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DIRECTORY OF
**ENVIRONMENTAL
INFORMATION &
ORGANISATIONS**
IN SOUTHERN AFRICA

Volume I
SADC REGION
BOTSWANA
MOZAMBIQUE
ZAMBIA
ZIMBABWE

IUCN
The World Conservation Union



IIED
INTERNATIONAL
INSTITUTE FOR
ENVIRONMENT AND
DEVELOPMENT

SARDC
Southern African Research
and Documentation Centre



SARDC - Southern African Research & Documentation Centre
Box 5690, Harare, Zimbabwe
E Mail SARDC@MANGO ZW
Fax (263-4) 738693 Tel (263-4) 738694/5/6

IUCN - The World Conservation Union
Regional Office for Southern Africa
Box 745, Harare, Zimbabwe
Fax (263-4) 720738 Tel (263-4) 728266/7

This report represents a timely, scientific treatment of a subject of public concern. Its collaborating partners take responsibility for choosing and focusing the study topics and guaranteeing its authors and researchers freedom of inquiry.

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ENVIRONMENTAL
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IN SOUTHERN AFRICA

Volume I
SADC REGION
BOTSWANA
MOZAMBIQUE
ZAMBIA
ZIMBABWE

A Product of the International Environmental and Natural Resource Assessment Information Service (INTERAISE) Project
funded by

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Editor

Munyaradzi Chenje, IMERCSA

Projects Editor

Max Chivasa, IMERCSA

Authors

Ida T Sibaya and M Chenje, IMERCSA

Indexer

Wilson Yule, IMERCSA

Contributors

Wilson Yule and Joshua Chigodora, IMERCSA

Maria da Luz P Dias, SARDC Maputo

Translation

Alexandra King, IMERCSA

Technical Support & Review

Kevin Grose, IUCN Headquarters, Gland

Dan Tunstall and Sean Gordon, WRI

Barry Dalal-Clayton and Dilys Roe, IIED

Jens Fugl and Tabeth Matiza-Chiuta, IUCN-ROSA

Pontso Mafethe and Simon Anstey, IUCN-ROSA

Ruud Jansen, IUCN Botswana

Maswabi M Maimbolwa, IUCN Zambia

Phyllis Johnson, SARDC

Eduardo Coelho, SADC ELMS

d

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ACRONYMS

COUNTRIES

AO	Angola
BW	Botswana
LS	Lesotho
MW	Malawi
MZ	Mozambique
NA	Namibia
ZA	South Africa
SZ	Swaziland
TZ	Tanzania
ZM	Zambia
ZW	Zimbabwe
CH	Switzerland
GB	United Kingdom
US	United States of America

ORGANISATIONS

CASS	Centre for Applied Social Sciences, University of Zimbabwe
CIDA	Canadian International Development Agency
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DANIDA	Danish Development Agency
DNFFB	National Directorate of Forests & Wildlife (Mozambique)
ENDA	Environment and Development Activities
FAO	Food and Agriculture Organisation of the United Nations
GEF	Global Environment Facility
HIVOS	Humanistic Institute for Cooperation with Developing Countries
IIED	International Institute for Environment and Development
IMERCSA	India Musokotwane Environment Resource Centre for Southern Africa
IUCN	International Union for the Conservation of Nature and Natural Resources
IUCN-ROSA	IUCN-Regional Office for Southern Africa
NORAD	Norwegian Agency for Development
ODA	Overseas Development Assistance
SADC	Southern African Development Community
SADCC	Southern Africa Development Coordination Conference
SADC ELMS	SADC Environment and Land Management Sector
SADC FANR	SADC Food, Agriculture and Natural Resources Sector

ACRONYMS

SADC SACCAR	SADC Southern African Centre for Cooperation in Agricultural Research
SARDC	Southern African Research and Documentation Centre
SIDA	Swedish International Development Authority
SOIWD	Southern Okavango Integrated Water Development Project
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
WCMC	World Conservation Monitoring Centre
WRI	World Resources Institute
WWF	World Wide Fund for Nature
ZERO	Zimbabwe Energy and Environment Research Organisation

TERMS

AIDS	Acquired Immune Deficiency Syndrome
DDT	Dichloro-diphenyl-trichloroethane
EIA	Environmental Impact Assessment
INTERAISE	International Environmental and Natural Resource Assessment Information Service
NCS	National Conservation Strategy
NGO	Non-Governmental Organisation
PVO	Private Voluntary Organisation
TGLP	Tribal Grazing Lands Policy
ZACPLAN	Zambezi River System Action Plan
ZACPRO	Zambezi Action Project (part of ZACPLAN)

ACKNOWLEDGEMENTS

In 1994, following the successful publication of the *1993 Directory of Country Environmental Studies*, the collaborative partnership involving the World Resources Institute (WRI), the International Institute for Environment and Development (IIED), and the World Conservation Union (IUCN), identified the Southern African Research and Documentation Centre (SARDC) as the southern Africa regional node of the International Environmental and Natural Resource Assessment Information Service (INTERAISE)

SARDC, through the India Musokotwane Environment Resource Centre for Southern Africa (IMERCSA), was tasked to

- ❖ compile and publish a three-volume *Directory of Environmental Information & Organisations in Southern Africa* focusing on the countries which are members of the Southern African Development Community (SADC),
- ❖ develop a comprehensive INTERAISE database with information on the region to enable researchers to locate and access, within the region, environmental information at national and regional levels, and
- ❖ to make environmental assessment information more widely available to policy analysts and development planners in and outside the region

Contrary to the age-old saying that too many hands spoil the broth, the collection of documents, establishment of the database, and the preparation and publication of this directory could not have been possible without invaluable assistance from many quarters, both in and outside southern Africa

SARDC would like to acknowledge the strategic advisory role of Kevin Grose, head of the IUCN Information Management Group (IMG) in Gland, Switzerland, both at the beginning and during the preparation of abstracts, Phyllis Johnson, SARDC Director, for her invaluable editorial advice, the support from INTERAISE collaborative partners -- Dan Tunstall and Sean Gordon of WRI, and Barry Dalal-Clayton and Dilys Roe of IIED. We want to thank WRI and our INTERAISE collaborators for material taken from the *1993 Directory of Country Environmental Studies*

SARDC would also like to thank the international donors who provided the funds to make the whole exercise possible, IUCN-ROSA, particularly Jens Fugl, who was always available to receive and onpass the baton, thereby keeping the project on track, Tabeth Matiza-Chiuta, Simon Anstey and Pontso Mafethe all of IUCN-ROSA for reviewing the manuscript and their constructive suggestions, Ruud Jansen for making document-collection in Botswana possible, Catherine Duncan and Debra Leonard, both of the Kalahari Conservation Society, for coordinating the legwork in Botswana, Masego Madzwamuse and Kgomotso Maano, both of IUCN Botswana, Katongo Chisupa in Zambia, and Maria da Luz P Dias, the SARDC documentalist and project manager in Maputo, for sourcing documents in Mozambique and preparing some abstracts in Portuguese, and Alexandra King of IMERCSA for translating the English abstracts into Portuguese

ACKNOWLEDGEMENTS

The preparation of the directory fell on the shoulders of Ida Sibaya, the IMERCESA documentalist who prepared the abstracts and managed the database, and Wilson Yule who took over from Ida and prepared the index

Many others played a role in the preparation of Volume I and they include Max Chivasa and Mutizwa Mukute for reviewing the abstracts, Nomusa Mthethwa for administrative support, Paul Wade for the cover design, and Anderson Mwale for page and text design

Finally, we thank the many organisations which provided the INTERAISE project of southern Africa with copies of reports and studies cited in this directory. It is the support and hard work of these organisations that will help to make environmental information a tool for progress in the southern African region

We at SARDC-IMERCESA welcome your comments on Volume I of the Southern African directory and would like to receive suggestions on how we can improve and expand our coverage, particularly during the preparation of Vols II & III

Munyaradzi Chenje

SARDC

The Southern African Research and Documentation Centre (SARDC) is an independent institution involved in the collection, analysis and dissemination of information about the southern African region. SARDC's objective is to improve the base of knowledge about economic, political, environmental, gender, cultural and social developments and trends, and their implications by disseminating information to a wide regional and international audience. SARDC is also a documentation centre containing over 4,000 subject files on regional issues, a library of books and periodicals, and computerised database of select material with reading room facilities for researchers and others studying issues with a regional perspective.

A separate environmental library and database, which are at the core of SARDC's ongoing reporting and analysis of regional environmental issues, are housed at the India Musokotwane Environment Resource Centre for Southern Africa (IMERCISA). The Centre's overall intent is to provide researchers, media, non-governmental organisations (NGOs), governments, diplomats and others with up-to-date information on the environment in southern Africa.

INTERAISE

The International Environmental and Natural Resource Assessment Information Service (INTERAISE) is a collaborative project undertaken by the International Institute for Environment and Development (IIED), the World Resources Institute (WRI) and the World Conservation Union (IUCN) on behalf of the Development Assistance Committee of the Organisation for Economic Cooperation and Development.

The project began in 1990, in recognition of the problem of locating and accessing environmental information at a national or regional level in, and for, developing countries. The first phase of the project had two principal goals: to identify and locate key national environmental and natural resource assessment documents, and to make this information available to those who need it in developing countries and in the development aid community.

Documentation collections have been established at IIED, WRI and IUCN, an additional one at the Australian International Development Assistance Bureau (AIDAB), in which hard copies of resource assessment documents are housed on a country by country basis. SARDC has been identified as the southern African node of INTERAISE. In the second phase of the project, INTERAISE seeks to contribute towards institutional capacity building by delivering available information and strengthening institutional links within developing countries. This will be accomplished by the INTERAISE Information Service operated by IIED. WRI will manage compilation of a revised and expanded Directory - *World Directory of Country Environmental Studies* - and diskette for publication in early 1996. IUCN has been assisting in the development of two regional directories of natural resource profiles and assessments for Southern Africa and Central America.

INTRODUCTION

“We are a people with close traditional ties to the soil and to nature. We must tap the deep understanding for the environment which is inscribed in the experience of those whose lives and well-being depend on it” -- Nelson Mandela, first President of a democratic South Africa

Until the early 1960s, there was hardly any written, holistic environmental policy anywhere in the world. The situation was no different in the member states of what is today the Southern African Development Community (SADC).

For most of the last three decades, the SADC countries -- Angola, Botswana, Lesotho, Malawi, Mauritius (admitted in August 1995), Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe -- have been preoccupied with decolonisation and the consolidation of national independence. The study of environmental issues and publication of policy documents are still very much in infancy compared to the industrialised world and some developing countries.

While that may be the case, indigenous environmental activities and experiences have been passed down orally through generations since time immemorial. Different sections of the community in the region have been involved in generating and gathering information over the years, producing a wide variety of materials and documents on the environment in southern Africa. Some of those documents -- published and unpublished -- are profiled in this volume of the *Directory of Environmental Information & Organisations in Southern Africa* and the two subsequent volumes. The majority of the documents were published during the past six years, focusing on issues such as the natural resource base of southern Africa, land degradation, deforestation, poaching and pollution, evolution of environmental policy and legislation, population growth, poverty and economic development.

The directory can help researchers, policy planners and individuals interested in environmental and developmental issues to identify and gain access to reports on the environment in southern Africa. The decision to prepare this directory was a result of the success and interest generated by the International Environmental and Natural Resource Assessment Information Service (INTERAISE) project which started in 1990.

The project, a collaborative initiative involving the World Resources Institute (WRI), International Institute for Environment and Development (IIED) and the World Conservation Union (IUCN), culminated in a second publication, the 1993 *Directory of Country Environmental Studies*.

The success of that directory led WRI, IIED and IUCN to commission the Southern African Research and Documentation Centre (SARDC), a regional, non-profit foundation based in Harare, Zimbabwe, to gather environmental documents on southern Africa, establish a database/library and publish a comprehensive regional version of the 1993 international directory. SARDC, through the India Musokotwane Environment Resource Centre (IMERCSA), was commissioned because of its experience in collecting documents and establishing a bibliographic database under the Communicating the Environment Programme (CEP), a regional partnership started in 1992 to gather, store, analyse and disseminate environmental information on southern Africa.

INTRODUCTION

The objective of the partnership, which involves SADC ELMS, IUCN and SARDC-IMERCSA, is also to facilitate understanding and communication between environmental groups and decision-makers in the region. CEP is funded by the German Federal Ministry for Economic Cooperation (BMZ).

Similar to the international INTERAISE database and documentation collection, the southern African initiative seeks to identify and locate key national environmental and natural resource assessment documents and to make this body of information accessible to users -- from researchers, non-governmental organisations, universities to policy planners. In addition, the southern African initiative seeks to provide information not only at the national level but all at the sub-national and local level, to identify key environmental organisations and individuals as well as provide an overview of the environmental policy infrastructure in place in each country. As such, it seeks to contribute to building capacity for informed environmental decision-making and action.

