralists by mechanized farming in the Blue Nile, Kordofan and Darfur regions is a major cause of conflict in those areas.
4. Profits generated from these areas by investors (known as "suitcase farmers") are usually siphoned off to other regions,

outside the agricultural sector into trade and auxiliary services in towns (Abdel Ati et al. 1993: 17).

In Sudan, the number of poor households rose from 1.6 million (8 per cent of the population) in 1978 to 2.6 million (13 per cent of the population) in 1986, at an annual rate of increase of 6.2 per cent (Ali 1992: 13). The poverty line in monetary terms also rose, from Ls. 777 to Ls. 6,384 in the same period, with an annual growth rate of 30.1 per cent. The 1990s witnessed radical changes in Sudan economic policies, accompanied by a massive increase in the number of poor households and a growing gap between incomes and the cost of basic needs. Ali suggested that the percentage of poor households below the poverty line in 1993 was 93.16 in rural areas (2.7 million) and 84.43 in urban areas (0.7 million), a total of 3.43 million households (91.4 per cent) (Ali 1994: 110–11). According to Nur's (1996) calculations, the daily cost of living per capita has risen from Ls. 71 in 1992 to Ls 2440 in 1996 (i.e. doubled 34.4 times over four years, at an annual rate of 834 per cent).

It is important to note, however, that during the period 1986–93, the number of poor households rose at an annual rate of 2.3 per cent, but the rural areas recorded a lower rate of growth (1.6 per cent) than the urban rate of 6.9 per cent. This low rate of increase in rural areas could be attributed to the high rate in the base year (83 per cent in 1986) (Ali 1994: 112), the migration of the rural poor to towns, and the more serious and obvious adjustment mechanisms at the expense of the natural resource base as the only accessible alternative.

The continuity of war in the south and the armed conflict in western Sudan have led to the displacement of population and to a serious ecological disequilibrium both within and outside the war zones. According to Harir, the movement of a number of nomadic tribal groups from northern Darfur to the southern parts of the region, due to the drought and localized famines since the early 1970s, has created competition for resources. That competition (between newcomers and the original population) soon acquired a violent nature (Harir 1992: 20–1). The tribal war between the "Arabs" and Fur during the second half of the 1980s led to the burning down of 400 villages and the loss of over 200 human lives and 40,000 animals. It was alleged that farms were destroyed and trees were cut down by Arab tribes, and that grazing lands were burnt and water wells destroyed by the Fur. The scale of destruction and losses caused by that war is indicated by the huge sums of money paid in compensation after a reconciliation agreement was reached in 1989. The ecological significance of the war is indicated by the fact that the reconciliation agreement focused

on the organization of the use and protection of grazing and water resources more than on any other issue.

The environmental damages caused by war within the battle zone in southern Sudan have been described by De Waal (1993), and include tree destruction by tanks, burning caused by shellfire, clearance by the army, disruption of economic activities, raids and looting, and the use of food as a weapon in the war or as a means of profiteering (De Waal 1993: 33–36).

In addition, the economic cost of war and the displacement of the population are causes of degradation. The resource/population imbalance caused by war is well-manifested in urban areas, where the displaced people went, in the form of a sanitation crisis, pollution and poor hygiene. The economic cost of the war (estimated to be US$1–3 million per day in the south) led to a dramatic drop in public expenditure during the 1990s on food, health care and education.

Based on the above description of the state of the environment, and in reference to the political and policy dimensions of environmental degradation, it can be stated that:

1. In most cases, conflicts over resources have more to do with the inadequacy of resource management practices rather than with scarcity;
2. The relationship between environmental degradation and conflict is not necessarily a causal relationship; rather, (armed) conflicts are the expression of the consequences of various socioeconomic and political processes;
3. Political and economic policy choices need to be examined if an improved understanding of ecological degradation is to be attained.

Sanitation services cover 75 per cent of the population (89 per cent in towns and 65 per cent in rural areas). About 48 per cent of the population (55 per cent in urban areas, 43 per cent in rural areas) has access to clean, safe drinking water. According to the WHO, 90 per cent of epidemics are water-related diseases (malaria, bilharzia, guardiasis, etc.), causing 40 per cent of the deaths of children under five. Health facilities are very poor, and with the liberalization policies access to them has been denied to the bulk of the population, which lives below the poverty line. Health services are accessible to 51 percent of the population, and only to 40 per cent in rural area (SECS 1995: 75). Health care services suffer from the severe shortage of specialized man- power and facilities. As a result, the mortality rates (according to the 1993 census) are 552 per 100,000 for mothers, 77 per

1000 for infants and 118 per 1000 for children under five years. Corruption jeopardizes the enforcement of laws, and opens the way for the use of the state apparatus for the obliteration of natural resources.

POST-INDEPENDENCE ENVIRONMENTAL MANAGEMENT POLICIES

Sudan's concern for environmental conservation can be traced back to the beginning of the 20th century, when the British colonial government issued laws to protect or regulate resource utilization. However, during the first two decades of the post-Independence era, efforts focused on the establishment of institutions to conserve the environment, rehabilitate some environmental elements, or regulate resource utilization systems. Among these efforts were the Land Utilization Department and the Rural Water Management, Soil Conservation and Soil Investigation Departments at the Ministry of Agriculture. The implementation of conservation measures, however, was heavily dependent on local authorities (Native Administration) responsible for monitoring. The abolishment of the Native Administration in 1970, without an appropriate alternative, led to the absence of control, to mismanagement and misuse, and thus to the deterioration of natural resources, especially forests and grazing areas.

Other activities undertaken in the 1970s include the Anti-thirst Campaign, the Cattle Plague Campaign, and the Blue Nile Health Project (Blue Nile Province). Some of these measures were accused of hastening degradation. The Anti-thirst Campaign, which encouraged the digging of water points, did not consider the carrying capacity of the natural range; with the improved animal health services, overgrazing, conflicts and ultimately the loss of livestock resulted.

The 1990s also witnessed the establishment of institutions and bodies to combat environmental degradation and resource depletion. These include the Desertification and Rehabilitation Unit (1974), the National Committee for the Environment (1974), and the Institute for Environmental Studies at the University of Khartoum (1978). Research on and campaigns for the environment within the academic circles were well-advanced at that time, especially regarding desertification, and were far ahead of the official government effort. Some national NGOs, such as the Sudanese Environmental Conservation Society (SECS), consisting mainly of academics and researchers, played a major role in campaigning for a greater consideration of environmental issues in socioeconomic planning. This coincided with the international focus on the links between environmental conservation and sustainable development.

In general, at the end of the 1980s, the legal and institutional context was not conducive to any significant results *vis-à-vis* the environment. On the contrary, the national development policies, sectoral in nature, lacked comprehensiveness and effective coordination (SECS 1995: 6). In fact, environmental conservation received little attention from national governments, compared to in the colonial period (motivation aside). Conservation was not among the priorities of national governments until the crisis of the Sahel zone during the first half of the 1980s became apparent.

The 1990s witnessed some major developments in legislation relating to the environment. These are: the establishment of the High Council for Environment and Natural Resources under the Ministry of Environment and Tourism (1990), the establishment of the Environmental Section within the Attorney General Office (1990), and the formulation of the National Comprehensive Strategy (NCS) (1990–2000), with a specific section on the environment. In addition, several laws were endorsed to bring all departments in line with the requirements of the NCS and the new government structures.

Following the change of regime in June 1989, the Transitional Constitution of 1985 was replaced by a number of "Constitutional Decrees". These decrees, issued by the Head of the Command Military Council (later the President), included the Third (organization of the state institutions, 1989) the Fifth (that formed the National Transitional Legislation Council, 1991), the Seventh (principles of rights and obligations, 1994), the Eleventh (on which the federal state system was based, 1994), and, finally, the Twelfth (which regulates the relationships between the states and the central government, 1995).

According to the 12th Constitutional Decree, the powers relating to environment and natural resources are vested in the federal states, subject to federal planning and policy-making. The decree does not identify the means of controlling activities within the states or the coordination among the states. Another problem is posed by the sharp and sudden transition from centralized environmental policy to full-fledged decentralization at a time when most of the new states lack resources and technical know-how. More serious is the withdrawal of central support: most states will likely consider the natural resources, especially forests sources of revenue.

There is no basic law that establishes the legal context for environmental affairs. A step in that direction was the draft presented by the UNDP consultant who identified some guiding principles for the "environmental law", including the rights of all Sudanese citizens to a healthy and clean environment, to be reciprocated by a commitment to participate in the

conservation of natural resources and protection of environment (Polentino 1994).

The High Council for Environment and Natural Resources (HCENR), established in 1992, is the government advisory body and the coordinating unit for the various government departments and institutions. The experience of the last four years (1992–96), however, shows that the HCENR is handicapped by financial, technical and organizational constraints (SECS 1995: 55).

The National Forestry Corporation (NFC) illustrates sectoral legislation. Since the beginning of the century, the colonial government had issued several ordinances stipulating that forests were deemed the property of the government, until the opposite was proved. The forestry department was established in 1902 to oversee those regulations. After Independence, several new laws and acts were adopted to strengthen the NFC control over forest resources and their development.

Despite the proliferation of national and international legal instruments and the availability of relatively large financial resources (compared to other institutions dealing directly with natural resources) from international agencies and organizations, the natural forest area decreased from 584362 kilometres in 1968 to 559015 square kilometres in 1981 (i.e. a decrease of 4.3 percent or 6 million acres within 13 years) (Kanoan 1995: 20).

That implies that sectoral legislation has not been effective in protecting forest resources. That failure could be attributed to:

1. the absence of a basic environmental policy and clear land use law (Kanoan 1995: 80); contradictions between sectoral legislation and federal/state laws or constitutional orders which deny the NFC the chance to protect forests;
2. the spatial distribution of forests over large areas of Sudan, reducing the NFC's capacity to reach, protect or develop those forests;
3. conflicts, war and insecurity in the areas of rich forest resources where "national security" is given priority and civil legislation is frozen by the state of emergency in the war zones;
4. the limited resources allocated to the NFC reduce its capacity to enforce legislation on any significant scale. This has been particularly true in the last five years, when foreign assistance to Sudan sustainability diminished.

THE NATIONAL COMPREHENSIVE STRATEGY (1992–2002)

Concern about the environment has culminated nationally in the National Comprehensive Strategy (NCS) 1992–2002, one of the most important documents produced by the present government in Sudan. Its importance stems from its comprehensiveness and the large number of people involved in formulating it. It is referred to repeatedly in economic and political decision-making at almost all levels of administration. This chapter focuses on the "Environmental Strategy" of the NCS Social Development section (GOS 1992: pp. 101– 4). The guiding principles of the NCS are:

1. The protection and development of the natural environment are essential components of the creator's call for human perpetuity on earth; whereas the destruction of the environment is an act of spoiling of earth, against which God warned.
2. Each Sudanese citizen has the right to a safe environment which ensures health, self-sufficiency and well-being.
3. Sustainable development, which must be pursued, is development which provides for the needs of the present generation without jeopardizing the capability of future generations to meet their needs, and therefore requires the careful use of natural resources and the protection of natural and social environments.
4. Collaboration with neighbouring countries in dealing with common environmental issues is called for.

Objectives of the NCS are:

1. the protection and development of the environment for sustainable development;
2. quantitative and qualitative environmental improvement for the Sudanese citizen, particularly in the rural areas, to enable him to live happily and in dignity in his own country;
3. reduction of poverty, one of the main causes of environmental destruction;
4. rehabilitation of the vegetation cover in order to preserve rainfall levels, watershed protection, soil protection against denudation, and protection of farmlands and settlements against desert encroachment;
5. preservation of ecosystems so as to sustain soils and renewable natural resources;

6. rationalization of the use of water, soils, forests, ranges and aquatic resources and their protection against pollution;
7. enhancement of environmental awareness among politicians and executives to enable them to adopt scientific approaches for environmental protection and to enable the public and NGOs to take initiative in caring for the environment and adopt measures to deal with the environmental issues;
8. efficiency in dealing with various chemical products, to ensure human and animal health and environmental well-being;
9. enhancement of environmental sanitation;
10. improvement of urban environment and prevention of pollution, protection of wildlife and its natural habitats and rationalization of their use and preservation of biodiversity;
11. protection of the environment of the Nile river, and other rivers and the Red Sea, and the sustainable development of their resources.

The policy advocates:

1. the planning of development projects on a sustainable basis, making use of local technologies and adopting other technologies appropriate to the local environments and to the Sudanese way of life;
2. the assessment of the environmental consequences of each project based on its feasibility study, and checked by the approving agency;
3. the correction of current malpractice in ongoing projects that adversely affect the environment, to redress the situation and to prevent further damage;
4. the creation of a national institution for environmental protection with sub-offices in the states and provinces to plan policies, suggest legislation, monitor and follow-up the implementation of all environmental decisions and to conduct research;
5. the promulgation of legislation with effective sanctions.

The programme for the implementation of these policies was divided into three phases (of 3, 4 and 3 years) and 12 activities, which can be grouped into four main categories:

1. Awareness, education and extension (Subsection 1)

2. Legislation (Subsections 2, 6, 11)
3. Survey, inventories and research (Subsections 4, 8, 9, 10, 12)
4. Implemented activities (Subsections 3, 5, 7)

The strengths of this strategy and the government decisions that followed its adoption include:

1. The positive step of having the strategy itself;
2. The establishment of a High Council for Environment and Natural Resources;
3. The NCS's commitment to allocate 25 per cent of the land area to forests;
4. The issuing of Act No. 345 by the Ministry of Agriculture, making it mandatory to plant shelter belts in 10 per cent of mechanized farming areas and 20 per cent of the irrigated areas;
5. The Green Expansion Project, which includes planting trees by school pupils and students, people's forests and the restocking of the Gum belt;
6. The inclusion of environmental concepts in primary and secondary school curriculums;
7. The participation in the Earth Summit (Rio 1992) and the professed adherence to its declaration.

However, the policy conflicts in the NCS's planned sectoral programmes, together with some political, economic and administrative decisions taken after the formulation of the plan, very much undermine its strength, and reduce its value as a means of environmental conservation.

CONTRADICTIONS WITHIN THE NATIONAL COMPREHENSIVE STRATEGY

While the first objective of the agricultural policy is the achievement of food security (p. 188), priority in agriculture is given to export production. A further contradiction is the legalization, organization and expansion of mechanized farming outside the planned areas (p. 191). It is not indicated how the objective of encouraging small traditional producers (p. 188) will be achieved, and there is an emphasis on resource allocations to the modern irrigated and rain-fed mechanized sectors (pp. 188–91). The NCS's first phase, which consists mainly of awareness campaigns, education and surveys, seems to be having little or no effect, since the areas most in need

of such activities are at present war zones or are beyond the reach of the national media. There are no mechanisms or institutions for the horizontal (sectoral) or vertical (administrative) coordination among various units; this has further been complicated by the adoption of the federal system of government. Probably the most serious weakness is that the goal of agricultural expansion contradicts the NCS environmental conservation commitments, and rules out sustaining, let alone developing smallholder farming. The NCS envisages a doubling of mechanized agriculture and the livestock population in ten years' time. Considering the fact that about 40 per cent of Sudan is covered by mountains, deserts and disease-infected forest areas, these figures strongly indicate the lack of commitment to the NCS. Even if the figures are revised to reflect reality, the strategy seems to be doomed due to unavoidable conflicts between pastoralists and small traditional cultivators.

Although the NCS embodies very ambitious objectives and identifies some means by which to pursue objectives, the plan suffers from a number of weaknesses. It is based on inadequate, largely inaccurate information, often outdated. The absence of democratic structures and/or awareness campaigns prevented popular participation. The NCS is formulated in sectoral terms, without provisions for coordination. Furthermore, implementation has been impeded by the instability of the government units concerned and by the infancy of the Ministry of Environment and the High Council for Environment and Natural Resources. The administrative status of several departments (e.g. Wildlife and Range and Pasture) changed several times. These changes were exacerbated by the shift to the federal system of government. The NCS lacked clout because it had no power to enforce implementation and follow-up.

CONCLUSIONS

Due to the weaknesses of the environmental management plans and various contextual constraints, their impact has been insignificant. With the exception of DECARP efforts, monitoring of environmental changes and follow-up are hampered by the problems of inaccuracy and lack of information. Further, despite the long history and immense body of sectoral legislation to protect the environment and manage resource use, logistical problems, administrative weakness and corruption very much reduce the government's ability enforce the law.

Political and administrative instability and the continuous changes both at personnel and institutional levels impede implementation. The strategies are considered ends in themselves, since they are formulated for specific

political ends. The high cost of the civil war and the priority of defence and security over economic, social and environmental aspects both within and outside the war zone hampers effective legislation.

Environmental economic considerations are lacking: GNP does calculate the cost of environmental degradation. Privatization and the absence of centralized control over prices and mechanisms of environmental protection are further impediments.

Piecemeal and sectoral, sometimes contradictory legislation occurs. The High Commission of Environment and Natural Resources has attempted to improve coordination by proposing a Basic Environmental Law (BEL), currently under discussion.

The adoption of the federal system of government and the reliance on state governments to finance services from local resources threatens the effective implementation of the NCS. Local resources are derived from the intensive exploitation of natural resources or heavy taxation, which indirectly increases resource exploitation by the local population.

Conflict and political tension with neighbouring countries prevents cooperation and collective action to combat environmental degradation. These political tensions have also paralyzed the regional organizations concerned with the environment, such as the Intergovernmental Authority on Drought and Development (IGADD), and reduced their effectiveness. The economic and social development policies adopted since Independence have mainly been large-scale development projects and the distribution of projects and services among different regions has been unequal. With such difficulties and contradictions, environmental planning in Sudan can hardly be effective.

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Chapter 7

National Environmental Policies in Tanzania
Processes and Politics

Raphael B. B. Mwalyosi
and
Hussein Sosovele

INTRODUCTION

Tanzania is faced with widespread environmental problems such as deforestation, soil erosion, pollution, the deterioration of aquatic systems, and a loss of biodiversity. Only about 22 per cent of Tanzania's land has medium to high fertility (United Nations Secretariat 1993). The rest of the land is not arable. This is largely because of unreliable rainfall, infertile soils and rampant pests and vermin. The areas with a high agricultural potential are often subjected to mechanized farming, primarily for the production of cash crops. The mosaics of traditional food crops and trees are being replaced by monocrops: biodiversity is thus declining and soil degradation increasing. Also, these areas with a high agricultural potential tend to support relatively high human population densities and growth rates. Consequently, there is not enough land for traditional shifting cultivation. Due to the continuous use of the land, the soil rapidly loses fertility, and productivity falls. The response to the land shortage is often encroachment onto public lands, including Protected Areas (PAs).