While Volume I covers the SADC region, Botswana, Mozambique, Zambia and Zimbabwe, Volume II will cover Angola, Malawi, Namibia and Tanzania, and Volume III, Lesotho, Mauritius, South Africa and Swaziland.

The directory provides abstracts and bibliographic information, for the major natural resource and environmental studies prepared on southern African countries since 1985. Materials listed in this directory are housed at IMERCESA.

The directory contains bibliographic entries on about 140 studies, some of which were published in the *1993 Directory of Country Environmental Studies*. Volume I of the southern African directory cites the documents mainly in English but Mozambican abstracts are in both English and Portuguese -- the two official languages of SADC.

Included are regional and national reports prepared for the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in June 1992.

ORGANISATION OF THE DIRECTORY

The directory is divided into five sections

- ❖ **SADC Region**, Overview, bibliographic abstracts and regional contacts
- ❖ **Botswana**, Overview, bibliographic abstracts and national contacts
- ❖ **Mozambique**, Overview, bibliographic abstracts and national contacts
- ❖ **Zambia**, Overview, bibliographic abstracts and national contacts
- ❖ **Zimbabwe**, Overview, bibliographic abstracts and national contacts

The documents are cited starting with the most recent which are regional in scope in the case of the SADC region, and national in the case of country documents. Documents covering only a part of the SADC region are cited next also starting with the most recent, and these are followed by sectoral documents. In the case of national documents, those dealing with sub-regional studies are profiled in a chronological order ahead of those dealing with different sectors.

SELECTION CRITERIA

To be selected for the southern African directory, the studies had to meet certain criteria

- ❖ concerned with southern African environmental assessments, state-of-the-environment reports, profiles, environmental action plans and conservation strategies,
- ❖ concerned with national, sub-regional and sub-national environmental assessments, state-of-the-environment reports, profiles, environmental action plans and conservation strategies,
- ❖ sectoral/area studies having a significant environmental perspective on issues such as biodiversity, wildlife, habitats, protected areas, energy resources and use, freshwater, global change, climate change, landuse, forests, agriculture, fisheries, etc ,
- ❖ useful to policymakers and others concerned with development planning,
- ❖ timely (prepared since 1985), and
- ❖ publicly available

Furthermore, it had to be possible to obtain copies of the reports so contents could be reviewed and abstracted

SUBJECT COVERAGE

The primary focus of the directory is to provide a detailed reference to reports which assess the condition and trends of the natural resources of the region and each country -- air, water, land, minerals, and living resources -- and link the quantity, condition, use and value of these resources to economic development and the maintenance of ecosystems. Also cited are natural resource management strategies and action plans that analyse the resources in the SADC region and in each of the four countries, and propose plans and priorities for action.

In addition to the regional and national abstracts, the directory also provides summary descriptions (overviews) of environmental policies and institutional framework for the region and each country. These overviews are at the beginning of each region and country section.

INTRODUCTION

SADC

Quite a number of regional studies have been included in the directory, the majority collected through the inter-governmental organisation, SADC and its Environment and Land Management Sector (ELMS). The publications cited also include the comprehensive book *State of the Environment in Southern Africa*, which was published in 1994 by CEP partners -- SADC ELMS, IUCN and SARDC.

COUNTRY

Attempts were made to obtain reports from all the four countries covered. However, the coverage is uneven and Mozambique is poorly represented mainly because of the difficulties encountered in sourcing the documents. In general, national studies were easily available compared to documents specifically dealing with sub-national or district environmental issues in each of the four countries.

DIRECTORY-TYPE INFORMATION

This publication includes directory-type information, listing organisations and contacts from various environmental fields such as wildlife, forestry, water and wetlands. Most of the entries were drawn from the CEP contacts database of 1,500 entries. The list includes names and addresses of governmental, inter-governmental and non-governmental organisations, and institutions which prepare and/or issue the above mentioned surveys and strategies, and names and addresses of other important organisations, networks or key contacts in the region and at national level. While every effort was made to give a brief description of each organisation and its area(s) of expertise, it was not possible to do so for all the organisations listed due to unavailability of information.

DIRECTORY DATABASE, SOFTWARE AND HARDWARE

The Southern African directory, will soon be available on a diskette similar to the international 1990 and 1993 directory databases. The Database is available in Micro CDS/ISIS, a bibliographic software programme developed by the United Nations Educational, Scientific, and Cultural Organisation (UNESCO).

CONTACTS

For more information about the Southern African directory, contact

INTERAISE Project

India Musokotwane Environment Resource Centre for Southern Africa (IMERCSA)

15 Downie Avenue, Belgravia, Harare, Zimbabwe

Tel ++(263-4) 737301/720814

Fax ++(263-4) 738693

Telex 26035 ZPH ZW

Email IMERCSA@MANGO ZW

INTERAISE Project
IUCN-Regional Office for Southern Africa
6 Lanark Rd, Belgravia, Harare, Zimbabwe
Tel ++(263-4) 728266/7
Fax ++(263-4) 720738
Telex 22670 IUCN ZW
Email JEF@ROSA IUCN CH

For more information about the INTERAISE project, contact
INTERAISE, World Resources Institute
1709 New York Avenue, N W , Washington, D C 20006, U S A
Tel ++(1-202) 638-6300
Fax ++(1-202) 638-0036
Telex 64414 WRI WASH
Email DIRECTORY@WRI ORG

INTERAISE, International Institute for Environment and Development
3 Endsleigh Street, London WC1H ODD, United Kingdom,
Tel ++(44-171) 388-2117
Fax ++(44-171) 388-2826
Telex 317210 Bureau G
Email EPGIIED@GN IGC ORG UK

INTERAISE, IUCN - The World Conservation Union
Rue Mauverney 28, CH-1196 Gland, Switzerland,
Tel ++(41-22) 999-0001
Fax ++(41-22) 999-0002
Telex 419624 IUCN CH
Email KEG@HQ IUCN CH

ENVIRONMENTAL POLICY OVERVIEW

The Southern African Development Community (SADC) region -- bounded by Tanzania to the north-east, Mauritius and the Indian Ocean on the east coast, South Africa to the south, the Atlantic Ocean on the west coast, and Angola to the north-west -- covers a total of 6.9 million square kilometres, which is about 30 percent of the African continent. Only 7.6 percent of the region is arable land. With an area of about 1.3 million square kilometres (km²), Angola is the biggest country in the region, and Swaziland the smallest with 17,300 sq km. Malawi has the highest percentage of arable land (25.3 percent), and Namibia the least, with 0.8 percent.

SADC, with a total population of about 141.5 million in 1995, was established as the Southern Africa Development Coordination Conference (SADCC) in 1980 with nine members. The organisation, which became a development community in 1992, has grown to 12 with the membership of Namibia (1990), South Africa (1994) and Mauritius (1995).

In southern Africa, environmental awareness has been achieved at great cost, according to the *State of the Environment in Southern Africa*, one of the most comprehensive publications on the state of the region's environment. The socio-economic crises which ravaged the continent from the early 1970s into the 1980s, particularly sharpened debate on environmental issues.

Over the years, most environmental initiatives were taken by individual countries or groups of countries affected by a common problem. This has since evolved, gaining regional perspective and attention, with all SADC countries committing themselves to the sustainable utilisation of resources.

Article 5 of the Treaty establishing SADC says one of the Community's major objectives is to "achieve sustainable utilisation of natural resources and effective protection of the environment"

In Article 21, the member-states further commit themselves to cooperate in the areas of "natural resources and environment"

Both examples show the extent to which the environment has taken a central place in the evolution of policy in the SADC region, and in the gathering and dissemination of environmental information to different communities in the region.

One of the SADC institutions playing an important role in promoting sustainable development is the Environment and Land Management Sector (ELMS), which is based in Lesotho. SADC ELMS works closely with environment departments and ministries in all member states.

SADC has identified three main environmental policy goals, which are to

- ❖ protect and improve the health, environment and livelihoods of the people of southern Africa with priority to the poor majority,
- ❖ preserve the natural heritage, biodiversity and life-supporting ecosystems in southern Africa,
- ❖ support regional economic development equitably and sustainably for the benefit of present and future generations.

The need for sound environmental policies has never been so critical.

ENVIRONMENTAL INFORMATION

Governments in the region have responded by upgrading relatively small environment and natural resources departments to full ministries

Each country has at least one ministry directly responsible for environmental issues and numerous others whose activities impact on the environment and natural resources

In addition to institutions, member states have introduced laws which not only give power to such institutions but also help to enforce measures which promote sustainable development. However, some member states have gone beyond just introducing environmental laws, raising the environmental issues at constitutional level

For example, South Africa has made a safe environment a fundamental right. Under Fundamental Rights, the interim South African Constitution guarantees every person environmental rights, stating "Every person shall have the right to an environment which is not detrimental to his or her health or well-being"

Namibia is the first country in the region to make the environment a constitutional issue. Southern African countries are party to several international treaties and conventions, some of which shape the region's policy thinking

International conventions on the environment are a new phenomenon in southern Africa, as they are throughout the continent. Participation is clearly tempered with national interests of individual countries, but regional conventions embody a new resolve to work together

While the SADC region appears to be in transition as far as environmental management issues are concerned, the growing number of institutional frameworks, both governmental and non-governmental, are clearly laying a strong foundation for effective management of the region's environment and natural resources

There is now greater accommodation between government and NGOs at the national and regional level to work together to achieve common policy objectives. This is evidenced by the wide consultation between both sides before and after the Earth Summit

The strength and influence of NGOs varies across the region. A new crop of fairly influential environmental NGOs has been established in Botswana, Namibia, South Africa and Zimbabwe, followed by Angola and Tanzania. Mozambique is developing some, but their presence is yet to be felt

BIBLIOGRAPHIC ABSTRACTS

The following documents are cited starting with the most recent and covering the whole SADC region, followed by documents focusing on parts of the region, and finally by sectoral documents. The name of the publisher or distributor of each document is provided at the end of each citation. Where full address is not immediately provided, refer to section on regional contacts.

Proceedings of the first SADCC conference on climate change, Windhoek, 2-6 March 1992

SADC ELMS, Maseru, LS

This report is based on the proceedings of a regional conference on climate change organised to create awareness among decision makers and policy makers in the SADC region. Among the issues covered in the report was the possible impact of climate change on rural societies in southern Africa. Rural societies are the most dependent on natural resources and are most affected by the climatic change such as global warming, drought and desertification, ozone depletion, water supply security and water resources management.

Available from
IUCN-ROSA

Biological diversity in southern Africa the path ahead

Masundire, Hillary Matowanyika, Joseph (eds)
IUCN-ROSA, Harare, ZW
1995 En 68p

Report of a workshop. The report focuses on research, human resource requirements and support mechanisms for action-oriented strategies that promote conservation of biological diversity within and between the states of southern Africa. Country presentations for the SADC states are also provided.

Available from
IUCN-ROSA

Human and social imperatives for environmental and resource management in southern Africa

Adisu, Melkamu Croll, Peter Matowanyika, Joseph (eds)
IUCN-ROSA, Harare, ZW
1995 En 49p

Results of a round-table meeting aimed at promoting dialogue between environmental officers and senior policy-makers.

The meeting was held after the realisation that the key to sustainable development is the recognition that separating the environmental and societal process is counterproductive.

It is imperative to note that the future of the preservation of natural resources and the betterment of the human condition lies in efforts to create alliances between those who are struggling to find new ways of serving the needs of the people, and those who are committed to meeting the demands of the environment.

ENVIRONMENTAL INFORMATION

The meeting noted that many communities, in order to survive, utilise resources to the point of destruction

Available from
IUCN-ROSA

SADC policy and strategy for environment and sustainable development toward equity-led growth and sustainable development southern Africa

SADC ELMS, Maseru, LS
Dec 1994 En 1 vol tables

This is a document from a SADC Policy and Strategy Workshop which was attended by environmental personnel from the region. It discusses the environmental, social and economic challenges and opportunities faced by the region in order to achieve sustainable development.

SADC member countries were represented at the UNCED held in Brazil in 1992, where Agenda 21 — the global action plan for environment and development — was adopted.

The report discusses the implementation of Agenda 21 in the SADC region, emphasis being placed on

- ❖ the environment integration and development,
- ❖ the implications of Agenda 21 for key SADC sectors,
- ❖ policy gaps in the present SADC structure and the necessary action to be taken

The report also discusses issues which are not catered for in Agenda 21, such as alleviation of poverty and the development of equity-led growth strategies — which focus on the development of the poor people — at national and international levels.

The reports recommends

- ❖ the incorporation of Environmental Impact Assessments into public policy,
- ❖ the formulation of a new overall SADC policy which will address equity-led growth and sustainable development, from which the policy for environment and resource management will be developed,
- ❖ strengthening of regional integration and institutions for the successful implementation of the new SADC environment programme

The document concludes with an emphasis on resource-sharing in the region. It includes annexes.

Available from
SADC ELMS

State of the environment in southern Africa

SADC/IUCN/SARDC
SADC ELMS, Maseru, LS
IUCN-ROSA Harare, ZW
SARDC, Harare, ZW
1994 En 332p photos, ill, maps, figures, tables

Southern Africa's environment is presented as it occurs in nature — without national boundaries. This environment is shared by everyone in the region regardless of history, nationality, ethnic origin, gender, religion or class. The main focus is on ecological zones (ecozones) and how they are affected by human activities.

The book, which is a result of region-wide consultations involving many organisations and individuals, contains a foreword by the President of the Republic of Botswana and Chairman of SADC, Q K J Masire.

The book is in three parts — background, environmental issues today and environmental issues in the future. The regional overview looks at socio-economic issues such as population growth and economic development, and how they affect people's interaction with the environment.

The history of environmental management and evolution of environmental policy are discussed, detailing traditional conservation methods, the colonial impact and policies and institutions that regulate the southern African environment today. Southern Africa's topical environmental issues covered include soils and land use, woodlands and forest resources, wildlife and protected areas, freshwater and marine resources, pollution and impact of armed conflict on the environment.

The "issue" chapters focus on how people in the region interact with the environment, various measures used to protect and conserve resources, and the factors which contribute to overexploitation of resources.

The book concludes with a detailed look at global atmospheric changes and considers the possible impact on the region of global warming and the depletion of the ozone layer. It also looks at the major environmental trends and scenarios, and projects them into the future to determine how these could be impacted with major changes. The underlying theme of the book is sustainable development for the region.

Available from

SADC ELMS, IUCN-ROSA and SARDC

The southern African environment profiles of the SADC countries

*Moyo, Sam O'Keefe, Phil Sill Michael
Earthscan, London, GB
1993 En 354p maps*

The book goes beyond the physical and environmental analysis by discussing environmental issues in relation to other factors. It provides data on the natural resource base of 10 southern African states (excluding South Africa).

Land issues are discussed in terms of potential for agriculture and other production activities. Land tenure and the conflicts over land use are also addressed.

It also discusses wildlife, forestry and mining. Population growth, distribution and density are covered in detail. Economic activities that are dependent on the environment such as cultivation and mining are also explored.

ENVIRONMENTAL INFORMATION

Technology is covered in relation to its impact on the environment. The concept and practice of sustainable development is discussed throughout. Environmental problems pertaining to 10 SADC countries are discussed and the book proposes strategies to combat them.

Available from

Earthscan Publications Limited
120 Pentonville Road
London N1 9JN
UK
Tel ++(44-171) 2780477
Fax ++(44-171) 2781142

Sustaining our common future special report for the UNCED Secretariat

*SADCC ELMS, Maseru, LS
Oct 1991 En 32p maps, diagrams, tables*

This is a report prepared for the Earth Summit in Brazil by the Southern Africa Development Coordination Conference (SADCC), now called Southern African Development Community (SADC).

The population of the 10 member states in 1989 was 80 million, more than two-thirds lived in rural areas. The first chapter of the report presents environment and development trends — economic, social, political and environmental — in the region.

The main environmental resources of the regions are described and they include

- land,
- water,

- vegetation,
- minerals and
- wildlife

Development plans and programmes for improving conditions are presented to counter common problems such as soil degradation, deforestation, expanding desertification, and the declining biological diversity.

Chapter two lists SADCC's objectives, programmes and goes on to outline the organisation's Natural Resources Development Strategy which has seven priority areas encompassing the maintenance and enhancement of natural resources, economic analysis and marketing of products, and environmental education.

The Environment and Land Management Sector is responsible for environmental affairs in the region, especially joint programmes such as the Zambezi River Action Plan and the Kalahari-Namib Action Plan, which involve several countries in the region.

The third chapter covers priorities for the transition to sustainable development. This transition will be all round, that is, demographic, economic, technological, social, participatory and institutional.

The last chapter expresses SADCC's priority concerns and expectations for the negotiations before and after the UNCED.

Available from
SADC ELMS

Environmental profiles of seven countries in southern Africa

*Both ENDS, Amsterdam, The Netherlands
HIVOS, Den Haag, The Netherlands
Apr 1991 En 1 vol*

The environmental profiles are based on information available in the Netherlands where the study was done. The profiles cover Botswana, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe.

For each country, the document discusses

- ❖ the major environmental problems,
- ❖ environmental policy and legislation,
- ❖ institutions and organisations dealing with environmental issues, and
- ❖ international cooperation on environmental issues

The environmental problems faced by the region are land degradation (especially in communal areas), deforestation, poaching, pollution, urbanisation, and lack of coordination between institutions responsible for the implementation of policies.

Though common to the region, the extent of the problems varies in each country. Urbanisation is a major problem in Zambia where 43 percent of the population live in urban areas, while industrial pollution is most severe in South Africa, the most industrialised of the countries in the region.

The report includes some recommendations at the end of each country profile.

*Available from
Both ENDS
Damrak 28-30
1012 Amsterdam
Netherlands*

Plan of action for the Kalahari Namib region integrated land use planning, rangeland monitoring, protection and rehabilitation

*SADCC, Maseru, LS
1990 En 81p tables*

This plan involves Angola, Botswana, Namibia, Zambia and Zimbabwe.

The main objectives of the plan of action are

- ❖ to achieve sustainable exploitation of natural resources in the Kalahari-Namib region,
- ❖ to stop human-induced land degradation and desertification processes, and
- ❖ to improve the welfare of populations in the area and thus contribute to breaking the vicious cycle of poverty, land degradation and increased poverty.

Pilot projects will be carried out in each country and communities will be strongly involved in the projects. The action plan will be implemented in two phases over a 20-year period. A monitoring system for the pilot projects has been outlined and this will be used to review changes and progress.

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The plan will be monitored by the SADC's Environment and Land Management Sector and focal points will be set up in governments of the five concerned countries

The annexes have been divided into two volumes. The first volume is a detailed description of the monitoring system which covers inventories, monitoring of implementation, organisational aspects, flow of information, and regional exchange

The second volume is a detailed country by country breakdown of the plan of action with activities, duration and cost of implementation

Available from
SADC ELMS

From policy guidelines to problem solving a critical assessment of the National Conservation Strategies of Botswana and Zambia

Borhaug, Kjetil
Chr Michelsen Institute, Bergen, Norway
Nov 1993 En 62p

This study focuses on the National Conservation Strategies (NCS) of Botswana and Zambia. The main aim of the study is to highlight the problems which are likely to be encountered in the implementation of the NCS in the two countries

The report is divided into two parts, the first part covers environmental problems, goals and policies, while the second part looks at the implementation prospects of the NCS

The major and common objective in the two national conservation strategies is to achieve optimal and sustainable utilisation of natural resources

The strategies also seek to address issues of water scarcity, deforestation, overgrazing, pressure on wildlife and natural resources, industrial and urban pollution, soil erosion, poverty and underdevelopment

The study points out that the existing environmental policies in the two countries do not spell out in detail what should be done within various sectors. It goes on to propose a framework for implementation of the strategies

Both countries have set up environmental councils and one of the responsibilities of the councils is to coordinate the implementation of the NCS

The study outlines organisational challenges and problems which face the NCS, and goes on to propose ways of facilitating organisational changes that make implementation more effective

Available from
Chr Michelsen Institute
Development Studies and Human Rights
Fantoftvegen 38
N-5036 Fantoft,
Bergen
Norway
Tel ++(47) 55574000
Fax ++(47) 55574166

Opportunities for NGO involvement in the Southern African Development Community's (SADC's) strategies on the environment

*Katerere, Yemi Moyo, Sam Ngobese Peter ZERO, Harare, ZW
Aug 1993 En 59p tables*

The paper looks at how non-governmental organisations (NGOs) in southern Africa can be incorporated into SADC's environmental agenda. The paper starts with an analysis of the main environmental concerns, highlighting the problems, the economic setting, the human dimension, trade issues, resource use patterns, and regional institutional issues.

The paper goes on to discuss the SADC strategy on the environment and it describes the programmes which are implemented by SADC's Sector Coordinating Units.

These sectors are the Environment and Land Management Sector, the Forestry Sector, the Inland and Marine Fisheries Sector, the Wildlife Sector, and the Energy Sector.

The descriptions show that there is very little NGO participation in the SADC programmes and it proposes ways of involving NGOs in the implementation of the SADC strategies, for example, in fields of research, production and information dissemination.

The constraints faced by NGOs are highlighted and the authors recommend that SADC should utilise NGOs' strengths — community-oriented set up, expertise, networks, administrative structures and unity which is a result of the NGOs' participation in UNCED.

The paper concludes by encouraging SADC to cooperate with NGOs for the successful implementation of the SADC environment strategy.

*Available from
ZERO*

Regional policy and strategy for food, agriculture and natural resources

*SADC ELMS, Maseru, LS
En*

This strategy complements existing sectoral policies and strategies of the SADC. The Food, Agriculture and Natural Resources (FANR) sectors face many problems which include:

- ❖ food production and population imbalance,
- ❖ lack of employment in rural areas,
- ❖ food insecurity,
- ❖ environmental degradation,
- ❖ inadequate training, education and research,
- ❖ poor resource management,
- ❖ lack of technical and financial resources,
- ❖ weak institutions and low levels of technology.

The policy for the FANR sectors has six objectives:

- ❖ to increase agricultural production and productivity and ensure food security at the household, national and regional levels,
- ❖ to ensure the efficient and sustainable utilisation, effective management and conservation of natural resources,

ENVIRONMENTAL INFORMATION

- ❖ to incorporate environmental considerations in all policies and programmes and to integrate the sustainable utilisation of natural resources with development needs,
- ❖ generate domestic savings and foreign exchange to finance a gradual, structural transformation of the region's agriculture-dependent economies,
- ❖ to improve the living conditions of rural populations in member states through increased income and employment derived from the efficient and sustainable utilisation of agricultural and natural resources,
- ❖ to ensure the recognition of the value of natural resources so that they can contribute optimally to the welfare and development of all people of the region

Available from
SADC ELMS

SADCC food, agriculture and natural resources review and integration of policies and strategies final report

Carroll, M [et al]
SADCC FANR, Harare, ZW
CIDA, Canada
Feb 1992 En 2 vols

At its formation in 1980, SADCC was organised into sectors to implement its plan of action. One of these sectors is the Food, Agriculture and Natural Resources (FANR) sector, which is coordinated by more than one country, unlike the other sectors.

This policy document incorporates the main elements in food, agriculture, natural resources and the environment, therefore enhancing

regional collaboration among member states and improving on the delivery of SADCC interventions in agriculture and natural resources. The report is presented in two volumes, volume I provides an issues-oriented assessment of the FANR Sector of the SADCC. It addresses the constraints faced in the integration of the Sector.

For example, the overlap and conflict between agriculture and natural resources and the lack of operational strategies for the SADCC sectors. Volume I also presents some recommendations which include a regional and programme-based strategy, the re-organisation of the management structure and some specific sectoral recommendations. Volume II contains the proposed Integrated Policy for the Food, Agriculture and Natural Resources of SADCC.

Available from
SADC FANR

SADCC natural resources and environment policies and development strategy

SADCC, Maseru, LS
Jan 1988 En 35p

This is an outline of the policies and development strategy for the region's natural resources and the environment.

An overview of the region's natural resources — land, water, plant, fish and wildlife — is given. The major environmental problems identified are overgrazing, desertification, poaching and lack of support for conservation.

and conservation-based rural development. The document also identifies the conservation action needed in order to counter the problems identified.

The action involves

- ❖ formulation of policies,
- ❖ evaluation of natural resources,
- ❖ review of legislation and institutional set-up,
- ❖ training of personnel,
- ❖ environmental education,
- ❖ assistance to rural communities to conserve natural resources, and
- ❖ implementation of international conventions.

Five policies have been drafted which will provide the framework for an appropriate cross-sectoral natural resources development strategy. The policies cover soil and water conservation and land utilisation, forestry, fisheries, wildlife management, and grasslands management sectors.

The final section looks at the natural resources development strategy which aims at the sustainable use of natural resources for the development of the region. Sector specific programmes and activities are given in detail.

Available from
SADC ELMS

SARP - Southern Africa regional water sector assessment

USAID, Harare, ZW
Stanley Consultants, Muscatine, US
Jul 1995. En 2 vols tables maps diagrams

The study was commissioned to assess regional water resources and infrastructure for southern Africa. Included in the study are 11 SADC countries and Zaire. The assessment has the potential to impact more than 160 million people throughout the region.

Thirty regional water activities were assessed and then grouped, to determine which would provide the most regional benefit while receiving outside support.

These regional water sector activities were put under categories:

- ❖ environmental enhancement,
- ❖ the Vaal river basin regional water augmentation,
- ❖ planning and management for international river basins,
- ❖ groundwater studies,
- ❖ region-wide water resource activities,
- ❖ legal assistance,
- ❖ institutional support, and
- ❖ other projects.