In the areas with medium and low agricultural potential, natural population growth is augmented by migration from the crowded high potential areas. To compensate for the low yields in these areas, farmers expand farmland into marginal areas. The latter areas, when devoid of natural vegetation cover, become susceptible to wind and water erosion.

Poorly conceptualized national policies such as the Villagization Programme (VP), the "farm or perish" campaigns, and the ongoing economic adjustment policies also contribute to environmental problems through excessive land use, soil erosion, declining productivity and further encroachment in marginal areas.

About 60 million hectares (or 50 per cent) of mainland Tanzania is potential grazing land. The current livestock population in Tanzania is about 12.5 million cattle and 9.5 million goats and sheep (FAO 1990) or 9.7 million Livestock Units (LU). This gives a density of about 0.16 LU per hectare. Because some of the potential grazing areas are infested with tsetse flies, or are protected for conservation and other purposes, livestock is concentrated in limited rangelands where stocking densities often exceed their carrying capacity (Mwalyosi, 1991). As a result, severe de-vegetation and a deterioration of range conditions has been reported for some areas (Mwalyosi 1992). Overstocking of some areas is due to the sedentarization of formerly nomadic and semi-nomadic pastoral people, the abolition of traditional land tenure systems, and the rapid growth of the human population.

Deforestation is largely caused by the expansion of cropland, bush fires and the cutting of trees for fuelwood, charcoal, building poles and commercial timber. Approximately 0.7 per cent of Tanzania's forest and woodland is cleared annually for agricultural purposes (McNeely et al., 1990). This rate is likely to be enhanced by the liberalization of external trade, particularly in timber and other forest products (Bagachwa et al. 1995). Deforestation due to the expansion of cropland is particularly severe in the coffee and cotton-growing regions (WRC, IUCN and UNEP, 1993; Munzava in Misana and Nyaki 1993) and regions settled by refugees from Rwanda and Burundi (Ketel 1994). Also, the coastal forests and thickets, once covering about 59,300 square kilometres, now occur as isolated patches, in some cases as small as 2 square kilometres (Mackinnon and Mackinnon 1986, Burgess and Muir 1994).

Tanzania has been called a "megadiversity" country due to the large number of species it has (McNeely et al. 1990, Stuart et al. 1990). However, the rapid and extensive deforestation going on in the country is threatening biodiversity. The major threat to wildlife biodiversity in Tanzania is human encroachment into the conservation areas and the poaching of species of commercial value. Thus, in some PAs, poaching has either eliminated entire wildlife populations or reduced them to very low levels (TWCM 1991).

A less dramatic but serious problem for the long-term survival of the majority of large mammals and carnivores in Tanzania, is the loss of critical habitats in areas outside or adjacent to the PAs, due to agricultural and

settlement expansion. The persistent reduction or loss of natural habitats and the blockage of animal migration corridors is eroding biodiversity. Further, the resulting isolation of reserves renders them unviable because of enhanced species extinction. Current wildlife habitat loss in Tanzania is estimated at 43 per cent of the original (McNeely et al. 1990).

The coastal zone of Tanzania is highly fragile and dynamic. The coastal zone includes highly productive and biologically diverse ecosystems that offer crucial nursery habitats for many marine species. The coastal zone features include coral reefs and mangroves.

Coral reefs are often subjected to blasting by fishermen engaged in dynamite fishing. The long-standing tradition of extracting live coral for lime-making has contributed to the destruction of the marine ecology. Corals are also damaged by people collecting shells or by carelessly dropped anchors. Also, fishing activities have been concentrated in areas near the shore. These areas are suffering from heavy fishing pressure, and are showing signs of over-exploitation. Coastal erosion is already threatening infrastructure in affected areas. Only about 20 per cent of the original mangrove forests are said to remain today (Bwathondi and Mwamsonjo 1993). Mangroves are subjected to intensive harvesting for poles and firewood. They are also cleared for cultivation and for salt production. In some areas, mangrove stands have been completely wiped out by industrial pollution and oil spills from tankers.

The rapid urban growth rate (6.8 per cent per annum) (NEMC 1993) puts tremendous pressure on the environment, particularly because it is largely uncontrolled and legislation is not enforced. Due to the acute shortage of housing in many urban centres, up to 70 per cent of the urban population lives in squatter settlements. In almost all squatter areas, the handling and management of waste is problematic due to overcrowding, a lack of physical planning, and poorly functioning waste treatment plants (or their total absence). Thus, the lack of adequate waste handling facilities is a major cause of pollution in Tanzanian cities and towns. Also, industrial development in the major towns causes alarming soil and water contamination through industrial waste disposal.

There are major environmental problems related to mining and quarrying. They include deforestation and land-stripping in preparation for mining, timbering of mine pits, and the building of shelters and the use of wood for domestic purposes. Also, extensive burrowing and quarrying is associated with road construction which is not accompanied by land reclamation and landscaping. The gaping gravel pits and quarries are a health hazard and an eyesore throughout the country. Water pollution is another environmental problem common in mining areas. For example,

careless handling of mercury by artisanal gold miners can lead to self-poisoning. Also, coal mining can cause health and environmental problems due to poor disposal of slurry and ash, uncontrolled air emissions and disposal of process water. Mining is also responsible for sudden concentrations of human settlement, causing social and ecological stress as well as health problems due to inadequate sanitary facilities.

STRATEGIC POLICY RESPONSES TO ENVIRONMENTAL PROBLEMS

It is now widely acknowledged that sectoral resource management bias leads to contradictions among policies. Hence cross-sectoral natural resource management policies are essential to avoid such contradictions, and to minimize sectoral conflicts and overlap of activities. It is further claimed that cross-sectoral policies are necessary to ensure that all government agencies are involved in the process of sustainable development.

Thus, in the 1980s, strategic planning approaches were adopted in Tanzania. It is not clear whether these plans have been effective in alleviating the environmental problems in the country. In the sections which follow, we assess the effectiveness of integrated strategies and plans in the context of Tanzanian conditions. Also, we examine the importance of institution building at the local level, and discuss whether it is possible to harmonize such institutions with regional and national levels of project design, implementation, monitoring and evaluation with full participation of the local communities.

National Conservation Strategy for Sustainable Development (NCSSD)

Generally, the main purpose of national sustainable development strategies (NSDS) is to assist societies to:

- maintain or improve economic performance and the quality of human life;
- ensure that development efforts are environmentally sound; and
- restore, maintain and enhance ecological processes, biodiversity, natural resources, cultural and natural heritage, and the systems that sustain them.

Prior to the initiation of the Tanzanian NCSSD, the government established the National Environment Management Council (NEMC) in 1983. The first task of the NEMC was to prepare a National Conservation Strategy (NCS). Thus, the planning process started with the identification of priority areas for action, through a workshop in November 1990. This was followed by analyses of pressing environmental problems in Tanzania and their prescriptions by specialists at another workshop in April 1992.

Following Tanzania's participation in the UNCED conference in Rio de Janeiro in June 1992, and the subsequent Agenda 21 documentation, the NCS process was renamed the NCSSD. The scope of the latter was wider, including sector-specific problems of sustainable development and possible solutions. Written contributions to the expanded text were commissioned from individual experts from sectoral ministries. Also, representatives from ministries participated in a series of seminars in November 1993, and discussed and amended the final text.

The document was reviewed by the Board of Directors of the NEMC, and approved in September 1993. Subsequently, in February 1994 the document was discussed by a Steering Committee, which approved the document, subject to certain changes. The NCSSD was presented to the representatives of district and regional governments in a week-long conference in February/March 1994. Their contributions were used to further enrich the document, after which the document was finally approved by the Steering Committee in May 1995.

The issues and recommended measures presented in the NCSSD led to the formulation of specific action programmes known as the Environmental Action Proposals. These proposals were subjected to scrutiny by the sectoral ministries and a wide variety of subject matter specialists in a series of workshops in late 1993 and early 1994.

There are many sectors and institutions in Tanzania whose activities, laws and policies impinge on the environment. Coordination of these activities requires flexible institutional frameworks with clear mandates. The NEMC was to play this coordination role. The NEMC was given wide-ranging mandates, including legislation and policy formulation, the coordination of environmental matters, the specification of standards, norms, and criteria for maintenance of environmental education, and the maintenance of liaisons with national and international organizations.

When the NEMC was formed there was no ministry primarily responsible for the environment. Environmental affairs were taken care of by the Ministry of Lands. However, in 1990, the Ministry of Tourism, Natural Resources and Environment (MTNRE) has established by presidential decree. The new ministry had a Division of Environment

(DoE) headed by a Director. The NEMC was also brought under the jurisdiction of the new ministry. One problem with the NEMC is that it is not represented in the regions and districts of the country.

The Division of Environment (DOE) has taken over many of the tasks formerly performed by the NEMC, including the preparation of government policies on environment and representing the government in international environmental fora. However, the functions and responsibilities of the two sister institutions are unclear. Overlaps and resource waste are unavoidable.

In 1995, the NEMC and the DoE were moved to the Vice President's Office (VPO). This move is considered by many to be an attempt to give the environment more attention at a high level, and an attempt to direct ministries concerned on environmental matters. However, at the time this chapter was written, the institutional framework and the mandates of the newly formed Department of Poverty Alleviation and the Environment were still being worked out.

Meanwhile, confusion continues to beset the division of responsibilities both between the NEMC and the DoE and between these institutions and the new Ministry of Natural Resources and Tourism (MNRT) and other ministries. In particular, it is unclear yet how the VPO and the Prime Minister's Office (PMO) are going to work together in implementing the strategy at the regional and district levels. Moreover, the link between these two high level government organs (VPO and PMO) and the local governments believed to represent the people at the local level), is not clear. This may create problems, especially in terms of fostering people's participation in sustainable resource use.

The NCSSD acknowledges the existence in Tanzania of a multiplicity of environmental legislation which is sectoral, and recognizes that enactment has generally been *ad hoc*. The strategy recommends an expeditious process of enactment and enforcement of laws and regulations or by-laws at national and local/municipal levels. The NCSSD recognizes the low capacity of the country to deal with the proposed legislation process, and thus includes an institutional capacity building process.

The NCSSD also notes that whereas the central government has in the past played a key role in coordinating environmental management issues in the country, actions initiated or taken at a national level cannot be effectively implemented at the level of the district authorities and below. This is particularly so because local governments lack adequate legal powers and financial resources. Similarly, although NGOs run environmental projects in Tanzania, they lack expertise and financial resources, and thus their full potential has not yet been realized.

There is little awareness of the NCSSD process amongst government officials, NGOs and the business community, although this awareness is increasing. This awareness, however, is mostly confined to the elite in Dar es Salaam. Amongst the ordinary citizens, the awareness of the NCSSD is almost nihil, despite the plea in the NCSSD to enhance people's participation. The NCSSD pays particular attention to environmental education as a means of facilitating public understanding of Tanzania's environmental problems.

A strong NCSSD would have emphasized public participation in the sustainable resource management process. However, the NCSSD diverges from this ideal. The NCSSD involved selected experts in its various workshops and meetings to chart the NCSSD, while grassroots participation was totally ignored.

It is claimed that sectoral ministries were involved in the preparation of the NCSSD through the preparation and presentation of workshop papers, and through individual participation in the workshops. However, most of the experts participated in their individual capacities, and did not necessarily represent their ministries. Therefore, it is doubtful if the views they presented at the workshops were endorsed by the sectoral ministries. Also, the recommendations from such workshops were not necessarily binding on the part of the ministries. It is not surprising, therefore, that most ministries are aware of the NCSSD but do not necessarily agree with its contents.

It is expected that the NCSSD will provide a framework within which sectoral ministries will undertake environmental management. The overall coordination of environmental management is the responsibility of the NEMC and the VPO. To this end, the NEMC has developed a wide range of environmental programmes. Although the NEMC has a staff of 140 people, currently it has less than 50 per cent of the required professional staff. The staffing problem is aggravated by inadequate office space and equipment. More critically, the NEMC is constrained by the lack of financial resources. Consequently, many people have expressed doubts about the ability of the NEMC to coordinate decisions and policy developments. A small staff that was under the MTNRE has moved to the VPO to newly created Department of Poverty Alleviation and Environment. The staffing position as well as the qualifications of the would-be staff in the new department are yet to be determined. Therefore, it is too early to make any reasonable assessment of the capacity of the VPO with regard to environmental matters.

Although the NCSSD process was led by the NEMC, there was substantial interference by the donor. The Swedish International

Development Authority (SIDA) provided expertise right from the preparatory stages of the NCSSD. Some of the experts posted did not have the necessary experience for the assignment. Throughout the preparation process of the NCSSD, donor influence has been significant. This gives rise to the feeling that the strategy may have been tailored to meet the needs and conditions of the donors. Furthermore, the World Bank set deadlines for the submission of the strategy, for Tanzania to benefit from IDA funds. Thus, the strategy may have been prepared hastily. This could explain the lack of adequate grassroots participation.

TANZANIA NATIONAL ENVIRONMENTAL POLICY AND ACTION PLAN

The overall goal of the National Environmental Policy (NEP) is to achieve sustainable development that maximizes the long-term welfare of both present and future generations of Tanzanians (MTNRE 1994a). Broadly, the NEP seeks to achieve the following objectives:

- to ensure the sustainable and equitable use of resources;
- to prevent and control the degradation of land, water and air;
- to conserve the natural and man-made heritage and biological diversity;
- to raise public awareness and understanding of the linkages between environment and development and to promote individual and community participation; and
- to promote international co-operation in environmental matters, including the implementation of conventions.

The National Environment Action Plan (NEAP) is an attempt to chart priorities, strategies, mechanisms and institutional arrangements for the implementation of the NEP at all levels.

Both the NEP and the NEAP are managed by the Division of Environment. The preparation of the NEP was commissioned to the Centre for Energy, Environment, Science and Technology (CEEST), which is an NGO. CEEST coordinated the drafting of the NEP through meetings and workshops. The draft report appeared in 1994, but, since then the document has been subjected to a series of consultations. In practice, the preparation of the NEP started after the NCSSD had been established. Logically, the NEP should have been prepared first and used to guide the NCSSD process.

In the preparation of the NEAP, the World Bank provided an expert to assist the local team. The local experts were drawn from sectoral ministries, the Prime Minister's Office, academic institutions and NGOs. The planning approach integrated several other initiatives, including numerous project and policy responses to specific environmental concerns such as the conservation strategy consultation process, the Agenda 21 national consultation, and the draft National Environmental Policy.

The NEAP identified ministries and agencies which will have a major role in implementing the action plan. Also, the NEAP further requires each ministry and agency to designate a person or office that will be responsible for environmental matters. Each will have to develop an implementation plan and report annually on progress made. However, it is not clear how such units will be established and administered. The NEAP proposes the formation of a Steering Committee (with representation from environment-related ministries) which will facilitate coordination and provide guidance.

Since its establishment, the DoE has had some difficulty in acquiring qualified staff, office space and financial resources. Moreover, unlike other government divisions, the DoE has no representation in the regions and districts. In these areas most of the functions related to the environment are performed by Regional and District Natural Resources Officers. The DoE is now located within the VPO. The latter is expected to provide guidance and leadership to sectoral ministries, the business community, NGOs and the public in implementing the NEAP.

Although the institutional framework is not defined, it is unlikely to be different from the existing top-down structure. The centralized approach seems to be favoured, as evidenced by the recent decision to shift environmental responsibility to the VPO. This approach is unlikely to be effective, because experience suggests that such highly placed offices are unable to deal with regional and district governments, which in this case have a very crucial role to play (i.e. the identification of priorities and action plans at the local level). Moreover, the NEAP singles out the NEMC as the facilitating agency in the planning process at the district level. However, it is not clear how the NEMC, a centralized institution, is going to do this. Also, it is not clear how the existing institutional framework is going to accommodate the Prime Minister's Office. The PMO is responsible for regional and local administration, and hence it is expected to play a very important role in involving the district governments in the implementation of the NEAP.

Awareness amongst government officials and NGOs of the NEP and the NEAP process, objectives and potential outcome varies. Some awareness exists, particularly among the sector ministries which were

represented in the planning process. However, as was the case in the NCSSD, the experts who participated in the planning process often did so in their personal capacities. Hence, their views were not necessarily those of their respective ministries. Thus, even at the ministerial level, awareness may be low. The low level of awareness is evidenced by the fact that ministries continue their development activities without due concern for the environment. Few development projects are subjected to environmental impact assessment. Awareness concerning the NEP and the NEAP amongst NGOs, the business community, and government officials at the regional and district levels and amongst the population at large is low.

Although both the NEP and NEAP acknowledge the need for public participation, their preparation did not involve the public. Both the NEP and the NEAP were prepared by teams of experts, and the draft documents have been discussed mostly by the elite, the business community, academics and policy-makers in urban areas. The people in the regions and districts have not been involved. It is important that the public be given an opportunity to discuss and make contributions to these documents. This could be done now, when the plans are underway to merge the NCSSD and the NEAP and to align these two documents with the requirements spelled out in the NEP. However, the existing institutional set-up will be a constraint to the full realization of people's participation. As pointed out above, at the national level the responsibility for environmental planning lies with the VPO, while at the regional and local levels the PMO responsible. It is difficult to see how the VPO and the PMO will cooperate in this regard.

At the national level, the VPO is responsible for guiding the implementation of the NEAP. This is a new responsibility for this office. Experience suggests that the VPO will require substantial financial support to build the capacity required. Also, the framework will be required to facilitate consultation and coordination amongst the various administrative levels (national, regional, district, NGOs, private, community organization, etc). The strategy will be viable only if the government not only encourages the involvement of the public, but also emphasizes capacity building within environment-related institutions and the local authorities.

THE NATIONAL PLAN TO COMBAT DESERTIFICATION

The plan to combat desertification was an international initiative to find solutions to environmental problems associated with desert encroachment and ecological degradation of arid lands world-wide. The idea arose from the need for a scientific basis for the rehabilitation and rational

development of arid and semi-arid lands, through integrated programmes of research, training and demonstration.