The legal assessment was focused on examining the process and needs to facilitate sharing of water resources in the region.

The institutional assessment revealed that at national level, water-oriented government department capabilities were severely limited by lack of appropriate staff, training facilities, equipment and budgets.

Technical expertise mainly exists at junior levels. The report also includes some recommendations on how best the USAID can assist in the development of the 30 water activities.

ENVIRONMENTAL INFORMATION

Volume II of the report contains 11 catalogues of water sector activities, which were derived from the Southern African Regional Programme of USAID database, created for the project

Available from

USAID-Zimbabwe
PO Box 6988, Harare
Zimbabwe

Tel ++(263-4) 720630/720739/720757
Fax ++(263-4) 722418

Water resource use in the Zambezi Basin proceedings of a workshop held at Kasane, Botswana

*Matiza, T Crafter, S Dale, P
IUCN, Gland, Switzerland
SADC ELMS, Maseru, LS
1995 En 173p*

In the wake of the devastating 1991/92 drought in southern Africa, increasing awareness grew of the potential of the region's water resources. Of particular interest was the utilisation of the region's largest water source, the Zambezi Basin. Eight countries in the region (Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe) form the 'Basin States'

The utilisation of the Zambezi waters presents a number of environmental problems associated with the development of wetland areas. These problems demand that future development projects are properly evaluated in ecological terms, before they are allowed to proceed

In view of this, IUCN and SADC ELMS organised a workshop on water projects of the Zambezi River. The book examines the current and future use of the waters of the Zambezi Basin with particular emphasis on environmental protection, equitable and sustainable sharing of the waters

Available from

IUCN-ROSA

Water harvesting proceedings of the SADC ELMS practical workshop

*Finkel, Moshe Segerros, Mikael
SADC ELMS, Maseru, LS
Apr 1995 En 201p tables, diagrams, maps*

Recurrent drought in the SADC region has clearly pointed out the need for better management and utilisation of the region's water resources. Water harvesting in its broad term covers a variety of means for the collection of surface and sub-surface water for its productive use. Its basic aim is to provide low-cost sustainable water supplies for rural communities based on local water sources

The objectives of this workshop were to

- ❖ familiarise experts from the SADC countries with a broad range of water harvesting techniques,
- ❖ to acquaint technical officers with the approach to social water development, and
- ❖ to assist a water-short community selected by the Government of Namibia with practical solutions to their water problems

The proceedings discuss water harvesting as an element for social water development, as well as water harvesting techniques for rain water, runoff water, flood water and subsurface water

It also includes two design models for water harvesting, one catering for water for crop production and the other for animal and domestic water. Country reports on water harvesting in Botswana, Lesotho, Zimbabwe, Swaziland and Zambia are also included

Available from
SADC ELMS

The development of an integrated water resources management plan for the Zambezi river basin proceedings

SADC ELMS, Maseru, LS
Oct 1994 En 48p tables

The Zambezi River System Action Plan (ZACPLAN) was adopted by the SADC in 1987 to develop and implement an environmentally sound water resources management plan for the entire Zambezi River basin

Nineteen projects were identified for implementation under ZACPLAN. The aim of this workshop was to review the progress in, and guide on the implementation of ZACPRO 6, one of the projects under the ZACPLAN, which aims to develop an Integrated Water Resources Management Plan for the Zambezi River Basin

The workshop observed that inadequate administrative, technical and institutional capacity, as well as lack of coordination in the

formulation and implementation of regional water resources programme inhibited progress

The workshop therefore, recommended that ZACPRO 6 include

- ❖ evaluation and assessment of environmental impacts of completed, on-going and planned projects,
- ❖ strengthening of relevant administrative, institutional and technical capacity at national and regional levels, and
- ❖ development of water resources improvement and management schemes

The report also gives a review by SADC ELMS of the other regional water resources projects such as, the Hydrological Cycle Observation System for SADC (HYCOS-SADC) and the Regional Hydroelectric Hydrological Assistance Programme

A summary country report for each of the eight represented countries is also included

Available from
SADC ELMS

ZACPLAN - Zambezi River System Action Plan implementation of category projects ZACPRO's 1-8

SADCC, Maseru, LS
En 185p tables

The Zambezi River basin stretches over parts of Namibia, Angola, Botswana, Zimbabwe, Zambia, Tanzania, Malawi, and Mozambique

ENVIRONMENTAL INFORMATION

The main objectives of the programme are to

- ❖ promote the development and implementation of environmentally sound water resources management in the whole Zambezi river system,
- ❖ to contribute to the incorporation by riparian states while increasing long-term sustainable development in the river basin

The Action Plan has many elements including

- ❖ environmental assessment,
- ❖ environmental management,
- ❖ environmental legislation, and
- ❖ environmental education

There are two categories of projects. This volume gives a detailed description of category I projects which are designed to meet short-term specific goals, for example, to provide an up-to-date compilation of projects in the Zambezi river basin which relate to ZACPLAN.

Category II projects will follow and seek to fully achieve the main objectives of the programme. The report also gives a description of the socio-economic conditions pertinent to the ZACPLAN in the riparian states.

The conditions are

- ❖ environmental legislation,
- ❖ administrative frameworks,
- ❖ research monitoring of water resources,
- ❖ water supply and sanitation,
- ❖ industrial development,
- ❖ energy production,
- ❖ agriculture and fisheries,
- ❖ forest resources management,

- ❖ tourism, wildlife and nature, and
- ❖ environmental education

Available from
SADC ELMS

SADC Land and Water Management Research Programme proceedings of the first annual scientific conference

Goolifer D E Kronen, M (eds)
SADC-SACCAR, Gaborone, BW
1992 En 278p tables, graphs, maps, ill

Sound land and water management in semi-arid environments represents an important challenge for the entire SADCC region, and in view of the pressing problems being encountered in food production and security, it is imperative that research in this field be continued and expanded.

The purpose of the conference was to bring together scientists who are actively involved in the field of land and water management research within the SADCC region to share experiences and the results of past research, discuss problems which are common to all countries, and identify areas in which future research will be required.

The conference also provided a regional forum for the presentation and dissemination of the results and conclusions of the Land and Water Management Project, which is the pilot phase of the long-term SADCC Land and Water Management Research Programme.

A total of 33 papers presented at the conference are in the proceedings.

The papers discuss various issues on soil and water management in Botswana, Malawi, Mozambique, Namibia, Swaziland, Tanzania, Zambia and Zimbabwe

In addition, papers presented by scientists from India, United Kingdom and Belgium are included

Available from
SADC SACCAR

SADCC Land and Water Management Research Programme proceedings of the second annual scientific conference

Kronen, M (ed)
SADC-SACCAR, Gaborone BW
1992 En 358p tables, graphs diagrams, ill

In southern Africa, regional food security is very important, with the agricultural sector contributing, on average, more than 50 percent of the Gross Domestic Product. Regional cooperation between SADC member states is essential in achieving this

The SADC Land and Water Management Research Programme was established to carry out research in water and land management, and to develop technology which will increase water availability and water use efficiency in agricultural production systems, and enhance and sustain land productivity

The overall theme of this conference was Research in Land and Water Management in Semi-Arid Regions

A broad range of issues having to do with this overall theme were discussed and 32 papers were presented

The papers covered five major scientific fields, which are

- ❖ models- complex approaches,
- ❖ socio-economics and agroforestry,
- ❖ agro-meteorology,
- ❖ crop, soil, water management, and
- ❖ techniques and methods required to implement research activities in various fields of land and water management

New developments in data analysis including the use of Geographic Information Systems (GIS) and remote sensing in land evaluation were also presented

Available from
SADC SACCAR

SADC Land and Water Management Research Programme proceedings of the third annual scientific conference

Kronen, M (ed)
SADC SACCAR Gaborone BW
1993 En 543p tables graphs, maps

The SADC Land and Water Management Research Programme holds annual conferences with participants from SADC countries and guests from outside the region

ENVIRONMENTAL INFORMATION

The objective of the annual conferences are to

- ❖ provide scientists with a forum for reporting on the results obtained in their respective research agendas and identify achievements
- ❖ provide critical reviews from fellow scientists on methodologies, results of researches,
- ❖ exchange information,
- ❖ provide collective scientific leadership and guidance to the Steering Committee of the programme in articulating further priority areas requiring attention at national or regional level

The theme of the third annual scientific conference was land and water management for crop production in semi-arid regions - a challenge for the SADC region. The 44 papers presented at the conference are included in the proceedings and these covered 10 major scientific fields,

- ❖ droughts (analysis, prediction and strategies),
- ❖ agro-meteorology,
- ❖ socio-economics and on-farm research,
- ❖ soil fertility,
- ❖ crop production,
- ❖ land evaluation and land use planning,
- ❖ land management and intervention techniques,
- ❖ water balance and soil moisture, and
- ❖ irrigation

Available from
SADC SACCAR

Wetlands a conservation programme for southern Africa

Chabwela, Henry N
SADCC, Lilongwe, MW
IUCN-ROSA, Harare, ZW
Nov 1991 En 2 vols maps, tables, photos

The report is based on a survey of the wetlands of southern Africa. The main goal of the wetlands programme is to increase the productivity of these systems and to expand opportunities for the exploitation of the wetland resources on a sustainable basis.

The report is in two volumes, the first volume is a regional level presentation while the second volume contains an assessment of each country, namely, Angola, Botswana, Malawi, Mozambique, Namibia, Swaziland, Tanzania, Zambia and Zimbabwe.

Volume I begins with a presentation of the problems associated with wetlands. The term wetland is defined and the types and ecological characteristics of wetlands found in the region are described, for example, floodplains, riverine system, swamps, marine system and drainage dambos.

Wetland values and functions are given, and it also describes how the systems are being threatened by human actions despite their importance to the region. Volume I ends with a discussion on wetlands protection and utilisation in southern Africa as a whole.

Volume II, a country profile discusses each country's wetland types, wetland values, threats and protection of wetlands and related issues such as legislation and institution capacities, recommendations and priority issues for the country's action plan. Goals are set for each action plan, and these are followed by objectives and activities.

Available from
IUCN-ROSA

SADC sub-regional case study on drought and desertification

SADC ELMS, Maseru, LS
May 1994 En 53p tables, diagrams

The study stemmed from Chapter 12 of UNCED's Agenda 21, which outlines some of the possible action programmes in combatting desertification and on drought effects.

Desertification in Africa is so severe that it threatens the livelihoods of several million people. In southern Africa, the three major primary causes of desertification are over-cultivation, overgrazing and deforestation, which are influenced by climatic changes and the changing social and economic conditions.

The study covers SADC countries excluding South Africa. It presents an overview of the desertification problem in the SADC region and a synthetic assessment of measures to combat desertification and to mitigate against the effects of drought.

Elements discussed in the sub-regional action programme are

- ❖ population and migration,
- ❖ hydrology and meteorology element,
- ❖ management of transboundary range and grazing lands,
- ❖ management of transboundary forest resources,
- ❖ management of shared rivers, lakes and aquifers,
- ❖ energy demand and supply,
- ❖ regional early warning systems, and
- ❖ research, training and technical cooperation

The report also discusses mechanisms for strengthening SADC sub-regional institutions in the field of environment, food security and natural resources management.

Available from
SADC ELMS

Combating desertification in the southern African region: an updated regional assessment

Darkoh, Michael B
UNEP Nairobi Kenya
1989 En 371p tables maps diagrams, graphs

Desertification is a global problem and in Africa, the creeping desert is threatening 34 percent of the continent. This study reviews the efforts in combating desertification in the southern Africa region.

ENVIRONMENTAL INFORMATION

Its primary task was to survey the state of desertification and drought within six southern African countries Botswana, Lesotho, Madagascar, Tanzania, Zambia and Zimbabwe

The introduction gives some background information on desertification and drought, showing the indicators and the status of desertification, where desertification occurs in Africa and the United Nations Plan of Action to Combat Desertification (PACD)

The introduction also includes some general characteristics of the southern African region such as the climate, vegetation, economy and population. The second chapter gives a synthesis of how to combat desertification in the region

The main sub-headings of the chapter are

- ❖ the current status of desertification,
- ❖ the socio-economic and institutional causes of desertification,
- ❖ a synopsis of the progress made in combating desertification,
- ❖ the constraints to the implementation of the PACD, and
- ❖ the lessons gained from past experiences

Each of the six subsequent chapters focuses on one of these countries covering

- ❖ a general description of the country's features, that is, location, size, climate, etc ,
- ❖ dimensions of the desertification problem,
- ❖ the progress made in combating desertification in the country, and
- ❖ a summary of the survey

It includes appendices

Available from

UNEP
Desertification Control Programme
Activity Centre
PO Box 30552, Nairobi
Kenya
Tel ++(254-2) 230800
Fax ++(254-2) 215615

Working group on assessment of the inshore fisheries stocks of Lake Kariba

*Zambia/Zimbabwe SADC Fisheries Project, Lusaka ZM
Sep 1993 En 59p tables, diagrams, ill*

The bulk of the fish species of Lake Kariba occupy the inshore area. One of the objectives of the Zambia/Zimbabwe SADC Fisheries Project is to assess the status of the inshore fisheries in order to recommend a strategy for development

A workshop was held to review the available data, evaluate the data collection systems, provide assessment results of use to management and to conclude and recommend improvements and future research. The participants analysed data available on a data base, and three species were selected for the analysis which was restricted to classical length based on analytical assessments, including selectivity analysis for gill nets

Time series of the catch and effort data were also analysed

The major problem in the assessments was the lack of length frequency data from the fishery, and the assessments had to be based on extrapolation from the experimental fishery

The results of the assessment show that the three species are only exploited by the inshore fishery at a relatively large size, that is, the fishing pressure even at high effort levels will have only a moderate influence on the stock and a decrease in mesh sizes would enable higher yields

The results represent overall average conditions, which may reflect higher exploitation levels in some fished areas and no exploitation in protected areas

Available from

Zambia/Zimbabwe SADC Fisheries Project
PO Box 75, Kariba
Zimbabwe
Tel ++(263-61) 2936
Fax ++(263-61) 2938

Strengthening environmental policy and law for mining in the Southern African Development Community

Halter Faith
SADC Mining Coordinating Unit Lusaka, ZM
Swedish Geological AB Sweden
Mar 1994 En 42p

The purpose of this study was to assess the current status of environmental policy and law for mining in the Southern African Development Community (SADC), and to recommend how the SADC Mining Sector can support improvements in this area

The report presents a review of

- ❖ mining and the environment, highlighting the diversity of mining,
- ❖ environmental impacts from mining activities,
- ❖ policy, legal and institutional frameworks,
- ❖ the prospects of new investment in the region, and
- ❖ the role of the Mining Sector Coordinating Unit (MCU)

It further gives an analysis of the legal and institutional capacity, legal requirements, the effectiveness of legal responses to mining and the environment, and the potential role of the SADC-MCU

The report recommends that the sector focuses on four major areas to help strengthen environmental policy and law related to mining, and suggests initial activities in each area

The recommendations are

- ❖ developing regional policy and guidance to improve environmental management of the mining sector,
- ❖ building institutional capacity for sound environmental management of mining,
- ❖ promoting responsible new investment in the mining sector, and
- ❖ supporting regional networks and information exchange about mining and the environment

Available from

SADC Mining Coordinating Unit (MCU)

ENVIRONMENTAL INFORMATION

Environmental effects of mining in the SADC region

*Bergstrom, J Holloway, J Zulu, E
SADC, Lusaka, ZM
Aug 1992 En 55p photos, tables*

Mining produces a lot of waste material, which, when not properly disposed of, causes considerable damage to both the environment, the human and wildlife populations

This report gives an overview of the effect of mining operations in the SADC region on the environment It is based on visits to seven countries and 35 mines and mining organisations

The chapters cover the following areas

- ❖ air pollution from mining,
- ❖ pollution arising from mining effluent,
- ❖ ground and groundwater pollution,
- ❖ environmental impact statements and closure funding in SADC mining, and
- ❖ conclusions and recommendations

Under air pollution, it discusses the chemical emissions, their quantities, effects and control The greatest amount of gaseous emissions were discovered to be of sulphur dioxide, while some were of cobalt, arsenic and mercury This chapter also looks at particulate emissions from heavy metals, silicosis, asbestosis, and others

At the end of the chapter is a discussion on the SADC air pollution standards Next, is the chapter on pollution arising from mining effluent It covers chemical effluent, quantities, effects and control

These chemical effluent are mainly of heavy metals, sulphur compounds and other contaminants such as arsenic and cyanide The fourth chapter looks at the effect of mining on ground and groundwater

The following topics covered in the chapter are heavy metals, groundwater depletion, ground subsidence, and unprotected mine openings

The study discovered a lack of baseline studies and environmental impact assessments, and the authors recommend these should be a prerequisite before new mines or expansion programmes start operating The document also covers case studies of the mines visited

Available from

SADC Mining Sector Coordinating Unit

Biomass assessment woody biomass in the SADCC region

*Millington, Andrew [et al]
Earthscan, London GB
SADCC, Lilongwe, MW
ETC Foundation Tyre & Wear GB
1989 En 270p tables, maps diagrams*

In the introduction, the technique called remote sensing is explained and how it was used for this book to show how much woody biomass (trees) there is in the region (excluding Namibia and South Africa) The book describes how the information is gathered and used The limitations of the remote sensing method are also highlighted

An overview of the biomass in the southern African region is given and vegetation is classified according to how fast it grows, and the distribution of these classes is shown

The distribution classes range from Biomass Class A to Biomass Class Z and these classes do not recognise political boundaries and, therefore, sometimes overflow in several countries. A detailed discussion of supply and demand is given which also reveals areas with excess woody biomass and those with a low supply

It further provides the names of the most dominant tree species and communities in the region, and a detailed country by country assessment of vegetation distribution, accessibility and wood quality

For example, Tanzania was divided into seven biomass classes which are Wet Miombo Woodland, Wet Seasonal Miombo Woodland, Dry Miombo Woodland, Cleared Miombo Woodland, Coastal Forest Mosaic, Semi-arid Steppe and the Semi-arid Dry Steppe

Conflicts over use of the resources and reasons for loss of woody biomass in specific areas are given

Available from
 Earthscan Publications
 3 Endsleigh Street
 London WC1H 0DD
 UK
 Tel ++(44-171) 2780477
 Fax ++(44-171) 2781142

The fuelwood trap a study of the SADCC region

Munslow, Barry [et al]
 SADCC,
 Earthscan, London, GB
 1988 En 181p

Deforestation is a continuing problem in the southern African region. The book seeks solutions to the growing energy problem within the region. The contents are divided into three parts, the first part giving a general overview, the second part focuses on rural areas and the third part on urban areas

Woodfuel is the major fuel for domestic use and it accounts for almost 80 percent of the total energy consumption of the SADCC [now SADC] region. Deforestation has exceeded reforestation for a long time

The authors recommend that the fuelwood problem is best solved by focusing on the place of woody biomass management within the agricultural production system

In addition, they believe that separate policies are required for rural and urban areas in order to solve the fuelwood problem

In the second part, the report proposes ways of building a sustainable future for woodfuel supply in rural areas. It also gives an assessment of the problems associated with woody biomass supply. Case studies on woody biomass management in Malawi, Zimbabwe, Tanzania and Swaziland are included

ENVIRONMENTAL INFORMATION

In the third part, the use of energy in the region's urban areas is analysed, and ways of ensuring urban energy supplies are given as fuel switching, the enhancement of supplies, fuel conservation, and improvement of marketing and transport systems. In the conclusion, the authors state the need for new and specific solutions to the problem of fuelwood. Includes appendices.

Available from
Earthscan Publications
(Refer to earlier citation for address)

Land policy and agriculture in eastern and southern Africa

Arntzen, J W Ngcongco, L D Turner, S D (eds)
United Nations University, Tokyo, Japan
1986 En 150p maps, tables

This document contains a selection of papers presented at a workshop on land policy and agricultural production in eastern and southern Africa.

The papers discuss land policy, including administrative and institutional considerations and social, economic and environmental implications, as they determine and are influenced by land policy.

Land policy is very important in this region because agriculture is the mainstay of the economy in most of these countries, determining economic opportunities for a large proportion of the population which is based in rural areas.

The workshop examined some similarities and differences between the countries in the region which influence land policies. The countries have a similar colonial history, dualism in the agricultural sector with communal and commercial sub-sectors, rapid urbanisation, and rapid population growth.

The differences are environmental conditions such as rainfall and soils, the location of a country in relation to regional and overseas markets, the nature of population pressure on agricultural resources, level of dependence on the agricultural sector, and the political objectives of the various governments.

Available from
United Nations University
Toho Seimen Building, 15-1 Shibuya 2-chome,
Shibuya-ku, Tokyo 150
Japan
Telex J 25442

The energy sector in SADCC countries' policies, priorities and options in the context of the African crisis

*Scandinavian Institute of African Studies,
Uppsala, Sweden*
1985 En 41p

The majority of the population in the SADCC region live in rural areas where firewood is the main source of energy because they cannot afford modern fuels.

In the region, in 1980, 79 percent of fuel used was from traditional fuels in the form of fuelwood, charcoal, crop and animal residue, while 21 percent was from modern fuels, namely electricity, petroleum products and coal

This document analyses the pattern of energy supply for the major fuels — oil, natural gas, coal, electricity, and woodfuel. The results of the analysis show that on a physical basis, the energy foundations of the region are robust

The long-term availability of large surpluses of modern fuel forms in the region as a whole suggest that, in principle, with adequate regional cooperation, the energy sector could be an engine for economic development

But, presently, all SADCC countries, besides Angola, import oil from outside the region. The principal energy issues and policy options concerning major forms of energy are also discussed. Efforts initiated by SADCC countries to manage the end-use, demand and supply of energy, and the severe constraints that limit these efforts are also discussed. It includes case studies on investment policies in electricity in Mozambique and Swaziland

Available from

Scandinavian Institute of African Studies
PO Box 2126
S-75002
Uppsala
Sweden

ENVIRONMENTAL ORGANISATIONS

REGIONAL CONTACTS

Action

PO Box 4696
282 H Chitepo Avenue
Harare, Zimbabwe
Tel ++(263-4) 724924
Fax ++(263-4) 795150
E-Mail ACTION@MANGO ZW

Contact **Mr Steve Murray**
Programme Coordinator

Action provides information and education about environmental and health related topics to over one million schoolchildren in 13,000 schools in six SADC countries. Action publishes an environmental health magazine for children, provides training to teachers in Environmental Education (EE), undertakes research in EE, develops and publishes materials on the environment for other agencies, and networks EE information in southern Africa and beyond.

Africa Resources Trust (ART)

PO Box HG 690
3 Allan Wilson Avenue, Belgravia
Harare, Zimbabwe
Tel ++(263-4) 739163
Fax ++(263-4) 795150

Contact **Dr Jonathan Hutton**
Director

ART is dedicated to the promotion of human welfare by focusing on alleviation of poverty through the ecologically and economically sound use of wild species. Its field experience has taught that conservation needs to be redefined as an activity that includes people

Accordingly, consistent with this, ART specialises in information, communication, policy analysis and the market environment, primarily at regional and international levels, as they relate to community management of wild species.

Development Media Organisation (DMO)

PO Box 5725
11 Bishop Gaul Avenue, Kopje
Harare, Zimbabwe

Contact **Mr Gama Mutemeri**
Executive Director

DMO is an environment and development publishing organisation. It publishes a bi-monthly tabloid newspaper called *Development Dialogue* which focuses on development issues in the southern African region. It has also published a Green Directory for Zimbabwe.

Drought Monitoring Centre

PO Box BE 150, Belvedere
Bishop Gaul Avenue/Hudson Avenue
Harare, Zimbabwe
Tel ++(263-4) 733156
Fax ++(263-4) 733156
Telex 40004 ZW

Contact **Mr Bradwell Garanganga**
Coordinator

The DMC is one of the two centres established by the UNDP and the World Meteorological Organisation in Africa to analyse and monitor drought conditions and to devise strategies for mitigating the impacts of drought.

SADC REGION

It co-publishes the monthly *Drought Monitoring Bulletin* with the other DMC in Kenya

Food Security Network of SADC NGOs

PO Box CY 3280, Causeway

68A Central Avenue

Harare, Zimbabwe

Tel ++(263-4) 721185

Fax ++(263-4) 721185

Contact **Mr Ephraim Matinhira**
Regional Administrator

The network is a collaborative mechanism of NGOs engaged in the food issues of the grassroots. The main areas of focus include all areas of the food cycle, natural resources management and utilisation, appropriate technology development and transfer, food policy recommendations, household-based research, training, exchange visits and secondment programmes

India Musokotwane Environment Resource Centre for Southern Africa (IMERCSA)

PO Box 5690

15 Downie Avenue, Belgravia

Harare, Zimbabwe

Tel ++(263-4) 737301

Fax ++(263-4) 738693

Telex 26035 ZPH ZW

E-Mail IMERCSA@MANGO.ZW

Contact **Mr Munyaradzi Chenje**
Director

IMERCSA, a unit of the Southern African Research and Documentation Centre (SARDC), developed out of the Communicating the

Environment Programme, a partnership of SADC ELMS, IUCN and SARDC. It provides researchers, the media, NGOs and governments with up-to-date information on the environment in southern Africa. IMERCSA produces environmental factsheets and news features, and it also houses a library with a bibliographic database and a computerised directory of environmental experts in the region.