Thus, in 1981 the United Nations Environmental Programme (UNEP) prepared a Plan of Action to Combat Desertification (PACD) for Tanzania. Although the plan was not adopted by the Tanzanian government, in 1985 the UN General Assembly endorsed the inclusion of Tanzania in the list of countries eligible to receive assistance through the United Nations Sudano-Sahelian Office (UNSO) in implementing the plan. The long-term objective of the plan in Tanzania was to secure the nutritional basis for Tanzanians at the present time and in future, by adopting sustainable land use systems in the arid and semi-arid conditions. These objectives were to be translated into a plan of activities.

The UNSO launched a desertification control planning and programming mission in Tanzania in 1985. This PACD was part of a planning process which was already underway to combat resource degradation in the country. The mission first produced a report entitled "Assessment of the Problem of Desertification and Review of Ongoing and Proposed Activities to implement the PACD". Among other things, the report proposed the establishment of a Drought and Desertification Control Unit. The planning mission concentrated on a few selected core dryland areas (receiving less than 600 mm of rain). Special attention was paid to pastoralists and agro-pastoralists, and most particularly to women and children who were to be the main beneficiaries/participants. The focus was on monitoring the desertification process so as to explore the causes and actual environmental changes. The plan was to be implemented in phases. The first phase would take seven years to complete. During the first phase, it was planned to put in place or accomplish the following:

- establishment of a documentation centre at the NEMC;
- monitoring of desertification in Tanzanian drylands;
- establishment of radio programmes of environmental education;
- integrated development of range, farming, and wildlife management in the pastoralist division of Loliondo;
- pastoralist area development in Naberera, Maasai Steppe;
- women's development in Tingatinga agro-pastoral area; and
- sustainable resource management in the Mtera reservoir perimeter.

A Drought and Desertification Control Unit was established within the NEMC. The Unit was responsible for initiating a planning process to

combat desertification and facilitate the implementation of the plan, but due to the lack of financial commitment its impact was minimal.

There is a general lack of awareness among the public on desertification in Tanzania. Thus, it was decided to establish a Documentation Centre at the NEMC (which would compile and disseminate environmental information to the public and interested individuals and institutions) and to establish radio programmes providing environmental education.

Apart from a few workshops and consultations with regional and district authorities, there was little or no local participation in the planning process. This was most unfortunate, because the ultimate beneficiaries of the plan were to be the smallholder farmers and pastoralists in the drylands.

TANZANIA FORESTRY ACTION PLAN (TFAP)

The preparation of national forestry action plans was motivated by the World Forest Congress in 1985, which identified deforestation as the biggest threat to the environment. The FAO initiated world-wide discussions to solicit views on how to curb deforestation and to develop comprehensive strategies, particularly for the tropical areas which were hard hit by deforestation. These ideas gave birth to the Tropical Forestry Action Plan. The Tropical Forestry Action Plan (TFAP) was unveiled by the FAO and the World Bank in 1985. The overall aim of this programme was to increase investment in forestry in tropical forest countries (Lohmann and Colchester 1990). The specific objectives of Tanzania's Forestry Action Plan were:

- to review past policies and development efforts;
- to formulate a long-term development strategy and establish targets;
- to prepare an action plan with development and institutional support programmes; and
- to present project profiles for the implementation of the plan.

The overriding strategic goal of the TFAP was to reduce deforestation by 50 per cent, to double forestry-related employment, and to increase other economic, social and environmental benefits.

The planning process for the TFAP started in 1988 with the formation of an inter-sectoral steering committee. This committee included the Principal Secretary of the Ministry of Tourism, Natural Resources and Environment, and representatives from: Ministry of Lands, Agriculture, Forestry Division, Prime Minister's Office, National Environment

Management Council, and the Division of Environment. The Steering Committee was responsible for the overall supervision of the planning process. Also, the committee was later to provide guidance to the TFAP implementation process.

The plan was developed through a participatory and bottom-up process that included the preparation of background papers by 60 local specialists (consultants), 15 aid agencies, a survey of 1000 villagers, the involvement of NGOs and private sector enterprises, and numerous inter-sectoral meetings and workshops. The TFAP focused on issues related to policy, legislation and administration. Also, the planning process considered issues the roles of women, community and NGOs, the maintenance of biodiversity, training, research, and planning. The plan also dealt with land husbandry, bioenergy, bee-keeping, wildlife management, and ecosystem conservation.

Tanzania's principal forestry legislation is based on the 1953 Forest Policy and the 1957 Ordinance. These laws are outdated and only loosely linked to the current national priorities and related policies. Recognizing the weaknesses in the legislation, the TFAP recommended the revision of the 1953 Policy and 1957 Ordinance, as well as other related laws. The TFAP also suggested the creation of an environmental policy and supporting legislation.

During the planning process it was observed that there was no effective administrative chain of command within the forestry sector. Thus, there was a duplication of efforts, resulting in conflicts. This situation arose because the forestry administration was operating under three parallel structures (i.e. regional administration, local governments and the Ministry of Natural Resources and Tourism (MNRT)). Furthermore, certain forestry management functions (e.g. catchment forestry) had been delegated to Regional Catchment Forestry Officers who are available in a few regions only. Although these officers are working in the regions, they are answerable to the Director of Forestry and Bee-keeping.

To resolve the above mentioned problems, the TFAP recommended that the administration should be streamlined and consolidated. The objective of this change was to enable the government to benefit optimally from the few technical staff scattered throughout the regions and districts. Also, it was recommended that the Forestry and Bee-keeping Division be split into the Forestry Division and the Bee-keeping Division. Lastly, the plan took to task the government-mandated pattern of resettlement and "villagization" which has disrupted tribal landholding traditions. The plan proposes a return to a more decentralized system of village land administration.

There is a relatively high awareness of the TFAP amongst academics and politicians in Tanzania. The main TFAP document is written in English, a third language to the majority of Tanzanians. Therefore, the majority of the Tanzanians cannot understand the document. Also, the TFAP document is not in wide circulation even in urban areas.

Indeed, the government has adapted the TFAP as a strategic plan for managing forestry resources. The government has shown some commitment to the plan by, for example, committing funds and personnel. However, this support is insignificant, particularly considering the government's unwillingness to carry out the proposed restructuring of the Forestry and Bee-keeping Division (FBD).

The participation of local and regional administration in the preparation of the TFAP was inadequate. Most of the documentation that formed the TFAP was prepared by commissioned experts. Also, despite the importance attached to people's participation by the TFAP, no effective participation mechanism for all stakeholders was established. Moreover, only a few local institutions were involved (mainly institutions related to forestry). Even the workshops to discuss the TFAP strategies could not involve the grassroots, given that English language was the means of communication.

At the inception of the TFAP, intentions were expressed to ensure the enhancement of institutional capacity and viability. The TFAP recommended the establishment of a Planning Section, to be responsible for long-term planning, budgeting, coordinating and monitoring the implementation of the TFAP. On the contrary, only a Planning Unit exists to date, and this has been reduced to a team of two staff members. With such incredible understaffing, it is unlikely that the Planing Unit will be able to perform its tasks.

Currently, the implementation of the TFAP is coordinated by a steering committee within the Forestry and Bee-keeping Division. This committee is constrained by low budgets and a lack of qualified staff. Not surprisingly, therefore, the committee has been unable to carry out its tasks. In retrospect, the domestic funding was probably too optimistically assessed during planning, considering the present economic situation of Tanzania. Sectors are competing for investment support from the government. Moreover, the proposed projects were not prioritized so as to maximize the limited resources, and no attempt was made to relate the project proposals to the available capacity and resources to implement them. Besides, experience does not suggest that the Forestry and Bee-keeping Division (FBD) or the private sector are capable of implementing such an ambitious programme.

The viability of the plan is also questionable because, as past experience shows, a sectoral ministry cannot implement such a comprehensive programme, given that most of the activities and actors involved are beyond one ministry's mandate. Despite the above mentioned shortcomings, the TFAP is acknowledged as being one of few such plans which have paid attention to land rights and the local control of resources (Lohmann and Colchester 1990).

A large part of the preparatory phase and the implementation of the TFAP has been made possible through donor support. The main coordinating agency during the preparatory phase of the TFAP was the FAO, although the World Bank, UNEP, UNDP, and the World Resource Institute were also involved. FINNIDA was the lead donor agency for the preparation work between 1988 and 1989. Of the estimated US$670 million required for implementation of the TFAP in 18 years, 30 per cent was expected from the donor community. Despite efforts to solicit funding from the government, the targeted national contribution has not been obtained. Contributions from the private sector are difficult to estimate, and even more difficult to collect. Contributions in the form of self-help labour of farmers and other self-employed persons cannot be realized because all the proposed programmes and projects are based on inputs and financing from the government and donors (Williams et al. 1994). Consequently, to-date, donor support to the TFAP has been higher than planned. Unfortunately, donor support is expected to decline in future due to donor fatigue and economic difficulties of donor countries.

To-date, only community and farm forestry and land husbandry programmes have progressed relatively well, probably because these programmes are of interest to donors (Williams, et al. 1994). A land use planning project started in July 1992 in one region, and the Tanzania Natural Resources Information Centre (TANRIC) has been established. Training in land husbandry has been strengthened at the Sokoine University of Agriculture. Fairly successful forestry management has been limited to catchment forestry, especially in the East and West Usambaras.

Programmes in bee-keeping have achieved limited success, while a research component on bioenergy was established in January 1995. In the wildlife sector, some achievements have been obtained in anti-poaching. However, much work remains to be done, especially in relation to village wildlife schemes. There has been considerable donor interest in programmes for the conservation of ecosystems and biodiversity, and the following have been undertaken:

- the establishment of the Division of Environment;
- the designation of the Amani Nature Reserve;

- the establishment of Udzungwa Mountain National Park;
- the biological assessment of 39 coastal forests;
- the establishment of Mafia Island Marine Park;
- preparatory work for the conservation of wetlands (e.g. management plan for the Rufiji Delta); and
- preparatory work for a biodiversity country study through GEF.

Work on forest resource assessment has progressed well in a few regions. Efforts have been made to re-establish annual forestry statistics to assist in the monitoring of the TFAP implementation process.

NATIONAL ENVIRONMENTAL POLICY FOR ZANZIBAR

The National Environmental Policy and Plan for Zanzibar (NEPPZ) provides a summary of the status of environmental management and a framework within which environmental management can be done in Zanzibar. The origin of the NEPPZ is a discussion paper of 1989 which proposed an environmental policy. Later, a Policy Discussion Paper was prepared, drawing heavily on an environment seminar which was organized by the Commission for Land and Environment (COLE). The final policy was formulated in 1992.

The preparation of the policy took into consideration existing relevant policies. Examples of such policies include the Agricultural Policy, the Tourism Development Plan, the Coastal Zone Management Plan, the Fisheries Policy, the Multiple-Use Management Plan and the National Environmental Legislation and International Conventions. The NEPPZ comprises twenty-two policy statements on the coordination, management, monitoring and enactment of environmental legislation.

The preparation of the policy was managed by the Department of Environment (DoE) within the Ministry of Water, Construction, Energy, Land and Environment. The DoE is also responsible for the promotion and facilitation of the implementation of the plan the coordination of sectoral activities and the monitoring of the state of the environment in Zanzibar.

However, the implementation of the policy is a sectoral responsibility. To facilitate the implementation of recommendations, sectoral agencies are required to establish environmental units to liase with the DoE. However, no clearly defined operational structure has been established. The NEPPZ been approved by the Government of Zanzibar in August 1991. But to-date no legislation has been enacted to support implementation of the policy. The policy has been widely distributed, read and used, but since the

policy is in English, it is unlikely that it is read by the majority of the local people, who do not speak English. Thus, the establishment of the national policy and action plan for Zanzibar was locally motivated, and the planning process was, to a large degree, locally financed. However, NGOs involvement and community and private sector participation were completely lacking.

The lack of expertise and financial resources is a major constraint on the establishment and effectiveness of environmental units within the ministries. The absence of effective units makes the coordination of implementation of the policy and action plan difficult. Furthermore, communication and logistical problems, especially between Zanzibar and Pemba hinder the smooth functioning and follow-up of activities. Also, in the absence of legislation, especially on environmental impact assessment, many development projects continue to be implemented with a total disregard for the environmental consequences. Another serious constraint on policy implementation is the issue of empire building. No single institution wants to be dominated by another. Under such circumstances, coordination becomes difficult.

CONCLUSIONS

Several characteristics appear to be common to most of the conservation strategies and environmental management plans in Tanzania. One of the most distinct feature is the exclusion of some of the stakeholders in the planning process. In particular, local communities have been misconstrued to be illiterate and ignorant of the environment. Thus, local participation is wrongly perceived by the planners to be a waste of time and resources. Recent experience suggests that local people are better experts and managers of their environment. No policy can be sustainable without local participation in both planning and implementation.

Similarly, NGOs have not been involved in policy formulation, although they are acknowledged as crucial potential policy implementors. NGOs have been ignored, often on the pretext that there are no environment-related NGOs, or that they lack the capacity to make effective contributions, or that they are against the government. They are sometimes feared as competing with the government for donor funds. In recent years, environment-related NGOs have mushroomed in Tanzania. Although most lack the necessary expertise and resources, they should be supported if their potential is to be realized.

Many sectoral ministries and public agencies participated in the planning processes. However, this participation was usually confined to the

preparation and presentation of sectoral workshop papers and/or representation at workshops or seminars. Apparently, the so-called representatives of ministries or public agencies do not necessarily represent the views of their institutions. As a result, decisions reached are not binding for the institutions concerned. This kind of participation is therefore ineffective and inappropriate. In all the reviewed conservation plans the impact of donors on the policy formulation and implementation through donor conditionalities and provision of foreign expertise is evident.

National conservation plans are dependent on donor support for both planning and implementation. In almost all cases, no attempts seem to have been made to relate project proposals to the available institutional capacity and resources. Mwalyosi and Mohamed (1996) have shown that the number of environmental experts in Tanzania is limited. The shortage of experts is expected to increase. This raises doubts about sustainability, because in the absence of donor support these plans cannot be implemented.

Also, institutional arrangements constitute a major constraint on environmental management and sustainable development. The concept of bottom-up planning is relatively new in Tanzania. It seems that the centralized approach is favoured. This approach is unlikely to be effective. In a centralized approach, environmental units or staff in ministries involved in environmental issues may be marginalized within the structure of their agencies. This is likely to occur because the environment is not a top priority within the government. We have also noted that locating the environmental portfolio in the VPO creates operational problems, particularly regarding involving regional and local governments in policy formulation and implementation. The relationship between VPO and PMO and the local governments is not clear. This may create problems, especially in terms of fostering people's participation in sustainable resource use. Moreover, the NEAP singles out the NEMC as the facilitating and coordinating agency in environmental management at all levels. However, it is not clear how the NEMC, a centralized institution, is going to do this. Neither the NEMC or the DoE are represented at the regional, district and local levels.

Tanzanian government structures inherited from the colonial regime have been adopted without specific responsibilities for environmental management being assigned. Changing these structures and legal instruments appears to be difficult, sometimes due to personal interests or whims. Empire building has been singled out as a factor responsible for the unwillingness to endorse significant change. This has consequences for

institutional memory, because the existing information management systems are young and inadequately coordinated.

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Chapter 8

Environmental Management in Uganda
A Critique

Harrington Sengendo
and
Paul K. Musali

In 1991, Uganda launched its first National Environmental Action Plan (NEAP) process. The main purpose of the NEAP was to integrate environmental concerns into the overall socio-economic development process, and further to address concrete modalities for the conservation of Uganda's natural heritage. The NEAP process resulted in several environmental policies, legislation, institutional arrangements and an investment plan. This forms Uganda's *de facto* conservation strategy today.

The purpose of this chapter is to review broadly Uganda's efforts in the management and conservation of natural resources. It critically reviews the sectoral polices and legislation and reveals the major weaknesses of this sectoral approach to environmental conservation, an approach on which the country heavily relied. Furthermore, this chapter explores the relationship between the NEAP and the new environmental policies, legislation and institutional arrangements with a view to pointing out the strengths and the potential weaknesses of the action plan.

INTRODUCTION

Despite its environmental endowments, Uganda has been suffering environmental deterioration and degradation in the last two decades. The

degradation of the environment stems from several interrelated problems. Surveys have revealed that the following could be taken as the key environmental problems. Soil degradation is highly pronounced in the highland agricultural areas, for example Kigezi and Bugisu. Increased erosion is largely due to the destruction of vegetation cover in the catchments and to poor farming practices in the wetlands, which do not have clear conservation measures. This has led to a decline in soil fertility, with corresponding low agricultural yields and the siltation of rivers and lakes, such as the Manafa and Rwizi rivers and the Kyoga and Victoria lakes.

The loss of biodiversity as a result of reduced vegetation cover and the disappearance of species and genetic resources is widely recognized. Since 1900, 6.5 million hectares of forested land (both natural high forest and savannah woodland) have been lost, and only 3.5 million hectares of these forest types remain today (Forest Department 1992). The main causes include excessive logging, fuelwood collection, the expansion of agricultural land, and overgrazing. Deforestation can also be explained by the fact that over 94 per cent of Uganda's total energy requirements are provided by fuelwood, while 92 per cent of the population depends on woodfuel for domestic energy.

Pollution results from activities such as mining, agriculture, industry and service sectors (hospitals) and tertiary industries. A major area of concern is the use of toxic chemicals in agriculture, and, until recently, in the proposed eradication of the water hyacinth from Uganda water bodies. The uncontrolled application and disposal of pesticides has led to soil degradation, the pollution of water bodies, which threatens aquatic biodiversity, and a decline of the populations of economic insects such as bees. The improper disposal of hazardous waste from industry, mining and hospitals has also caused pollution.

The pattern of human settlements in the country limits the provision of services and infrastructure improvements. The basic urban services are inadequate and accessible to few people. As a result, a number of environmentally-related diseases are prevalent. The high infant mortality rate (110 per 1000) arises mainly from such preventable diseases as diarrhoea, measles, worm infections, respiratory diseases and malaria. Such diseases result from poor urban and rural planning, where settlements are characterized by poor sanitation, polluted water, poor quality housing and overcrowding.