Participatory Ecological Land-Use Management (PELUM ASSOCIATION)

P O Box CY301, Causeway, Harare

Zimbabwe

Tel ++(263-4) 792223/726538/731541

Fax ++(263-4) 723056

Contact **Mr John Wilson**
Coordinator

SADC Energy Sector

Rua Gil Vicente No 2, Luanda,

Angola

Tel ++(2442) 345288

Fax ++(2442) 343003

Telex 4090 TAUANG

Contact **Mr Antonio H Da Silva**
Sector Coordinator

The Sector addresses issues of energy development, conservation and security, and ensures that energy can be made available in the SADC region in the most efficient and cost-effective manner. The Sector is intensifying its efforts to ensure sustainable woodfuel supply and environmental conservation in the region.

ENVIRONMENTAL ORGANISATIONS

SADC Environment and Land Management Sector (SADC ELMS)
PO Box 24,
Maseru 100
Lesotho
Tel ++(266) 322158
Fax ++(266) 310190

Contact **Mr Bataung Leleka**
Sector Coordinator

The Southern African Development Community (SADC), is a legal inter-governmental institution involving 12-member States who are committed to equitable and sustainable integrated development of the southern African region. It is structurally organised into several sectors whose respective coordination is entrusted to the government of a specific member state.

The Government of the Kingdom of Lesotho is responsible for coordinating environmental, land and water resources management programmes and, to that effect has established the ELMS Coordination Unit within its Ministry of Agriculture, Co-operatives and Marketing.

Environmental assessment, reporting and awareness creation activities are some of the key components of the ELMS programme of work, which is designed to further SADC's specific objective of "achieving sustainable utilisation of natural resources and effective protection of the environment".

SADC Food, Agriculture and Natural Resources Sector (SADC FANR)
PO Box 4046, Harare
Zimbabwe
Tel ++(263-4) 751612
Fax ++(263-4) 751613
Telex 22455 FODSEC ZW

Contact **Mr Reginald Mugwara**
Sector Coordinator

The Sector aims to increase agricultural production and food security of households, nations and the region, to foster the efficient development, utilisation and conservation of natural resources, to incorporate and promote environmental considerations in all SADC policies and programmes, and to improve the living conditions of the rural population in the region.

SADC Inland Fisheries, Forestry and Wildlife Sector
P Bag 350, Lilongwe 3
Malawi
Tel ++(265) 782600
Fax ++(265) 782537

Contact **Mr David Kambauya**
Sector Coordinator

The Sector has three sub-sectors: Inland Fisheries, Forestry and Wildlife. The Sector promotes sustainable utilisation and development of the natural resources in the region.

SADC Livestock Production and Animal Disease Control Sector

P Bag 0032,
Gaborone
Botswana
Tel ++(267) 350617
Fax ++(267) 303744

Contact **Dr Motshudi Raborokgwe**
Sector Coordinator

The Sector has priority objectives of disease control, livestock production, stock improvement, production of veterinary products and stock feeds

The problems addressed by the sector are poor breeding stock, inadequate services, and overgrazing. It has a strategy of regional intervention in disease control and livestock research extension and training

SADC Marine Fisheries and Resources Sector

P Bag 13355,
Windhoek
Namibia
Tel ++(264-61) 3963187
Fax ++(264-61) 224566

Contact **Mr David Boyer**
Sector Coordinator

The Sector is charged with the task of providing leadership and guidance in the formulation and implementation, and management of sector policies, strategies, programmes and projects. One of the Sector's programmes is the marine fisheries programme which generally aims at the sustainable exploitation of the marine fisheries

SADC Mining Sector Coordinating Unit (MCU)

PO Box 31969, Lusaka
Zambia
Tel ++(260-1) 251719
Fax ++(260-1) 252095

Contact **Mr Willie Sweta**
Sector Coordinator

MCU provides all services to any organisation or mining related bodies. The main functions of the sector are to carry out administrative obligations, to administer mining projects and to recommend and review new projects, to obtain funding for adopted projects, to provide information, specialised consultancy and an advisory service

SADC Tourism Sector

PO Box 52, Maseru 100
Lesotho
Tel ++(266) 325608
Fax ++(266) 310194

Contact **Mrs Mathato Matlanyane**
Sector Coordinator

The Sector's over-riding priority is to maximise the region's market share in tourism. This is achieved through regional integration to offer a more diversified product, and cooperation to pool resources, improve standards and in the promotional arena

ENVIRONMENTAL ORGANISATIONS

Southern African Centre for Cooperation in Agricultural Research (SACCAR)

P Bag 00108, Gaborone

Botswana

Tel ++(267) 328847/8

Fax ++(267) 328806

E-Mail 100075,2511@COMPUSERVE.COM

Contact **Mr Bruno J Nduguru**
Director

SACCAR was established as a SADC Unit to provide the organisational basis for regional cooperation and to provide technical support for National Research Systems and to provide professional training in the FANR sector. SACCAR has developed 17 regional agricultural research programmes and activities to achieve its objectives and strategies.

Southern African Research and Documentation Centre (SARDC)

PO Box 5690

13 Bath Road, Belgravia

Harare, Zimbabwe

Tel ++(263-4) 738695/6

Fax ++(263-4) 738693

Telex 26035 ZPH ZW

E-Mail SARDC@MANGO.ZW

Contact **Ms Phyllis Johnson**
Executive Director

SARDC is an independent institution involved in the collection, analysis and dissemination of information about the southern African region. This is done through special reports and news features, fact sheets, policy analyses, technical expertise, topical seminars, and other specialist services. It is the parent organisation of the IMERCSA. Patron is Julius K. Nyerere.

Southern Centre for Energy and the Environment

PO Box CY 1074, Causeway

31 Frank Johnson Avenue, Eastlea

Harare, Zimbabwe

Tel ++(263-4) 737351

Fax ++(263-4) 739341

Contact **Dr Ruzvidzo Maya**
Director

The Southern Centre is an independent non-profit research facility. The specific role of the Centre is to investigate and obtain technical information necessary to support the introduction of sustainable development policies and practices in Zimbabwe and the southern African region.

UNEP-Infoterra (SASIN)

Department of Town and Regional Planning

Ministry of Local Government & Lands

P Bag 0042, Gaborone

Botswana

Tel ++(267) 354277, 354285

Fax ++(267) 313280, 354273

Telex 2589 MLGL BO

E-Mail unepbot@wn.apc.org

Contact **Ms Mmapula Keaitse**

The Southern African Subregional INFOTERRA Network (SASIN) is part of one of the largest environmental networks in the world, linking information seekers and providers. SASIN, whose objective is to help provide solutions to common environmental problems facing countries in the region, is comprised of national focal points in Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe. It is also closely linked to SADC.

The World Conservation Union - Regional Office for Southern Africa (IUCN-ROSA)

PO Box 745,
6 Lanark Road, Belgravia
Harare, Zimbabwe
Tel ++(263-4) 728266
Fax ++(263-4) 720738
Telex 22670 IUCN ZW
E-Mail poma@rosa iucn ch

Contact **Dr Yemi Katerere**
Regional Director

The mission of the IUCN, Southern Africa region, is to facilitate and strengthen an integrated approach for the sustainable and equitable use of natural resources and the conservation of biological diversity

Zambezi River Authority

PO Box 630 TA
Club Chambers, Baker Avenue
Harare, Zimbabwe
Tel ++(263-4) 704031
Fax ++(263-4) 704035

Contact **Mr Michael Tumbare**
Chief Executive

The Zambezi River Authority is a binational organisation that looks into the water management along with environment and pollution monitoring of Lake Kariba and the portion of the Zambezi River common to both Zambia and Zimbabwe. It also maintains the Kariba Dam wall and the telemetry system located upstream of the Dam which forms part of the Kariba complex

Zimbabwe Energy and Environment Research Organisation (ZERO)

PO Box 5338,
158 Fife Avenue, Harare
Tel ++(263-4) 791333
Fax ++(263-4) 732858
EMail ZERO@MANGO ZW

Contact **Dr Joseph Matowanyika**
Director

ZERO is a regional environmental organisation whose aim is to influence national, regional and international environmental policy formulation processes toward people-centred development focusing on sustainable use of natural resources

ZERO's approach is achieved through policy advocacy based on research, collaboration with governments and NGOs, organising fora for analysis of environmental policies, publications, making documentation of environmental, development and energy materials available to users, and diffusing scientific information and skills to grassroots communities through participatory research methods, awareness raising, workshops and training

ENVIRONMENTAL POLICY OVERVIEW

Botswana covers 581,730 km², 84 percent of which is the Kgalagadi Desert. Scarcity of water is, therefore, a major limiting factor in various areas. With an average rainfall of 450 mm annually, much of Botswana is arid.

Together with Namibia and South Africa, Botswana faces the prospect of inadequate water supplies in less than 30 years. Because water is so precious, the Botswana named their currency Pula, meaning rain. Their national emblem has *Pula* inscribed on it and their flag has blue denoting both the sky and water.

Despite Botswana's water problems, the country is rich in biodiversity, and about 40 percent of Botswana is protected area -- about half of it falling under the state and the remainder under local authorities.

With 2,800 plant species, few of which are endemic, Botswana's floral diversity is modest compared to that of its neighbours.

However, it has a rich assortment of animal species, many of which are endemic, over 400 bird species have been recorded in the Okavango delta area alone, and the savannas contain numerous predator and hoofed mammal species.

Botswana introduced its first game law in 1891 when the then Bechuanaland was still under British administration. The laws were protectionist and the game reserves were specifically targeted at game preservation.

Today, the major wildlife-related legal instruments are, the 1968 National Parks Act, the 1975 Fish Protection Act and the 1979 Fauna Conservation Act.

In 1992, the government amended the Wildlife Conservation and National Parks Act to enable local people to control wildlife in their areas. On tribal land, the 1970 Tribal Land Act provides for the establishment of Wildlife Management Areas (WAMs) and the 1975 Tribal Land Policy defines the concept of WAMs. These are wildlife corridors and buffer zones in which sustainable use is practised by local people.

The national parks department is responsible for drawing up management plans that are then reviewed and approved by the district authorities. The department also assists with the establishment of quotas to be hunted in any given year to avoid overexploitation.

Botswana's protected areas, which include the Chobe National Park, Central Kgalagadi Game Reserve, Nxai Pan National Park, Makgadikgadi Pans Game Reserve, the Moremi Wildlife Reserve and smaller ones, cover almost 18 percent of the country. Another 18 percent of the country has been earmarked for development as Wildlife Management Areas.

In addition to wildlife legislation, Botswana has also enacted a number of laws dealing with environmental impact assessment. Apart from the Fauna Conservation Act, the National Parks Act, the Fish Protection Act, EIA legislation also includes the, Forest Act, Herbage Preservation (Prevention of Fires) Act, Atmospheric Pollution Control Act and Agricultural Resources Conservation Act.

While it is acknowledged that these laws do not adequately protect the environment in terms of environmental impacts, they are crucial in the protection of the country's fragile arid environment from development associated with rapid economic growth.

ENVIRONMENTAL INFORMATION

Development has spawned problems such as rangeland degradation, loss of trees for fuelwood, depletion of groundwater resources, reductions in wildlife populations and indigenous grassland products, erosion of some arable land, the generation of rural, urban, and industrial wastes, leading to soil and water pollution, and the presence of unsightly and hazardous borrow pits abandoned after the extraction of building materials

A number of ministries and government departments are involved in environmental management in Botswana. These include the National Conservation Strategy Coordinating Agency which is responsible for the implementation of the conservation strategy, the Ministry of Agriculture, the Ministry of Local Government, Lands and Housing which is responsible for land management, the Ministry of Commerce and Industry, the Ministry of Mineral Resources and Water Affairs, and the Natural Resources Board

Traditional chiefs continue to play a role in allocating land, and in some regions, overseers are still active with respect to grazing land. Government measures are complemented by NGOs some of whom have lobbied for strong environmental conservation measures, to conduct research, and add to knowledge and understanding of the dangers that threaten the environment in Botswana. The Botswana Society, the Kalahari Conservation Society, and the Forestry Association of Botswana are some of the NGOs that have spearheaded conservation measures

Academic support has been provided from the University of Botswana, and the Botswana Technology Centre

For example, the BTC has been promoting the use of sustainable sources of energy such as solar, wind and biogas stoves to reduce the people's dependence on firewood. Botswana's involvement in regional and international environmental issues is evident in the activities of the Southern African Development Community, whose sectoral programmes are concerned with soil erosion, exploitation of energy and forest resources

Botswana participates in the Southern African Regional Commission for the conservation and utilisation of soils, which also discusses common environmental problems. Botswana is a signatory to the following international agreements, conventions and/or treaties

- ❖ 1963 - Treaty Banning Weapon Tests in Atmosphere, Outer Space and Underwater,
- ❖ 1971 - Treaty, Prohibiting Emplacement of Nuclear and Mass Destruction Weapons on Sea-Bed and Ocean Floor and Subsoil,
- ❖ 1973 - Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES),
- ❖ 1982 - Convention on the Law of the Sea,
- ❖ 1987 - Montreal Protocol on Substances that Deplete the Ozone Layer,
- ❖ 1992 - Framework Convention on Climate Change, and
- ❖ 1994 - Convention to Combat Desertification and Drought

At regional level, Botswana signed, along with eight other SADC countries, the Protocol on Shared Water Systems in the Southern African Development Community (SADC) region in August 1995 in Johannesburg, South Africa

BIBLIOGRAPHIC ABSTRACTS

The following documents are cited starting with the most recent and covering environmental issues from a national perspective, followed by documents focusing on provincial, district and/or sub-national issues, and finally by sectoral documents. The name of the publisher or distributor of each document is provided at the end of each citation. Where full address is not immediately provided, refer to section on national contacts

Sustainable development in Botswana

*Barnhoorn, F [et al]
The Royal Dutch Geographical Society, Utrecht,
Netherlands
Utrecht University, Utrecht, Netherlands
July 1994 En*

The objective of the study was to analyse the relationship between resource potential and resource use in communal areas of Botswana and the consequences of such for sustainable development

The book presents a review of the origins and different perceptions of the concept of sustainable development. An attempt is made to synthesise these perceptions and to indicate the relevance of the main issues in the sustainable development debate. It also provides the geographical and policy framework for the field studies. The development process of Botswana is described, and the implication for the environment against the background of the country's natural and human resources

A description of state agricultural and landuse policies of relevance to the environmental conditions in the communal areas is given

The report describes the potential and use of natural and productive resources by rural households in three communal areas in the Chobe, North-East and Kweneng districts

For each communal area, attention is paid to the resource potential in terms of climate, soil and land suitability and to the resource use in the form of arable agriculture and livestock farming. Subsequently, resource potential and resource use are compared, and the effects for land degradation and soil erosion indicated

Conclusions are drawn with regard to the prospects for sustainable development. The report ends with a comparative analysis of the relationship between resource potential and resource use to identify factors responsible for the differentiation in resource use, and to assess the effectiveness of government policy

Available from
The Royal Dutch Geographical Society
Utrecht
Netherlands

Botswana in relation to post apartheid South Africa regional problems and opportunities

*Keatimilwe, Kagiso
Botswana National Conservation Strategy
Coordinating Agency, BW
Mar 1994 En 23p tables*

South Africa had been living under an apartheid system until the first democratic elections held in April 1994 when the system was abolished

ENVIRONMENTAL INFORMATION

During apartheid, the country experienced limited interaction with the rest of the world that imposed sanctions against South Africa

This paper looks at the integration of post-apartheid South Africa into regional environmental activities in southern Africa, especially the relations with Botswana, a neighbouring country

The possible impacts in Botswana discussed are on

- ❖ the policy and practice of environmental conservation,
- ❖ the shared natural resources with South Africa, and
- ❖ the institutions responsible for conservation

The paper outlines the key themes of environmental conservation, focusing on the concept of 'sustainable development' It also discusses Botswana and South Africa's major environmental policy goals, the legislations and institutions in the two countries

The major environmental issues with possible regional implications identified in Botswana are

- ❖ water resources,
- ❖ wildlife,
- ❖ land degradation,
- ❖ waste management,
- ❖ human population, and
- ❖ the management of veld products

Of these, Botswana and South Africa share water and wildlife resources, and the paper discusses in detail possible future sharing arrangements

Available from
National Conservation Strategy
Coordinating Agency

Botswana environmental policies and practices under scrutiny -- the Lomba archives

Williamson D
1994 En 31p photos, maps, ill

The report identifies and discusses critical issues which relate to the future and well being of Botswana's natural environment The Okavango Delta and adjacent conservation areas are threatened by over-exploitation and environmentally damaging developments

Inappropriate policies, which have been mainly shaped by the politically powerful cattle ranchers, pose a grave threat to the Okavango Delta and other important conservation areas The cattle industry has expanded with scant regard to social justice, particularly the land rights of Bushmen, or to environmental costs and economic optimality Veterinary cordon fences are erected without Environmental Impacts Assessments (EIA)

The viability of proposed Wildlife Management Areas is threatened due to the erection of these cordon fences, the spread of pastoralism through borehole development, and illegal or non-sustainable hunting practices These factors have contributed to a radical decline of wildlife populations The report suggests institutions responsible for the management and conservation of wildlife and other natural resources have been ineffective

The rural population has been alienated from wildlife over much of Botswana With no stake in official conservation activities and commercial eco-tourism ventures, few rural people are motivated to conserve wildlife

Government initiatives in addressing these problems need to be improved and the report recommends some solutions

Available from

Lindlife Publishers
PO Box 1004, Kalk Bay 7990
South Africa

Botswana national report for the United Nations Conference on Environment and Development

Slutshena, R Osafo-Gyimah K
Government of Botswana, Gaborone, BW
1992 En 145p

The report covers, among other things, Botswana's economy, government policy, society and natural resource base, and discusses the role of natural resources in economic development. It also identifies leading environmental issues, the most critical of which is pressure on water resources while others include degradation of rangelands, depletion of forest resources (especially fuelwood), and air, water, soil and solid waste pollution.

The report reviews environment laws, institutions, expenditures impact assessments research specific programmes and projects and private initiatives.

It concludes by developing a plan for sustainable development, first assessing constraints and opportunities, and then presenting "An agenda for Action"

Available from

Department of Town and Regional Planning

Biodiversity guide to Botswana

Commission of the European Communities
WCMC, Cambridge, GB
1991 En 29p maps, tables

The guide lists animal species, including endangered and rare species. All vertebrate species have been declared game animals (i.e., a license is required to hunt them). White rhinos, exterminated around the turn of the century, have been re-introduced with promising results. Genetic diversity is discussed. It is noted that indigenous resources such as sorghum, millet, cowpeas and groundnuts, wildebeest, and traditional cattle breeds are all genetically threatened species whose adaptation to Botswana's climate make them particularly valuable.

Following this are sections on vegetation zones, forest resources, and important habitats. The river systems and wetlands in the north — and the Okavango delta (one of the largest inland deltas in the world) in particular — receive considerable attention.

Next are sections on protected areas, which cover 18 percent of the country, and a list of areas of conservation importance that are not currently protected.

Discussion of threats to biodiversity and of conservation efforts make up the rest of the guide. Most threats stem from the country's burgeoning cattle industry, and illegal hunting is an ongoing problem. That conservation is taken seriously is clear from the extensive institutional resources and legislation devoted to landuse, animal protection, and habitat preservation.

ENVIRONMENTAL INFORMATION

Last is a list of conservation recommendations

Available from

WCMC

219c Huntingdon Road

Cambridge CB3 0DL

UK

Tel ++(44-223) 277314

Fax ++(44-223) 277136

Telex 817 036SCMUG

National policy on natural resources conservation and development

*Government of Botswana, Gaborone, BW
1990 En 18p*

This policy document is a follow up to the National Conservation Strategy (NCS) which was formulated to ensure the sustainable development of Botswana's environment and natural resources

It presents strategy goals — both development and conservation — identified by the government to ensure maximum utilisation of renewable resources while protecting the environment from deterioration

For example, one goal is to develop multiple rather than single purpose natural resource uses, and another is to conserve non-renewable resources. The main environmental problems were identified as, growing pressure on water resources, rangeland degradation, depletion of wood resources, exploitation of veld products, and pollution

In addition, the document prescribes solutions to the main problems

Various sectors which require government assistance have also been identified

The framework for the implementation of the strategy is defined and the government will take different approaches to achieve the NCS goals, for example, resource allocation based on 'reasonable rationing' and zonation. The three main types of benefits envisaged are conservation/protection of the environment, environmental development, and community gains

The document also defines prerequisites for the successful implementation of the NCS. The prerequisites include the establishment of an organisation to oversee the implementation of the NCS from the national level right down to district and village levels. The NCS will be turned into law through the proposed introduction of an NCS Bill to the National Assembly

Available from

National Conservation Strategy
Coordinating Agency

Nature of Botswana

*Campbell, Alec Middleton, Nick (ed)
IUCN, Gland, Switzerland
USAID, Arlington, US
1990 En 87p ill, maps*

Less than 150 years ago, eastern Botswana was home to countless herds, tall trees, and huge varieties of wild animals. Today, there are only a few remaining species, mostly on freehold land, most of the large trees are gone

As the human population increases and greater pressures are brought to bear on the land, resources are certain to continue to disappear. Currently, it is difficult to obtain land to plough or a place to sink a borehole for livestock. The declining range in the east has prompted a shift toward the more fragile ranges of the Kgalagadi sandveld. Wood is disappearing rapidly around large settlements, forcing rural people to travel ever-increasing distances to gather firewood and raising the cost of wood for urban residents. Almost half the wood collected is for fencing.

Pollution is localised, but is spreading due to industrial activities and a lack of sewerage systems. The primary purpose of this environmental profile of Botswana is to inform and encourage environmental activism among the country's younger generation, the decision makers and consumers.

The report covers Botswana and its history, human activities, natural resources and their uses, and people's attitudes toward the environment. It recommends improved natural resource management and a plan of action. Numerous comments from Botswana farmers, teachers, officials, students, and others are included.

Available from
IUCN Publications Department
(Refer to end of Introduction for address)

Botswana national conservation strategy

Government of Botswana, Gaborone, BW
IUCN, Gland, Switzerland
USAID, Arlington, US
Sep 1990 En 78p + 3 annexes charts

This document describes the supply and use of natural resources in Botswana and outlines a national conservation strategy. Primary issues are identified as pressure on water resources, rangeland pasture degradation, depletion of wood resources, overuse of grassland products, and industrial/urban pollution.

Specific government intervention — including legislative and educational initiatives to address these issues — are outlined and the expected benefits described.

The final section of the report presents organisational and administrative recommendations to implement these plans and estimates resource requirements.

Available from
IUCN, Conservation Strategies Service
(Refer to end of Introduction for address)

Botswana conservation of biological diversity

WCMC, Cambridge, GB
Jun 1989 En 26p

Botswana's biodiversity, divided under flora and fauna is explained briefly. The extent of the flora is estimated at about 2 700 species, the mammal taxa is about 162 species and over 400 bird species. Botswana has some threatened animal species. Fifty species, for example, brown hyena, cheetah, black rhino, wildebeest and some bird species have been declared as conserved. The white rhino is now extinct in the country while the black rhino, waterbuck and Nile crocodile populations, for example, have shrunk.

ENVIRONMENTAL INFORMATION

There are some plant species which are protected such as timber trees. Domestic crops such as sorghum, millet, groundnuts and cowpeas are threatened due to the introduction of hybrid and foreign varieties. Botswana's vegetation is mainly savanna, with different types of savanna in different areas such as shrub savanna, tree savanna and grass savanna.

The important habitats and localities are the river systems and wetlands, the Okavango Delta with its varieties of vegetation, fish, reptiles, birds and mammals. The Chobe river, Savuti marsh, rocky hills and pans are also part of the important habitats and localities.

Protected areas cover almost 18 percent of Botswana and these include the Chobe National Park and Moremi Wildlife Reserve. The six forest reserves in Botswana are all in the Chobe district. Deforestation occurs and is mainly caused by overgrazing, fires, game concentrations and wood collection for fuel. Botswana's biodiversity is threatened by the spread of pastoralism, large cattle population, Okavango development projects and other activities. A list of critical unprotected sites and proposed protected areas is included.

Available from:
WCMC

Botswana biological diversity assessment

*Hannah, Lee Wetterberg, Gary Duval, Leroy USAID, Arlington, US
Sep 1988. En [76p] + 3 appendices, maps, tables*

Botswana's heritage and future development are linked to the diversity of its natural resources. This report documents the extent and condition of these resources and analyses current efforts to maintain them through preservation and sustainable use.

Noting that Botswana's protected areas system is one of the world's best, it recommends further improvement by expanding the system to cover all 14 major ecosystem types, developing connecting corridors (including the proposed Wildlife Management Areas) between major protected areas, and strengthening enforcement of species protection laws and management of protected areas. Outside the preservation system, land use planning is excellent, but management of natural systems such as range, forests, and wetlands is doing little to promote conservation through sustainable use. Significant degradation is already occurring and threatens a serious loss of biological diversity.

Botswana's legislative and institutional structures strongly support conservation of biological diversity, and there is high potential for generating revenues through wildlife tourism. Key conservation needs are to upgrade water management in the open range, including a major effort in borehole management, improve implementation of land use plans, study the sustainability and economics of current forestry practices, and, above all, implement the National Conservation Strategy.