THE EVOLUTION OF NATURAL RESOURCE POLICIES AND LEGISLATION

As in other parts of pre-colonial Africa, the early inhabitants of modern Uganda depended entirely on their environment for survival. Through a wide range of ingenious cultural technologies and ideologies, people collected wild fruits and hunted wild animals, while others roamed the widespread plains with their animals, notably cattle, sheep and goats. With the increase in population and the emergence of centralized social organization in the form of kingdoms and chieftainships, the early inhabitants of contemporary Uganda embarked on rudimentary low-input forms of agricultural production. At this time, environmental resources belonged to the community, and there was equal access to resources through a system of usufructory rights. If policy is defined as the general intentions of a social organization in relation to given circumstances, the unwritten policy then could be interpreted as having been aimed at giving every member of the community equal access to resources for his personal advancement. This status, however, could have varied from one place to another, depending on the level of centralized social organization.

Policies in the field of natural resource use and conservation were the creation of the colonial administration. Since then, successive governments have designed policies to control and regulate the use of natural resources. Colonial and post-colonial policies in the field of conservation frequently shift in emphasis from conservation to over-exploitation to enhance rapid economic growth.

Environmental management and natural resource conservation in Uganda has, for a long time, been done on an *ad hoc* basis, without any gazetted policy, with the exception of policies in the forestry and fisheries sectors. In other sectors, there are statements and guidelines issued by ministries from time to time, which could be seen as "policies" for the management of natural resources. However, whether gazetted policies exist or not, policies, legislation, and regulations and the frequent statements of intention have evolved along sectoral lines. Departments in the area of natural resource management determine their own policies, draft legislation and propound guidelines without reference to other departments. This has often resulted in conflicts, overlaps and open rivalry over resource management, a fact that has on many occasions led to poor management and consequently to environmental degradation. In order to obtain a balanced view of the role of conservation initiatives as contained in the policy, objectives and/or statements, a sectoral approach is necessary, one which treats each sector separately.

The Forestry Sector

The formal management of Uganda's forest estate began way back in 1898 (Tukahirwa 1992), with the establishment of the Uganda forest service. Formal rules and regulations on the use of forests and their resources were laid down in 1900 (Kamugisha 1993). At that time the forest department was very small, and much emphasis was put on direct forest exploitation, with limited long-term planning. The department provided guidelines on the exploitation of forests, including logging and the tapping of rubber, and acquiring land and registering it as forest reserve.

However, these guidelines and regulations were not backed by a policy statement. The first all-round official policy in the forest sector came in 1929, following the Nicholson report on the role of forests in the development of Uganda. The 1929 policy specified guidelines on exploitation (volume and type of timber to be extracted) and highlighted the role of forests and trees in environmental conservation. In his report, Nicholson cited the role of forests in climate modification, the protection of water supplies and the prevention of excessive soil erosion. He further advocated farm forestry and the establishment of forest plantations. The 1929 policy was thus a landmark in the conservation history of Uganda. The policy had the following objectives:

1. to retain under forests or afforest all areas of land necessary on climatic or other indirect grounds;
2. to meet (with due regard to the vested rights) such demands of the population of Uganda as cannot be met by individual local administrative efforts;
3. to advise individuals and local native administrations in all matters pertaining to arborculture or forestry; and
4. in so far as it is consistent with the three preceding objectives, to manage the forests of Uganda so that they will give the best financial returns.

In 1938, the forest policy was reformulated, but it maintained the basics of the 1929 policy statement. The policy continued to stress the role of forests in environmental conservation by emphasizing the linkage between forestry and agriculture through the hydrological cycle, forestry in industrialization and soil erosion control. This policy, however, went a step further, acknowledging the role of the native communities in forest management and consequently establishing extension services and the education of "native" foresters.

As the population continued to increase, and in some places rapidly, the demand for food and higher incomes through cash crop production and the exploitation of wood products began to put pressure on the forests, and the forest policy had to be revised. In 1948 a new policy was propounded which took into consideration the circumstances as regards the reservation of land for forests *vis-à-vis* agricultural production. The 1948 policy therefore leaned more towards the direct exploitation of forests for economic growth. Forest management strategies were consequently recast to reflect the policy objectives. In the period 1950–60 there was considerable emphasis on the quality of forest timber in order to meet export demand and domestic demand. The cultivation of pure commercial stands of valuable species was emphasized. To adhere to this strategy the arboricidal treatment of forest stands was sanctioned. The period also witnessed an increased interest in plantation forestry.

The 1948 policy statement thus represented a marked departure from the earlier polices, that had commendable conservation objectives. The use of arboricides was widely encouraged, despite their negative and destructive effects on the environment. The idea then was to destroy what were termed "weed" tree species, totally ignoring their value in terms of biodiversity protection, fuelwood, herbs, etc. The arboricidal treatment further destroyed a lot of fauna and flora unintentionally.

Following Independence, there was a general feeling that natural resources should be exploited in the interest of accelerated socio-economic development, and further that the central management of natural resources, forests inclusive, should be pursued. In the period 1967–71, much of the forest reserve that had hitherto been under local government was brought under central government control. In 1970–71, the 1948 forest policy was reviewed. The new policy emphasized: (1) increasing timber production; (2) protecting wildlife and creating amenity forests; (3) efficiently converting harvested wood to reduce waste; (4) efficiently using the available forest by exploiting more species for various uses; and (5) encouraging people to grow their own trees.

Striking was the silence on community/local participation in forest management, which earlier policies had encouraged. Though the policy encouraged the reservation of land, extension services, public awareness, etc., it nevertheless aimed to obtain maximum economic gain from the forest. This makes its conservation stand weak, and undercut the achievements of former policies.

The period from 1974 to 1987 witnessed a systematic breakdown in law and order, and the forest sector suffered heavily. With an increasing demand for cultivable land, due to population pressure, encroachment on

forest reserves reached alarming levels, and local unregistered forests were almost completely wiped out.

By 1987, some forest reserves in Uganda had been completely wiped out, and the rest, including catchment protection forests, were under heavy pressure. A policy review was decreed necessary. In 1988, therefore, a new forest policy was gazetted. The policy strives for:

1. environmentally sound forest exploitation;
2. increased production of pulp and paper;
3. increased export of forest products;
4. conservation of natural ecosystems;
5. provision of recreation forests;
6. protection of forests against illegal activities;
7. promotion of active research especially in silviculture, tourism, environment and biotic diversity;
8. promotion of agroforestry; and
9. increased public awareness.

This new policy is being implemented by the Forest Department. It looks like a conservation-oriented policy, though, as we shall see later, it has shortcomings.

Agricultural Policy

Uganda is a predominantly agricultural nation, whose economy is mainly dependent on the export of agricultural products. Agriculture contributes almost 70 per cent to Uganda's GDP and provides 80 per cent of employment. Recognizing the importance of agriculture in the development of Uganda, the colonial administration established the Department of Agriculture at roughly the same time as it established the forest department.

Though there were numerous efforts to conserve soil, in the interest of prosperous agricultural development in Uganda, there was no concerted effort to formulate a comprehensive soil policy until 1994. Soil management was done on the basis of numerous district by-laws that applied to particular areas and were enforced by local chiefs. In the highland areas of Kigezi and Bugisu districts (now Kabale, Kisoro, Rukungiri, Mbale and Kapchorwa), farmers were required by law to control soil erosion by constructing contours and bands on which grass-strips or bushes were planted. Bench terracing also became common in these areas. In the lowland areas of Buganda, Busoga and eastern Uganda, farmers were encouraged to protect soils by growing *paspalum*

grass on degraded channels. Overgrazing and bush burning were prohibited by numerous by-laws.

In the absence of a comprehensive soil policy, the colonial administration only tried to conserve soil using by-laws against soil erosion and fire. Little effort was made to conduct research such that the proper classification of soils could take place. Proper research could have formed a basis for scientific soil management.

The lack of a clear strategy obscured the need for extension services and specialists in soil management in the Department of Agriculture, a problem that was carried over into independent Uganda. Soil management extension services were left to the general agricultural officer, who was over-burdened, and usually soil conservation was forgotten unless it presented serious constraints to agricultural production. It is surprising that, until recently, when the national soil policy was drafted and enacted, the situation remained as it was in the 1920s. Successive governments of independent Uganda continued to follow the colonial structure of soil management and conservation, even in the face of changing conditions.

A national soil policy has now been formulated with assistance from FAO/UNEP. The current policy places high priority on the need for updated soil surveys and mapping and the implementation of national land-use planning. The policy further recommends a review of land tenure, in an effort to increase land users' security of tenure. This could well support the application of sustainable land and soil management technologies.

Wildlife

Wildlife conservation in Uganda had its roots in the outbreak of sleeping sickness at the turn of the century. With very large areas devastated by the disease, the government evacuated the people, to resettle them elsewhere. The areas which had been plagued by sleeping sickness were turned into conservation areas in 1929. These areas still exist today, and some have now been upgraded from game reserves to national parks for Bunyoro game reserve is now Murchison Falls National Park and King George Reserve is now Queen Elizabeth National Park. Others have remained game reserves or sanctuaries. (e. g., Mt. Kei, Toro game reserve and Acholi).

The first attempts at wildlife management were made in 1924–25 when the control of "problem animals", especially the elephant, began with the creation of the Elephant Control Department by Captain Keith Cardwell. This institution was later transformed into the Game

Department, which was dissolved only recently, in 1995. The Uganda National Parks, a former parastatal, was created in 1952 to promote the conservation of wildlife and to promote tourism within the created national parks. However, there was no officially gazetted policy in the wildlife sector until 1990, when a UNDP-funded project produced a draft policy. The management of wildlife by the Game Department was restricted to big game, while those labelled as "vermin" were not considered eligible for protection. However, the UNDP policy was preceded by a number of policy statements and general objectives dating back to 1958, when J. H. Blower put forward the following general objectives:

1. to ensure the conservation in perpetuity of the maximum possible stock of game animals which can safely be maintained without harmful effects on either the land, the interest of human populations or the game itself;
2. to manage the game in such a way as to produce the greatest possible sustained annual crop of animals conducive to proper land use and to harvest this crop to the maximum advantage of the local African population;
3. to convince the local people by demonstration, propaganda and other means, of the advantages of wildlife conservation and management, and to give the African local governments and chiefs increasing responsibility for such conservation and management.

The management of wildlife in Uganda has, until recently, been based on these basic policy tenets. The 1959 game preservation and control act had its origin in this policy statement. In terms of conservation, this policy had all the necessary ingredients of modern policies that emphasize the role of local communities in wildlife management. However, poor implementation prevented the realization of the policy's objectives. Many of the wildlife managers, including game wardens and rangers, lacked the required training to deal with local communities through extension services and awareness campaigns. They continued to operate in a paramilitary manner, wearing uniforms, an approach that tended to alienate people from wildlife managers. These general objectives were later elaborated, to the effect that government would undertake the promotion of wildlife research to find better means to safeguard Uganda's wildlife resources. To achieve this objective, the Uganda Institute of Ecology was established, as the research arm of the Game

Department. Further, the government intended to establish a zoological garden for wildlife conservation education and awareness.

In 1971, the wildlife policy was reformulated. The government stated its intentions to:

1. recognize wildlife as a natural resource of economic, recreational and scientific value, to be held in trust for the present and future generations;
2. conserve and manage wildlife as a form of land use;
3. carry out planned wildlife utilization as a source of revenue to contribute to the economic development of Uganda;
4. protect human life and property against wildlife predations;
5. carry out wildlife education for the public at large.

The 1971 policy further categorized wildlife conservation areas into national parks, game reserves, controlled hunting areas and game sanctuaries. In each of these categories, management objectives vary from strict nature conservation (with only tourism in national parks) to hunting (in game reserves and controlled hunting areas).

This policy statement, while recognizing the importance of wildlife as a resource and acknowledging the need for public awareness, is nevertheless silent about local participation in sustainable wildlife resources management.

The 1971 policy further created a wildlife management structure that created a lot of conflicts: the national parks were put under the management of Uganda National Parks, a semi-autonomous organization, while game reserves, controlled hunting areas, and game sanctuaries were placed under the Game Department, a sectoral department within a ministry. The policy did not recognize that many game reserves formed buffer zones for national parks, that the sanctuaries and controlled hunting areas were game corridors that allowed the migration of wild game. Thus, placing these protected areas under different management systems created gaps in the sustained management of wildlife.

In 1990, as reported by Tukahirwa (1992), the wildlife policy was again reviewed. This time it included intentions to conserve biodiversity and to provide recreational facilities in harmony with environmental conservation in some protected areas. However, the policy retained its earlier orientation and did little to alter the style of wildlife resources management. The major policy objectives include:

1. to safeguard Uganda's natural heritage for the present and future generations;
2. to increase benefits to local communities through involvement in planning and administration as well as provision of access and employment in the protected areas;
3 to develop tourism and improve coordination among ministries;
4. to plan for development and improve the state of wildlife and national parks;
5. to provide increased revenue for wildlife and parks management;
6. to adhere to international standards of wildlife management; and
7. to improve the organizational structure and legal foundation of wildlife management.

Initially, the policy addressed the concept of sharing benefits with local communities along deliberate planning and administrative avenues. The policy further emphasized the need for a new organizational structure that could effectively handle wildlife conservation. Lack of coordination between the ministries involved and departments had previously led to the fragmentation of wildlife management, since each sector had its own policy objectives.

Fisheries Policy

Fishing has been an important economic activity in Uganda for a long time, but the lack of an officially gazetted policy contributed much to the recent decline in fishery. Rampant over-fishing has resulted in the disappearance of many species of fish traditionally cherished by local communities. There is a clear need for a comprehensive fisheries policy. Fishing in Uganda's roughly 39,460 square kilometres of fresh water continues to be managed along guidelines drawn up in the 1961 five-year development plan on which the 1964 fish and crocodiles act is based.

The current fisheries policy is a relic of the 1961 policy guidelines, which specifically addressed the following objectives:

1. the promotion of the value of fish for the health of the people and as an export commodity for which there is a market in neighbouring countries;
2. the maximization of the economic exploitation of the extensive natural fish resources consistent with the preservation of those resources for future generations;

3. the increase of fish resources wherever possible by aquaculture, stocking of fish ponds, and encouragement of sport fishing by tourists.

Though these guidelines provide an all-round policy, they lack a foundation in research on the potentials of fisheries. Furthermore, there is a notable silence about the need for extension services. These shortcomings render the implementation of the set strategies inefficient and enforcement difficult. The Fisheries Department aims to enforce legislation by:

- controlling licensing for each body of water, based on the scientific information available, e.g. by restricting the types of fishing gear allowed and limiting the number of fishing vessels that can operate in a given body of water;
- monitoring the amount of fish taken from the waters, recording types, numbers and weight of the fish collected;
- restocking water bodies;
- controlling the importation of live fish, to safeguard the current stocks;
- providing extension advice to primary producers, especially regarding fishing and processing techniques.

The last two aspects have provided challenges to the Fisheries Department. In the past, in an effort to realize maximum economic exploitation, more efficient fishing gear was introduced, including synthetic fibers (Tukahirwa 1992) as opposed to natural ones. This led to over-fishing, and *Oriondhromis esculanta (tilapia)* was greatly diminished, while *Haplochromis*, which was not palatable, increased. Due to inadequate research, the *Nile perch (Orionchromis niloticus)* was introduced, and this species consequently upset the ecological balance of Lake Victoria.

Water Policy

Water is a major factor in the socio-economic development of Uganda. Open waters and wetlands cover about 17 per cent of the total surface area of the country. However, the water resources are threatened by rapid population growth, pollution from both agriculture and industry, and an increasing demand for water.

In terms of policy, the water and sanitation policies and programmes are closely linked through current institutional arrangements. The water

policy has continuously had long-term objectives aimed at supporting national economic development by:

- improving the health and therefore the productivity of the population by providing safe drinking water within a reasonable walking distance, and by providing affordable adequate sanitation services for all;
- maximizing the productivity of commerce and industry by providing effective water supplies and water disposal services;
- increasing the efficiency of the sector through investment and financial self-sufficiency consistent with government equity considerations;
- planning for the proper development and utilization of water resources, and carrying out relevant studies as a prerequisite for negotiations regarding the socio-economic development of water resources.

These broad objectives were pursued using the following strategies:

1. establishing the National Water and Sewerage Corporation to take responsibility for all urban water supply and sanitation;
2. strengthening the water development directorate to take charge of rural areas and to provide technical support;
3. promoting community participation by transferring simple responsibilities to communities;
4. rehabilitating and strengthening hygrometric and hydrological networks by establishing computer-based data processing, analysis and retrieval.

The marked silence regarding water conservation should be noted. Until recently, when the water action plan was formulated, water policy did not consider issues of management of drainage basins. The issue of water quality management is also prominently lacking and needs urgent attention.

Wetland Policy

Wetlands account for 10 per cent of Uganda's land area and have traditionally been an important socio-economic resource. However, these unique and productive ecosystems have, until recently, been neglected, considered wasteland with a low value to society. Hence there was no

policy on their use. The management of wetlands in Uganda has been unclear, with no institution bearing responsibility for their planned use. Various sectors were concerned only with the resources that these wetlands offer, such as water or drainage for agriculture and fisheries. There was no effort to manage wetlands as a complete ecosystem. Hence, their degradation is not surprising.

In 1995, a National Policy for the Conservation and Management of Wetland Resources was formulated, with the overall aim of promoting the conservation of Uganda's wetlands in order to sustain their ecological and socio-economic functions for present and future generations. The wetland policy has five major goals that include:

1. to establish the principles by which wetland resources can be optimally used, and their productivity can be maintained in the future;
2. to put an end to unsustainable exploitative practices in wetlands to avert the decline in their productivity;
3. to maintain a biological diversity in wetlands in terms of the natural community of plants and animals and in terms of the multiplicity of agricultural activity;
4. to maintain the functions and values derived from wetland resources throughout Uganda;
5. to promote the recognition and integration of wetland functions in resource management and economic development decision-making with regard to sector policies and programmes such as forestry, agriculture, fisheries, wildlife and sound environmental management.

The implementation strategies call for stopping net drainage and destructive wetland uses, and aim to ensure the utilization of wetlands such that traditional benefits are conserved in biologically diverse wetlands by protecting wetland areas as well as areas which provide source water, or discharge areas. Management strategies further place wetlands under public resources that are to be managed by the government, and prohibit the leasing of wetlands. The communal use of wetlands is permitted but is regulated. The policy further specifies the role of environmental impact assessments and public awareness in the management of wetlands, and calls for the enactment of a comprehensive law for the proper management of wetlands. Generally, the wetland policy appears to be comprehensive in terms of conservation, though it

might appear very rigid in restricting wetland resource exploitation. No institution appears to have been mandated to enforce the wetland policy.

ENVIRONMENTAL AND NATURAL RESOURCE MANAGEMENT LEGISLATION

Legislation is the highest form of policy articulation. It should not only echo government policy but also be a tool for implementing the policy. In Uganda, legislation on the use and management of natural resources has evolved in three phases (Kamugisha 1993). As is the case for the policies, environmental legislation in Uganda has evolved along sectoral lines, and continues to be enacted on a sectoral basis.

The first phase of legislation started when regulations were enacted under the "African Orders in Council" of 1889. The principal laws, made in British Parliament, gave enabling powers and authority to the governor, and later to the legislative council of the Uganda Protectorate to make "subsidiary" laws for "good government" in Uganda. The second phase, from 1902 until Independence in 1962, was characterized by ordinances made under the Uganda orders in council, enacted by the governor and/or the legislative council. With Independence, a third era was ushered in, with acts of parliament or decrees.

The existing laws on natural resource and environmental conservation bear marks of colonial administration and have a number of negative elements, including and failure to involve local people in the formulation of policies and laws (while these same people are expected to benefit from such policies and laws). This has not encouraged grassroots participation and has further curtailed the implementation of polices, and has led to ineffective enforcement and a lack of interest in environment management programmes. Second, most of these natural resource laws fail to consider what the community could benefit from the resources. Wildlife legislation, for example, bars local people even from collecting mushrooms, firewood, grass and other products from protected areas. Similarly, permits are required for the exploitation of any forest product. These archaic laws cause resentment and alienate local communities from government efforts aiming at environmental protection, paving the way for encroachment. Many of the natural resource laws in effect today are out of date, and are of little relevance to the management and conservation of environmental resources. The laws were enacted between 1940 and 1960, and no longer reflect prevailing circumstances. The fines levied and the sentences for imprisonment do not reflect the value of the environmental resources destroyed. Further, in spite of the fact that laws

are expected to bring about a change in practices affecting natural resources, ignorance is widespread.

UGANDA'S NATIONAL ENVIRONMENT ACTION PLAN

As mentioned previously, the National Environment Action Plan (NEAP) is the *de facto* conservation strategy for Uganda. It has been developed to coordinate the multi-sectoral nature of environmental management. The action plan calls for the re-orientation of national and local efforts to address environmental problems in a more comprehensive and integrated manner. This strategy will constitute the basis for the achievement of the overall policy goal of sustainable socio-economic development.

Unlike the sectoral conservation and natural resource policies, the NEAP provides a national framework to guide environment and natural resource management. The NEAP is the cornerstone of the country's commitment to sustainable social and economic development. The policy has six specific objectives:

- to enhance the health and quality of life of all Ugandans and to promote long-term, sustainable social and economic development through sound environmental and natural resource management and use;
- to integrate environmental concerns in all development-oriented policies, planning and activities at the national, district and local levels, with participation of the people;
- to conserve, preserve and restore ecosystems and maintain ecological processes and life support systems, including the conservation of national biological diversity;
- to optimize resource use and achieve a sustainable level of resource consumption;
- to raise public awareness to understand and appreciate linkages between environment and development; and
- to ensure individual and community participation in environmental improvement activities.

This policy, together with the accompanying cross-sectoral environmental management strategies on land and resource tenure, land use planning, wetlands, biodiversity, water resources, etc., offers

conservation some hope, because it has a number of strengths, as opposed to earlier sectoral policies. Among other things:

1. The policy attempts to integrate conservation into the general planning system for socio-economic development;
2. Rather than basing itself on a sectoral approach this policy clearly recognizes the cross-sectoral nature of environmental issues;
3. The policy attempts to reduce conflicts, rivalry and the duplication of efforts by government departments and institutions;
4. The "grey areas" (e.g. environmental standards, landuse planning, environmental information, environmental accounting, pollution, environmental impact assessments etc.) not addressed in previous, sectoral policies, are addressed by the NEAP;
5. The policy clearly articulates the role of communities in conservation, reflecting the recognition that people's participation in conservation is essential to the success of any conservation plans; and
6. The policy is unequivocal on the role of environmental awareness in conservation.

The new conservation strategy calls for sectoral legislative reforms. Currently there are over 60 pieces of scattered legislation on various aspects of natural resource management and environmental protection. In addition to being sectoral, these laws are outdated. Furthermore, the majority of the laws address resource utilization, rather than conservation. They further lack effective sanctions.

The National Environment Management Authority (NEMA) has been created to effectively coordinate environmental concerns and integrate environmental issues into the overall national socio-economic development process. The NEMA, responsible for the implementation of the NEAP, will:

- coordinate the implementation of government policy and the decisions of the policy committee;
- ensure the integration of environmental concerns into national planning;

- liaise with the private sector, inter-governmental organizations, NGOs and government agencies of other states on issues relating to the environment;
- propose environmental policies and strategies to the policy committee;
- initiate legislative proposals, standards and guidelines on the environment in accordance with the national environment statute of 1995;
- review and approve environmental impact assessments and environmental impact statements submitted in accordance with the statute or any other law;
- promote public awareness through formal and non-formal education about environmental issues;
- undertake such studies and submit such reports and recommendations with respect to the environment as the government or the policy committee may consider necessary;
- ensure the observance of proper safeguards in the planning and execution of all development projects, including those already in existence, that have or are likely to have a significant impact on the environment;
- undertake research and disseminate information about the environment;
- prepare and disseminate a state of environment report once every two years; and
- mobilize, expedite and monitor resources for environmental management.

The NEMA is answerable to a policy committee, chaired by the Prime Minister, which includes ministers responsible for natural resources, agriculture, animal industry and fisheries, finance, economic planning, education and sports, health, housing and urban planning, local government, gender and community development affairs, tourism, wildlife and antiquities, and trade and industry. Under the policy committee is a board of directors with representatives from the various involved ministries, academic and research institutions, NGOs and the private sector. The board ensures the effective and efficient accomplishment of the objectives of the authority. On technical issues there are technical committees.

This institutional set-up has a number of strengths in terms of coordinating management. However, it is still too early to assess whether the NEMA can achieve its objectives. The tasks are many, while the authority is understaffed, with little room for expansion. The nature of the mandate is also rather ambiguous. The mandate does not clearly specify to what extent the NEMA can initiate legislation, undertake studies, propose policies, etc. Nevertheless, the NEMA can make a significant contribution to the management of the environment because:

1. It operates at the highest level of government and as such has considerable political support;
2. All sector ministries are represented at the higher level. It is therefore easy to harmonize polices and resolve conflicts should they arise;
3. The representation of NGOs, the private sector and academic and research institutions on the board of directors serves to bridge the gap between government machinery and the people, especially the private sector participants. This is expected to facilitate individual companies engaged in natural resource exploitation and/or management to be self-policing;
4. With its wide political support and donor funds, the authority is in an almost perfect position to advocate environmental protection. (However, this is a short-term strategic advantage: should the authority run out of funds and fail to live up to the expectations of the people, then its achievement in advocating environmental protection will be questionable).

An investment plan addresses the tangible economic activities that each sector will carry out towards attaining sustainable socio-economic development. Many environmental issues and problems were identified during the NEAP process, and corresponding recommendations were proposed to address them. However, given the constraints imposed by the current state of the national economy and the existing institutional infrastructure and managerial skills, not all the identified issues could be addressed at once. Priorities were established in order to optimize the allocation of scarce resources and develop a comprehensive investment programme.

A quick speculative review of the projects contained in the investment plan reveals that it is a result of a carefully calculated effort to halt environmental degradation through careful treatment of the underlying causes. If implemented, these projects will go a long way in ensuring that

environmental concerns are adequately integrated into the overall national socio-economic development process. The investment plan also includes projects identified by the public at large in a nationwide consultation. To some extent, it reflects people's priorities, and thus these projects will likely have people's support and be sustainable in the long run. The government has indicated its support for the investment plan, and as the economic situation improves more financial support is envisaged.

CONCLUSIONS

Given its varied resource base, Uganda can achieve sound socio-economic development, but the impulse to develop rapidly has created serious environmental problems, threatening the natural capital on which development greatly depends. Poverty and the prevailing high level of dependence on natural resource use and management have forced many people to over-exploit the natural resource base. At the same time, their ability to employ environmentally friendly technology has been restricted. It is therefore imperative that strategies be integrated to ensure a proper balance between economic development and environmental conservation.

During our fieldwork, we observed with concern the *ad hoc* manner with which the management of the natural resources has been dealt with. Many sectors have, for a long time, operated without policies, and others continue to do so. In some areas, there are laws with gazetted polices providing objectives for the law, while in others sectors laws exist without policies. Such chaotic resource management cannot promote sustainable development. The existence or absence of policies aside, it has also been noted that until recently there were no serious attempts to coordinate environmental management, and the sectoral nature of natural resource management has cost Uganda much in terms of conservation. Environmental issues are multi-sectoral, so conventional sectoral management is of little help to conservation. It has instead created a lot of conflicts, overlaps and rivalry between and within sectors, and has left some problem areas unattended to. The creation of the National Environment Management Authority to coordinate environmental management is a very welcome initiative, but the authority will have to overcome many difficulties.

Some obsolete colonial environmental laws are still being enforced. The laws are scattered throughout various statutes that have been drawn up by various sectoral institutions. This again renders current efforts to conserve the environment difficult. The proposal by the NEMA to

review all the sectoral laws, to make them "fit" with the environmental statute is a step in the right direction.

Natural resource management requires a clear understanding of the stakeholders' attitudes towards the resources. Policies and laws therefore must reflect the aspirations of society and further be enforced in such a way that will benefit society. The managing institutions still rely on authority derived from the law, rather than from peoples' acceptance

There is no significant population or official awareness of many policies, laws and strategies. People simply do not know of the existence of the many regulations governing environmental management. This is perhaps due to poor communication, but most importantly it is due to the weakness and fragmentation of the extension service network. Inadequate finances have prevented sectoral environmental management departments from recruiting or training adequate extension workers. Instead of advising resource users on what they should do to enhance resource sustainability, most departments only emphasize what local communities should *not* do. In our view this state-centered non-participatory policy does not guarantee to long-term sustainable resource management.

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Chapter 9

Environmental Conservation and Planning in Zambia

D. D. Theo
and
H. N. Chabwela

MAJOR ENVIRONMENTAL CONCERNS

Taking stock of efforts towards environmental conservation is an essential component of any successfully implemented plan. This chapter therefore examines various national plans and highlights efforts made in the last thirty years in the implementation of conservation goals in Zambia. The chapter is based on an in-depth review of the Zambian National Development Plans (NDPs) including the National Conservation Strategy (NCS). We will first delineate the contextual framework within which these plans were conceived, and will evaluate whether they have succeeded in responding to the major environmental concerns.

According to the 1990 census (CSO 1992), the population in Zambia was 7.8 million, but rapidly growing. Currently the population is believed to be slightly over 9 million. The population is not evenly dispersed. The highest concentrations occur in the Copperbelt Province (1.6 million inhabitants, population density of 50.4 people per square kilometer and Lusaka Province (1.2 million inhabitants, population density 55.2 people per square kilometre).

The population density in Zambia as a whole is 10.4 people per square kilometre, with the lowest regional densities found in the North-Western (4.8 people per square kilo meter), Central (5.4 people per square kilometre) and Northern Provinces (5.9 people per square kilometre). The distribution of the population is largely determined by economic activities.

At 3.25 per cent, population growth in Zambia is among the highest in Southern and Eastern Africa. Provincial figures are higher in Lusaka (5.4 per cent), Eastern (4.0 per cent), Central (3.5 per cent) and Southern Provinces (3.4 per cent). However, fertility rates are highest in the Luapula (7.4 children per female), while the national average is 7.2 children per female.

Urbanization is heaviest in the Copperbelt (90.5 per cent) and Lusaka Province (86.2 per cent). The Eastern Province is the least urbanized (8.8 per cent).

The over-exploitation of forests, wildlife and fisheries has not yet been fully addressed. Optimism among resource managers and exploiters regarding the abundance of natural resources in Zambia is a result of the lack of knowledge of the country's position. While over-exploitation remains a critical problem in the country, there are no clear solutions in sight. Many reasons have been given as to why resources are being depleted or are threatened with extinction.

First, in Zambia, as in many other developing countries, the economy and the population depend largely on natural resources for development capital. Natural resources, forests, wildlife, fisheries and soils were precursory to the implementation of all development plants. Accordingly, these resources were considered in monetary terms, to the extent that they would be converted to goods for exports. Over-hunting of wildlife species such as the elephant (*Loxodonta africana*) and the rhino (*Diceros bicornis*) (for the ivory and the horn respectively) is a good example of how over-exploitation could diminish species to near extinction. Most National Parks and Game Management areas are severely degraded (Chabwela 1994). Similarly, fish species and fisheries in Lake Bangweulu, Lake Mweru Wantipa are seriously threatened by over-fishing. Some species such as *Alestes* are locally extinct in some areas. The problem extends to forest resources, which are also threatened by charcoal production and logging. The teak species in areas such as Molobezi has declined, while the mukwa (*Prerocarpus angolensis*) and mupapa (*Alfizelia aquizensis*) are important timber species which are in considerably high demand.

Second, over-exploitation is attributed to the rural population, which is largely poor. Excessive poverty among rural inhabitants leaves them with limited options. Invariably, exploitation continues until the source is degraded. The poaching of wild animals by rural communities and the equally excessive fishing are expected to increase, as the human population increases. The loss of habitat due to human settlements and agriculture is one of the major causes of species and biodiversity losses. Finally, the poor management of natural resources must take most of the blame. This

deficiency is largely due to limited funding, and a shortage of manpower and equipment among institutions responsible for natural resource conservation. Legal instruments and policies in most cases cannot be effectively enforced even when the policies themselves are adequate. The situation is exacerbated by a lack of knowledge and research, and by the limited involvement of local communities in conservation issues. Dealing with conservation issues without input from resource users such as the rural communities themselves could prove to be extremely difficult and ultimately ineffective. Therefore, unless ways are found to reverse the over-exploitation of natural resources, the future of natural resources in Zambia will remain uncertain.

Our knowledge of the extent and the rate at which vegetation diminishes in Zambia is limited. For some reason, there is a general assumption that Zambia still enjoys vegetation cover, particularly in remote areas where the population is sparse. Although this may seem encouraging, we ought to start to manage our forests and savannah woodlands, knowing that Zambian ecosystems are fragile sub-tropical systems. Zambian vegetation does not recover if it is exploited or disturbed (Fanshawe 1969). Much of the vegetation is secondary or consists of relics of the original types. Vegetation cover is important, as it prevents soil erosion, sedimentation of rivers, and floods, and is economically important for fuel, wood, charcoal production and timber. Vegetation cover is further important as wildlife habitat. There is very limited appreciation of the true value of the forests, since forests are taken for granted as everlasting, owing to the fact that they appear always to have existed.

In Zambia, deforestation is serious. The major cause of deforestation is agriculture (Chidumayo 1989). Both large-scale and subsistence agriculture require land and lead to the clearing of the forest, causing monoculture. Zambia has over 26 farming systems (Schultz 1976), and land-clearing occurs everywhere in the country where there is human settlement. Population increases the demand for land. Shifting cultivation is the most destructive, as village farmers abandon old fields and establish new ones. Large areas in the Northern, Luapula, and Central Provinces are extensively cultivated according to this system, which depends largely on ash for the improvement of the soil (Kajoba 1994). The system requires the extensive chopping of trees for very small fields of millet.

Deforestation due to settlement is significant in large cities and towns. In Lusaka, for example, the tree cover has been removed around the city, due to large-scale farming, fuelwood collection and charcoal production. There are no forests within 50 kilometres of Lusaka. Deforestation also occurs through overgrazing and forest burning. In Zambia, forests are

burnt every year, for various reasons such as land clearing, hunting, agriculture and culture. Large forest areas have been degraded to woodlands, and then to shrub or grasslands (Fanshawe 1969). Overgrazing is an issue in the Southern, Western, Central and Eastern Provinces, where livestock farming is practiced most. However, the impact of grazing on forest cover has not been fully evaluated. Commercial logging is one of the major threats at present. Logging is intensive in the Central, North Western, Western, Southern and Eastern Provinces. Much of the timber from these areas is intended for export. Uncontrolled logging could have a devastating effect on the ecological systems.

Land ownership, property rights and land use practices are important issues. The issues concern resources such as water, fisheries, wildlife and forests. Nearly 93.7 per cent of land in Zambia is controlled by customary law. This includes 57.5 per cent Trust Land (land reserved in Trust for the tribe; formerly known as Native Trust Land), and 36.2 per cent Reserve land (land set aside for use by tribes usually situated in poor remote areas). Regarding the Trust Land, any member of the tribe can obtain access to the land through the right of occupancy (Kajoba 1994). The remaining 6.3 per cent of the land is State Land, including all former Crown Lands. In this category, individuals could have title deeds of tenure of 99 years. The Protected Area System is part of this land tenure category.

One important aspect which has not been fully addressed in Zambia is the limitations imposed on the implementation out of conservation programmes and development plans by the fact that much of the country is under customary rights. Large-scale developments such as the hydro-electric dams (e.g., the Kariba and Kafue Schemes), and the establishment of Protected Areas such as Forest Reserves and National Parks were undertaken either through special agreements with the inhabitants, or through compulsory land alienation by government. This was possible in the past, but due to the current land law reforms and public awareness of land rights, this may no longer be possible.

The successful and effective implementation of development or conservation plans would thus now require the participation of landowners and other stakeholders. The question of how land use on tribal land can be regulated is an important one. This is particularly relevant in cases where inhabitants and land users are not aware of fully conversant with whatever plans may be proposed. The successful implementation of any such plans is largely dependent on the involvement of the land user or inhabitant. The people or parties involved should agree with plans.

Pollution jeopardizes water accessibility and limits water use. Pollution is caused by chemicals from industries, agriculture and municipal effluents.

The situation in Zambia is critical, mainly in the Kafue River, because nearly all the major towns in Zambia and the large industries - copper mines, fertilizer and textile industries - are located in the Kafue River catchment. The Nakambala sugarcane production is situated in the Kafue Flats. It is therefore not surprising that parts of the Kafue River are polluted. Previous studies by Kaoma and Slater (1975) and recently by CIDA (1995) have confirmed the water quality problem in the Kafue River. Furthermore, the increased volume of Water-hyacin (*Eichhornia crassipes*) is a clear indication of the increasing eutrophication of the river. Unfortunately, pollution control measures in Kafue River have not been seriously considered, although recently some suggestions have been made (Chabwela and Mumba 1996).

Other issues on water resources in Zambia include water obstruction, the regulation of water flows, and the management of river basins. Sedimentation and siltation are serious problems in the Luangwa river system (Sharma 1983), while dam developments have had serious environmental and social effects on the Kafue Flats (Chabwela and Mumba 1996) on the Kafue River and in the Gwembe Valley on the Zambezi River (Scudder 1989). Siltation is caused by deforestation in the upper catchment area of the Luangwa River. According to Sharma (1985), the sediment load in 1980/81 and 1981/82 was close to 6 million tons in the Lusangwa River and 2 million from the Lusenfwa River. Siltation is a normal process, but accelerated or induced siltation can be a serious problem in aquatic environments, causing a reduction in productivity and a decline in the water quality. Certainly, future plans should include the stabilization of the Luangwa River systems.

Serious land use conflicts have just arisen in Kafue Flats, following the construction of a dam at Itezhi Tezhi in 1978. Numerous studies have been carried out to assess the impact of the dam on the ecosystem of the Kafue Flats (Williams 1977, Handlos 1992). Kafue Flats is one of the largest and most significant wetlands in Zambia. It is famous for its wildlife, mainly the waterfowl and the Kafue lechwe *(Kobus leche kafuensis)*. It is also a major fishing area in Zambia. However, the potential of these wetlands has been severely reduced due to habitat disturbance. Flooding is critical to these wetlands, but following the dam construction the flooding levels in the flats have severely declined, seriously threatening of the ecosystem.

EVOLUTION OF CONSERVATION POLICIES AND LEGISLATION

Traditionally, African communities have been closely linked to their environment. In considering conservation, one should not lose sight of how the traditional African has perceived conservation. Indeed, it can be argued that conservation has been practiced for a long time in these communities. Though some communities still have such linkages, those linkages are weakening.

Conservation in Zambia has been carried out by tribal and predominantly traditional communities on the one hand, and government institutions responsible for wildlife, forestry, fisheries and soil management on the other. Non-governmental organizations such as the World Widelife Fund (WWF), the International Union for the Conservation of Nature and Natural Resources (IUCN), and the Zambia Wildlife Conservation Society have also been instrumental in promoting conservation.

The Zambian National Development Plans were an historic and economic landmark. Their main purpose was to mobilize resources, coordinate activities and evaluate and monitor their implementation. Projects and programmes carried over from the period before Independence became part of this nation-wide development initiative.

Conservation under the First National Development Plan (1966–70) (FNDP) was organized in sector programmes at the national and regional levels. While the National Forestry Service propagated industrial plantations, with a view to supporting the mining industry, the forest sector's main objectives were the establishment of forests to protect against floods, erosion and desertification, the maintenance of the flow of rivers, and the achievement of self-sufficiency in timber, together with the development of wood-based industries. A number of forest reserves were established, and the forest estate grew from 4.1 to 5.7 million hectares. There was also progress in the management of indigenous forests and woodlands.

Wildlife conservation was dominated by the establishment of infrastructure in National Parks, the improvement of general conservation and the promotion of game production and research. Specifically, the plan called for the extension of game parks: the continuation of the UNFAO Luangwa Valley Development Programme, game cropping in Luangwa for habitat improvement and for meat and byproducts. During this period, a wildlife training school was constructed at Nyamaluma, in Luangwa Valley (GRZ 1966), and the National Parks and Wildlife Act was formulated to replace the Fauna Conservation Ordinance. The fisheries sector conservation programme was concerned with the development of

infrastructure to facilitate fish landings, the improvement of fishing methods, and the expansion of fisheries research, particularly in Lake Tanganyika, Lake Kariba, and the Mweru/Luapula areas. These plans were implemented.

The general objectives of the Second National Development Plan (1972–76) (SNDP) were similar to those of the FNDP. However, conservation objectives and strategies in this plan focused on increased fish production, marketing and the improvement of infrastructure. The plan also called for the development of fish farming, the expansion of fisheries research, and the development of training centers at Kasaka, Sinazongwe and Nchelenge (GRZ 1979). During the period of the plan, the Fisheries Act was passed (1974) to provide a framework within which fisheries would be developed and managed in the interest of fishermen, while safeguarding the fish population from over-exploitation.

The forestry sector plans were not different from those in the FNDP. The major focus remained the industrial production of timber. Additional measures were formulated policy to promote firewood and charcoal production. The National Parks and Wildlife Act focused on establishing a new comprehensive National Parks system, and prepared management plans for each National Park. It remained in control of Game Management Areas and hunting safaris. The plans also promoted the establishment of zoological parks in cities for educational purposes. Environmental education and public awareness of conservation issues were intensified, research was expanded, and the National Parks and Wildlife Act was passed.

In the Third National Development Plan (1979–1983) (TNDP) conservation objectives and strategies were not only expanded in the three sectors, but were also listed under the Natural Resources Department. The TNDP emphasized rural sector development, particularly in agricultural production, small-scale industries, village regrouping and rural reconstruction. Thus, the need arose to establish conservation practices at local and village levels. The Natural Resources Department was established to meet this need. The TNDP aimed to (GRZ 1979):

- Monitor the status of conservation areas and their natural resources;
- Carry out investigations into areas requiring conservation measures;
- Ensure appropriate utilization and proper management of natural resources;
- Educate the public on the need to conserve natural resources;

- Control and regulate practices such as deforestation, shifting cultivation and environmental pollution;
- Carry out effective legislation to achieve the foregoing.

During this period, the conservation programmes manifested three important features. There was a clear move towards establishing coordination and linkages among government institutions in conservation plans, particularly in land use practices, watershed or river basin studies and control of pollution. These strategies were reflected in the Natural Resources Department, the Water Affairs Department, the Fisheries Department, the Forestry Department and National Parks and Wildlife. Second, there was a comprehensive and expanded research programme which included investigations into the impact of the Itezhi Tezhi dam on the ecosystems of the Kafue Flats. And, third, the plan was characterized by the development or further review of legislation. In general, at this point the stage for conservation in Zambia was set.

The situation was different during the Fourth National Development Plan and the Economic Recovery Programme (1989–93). The period between 1983 and 1985 represents a gap in the execution of National Development Plans. This was a period of a three-year Structural Adjustment Programme (SAP) carried out under the auspices of the IMF and the World Bank. The programme was intended to resuscitate and restructure the country's economy following Zambia's request for assistance from these financial institutions. However, it did little as far as natural resource conservation is concerned, particularly with reducing extension and forest warden employment.

The Fourth National Development Plan was launched in 1989 following Zambia's withdrawal from the Structural Adjustment Programme. While the Fourth Plan was largely a continuation of the TNDP, two main outcomes are noteworthy: the incorporation of the National Conservation Strategy into the plan and the introduction of the Population Policy. Although the National Conservation Strategy was only under the jurisdiction of the Department of Natural Resources, this was a significant step towards its implementation. (Details of the strategy are discussed below).

The Population Policy was incorporated in the Fourth National Development Plan because population was considered to seriously constrain development objectives. At the start of the First National Development Plan, the growth rate was 2.6 per cent but this increased to 3.6 per cent between 1980 and 1985. It was estimated to be 3.7 per cent in 1990. It was acknowledged that the situation was exacerbated by increasing

rural-urban migration and uneven population distribution. The Population Policy aimed to slow down population growth to levels that could be supported by economic growth.

Preconditions for the successful implementation of the National Development Plans were not only the availability of resources and the capacity of the government, but also participation by the major players: political parties, organized labour, local communities, industrial groups and the private sector. Thus, National Plans were formulated by various agencies and various stakeholders. At the central level, the National Development Committee (NDC) evaluated proposed projects. Similarly, the NDC received progress reports on implemented projects. At the regional or provincial level, plans were executed by the Provincial Development Committees (PDC).

As regards the effect of the plans on conservation, the response is mixed. However, successes are evident. The National Plans made considerable strides forward in the following areas:

1. the creation and expansion of the protected Area Systems;
2. the development of infrastructure in protected areas, including the development of roads, bridges, water channels, buildings and airfields;
3. the implementation of large conservation projects, including research projects in protected areas as well as in watershed, forests, lakes and swamps;
4. the implementation of community projects such as the Luangwa Integrated Rural Development Projects (LIRDP), the Wetlands Conservation Projects (WCP), and the Administrative Management Designs (ADMADE);
5. the establishment and updating of policies and legislation; and
6. the establishment of conservation schools in the fishery, wildlife and forestry sectors.

The effective and full implementation of the programmes could not be achieved due to numerous serious obstacles. Firstly, civil unrest in neighbouring countries adversely affected Zambia's focus on the programme.

Secondly, a general economic decline, due to sanctions following the Unilateral Declaration of Independence (UDI) in Rhodesia, the fall in copper prices, the rise in oil prices, the dwindling foreign exchange and the implementation of the Structural Adjustment Programme between 1983 and 1985 impeded the implementation of the plan.

Thirdly, a rapidly increasing population weakened the programme further, as the social infrastructure and social services were overstretched.

Finally, institutional factors and general lack of capacity, including limited funding and a shortage of experienced manpower, constrained the development plans (GRZ 1989). Consequently, conservation suffered considerably. Poaching accelerated, while breeding was slow. As a result, important species such as the rhino and the elephant were threatened with extinction. Furthermore, most protected areas were degraded, ecological research had severely declined, and public education and awareness about environmental issues had virtually come to a standstill.

This scenario has continued. Structural adjustment demanded the reduction of central planning, so the conservation plans had to be abandoned. In the absence of alternative conservation plans, the future of conservation in Zambia was uncertain in 1991.

THE NATIONAL CONSERVATION STRATEGY AND THE INTERNATIONAL CONVENTIONS AND TREATIES

The formulation and implementation of the National Conservation Strategy considerably enhanced the conservation of natural resources in Zambia. While the strategy's main goal was "to satisfy the basic needs of all the people of Zambia, both the present and the future generations, through wise management of natural resources," the strategy's main method was to define and establish policies, plans, and their organization, to fully integrate conservation into Zambia's social and economic development. It was also the strategy's aim to analyze trends and current issues so as to better anticipate problems and needs (GRZ 1985). As in the case of the World Conservation Strategy (WCS), Zambia's Conservation Strategy's main objectives were:

- to ensure the sustainable use of Zambia's renewable natural resources (e.g. forests, agricultural land, fisheries, wildlife and water);
- to maintain Zambia's biological diversity;
- to maintain essential ecological processes and life support systems in Zambia.

The NCS was prepared by a team of experts. It took them nearly seven months to complete the task. The strategy defines the problems and issues, analyses priorities, identifies constraints, makes suggestions about its

implementation, and advises the government on future directions in environmental matters. The National Conservation Strategy was finally adopted by the government in 1985.

It is important to note that at the time the strategy was being formulated, two major factors were at play. First, in 1984 Zambia's conservation plan was already being implemented by various relevant institutions through the National Development Plans. Therefore, the strategy could only have been influential if it had been integrated into the national plans and initiatives. Second, the World Conservation Strategy had just been launched in 1980 by the IUCN and UNESCO.

In the absence of an evaluation and monitoring system, an accurate assessment of the effectiveness of the strategy may not be possible. Yet it seems clear that the strategy several limitations. Firstly, the strategy failed to be fully integrated into the national development priorities, and clearly failed to reach local groups in rural communities. This was attributed to the planning process, which was largely confined to scientists and government institutions. Local communities and the private sector were not involved. Secondly, implementation was not supported by matching funds in proposed projects. Finally, the Ministry of Lands and Natural Resources, which was responsible for the strategy, failed to coordinate other ministries on the issue of conservation strategy. The strategy seems to have come to an end with the introduction of structural adjustment (1989–93). Its status at present is not clearly known.

Attention has now shifted to the preparation of two equally important conservation documents: the National Environmental Action Plan (NEAP) and the Zambia Forestry Action Plan (ZFAP). It is generally accepted that the NEAP is the successor to the ill-fated National Conservation Strategy. Essentially, the NEAP is a strategic framework within which environment and sustainable development issues in Zambia have been identified and prioritized, and thus it is expected to constitute the foundation for a plan of action (GRZ 1994). NEAPs elsewhere have been reviewed and documented by Falloux and Talbot (1993) and by Greve and Falloux (1995). NEAPs are almost invariably supported by the World Bank and other donors, and reflect the preconditions under which aid and development projects for a country are supported by such international institutions. Zambia's NEAP process started in 1994, and it involved the main actors and government institutions, the private and parastatal sectors, non-governmental organizations, and provinces and local communities. The final document was approved by the government in 1995, following its review by concerned individuals and institutions. The NEAP in Zambia is currently in the implementation phase. The basic assumption of the NEAP

process is that it will form an integral part of nation-wide development decision-making. Unfortunately, since Zambia has (for the time being) abandoned the National Development Plans, NEAP is a "stand alone", lacking the support of a National Development Plan.

The forestry sector is currently formulating a sectoral and thematic strategy. The Zambia Forestry Action Plan was supported by the United Nations Food and Agricultural Organization. While the general process involves other institutions in environmental and natural resource conservation, the ZFAP's general intention is to focus on forest-related issues, such as afforestation, forest management, and forest conservation and restoration. It hopes to integrate these activities with other sectors. The expansion of the forestry sector is attributed to the National Development Plans. Nevertheless, the general pessimism of the plan emanates from the understanding that the mobilization of national efforts is not possible in the absence of a National Development Plan. As it now stands, the ZFAP may remain a sector programme with very little influence on other sectors.

Another aspect which is obviously of great significance to conservation is the role played by international conventions, agreements and treaties. Zambia is a signatory to a number of international conventions. At least thirteen of these conventions are related to environmental conservation. But environmental conventions attract a great deal of attention and require compliance. The review by Harland and Chabwela (1995) shows that the signing of conventions depends not only on government commitment, but also on factors such as the perceived benefits. Essentially, such benefits include accessibility to international funding to enhance the implementation of national priorities, especially if the convention coincides with the objectives of the national plans. However, Zambia has a limited capacity to carry out obligatory activities. The implementation of conventions depends on the availability of adequate human and financial resources, which are limited. The problem may be exacerbated if obligations require adjustments in institutional structural arrangements, policy and legal framework. This would clearly be the case if a convention did not coincide with the national priorities, and in Zambia the situation is critical for most environmental conventions. The lack of a national plan may impede compliance with the conventions.

THE LEGAL FRAMEWORK

The current laws on conservation represent many years of negotiations between the government and the traditional communities. These negotiations are ongoing. Legislation on environment and natural resources

appears in various sectors, because conservation has evolved along the sectoral lines. Traditional norms and practices could further be termed expressions and tools of the Zambian national environmental policy (Chinene et al. 1996). Legislation differs significantly from the way traditional communities understand their rights to property, resources and land.

Zambia has not developed a comprehensive environmental policy that could be used as a principal guide in the formulation of legislation. Rather, there are at least 33 laws which are directly or indirectly related to the environment (Chinene et al. 1996). These include the Environmental Protection and Pollution Control Act (EPPCA), the National Parks and Wildlife Act, the Fisheries Act, the Forestry Act and the Natural Resources Act. Obstacles to the implementation of these laws are the inadequate capacity of the law enforcement agencies, and gaps within the laws themselves.

NATIONAL CONSERVATION PLANNING AND POLICIES: SUCCESS OR FAILURE?

There is considerable literature on national environmental strategies (GRZ 1966, 1972, 1979, 1989, Fallouxe Talbot 1993, Carew-Reid et al. 1994; Greve and Fallouxe 1995). The World Conservation Strategy (IUCN/UNEP/WWF 1980; 1991) and the National Environmental Action Plan (World Bank 1995) have supported the view that no single format that can be recommended for environmental conservation plans. Plans vary from country to country, from time to time, and from region to region, and depend on the issues being tackled. It cannot be assumed that rules and standards as well as common practices among traditional communities have since formed the type of conservation systems passed on to them through generations.

In all cases, plans are developed in four phases: plan preparation, approval, implementation and updating (Carew-Reid et al. 1994; World Bank 1995). Furthermore, although specific details vary considerably, several elements are essential to most plans (Lampietti and Subramanian 1995): screening problems, setting priorities, setting goals and objectives, proposing policies, institutions and legal reforms. Plans should also cover implementation, monitoring and evaluation, and, finally, adaptation. These are tedious and time-consuming processes. Thus the success of a plan depends on how goals and objectives are perceived by both proponents and opponents of a plan.

As has already been noted, Zambia made substantial progress in environmental conservation between 1966 and 1993, through the National Development Plans. In particular, progress has been made in the development of institutions responsible for conservation and natural resource administration, the development and expansion of the Protected Area System, and the infrastructure development necessary for the management of resources and Protected Areas. By 1989, the Departments of Fisheries, Water Affairs, Forestry, Natural Resources and National Parks and Wildlife had been substantially expanded and well-established at the district and to some extent even at the local level When the Fourth National Development Plan was implemented, programmes in these institutions were massive and comprehensive. It was not surprising, therefore, that the formulation of the National Conservation Strategy was not an event outside the planning system. Nevertheless, although the implementation of the National Conservation Strategy could not be fully integrated into the Fourth National Development Plan, the establishment of the Environmental Council of Zambia and the EPPCA were its direct results.

By pursuing development through expanding the social and economic infrastructure, agricultural activities and mining, Zambia had encountered high environmental costs. The two frequently discussed environmental issues are the dams on the Kariba in 1960 and the Kafue hydro-electric dam schemes which started in 1967. The Kariba Dam project was undertaken by the Federal Administration of Rhodesia and Nyasaland. Its social impact has never been fully accounted for. This includes the involuntary resettlement of the Gwembe Tonga, loss of agricultural and traditional land, and downstream effects such as the loss of flood plains and the blocking of fish migratory routes (Scudder 1989). Waterborne diseases (primarily schistomiasis) have become endemic among settlers around the lake. Meanwhile, the Kafue Flats are equally severely threatened by the construction of the dam at Itezhi Tezhi. Critical land use conflict has emerged because of water use for hydropower generation, agriculture, industrial and domestic uses and water use for the environment (mainly wildlife and fisheries). The loss of migratory routes and habitat as well as the loss of breeding ground have seriously affected wildlife and fisheries. It should also be noted that the environmental impact was not evaluated for a number of other large-scale development projects.

The execution of these plans was constrained by several factors (GRZ 1979). Firstly, foreign exchange was scarce. This was attributed to the disruptions to the country's supply routes, the oil crisis, the world economic recession and the collapse of copper prices. Secondly, the civil unrest and

unstable governments in neighbouring countries had a negative impact. Thirdly, the implementation of SAP (1983–85) not only slowed down the environmental programmes, but also caused considerable hardship to the population at large. Internal constraints inherent in the plans were persistent gaps in legislation coupled with inconsistent policies, a lack of capacity among implementing agencies (in particular a clear deficiency in trained manpower) and a lack of interagency linkages and coordination. Further, there was a lack of data and knowledge regarding the issues. A lack of funding contributed to the ineffective execution of well-planned projects. In some sectors, the capacity was lacking to absorb the available funds, while other projects were constrained by lack of funds. A lack of public involvement in programme planning and implementation was evident in all the plans, including the National Conservation Strategy and the NEAP. These plans were usually drawn up by government workers and institutions. Consequently, there was a general delay in programme implementation. Institutional structure in some sectors was in need of transformation. Quite often, institutions failed to carry out tasks because issues were complex.

Common pitfalls and general features of failing strategies have been thoroughly reviewed elsewhere (Carew-Reid et al. 1994, Lampietti and Subramanian 1995, World Bank 1995, Khalikane and Chileshe 1996). Major and common pitfalls include the problem of the conceptualization of sustainable development. This issue has not been fully examined in Zambia, but there is obviously a general failure in the understanding of the relationships among the ecosystem components and economic and social elements. While the Zambia National Development Plans showed considerable support for conservation, programmes and projects were based essentially on economic models.

The identification of the causes of environmental degradation was difficult due to the limited data and the lack of knowledge of the issues. While environmental problems such as deforestation and over-exploitation have generally been described, determining real causes remains problematic as most of these issues are both complex and dynamic. Unfortunately, poor screening has seriously impeded the establishment of priorities in the initial planning phase.

Unlike the National Development Plans, the National Conservation Strategy, the NEAP and the ZFAP have not been considered Zambia's plans. In fact, the World Bank-driven NEAP is a precondition for funding. Zambia's access to loans will, to some extent, depend on the status of NEAP. Usually such plans are not fully integrated into the national priorities, as in the case of the NCS. The potential for failure of NEAP in

Zambia is thus real. Furthermore, since the implementation of such plans cannot be supported by local resources, the funding of such programmes will remain donor-driven. If this is the case, then the life-span of these conservation plans will obviously be short.

As stated earlier, many countries implement conservation policies as a requirement for loans. Without commitment from leaders at the national and local levels, the mobilization of public support becomes difficult. Moreover, strategies lacking political commitment cannot survive changes of government. The Zambia Conservation Strategy was terminated as soon as the new government took office in 1991.

Zambia's position as regards conservation is unlikely to improve. The continually worsening economic situation will severely affect all initiatives in environmental protection and resource management. Zambia's main sources of funds at present are external loans and grants, and these are usually earmarked for specific purposes and subject to stringent controls that put environmental programmes in a secondary position. Further, in the absence of a national development plan, it is unlikely that proposed plans such as the NEAP and the ZFAP will be implemented effectively. These plans are almost entirely driven by external initiatives and lack national support. Nevertheless, the country's responses to future conservation initiatives are likely to be dictated by the changing economic situation. Legislative change will continue in most environmental regulations, particularly the EPPCA, the National Parks and Wildlife Act, the Forestry Act and the Fisheries Act. Institutional changes in the public sector will continue. The current public service Reform Programme, which is supported by the UNDP, will prepare the required documents, but its implementation is doubtful. The ZFAP, and the National Parks and Wildlife sector are vulnerable, for major structural changes have been proposed (Child and Lee 1992). Restructuring may have serious environmental implications. Linkages may be lost. Further, the institution may lose the efficiency developed in recent years, and institutional transformation is costly and thus perhaps unsustainable. There are signs that the current Structural Adjustment Programme will be intensified, and thus further threaten the environment, through increased poverty and subsidy reduction. Environmental protection is not a priority under structural adjustment.

CONCLUSION

Three main concerns seem to have emerged from this review. First, the size of the population in Zambia is a major issue. Its growth and dispersion

require control. Second, National Development Plans are important, as they define national priorities and play a significant role in providing support for sectoral or thematic strategies. Third, many lessons have been learned from the previous plans. The question is whether the overall standard of living of the Zambian people has been raised, and human suffering both now and in the future has been minimized, through the wise management of natural resources. In this chapter, we have pointed out issues which Zambia faces in pursuing these goals. This chapter demonstrates that there is still a genuine need for more appropriate environmental planning and better institutions and instruments for implementation. Future plans in environmental planning must confront problems such as environmental auditing, screening, the setting of priorities, identifying underlying causes, the building of responsible institutions, and the expansion of institutional capacity and skilled human resources..

Zambia needs a centralized but flexible planning system that can integrate and coordinate all plans. Continued rapid population growth may adversely affect expected results. Successful plans would thus depend on how well this factor is continued. Plans lacking financial support cannot be effectively implemented. A special environmental fund should be established to support the implementation of such plans.

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Chapter 10

Desertification and Environmental Management in Botswana

Michael B. Kwesi Darkoh

GENERAL FEATURES

Botswana straddles the Tropic of Capricorn. It is a land-locked country with an area of 582,000 square kilometres, 80 percent of which is covered by the Kalahari Desert. The extent of the latter gives a misleading impression of Botswana as a country covered by an unproductive desert. The Kalahari, however, is not a true desert: it is covered by a vegetation mantle that ranges from woodland and close-tree savannah in the north, to low tree and shrub savannah in the south and west. There are four main ecological regions in the country: the hardveld, which occupies most of the eastern part of the country, the sandveld, which covers most of the Kalahari desert, the alluvial plains of the Okavango-Chobe system, and the lacustrine plains of the Makgadikgadi Pans (Table 1). There is no true desert in Botswana, but areas covered with sand dunes do occur, especially in the west and south-west. However, except for the Okavango-Chobe area in the north, the country suffers from a general scarcity of surface water.

Rainfall varies from an average maximum of over 650 mm in the north-east to an average minimum of about 250 mm in the south-west. It varies considerably from year to year, and is extremely unpredictable over space and time. Much of it falls in scattered convective showers, making for an extremely uneven distribution. Because of the prevailing high day-time temperatures, evaporation is generally high. Daily rates of open-water evaporation may reach 7.5 mm. Drought is endemic and tends to occur Periodically every ten to twelve years.

Table 1: Ecological Regions

ECOLOGICAL REGION/ SUBREGION	ELEVATION (metres above sea Level)	RAINFALL (mm)	AVERAGE TEMPERATURE (°C)
Hardveld	850 – 1489	400 - 500	20.6 (Gaborone)
Sandveld	800 – 1200	250 - 690	22.4 (Maun)
Okavango Delta	990 – 1030	400 - 500	22.0 (Shakawe)
Makgadikgadi Pans	905 – 930	400	22.0 (Rakops)

Source: Ringrose 1996.

In view of the frequency of drought and the paucity of surface water in the country, groundwater assumes a special importance. About 75 per cent of the country's human and animal population are dependent on it (Cooke 1983). It is estimated that groundwater has an extractable volume of 100,000 million cubic metres with only 1 per cent rechargeable by rainfall (Khupe 1994: 3). Modern technology has made it possible to access ground water, using water prospecting and deep borehole drilling methods. Thus, it is only recently that groundwater become a significant key resource in Botswana. Modern water prospecting methods have resulted in a significant shift in grazing pressure, as we shall observe later.

Another consequence of the endemic drought and surface water scarcity is the limited potential of the greater part of the territory for settled agriculture. Less than five per cent of the country is suitable for rain-fed agriculture. Farming activities entail mixed cultivation in addition to cattle and smallstock grazing, and extends from the outskirts of towns and villages (Ringrose et al. 1997). In the remaining 95 per cent of the country, livestock raising is the main economic activity. Most of the land (71 per cent) is under communal or tribal grazing tenure, 23 per cent is state land, and a small proportion (6 per cent) is leased freehold for large-scale commercial ranching. Over 50 per cent of all households in Botswana own cattle. Cattle is currently the largest single source of rural income. However, this percentage is slowly declining (Arntzen et al. 1994, 1996).

In the rangelands, which cover 95 per cent of the country, a number of land use categories can be identified. These include village-based communal grazing and borehole-based cattle posts which are owned by individuals or syndicates. In both cases, livestock graze freely in the available range and often return to the kraal for watering at night. The third category is freehold government-leased ranches which are fenced and under individual management. The country's rangelands also include extensive areas of National Parks and Game Reserves (18 per cent of the surface area of

Botswana) which are coming under increasing pressure because of conflicting land uses, as will be outlined later.

DIMENSIONS OF THE DESERTIFICATION PROBLEM

In addition to the ever-present threat posed by a marginal and drought-prone environment, certain fundamental socio-economic changes which have occurred in recent years, pertaining to man's relationship to the land have exacerbated ecological tensions in Botswana.

This concerns in particular the keeping of livestock and the use of grazing resources. These changes are associated with three major developments (Cooke 1983: 10):

- an alarming increase in both human and livestock populations;
- the development of a market-oriented economy which has given cattle a high market value; and
- water prospecting and borehole drilling (Perkins 1991) which have enabled livestock raising to push further west, to use the Kalahari sandveld as a grazing resource.

Though cattle numbers vary significantly depending on the incidence of drought and disease, Botswana has generally experienced an accelerated livestock population growth especially during the past three decades. In 1966, the total livestock population (cattle, sheep and goats) was 1.7 million. By 1981, this number had increased to over 4.5 million, an increase of 265 per cent. During the same period, the cattle population alone increased from 1.2 million to 3.5 million, an increase of 292 per cent. In 1991, the latest year for which estimates are available, the total livestock population was 5.5 million, with cattle alone accounting for 2.8 million.

The human population has also grown at an accelerated rate, from 574 000 in 1971 to 936 000 in 1981, an increase of 63 per cent in ten years. The population in 1995 was 1.5 million, an increase of about 300 per cent since 1971. The average density, however, is low, at 2.2 people per square kilometre, with district densities ranging from 0.5 in the west to 66 per square kilometre, in the east.

Population densities have traditionally been highest in the eastern part of the country, off the Kalahari sandveld. The Kalahari proper remained largely unoccupied until recently (except for small communities of hunter-gatherers such as the San and the BaKgalagadi) because of the absence of easily accessible permanent water. Formerly the Kalahari was used by Tswana herdsmen for seasonal and temporary grazing, while its large wild

animal herds provided game for hunting and supported a valuable trade in skins, ivory, furs, feathers and trophies. These hunting and grazing activities were controlled by the Tswana chiefs and their local overseers (*badisa*).

This situation changed radically with the introduction of colonial rule and the monetarization of the cash economy, and especially with the establishment of world beef export markets since the 1960s. Until that time, the Botswana beef trade was confined to the regional market outlets of the mining complexes of the Witwatersrand and Central African Copperbelt, from which it faced frequent exclusion (Perkins 1991).

The development of overseas beef export markets, especially after Independence in 1966, has given cattle an ever-increasing market value. Aggressive efforts by the Botswana Meat Commission (BMC), an export, slaughter and marketing parastatal, to maximize supplier prices and bolster overseas exports of beef, have paid off. They have yielded generous European Union (EU) concessions which have raised the price of Botswana beef up to 32 per cent above the world market price (Arntzen 1990). According to Morrison (1986, cited in Perkins 1991), the aggressive marketing stance taken by the BMC led to a 90 per cent subsidy on beef exports by the European Union (then the EEC) and increasingly privileged access to their markets since 1972. Further assistance came from the World Bank and various European donors. There has been a remarkable enthusiasm throughout Botswana to take advantage of these favourable conditions.

Recent studies (e.g. Silitshena, Perkins and Ringrose 1997) have linked the rapid increase in cattle population to the EU beef subsidy or the so-called Beef Protocol which has given remarkable opportunities to herd owners, large and small, to make more money, and which has given the government the opportunity to generate the foreign exchange needed (see also Opschoor 1985, Darkoh 1989). Owing to the increasing pressure in the crowded communal grazing areas of the east, large herd owners have in the last three decades moved westwards, establishing permanent cattle posts in the Kalahari sandveld. Overstocking and the degradation of vegetation have resulted. The move into the Kalahari sandveld has been facilitated not only by the EU subsidy but also by the good rainfall in the 1970s and by the Tribal Grazing Lands Policy (TGLP) introduced in 1975. The TGLP encouraged large cattle owners to move their herds out of the overcrowded communal areas, where they would be given exclusive rights to land for the establishment of fenced commercial ranches. Additional impetus was provided by modern science and technology, which provided veterinary needs and access to new sources of water. Livestock numbers and the area available for grazing allegedly increased by about two and a half times

between 1965 and 1976 (Perkins 1991: 73). Recent satellite imageries reveal that there has been considerable uncontrolled expansion of cattle posts into areas set aside for wildlife management, resulting in land use conflicts and the extensive degradation of the tree savannahs. Examples of land use conflicts are (Arntzen et al. 1996):

- conflicts between cattle and wildlife: competition for land, water and grass, predation, disease risks;
- conflicts between cultivation and cattle or wildlife: crop damage, experienced by up to 80 per cent of the cultivators;
- conflicts between cattle or wildlife and gathering veld products, such as *mokola* palm in the north. (However, most changes in gathering opportunities are undocumented).

The number of conflicts tends to increase during droughts, when the ecosystem is under stress, when resources are more limited and people traditionally move in search of reserve resources.

Desertification in Botswana generally takes a variety of regressive forms, including (Cooke 1983, Darkoh 1989):

- the deterioration of land or the reduction in grass cover and herbaceous biomass outward radially from watering points, caused by excessive grazing, trampling by cattle, and uncontrolled veld fires;
- large-scale vegetation changes resulting in some species becoming rare, and other (usually useless or inedible) species invading the area;
- loss of topsoil due to wind or to sheet and gully erosion.

These conditions are particularly common in areas under communal land tenure and land use systems, and occur throughout eastern Botswana. One effect of this continuing land degradation is that in Kgatleng district in the south-east, for example, between 1960 and 1981, the vegetation cover has decreased from between 6 and 15 percent to between zero and 2 per cent (Van Vegten 1981: 72).

In the communal areas, the main vegetation changes resulting from heavy (or excessive) grazing are bush encroachment and changes in the species composition of grasses (mainly a shift from perennial to annual species) (Ringrose et al. 1996). A further problem lies in the increase of bare soil areas, which are increasingly subject to wind or water erosion or alternatively may lose viability through compaction (Ringrose and Matheson

1987a and 1987b).

Rangeland degradation is widely blamed upon the "tragedy of the commons" (Hardin 1968), an open access problem held to be the result of the grazing of individually-owned livestock on communally-held rangelands. In that interpretation, individuals are said to maximize benefits by putting extra animals on the rangeland, while relegating the costs (reduced grazing opportunities and range degradation) to the whole community. People are often reluctant to reduce cattle numbers even in times of drought (Sanford 1983, Abel and Blaikie 1989). This is partly due to the fact that traditional herd management is prestige-oriented. However, many farmers aiming to increase their herds are opportunistic about grazing on either communal pastures or on their own farms, for economic reasons rather than prestige (Rampha 1996). Ranch owners find it convenient to let their cattle graze in the communal area, taking them back to the ranches when grazing conditions become degraded in the former (Republic of Botswana 1996). The lack of alternative investment opportunities may also have led many people to invest in cattle and other livestock. Hence the continued increase in stock levels.

Rangeland degradation (or desertification) contributes to the reduction in land productivity as a result of overstocking and overgrazing or as a result of veld product gathering for commercial use (Ministry of Agriculture, 1995). When human mismanagement of land weakens the natural system, drought and desiccation often lead to desertification. In most places in the country, fire is not controlled Degradation is exacerbated by the effects of drought and climate change (Warren and Agnew 1988).

While there is general agreement on these impacts, rangeland degradation in arid and semi-arid lands in general has become a contentious issue in recent literature (see, for example, Perkins 1991, White 1992, Dahlberg 1994, and Dalal-Clayton 1997). The resilience of rangelands, and their ability to recover, is a matter of debate. In Botswana, for example, where the perturbations include extreme seasonal and cyclic variations in rainfall, also fire and herbivory effects, it has been argued that the territory's ecosystems (especially those of the Kalahari) have evolved *within* such a framework. It is suggested that the Kalahari plant and animal specie are adapted to persist. That is, they will remain within the systems, despite the fact that their respective population sizes may fluctuate dramatically over time (Perkins 1991).

The implication is that Botswana's arid and semi-arid ecosystems (and the Kalahari ecosystem in particular) are extremely resilient, and that there is thus no desertification or acute dryland degradation in Botswana.

The truth of the matter is that the combined effects of increasing pressure from conflicting land uses (including intensive grazing, wood harvesting, the gathering of veld products and crop production), and recurrent disturbances such as droughts, have led to dryland degradation in the rangelands throughout Botswana. As a result of rapid increases in population and an accelerated demand for natural resources, the country's water, vegetation and possibly soil resources in the limited areas of arable land (where mouldboard ploughs are in extensive use) are being exploited at unsustainable levels. Reduced productivity of natural resources results from overuse or misuse, damaging production systems. The increasing influence of humans, and the current institutional arrangements restrict the effectiveness of traditional adaptive and coping mechanisms. It would seem that rapid socio-economic change and the erosion of traditional and centralized resource management systems have rendered it increasingly difficult for disempowered local communities to adapt or respond to changes in land use dynamics effectively. The situation has been aggravated by the commodity-biased and growth-focused policies of the past, and to some extent the present, which are governed more by the imperatives of production and consumption than by the principle of environmental sustainability.

Desertification or dryland degradation is a function of any factor or combination of factors which damage the land, water and vegetation resource base and thereby restrict or inhibit their use or productive capacity (United Nations 1994). In other words, it is a manifestation of natural resource decline and management failure (Darkoh 1997) which in rural Botswana is causing unemployment (Ringrose et al. 1997). As the case study of the mid-Boteti area illustrates, significant characteristics of desertification or dryland degradation are evident even in the Kalahari sandveld region. Also, any traveller in Botswana would observe that the hardveld landscape has been turned into a mosaic of fields and abandoned fields interspersed with grazed bush and occasional water sources (Ringrose et al. 1997). Increasingly, rocky uplands (plateaus and pediments) are being used for livestock/smallstock grazing, as forage on adjacent plains becomes depleted (Ringrose and Matheson 1995). Soil erosion problems are becoming increasingly significant in the hardveld, especially adjacent to ephemeral streams and downslope from adjacent plateaus. Land degradation around villages has intensified as a result of large-scale bush clearing aimed at stimulating crop production in both hardveld and sandveld areas. Near large settlements, an incipient problem is the slow diminution of fuelwood resources (Republic of Botswana 1996: 31). Bare soil areas are evident around boreholes and water points in the eastern hardveld as well as in the

Kalahari sandveld as a result of heavy grazing. Areas in the vicinity of National Parks and Game Reserves from which migrating herbivores are trapped behind fences also show heavy grazing and vegetation depletion. And, as we have noted, rangeland resources are becoming scarce and conflicts are increasing.

Without a doubt, degradation is widespread in Botswana. However whether the degradation in Botswana is temporary (slight) or severe (that is, permanent or irreversible) is a matter calling for further research, although, there is evidence in at least one case (the mid-Boteti area) that ecosystem recovery is problematic (Sefe et al. 1996: 247). Other areas with possibly severe degradation include Lake Ngami and Buffalo fence fringes, Bokspits, Matsheng villages, Letlhakane, Gumare and Mmankgodi/Kanye and Molepolole (Kwerepe 1997). The causes of land degradation in these places range from drought and low rainfall to overgrazing and deforestation.

Livestock raising on a large scale and the clearing of large expanses of land for crop production have been introduced in the Kalahari rapidly and under generally good rainfall conditions, so that definitive conclusions cannot be reached about the resilience of the Kalahari ecosystem. Yet while we must admit that the picture is not clear, there is little doubt that dryland degradation is taking place. As Ringrose et al. (1997) have pointed out, corollaries of the degradation process in Botswana include the decline in the wildlife population, a reduction in groundwater, and a decreasing biodiversity.

Nevertheless, the exact extent of desertification or acute dryland degradation to-date is not known. Work on this is presently ongoing (e.g. Ringrose et al. 1997). Preliminary results of degradation mapping by Ringrose et al. (1997) using GIS/remote sensing shows that in the 1994 post-drought transitional period, the area degraded is about 38, 000 square kilometres, or 6 per cent of the surface area of Botswana. In the drought period (1984) about 147, 000 square kilometres or 25 per cent of Botswana was degraded. Tentative results of rangeland degradation assessments indicate that about 17 per cent of Botswana's land is currently showing signs of land degradation in the form of bare soil (4.9 per cent), partial potentially degraded areas (6.1 per cent), and possible bush encroachment areas (6.4 per cent) (Kwerepe 1997, Ringrose et al. 1997).

THE MID-BOTETI AREA: A CASE STUDY

Desertification has been intensively studied in recent years in mid-Boteti, one of the most remote parts of the country (Arntzen et al. 1994, Chanda 1996, Ringrose et al. 1996, Rampha 1996, Sefe et al. 1996). The area is

located in the Kalahari sandveld region, which has a low natural productivity due to low rainfall and poor, sandy soil. It is drained by the Boteti, an ephemeral river which at times flows during the dry season, fed by water originating from Angola (via the Okavango). The area is inhabited mostly by poor pastoralists, and because of the nutrient deficient sandy soils and persistent seasonal and cyclical drought, only marginal agricultural activity can be sustained. Despite this, human pressure is relatively high, as people have always been attracted to the area because of the availability of surface water and the absence of the tse-tse fly. In recent decades, human pressure has rapidly increased and has caused increasing resource problems, particularly during drought and in the years when the river does not flow, as has been the case in most of the last decade. The area has come to be regarded in recent years as among most severely environmentally degraded areas in Botswana (Ringrose and Matheson 1978, Ringrose et al. 1996).

Desertification was found to occur at a significant rate in the mid-Boteti area (Arntzen et al. 1994, Ringrose et al. 1996). Symptoms which occurred or increased since the 1970s include: large areas of bare soil, recently formed sand dunes, the removal of 2–3 cm of topsoil through wind erosion, changes in the composition of vegetation, a high proportion of dead trees, a declining groundwater table, increasing salinity of wells, and a substantial reduction in wildlife populations. Particularly affected areas include the zone along the river, and areas around villages and around boreholes, where pressure tends to be relatively high. Since the area has suffered no decline in average rainfall during past decades, resource depletion has been attributed to intense resource use, particularly during early drought years (Sefe et al. 1996). A survey undertaken by Chanda (1996) reveals the existence of a crisis in the traditional economy of the area. The local population seems to be keenly aware of its temporal and spatial dimension. Human activities, rather than climatic factors, are seen to be at the core of the desertification process.

Some significant features of desertification in the mid-Boteti area include (Arntzen et al. 1994, Chanda 1996, Sefe et al. 1996):

- frequent flood failures of the Boteti river, which seriously affect flood recession cultivation as well as watering of livestock and wildlife;
- decreasing availability of fresh water;
- vegetation changes on rangelands, affecting the re-growth potential of trees and veldproducts (including veldfoods);
- species decline with changes to unpalatable cover;
- increasing scarcity of fuelwood and browse resources;

- reported crop damage by livestock and wildlife, indicative of land use conflicts;
- a decrease in the groundwater table, mostly affecting livestock and trees;
- veld supply problems in areas close to settlements, suggesting depletion in accessible zones over the years;
- wind erosion, which blows away the topsoil, exposing the underlying calcrete layer, and reducing the soil fertility.

In order to survive in the harsh environment with recurrent droughts, the local people have developed several adaptations such as (Arntzen et al. 1994):

- flood recession (or *molapo*) cultivation, which makes use of the seasonal river flow in an otherwise semi-arid environment;
- combining *molapo* and dry-land cultivation to reduce the risk of outright crop failure; with the same objective, farmers practice mixed cropping techniques;
- mobile livestock management strategies, largely determined by available water resources;
- replacement of cattle by goats during droughts;
- engagement in a combination of agricultural and non-agricultural activities to reduce vulnerability to the large agricultural risks.

In recent decades, however, many of these adaptations have become less feasible due to population increase and changing conditions. Extra *molapo* land is no longer available, while livestock mobility has been reduced by the demarcation of wildlife reserves (Arntzen et al. 1994). According to Chanda (1996: 70), a passive and fatalistic attitude prevails among the local population regarding environmental degradation because of their over-dependence on external solutions. Chanda advocates measures to break the dependency syndrome to ensure the right attitude and environmental sustainability.

COMBATING DESERTIFICATION IN BOTSWANA

Botswana has shown a clear appreciation of the problems of drought and desertification and is making tremendous efforts to combat them. Research and open discussions have been encouraged. The government has evolved and adopted new land use and land tenure policies.

Government policies on rangeland degradation and rangeland management are based on two assumptions (Dahlberg 1994). First, it is assumed that rangeland degradation is one of the most serious threats to the natural resource base, and second, it is assumed communal land use practices are largely to blame. The government shares the view that the solution to Botswana's rangeland degradation problems is to be found in western type rangeland management systems. Since Independence, therefore, new land use and land tenure policies have been introduced which encourage private ownership water and grazing resources, as well as extensive fencing. Although the approach has been criticized for causing more poverty and inequality (Opschoor 1980, Molutsi 1986) and on the grounds that similar policies in the past have not been acceptable to the majority of the farmers and have failed both to increase productivity and alleviate pressure on natural resources (Sandford 1980, Adams 1990, Hitchcock 1990), there has, to date, been no remarkable change in perception or approach. However, a number of environment and desertification related sectoral policies have been introduced by the government. These include the Wildlife Conservation Policy (1986), the National Policy on Natural Resource Use and Development (1990), the National Policy on Agricultural Development (1991), the Energy Master Plan (1993), and the National Water Master Plan (1991). Common to all these policies is a desire to ensure that natural resources are used sustainably.

Some of the specific measures introduced to combat desertification under the new policy reforms include large-scale and long-term action programmes such as the Second Livestock Development Programme, the Tribal Grazing Lands Policy (TGLP), the Arable Lands Development Programme (ALDEP) and the Remote Area Resettlement Scheme. These projects, and many others which are ongoing, are described in this author's compendium on *Combating Desertification in the Southern African Region* (Darkoh 1989, see also Kwerepe 1995, 1996). Most projects are sectoral in nature and deal with issues such as soil conservation, livestock production, rangelands and wildlife management, water and land management. Their basic aim is to introduce ecologically sound and cost-effective land management practices and to improve productivity and income levels of farmers and livestock owners. In addition to large-scale projects, numerous small-scale projects have been initiated which address, among other things, irrigation and water resources development, energy needs, drought relief and institutional capacity building. To date, government policies, programmes and institutional structures aimed at desertification control focus on the growing pressure on water resources, rangeland degradation, the depletion

of wood resources, the over-exploitation of veld products, and pollution in rural areas (Republic of Botswana 1992, Sefe and Acquah 1995).

The government recognizes that consultation, with various departments, institutions, NGOs and the public is an important component of environmental policy and programme implementation. Since environmental policy formulation is a dynamic process, the need for reviews in the light of new demands and circumstances is also appreciated.

The importance of introducing appropriate economic instruments in the form of relevant incentives and disincentives to encourage good environmental practice has been accepted. The need for clearer and more comprehensive environmental legislation has also been recognized by the government, as has the necessity to expand environmental education, research and training activities. Improved planning and administrative procedures are also regarded as vital. There is further a recognition of the need to establish specific priorities to combat desertification in desertified and threatened ecosystems such as the fringes of the Okavango delta, the Makgadikgadi Salt Pans, the Eastern Kalahari Sandveld and the south-western part of Botswana, where there are signs of sand dune formation (Kwerepe 1995).

In a major attempt to address environmental problems comprehensively, the government in 1990 introduced the National Conservation Strategy (NCS). This initiative, hopes to stimulate local community participation in containing desertification and other environmental problems. Economic diversification will be encouraged through incentives and disincentives, the enforcement of legislation, the introduction of new legislation where appropriate, improved planning and administrative procedures, the expansion of facilities for environmental education, training and research activities, and the development of integrated multi-sectoral conservation projects (Republic of Botswana 1990a, 1990b). The NCS Coordinating Agency now coordinates environmental matters in Botswana. It collaborates with the ministries involved on environmental issues and is currently involved in the preparation of an NCS Action Plan.

Despite government enthusiasm and substantial investments in anti-desertification programmes, the progress in combating desertification has not been spectacular. Constraints on the efforts of combat desertification include climatic factors, the lack of appropriate government policy, and economic growth, population growth and poverty and a lack of adequate and trained manpower (Ringrose 1996, Majingo 1997).

Climatic/natural constraints include:

- frequent droughts, drying effects due to climate change and the poor quality of the sandy soil;

- a lack of control over natural and man-made veldfires, leading to large areas being burnt annually, thereby increasing the areas of exposed soil which never regain their original vegetation cover;
- the absence of groundwater or surface water available (due to minimal recharge) for large scale agricultural/irrigation activities;

Government policy/economic growth constraints include:

- generally a development (growth) focused policy without due consideration to the impact (EIA) of government-initiated activities. For example, policies to increase agricultural productivity have led to extensive areas of the eastern Kalahari being cleared for fields, which in turn has led to increased wind erosion;
- European Union propagated subsidies (tariff reduction) under the Beef Protocol have directly led to increasing numbers of cattle, and hence an increase in the number of cattle posts and ranches throughout the Kalahari (Silitshena, Perkins and Ringrose 1996);
- a lack of institutions and a lack of coherent legislation and policies for proper natural resource management;
- communal lands comprise the greatest percentage of Botswana's land area, whereas resources (skilled manpower and equipment) which can ensure proper land use planning and/or management are presently skewed towards state-owned land;
- the Tribal Grazing Lands Policy has unwittingly introduced a dual grazing system, which allows the rich cattle owners to graze their animals in private ranches as well as in communal areas;
- laxity of land authorities in the enforcement of legislation on land management.

Constraints induced by population pressure and poverty:

- the generally high growth rates (3.5 per cent) leading to large population increases;
- increasing poverty among rural dwellers and lack of employment;
- the numbers of unemployed youth are generally increasing (along with the crime rate);
- the lack of personnel with appropriate skills; and
- limited land management and organizational capacity in rural areas.

On the issues of limited land management capacity in rural areas and the lack of personnel with appropriate skills, the Principal Lands Officer in the Department of Lands, in a recent (Majingo 1996) seminar presentation to land use planning students noted that there is presently only one land use planner per district in rural areas as compared with one or more physical planner(s) in each urban area. Of more concern, according to Majingo, "is the fact that in most cases the land use planners in the districts are not physical planners by training but environmentalists". Because of the manpower and deployment problems, implementation capacity is limited.

Directly linked with the issue of inadequate capacity and the lack of personnel is the inadequacy of land use registration in the rural areas, one of the major problems facing land use planning and natural resource management in Botswana. At present, there are three authorities managing land resources in Botswana, in line with the three major systems of tenure in the country. These are the Land Boards, which manage communal or tribal lands, the Department of Lands, responsible for the management of state land, and individual owners of freehold land. Land inventories for the three different land tenure systems in the country vary in coverage and accuracy, with state-owned land having the most comprehensive inventory, followed by freehold tenure, and tribal land coming last. Land inventories of tribal lands (communal areas) under the management of the Land Boards are "presently wanting, hence physical planning in most districts in the rural areas is in its rudimentary stage" (Majingo 1996).

Furthermore, institutions in rural areas such as chieftaincy, which managed natural resources in the past, have been stripped of their powers and their role in the development process. Their replacements have not adequately filled the void (Pilane 1997). The gap between modern and traditional institutional arrangements has created confusion among the rural population contusion that has been compounded by their inability to effectively articulate their interest in the new system. This could hinder effective community-based natural resource management, essential in the implementation of projects for environmental sustainability.

An equally serious deterrent is the passive attitude and dependency syndrome among rural Botswana. A sequel to the confusion described above, this has created a false perception among the rural population that the government is a provider, as opposed to a facilitator (Pilane 1997). Pilane notes that "unfortunately, some government programmes and politicians reinforce this perception". There are also serious reservations about the human impact and extent of dryland degradation among researchers.

Controversies and conflicts persist with respect to land management and degradation. Ringrose (1996) notes that the country's National Agricultural

Policy (1991) was based on the assumption that the management of communal grazing land was not productive, made the control of animal disease difficult and resulted in range degradation (Ministry of Agriculture 1991). Since about 71 per cent of the land used for livestock farming is communal land and vulnerable to open access, communal tenure was held to lead to poor management and lack of accountability by users. This activity was assumed to result in land degradation and low productivity. The National Agricultural Policy stipulates that, as part of the solution to these problems, individuals and communities should be allowed to fence grazing land where possible, after taking into account technical, socio-economic and environmental factors. Such fencing has been encouraged in accordance with the TLGP landuse planning process and with proper recognition of existing rights.

The issue of fencing in communal grazing land has given rise to considerable debate in Botswana, particularly with respect to its costs and the lack of environmental impact assessment. Also, since the country is currently intersected by disease control fences which may have contributed to the decimation of wildlife, fencing as a land use policy measure is in disrepute. The main debate in Botswana at the moment is whether more fences are necessary. Another issue is whether communal rangelands are as unproductive as the government of Botswana assumes, given that families derive more than only meat (e.g. draught power) from their animals, and are subject to the inequities of the dual grazing system which makes communal grazing management difficult (Ringrose 1996).

Further, the policies of various ministries contradict one another. For example, the National Policy on Agricultural Development stipulates that cultivators should live at their arable homesteads, whereas the National Settlement Strategy of the Ministry of Local Government Lands and Housing does not encourage people to settle there (Majingo 1996).

Policies such as subsidies from the Ministry of Agriculture for the de-stumping of fields and the clearing of large areas in the Kalahari have also provoked controversy, as this practice induces wind erosion. Recently this has led to requests for environmental impact assessments for major government programmes and policies, especially those of the Ministry of Agriculture.

The Ministry of Agriculture (MOA) also has a mandate to promote equitable growth and development. As indicated, a number of the activities of the Ministry have taken place without due consideration of the consequences to the environment. To address this issue, the MOA has recently conducted a study on incorporating EIA analyses in agricultural projects. Specific MOA activities requiring attention include: the

construction of cordon fences, the distribution and frequency of cattle posts, the management of veldfires, the abolishment of dual grazing rights, and agricultural clearing in the Kalahari.

Since the EU Beef Protocol is currently under review, a possible decrease or abolition of the existing arrangements may reduce the size of the national herd and thus diminish the impact of livestock on the environment (Ringrose 1996). However, government plans to increase the number of sheep and goats, on account of widespread rural poverty, may well negate any positive effects of changes to the Beef Protocol.

CONCLUSION

The arid and semi-arid lands of Botswana have undergone marked socio-economic and environmental change. This chapter has pointed out that as a result of the development of the livestock sector and the use of the country's grazing resources, a complex relationship between people and environment has occurred, giving rise to dryland degradation or desertification. While considerable progress has been made in combating desertification, most anti-desertification efforts have not yet achieved the expected results. The constraints on combating desertification include climate, government policy and population growth. But perhaps the greatest constraint is the void and confusion created by the breakdown of traditional structures and the lack of adequate institutional capacity and mechanisms to implement community-based natural resource projects. Also, there are influential skeptics who currently believe that the nature and extent of desertification in the country have been exaggerated. This could influence the pace of development, especially of the government's implementation of policies such as those outlined in the National Conservation Strategy. However, given the strength of the economy, the political will, the democratic governance and the environmental consciousness among the political leadership and the educated elite, sustained efforts and possible success in containing desertification in the near future seem to be attainable.

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