Available from
USAID Information Services Clearinghouse
1500 Wilson Boulevard, Suite 1010
Arlington, VA 22209-2404
USA
Tel ++(1-703) 3514006
Fax ++(1-703) 3514039

Developing our national conservation strategy

*Cooke, John Campbell Alec (eds)
Botswana Society, Gaborone, BW
1987 En 42p*

This report is based on a national seminar whose main purpose was to ensure that the proposed solutions to environmental problems are reviewed by a cross-section of professional and decision makers from the private and public sectors of Botswana. The contributions from this seminar formed part of the country's National Conservation Strategy.

The following are the four major topics which were identified for discussion at the seminar:

- ❖ the problem of overgrazing,
- ❖ the depletion of veld products and wildlife,
- ❖ the use and conservation of woodland resources,
- ❖ the growing problems of environmental pollution

For each of the above problems, the document lists the proposed solutions which were compiled before the seminar. This is followed by contributions and suggestions from the seminar participants regarding solutions to the problems.

For example, the suggested solutions to the problem of overgrazing covered legal aspects, management of grazing resources, pricing and taxation policies and the role of environmental education.

Solutions to the depletion of veld products and wildlife lie in improved administration and management of resources, the Department of

Wildlife and National Parks, tourism, provision of better education and public awareness, and more research. The book also includes opening and closing speeches by various senior officials presented at the seminar.

Available from
Botswana Society

Profile of environment and development in Botswana

*Amtzen, J W Veenendaal E M
Free University, Amsterdam Netherlands
University of Botswana Gaborone, BW
Oct 1986 En [117p] + 8 appendices charts,
maps tables*

Botswana is in a transition period in which environmental resource management has become a priority but not a practice. This report takes as its central theme the close linkages between environment and development.

It provides information on Botswana's natural resource endowments and utilisation,

- ❖ the causes and extent of environmental problems and their geographic and socio-economic distribution,
- ❖ the influence of international factors,
- ❖ key laws, institutions and development problems, and
- ❖ strategies to alleviate environmental problems

A sectoral approach is taken, focusing on livestock and crop production, wildlife and veld products utilisation, wood utilisation, mineral production, other productive activities and

ENVIRONMENTAL INFORMATION

household consumption, and land and water resources

The major problems examined are land degradation, pollution and competition for land and water. Since Botswana's industrial sector is relatively small, pollution is limited mainly to the mining sector. However, emphasis on economic diversification may alter this situation in future. Deforestation is also limited, but woodcutting combined with clearing of vegetation for cultivation and settlements has caused erosion, particularly in hilly areas and around villages.

The report states that many environmental problems could be limited or prevented through integrated development planning, public education campaigns, and systematic research. It is recommended that immediate efforts be made to address the most serious problems of land degradation.

Available from
University of Botswana

Botswana action program and plan

Christophersen, Kjell A [et al]
Feb 1989 En 51p

The report contains the USAID's Natural Resources Management Action Programme and Plan based on information obtained from interviews, literature searches, and central themes from the National Conservation Strategy (NCS) for Botswana.

The report presents the purpose and objectives of the report and gives an overview of the wealth

of information available on natural resource management in Botswana. It also describes the country's natural resources which include minerals, atmospheric resources, water, soils, vegetation and animal resources.

The cultural, socio-economic, institutional, educational and economic constraints to improved natural resource management are discussed. A section of the report synthesises priorities, constraints and opportunities, and also develops an action programme.

The programme discusses the actions required to reduce the constraints to improved natural resource management, the recommended geographic emphasis, and a description of how to define institutional conditions that must be present to achieve the set targets.

The plan examines the mission portfolio and recommends how it could be refocused to ensure that the Plan for Natural Resources Management goals are adequately addressed.

Available from
USAID Botswana
PO Box 2427, Gaborone
Botswana
Tel ++(267) 353382
Fax ++(267) 313072

An environmental analysis of Botswana

Williamson, Doug
IUCN, Gland, CH
n d En 42p maps

This is an environmental analysis of the post independence Botswana.

The country has a low rainfall pattern and high temperatures. This has resulted in a mainly tree and shrub savanna vegetation. Part of the country is covered by the Kgalagadi desert and surface water is scarce a resource.

The main suppliers of surface water are the Okavango and Chobe river systems. Botswana has a great wealth of animal and bird species but the wildlife population is on the decline especially in the desert area. The human population is growing rapidly with the majority residing in rural areas.

The country has experienced economic growth and development due to mainly its rich diamond deposits and better health and education services has increased the general standard of living. Botswana is active in environmental initiatives at both national and international levels. There has been an increase of pressure on the environment due to population growth, high cattle population, overstocking and pastoralism. These factors have led to further problems like land degradation, depletion of veld products, wildlife population and water shortages. Landuse conflicts, pesticides and pollution are other environmental problems discussed.

The next chapter looks at ways of resolving these problems which include recognition of the problem first participation of political leaders and effective land use planning and land management.

The last chapter looks at the present development aid being given to Botswana by Norway and the role donor agencies in general can play in resolving environmental problems faced by Botswana.

Available from
WCMC

Urban industrial solid waste pollution in Botswana practice, attitudes and policy recommendations

*Segosebe, E M Van Der Post, C
NIR, University of Botswana, Gaborone, BW
Apr 1991 En 43p tables*

Botswana is a developing country, but, since its independence in 1964, the country has experienced one of the highest economic growth rates in developing countries, with industrial development being highly encouraged.

The country's local government by-laws have not been amended to accommodate the changes and They, therefore, do not cater for the handling of industrial and commercial solid wastes, some of which may be hazardous.

There has been an increase in the amount of industrial wastes and this has led to problems of waste management. For example, poor and crude methods of waste disposal are being used. There is a limited recycling of byproducts, and inadequate law enforcement.

The purpose of this paper is to review the current practice of industrial waste disposal in urban areas, the waste disposal regulations and practices of municipal authorities in selected urban centres. It particularly examines the needs and attitudes of industrial operators relating to industrial wastes.

The document also looks at the problem of pollution from industrial wastes at global level. This problem is most common in the developed or industrialised countries. Recommendations on policy issues are included and these aim to redress the problems identified.

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Some of the recommendations are

- ❖ adoption of acceptable waste management and/or disposal methods should be made a pre-condition before factories are allowed to operate,
- ❖ adoption of new and effective methods of waste management such as designed landfills, and
- ❖ provision of law enforcement measures such as penalties to ensure public compliance

Available from

National Institute of Development Research and Documentation (NIR)

Southern Okavango integrated water development* environmental impact study - Sukwane Reservoir and Pipeline

*Department of Water Affairs, Gaborone, BW
Snowy Mountains Engineering Corporation,
Cooma, Australia
Mar 1991 En 1 vol maps tables*

The Southern Okavango Integrated Water Development (SOIWD) study was commissioned to establish the most effective, and equitable, and cheapest method of using the outflow from the Okavango Delta. The report is presented in three parts

Part I is a summary of an environmental impact assessment carried out in 1987 which provides background to the current study

The impact assessment looked at

- ❖ plant ecology,
- ❖ fauna,
- ❖ medico-ecological aspects,
- ❖ sociological and landuse aspects,
- ❖ relocation and compensation cost, and
- ❖ potential reservoir benefits

Part II is an update of the impact assessment of the impact of the reservoir — upstream and downstream — as well as the reservoir area

The main topics are

- ❖ hydrology,
- ❖ aquatic plants,
- ❖ medico-ecological aspects such as malaria and schistosomiasis,
- ❖ sociological aspects, and
- ❖ landuse aspects

The last section describes the potential impact of the proposed raw water transfer system between the Sukwane reservoir on communities, landuse and the natural vegetation

Available from

Department of Water Affairs

Programme for the planning of resource utilisation in the Okavango Delta region

*Ministry of Local Government and Lands,
Gaborone, BW
SWEDEPLAN, Stockholm, Sweden
SIDA, Stockholm, Sweden
[1989] En 3v charts, maps, tables*

While much of the resource base in Botswana's Okavango Delta region remains intact, there is no room for complacency. The most serious problem facing the Delta is lack of adequate management, especially for economically vital rangeland, soil, and water resources.

This three-volume work provides an exhaustive natural resource inventory of the region, along with a programme for integrating environmental considerations into planning. The first volume begins with a general description of the study area, which encompasses the Ngamiland, Chobe, and Central districts.

The 20 chapters which cover areas such as climate, hydrology, geology, soils, topography and geomorphology, botany, ecology, zoology, scenic and cultural features, population and settlements, agriculture, forestry and veld products, water use, wildlife utilisation, fisheries, tourism and recreation, infrastructure, nature preservation, administrative structures, laws and legislation. They are supplemented throughout by numerous maps, illustrations and graphs. Volume II sketches a programme for wide-scale planning for the utilisation and protection of resources in the Delta region.

It includes a spatial planning framework for each district, an analysis of major environmental concerns, discussion of conflict resource utilisation (often related to land and water rights), and recommendation concerning legislation, the settlement-wilderness interface, water management, infrastructure, and administrative structures. Annexes to Volume II include a list of 326 detailed, site-specific recommendations and reviews of policies and legislation. Volume III summarises the main findings of the inventory and major recommendations.

Available from

SIDA
PO Box 342, S-11121 Stockholm
Sweden
Tel ++(46-8) 150100
Telex 11450

**Report of the workshop on
environmental impact assessment
legislation**

*National Conservation Strategy Coordinating
Agency, Gaborone, BW
Dec 1992 En 147 p diagrams, graphs,
maps*

The report discusses environmental impact of the following sectors, water development, urban development, the manufacturing sector, road transport, tourism, mining, arable agriculture, and livestock production. For example, under mining, the listed environmental impacts are air and water pollution.

Remedial measures to overcome these problems under mining are given as, reduction of waste at source, recycling of material, treatment of the remaining waste, and disposal of unavoidable waste in environmentally acceptable manner. In addition, the strengths and weaknesses of the relevant environmental legislation for some of the above listed sectors are discussed. Also covered is environmental issues at airports, perspectives on the organisation, scope and conceptual basis of environmental regulation in Botswana and environmental impact assessment legislation — with international examples.

ENVIRONMENTAL INFORMATION

The last section covers the discussions held by the participants based on the papers presented at the workshop. Includes a list of useful concepts and terms as well as a selected bibliography.

Available from
National Conservation Strategy
Coordinating Agency

Soil physics final report 1987-1991

Fry, G J
Oct 1992 En 126p tables, graphs, photos

The report presents results of a soil physics research in subsistence farming in semi-arid eastern Botswana conducted over four rainy seasons. The main aim of the soil physics research was to determine water balances with a view to improve the availability of soil moisture for crop use.

The work was carried out as part of a multi-disciplinary programme incorporating agrometeorology, agronomy, hydrology and soil physics. Research was carried out on 16 farms, six research station fields and adjacent rangelands. Soil samples were analyzed in the laboratory for chemical and physical properties.

The soil physics methods used were the neutron probe for soil water content measurements, and mercury manometer tensiometers for the determination of soil water potentials. The results showed that the topsoil textures ranged from sands to sandy clays, while the subsoil was predominantly sandy clay loam in texture. The soils were poor in nutrients and crops usually showed a response to phosphate fertilizer and nitrogen additions.

The available water holding capacities of the top metre of soil averaged 137 mm, and the relief microtopography was low at between zero and four percent.

Rainfall averages for the four seasons in order between 1987 - 1991 were 790 mm, 553 mm, 413 mm and 609 mm. On average, rainfall never exceeded potential evapotranspiration and little water was lost through surface water movement. Infiltration rates ranged from 18-40 mm for the first hour. Limited soil water availability was not always responsible for crop failure. A number of options for improving soil water availability, including tillage operations, were also investigated.

Available from
SADC SACCAR
(Refer to regional contacts list for address)

Botswana national water master plan study

Department of Water Affairs, Gaborone, BW
Aug 1992 En 12 vols maps, tables, ill

The studies carried out to develop the Botswana National Water Master Plan were conducted in two phases. The results of the first phase are presented in 12 volumes covering the following aspects:

- agriculture,
- economics,
- demography and water demands,
- environment,
- hydrogeology,
- hydrology,
- institutional and training aspects,

- rural water supply,
- sanitation,
- water development strategies,
- water legislation and
- water resources modelling

Results from the second phase are presented in a single volume, and a series of six manuals for computer models, and some lecture notes were also developed

The principal objectives of the study was to estimate national water demands between 1990 - 2020 to determine

- ❖ the availability and development potential of the water resources available to meet the growing demands,
- ❖ the optimum water resources development programmes and policies, and
- ❖ to identify financial, institutional, human resources and legal requirements, environmental, and social impacts

Sixty-four percent of the water used in Botswana is from groundwater sources. The plan recommends implementation programmes to cater for rural and urban water supplies

Available from

Department of Water Affairs
(Refer to national contacts list for address)

The Tribal Grazing Lands Policy at the crossroads: fencing by individuals in the communal areas of Botswana? a position paper

Keijsper, V P
May 1992 En 61p graphs

Botswana's Ministry of Agriculture introduced a policy which allows individuals to erect fences in the communal areas

The theme of this paper is that this policy must be considered contradictory, illogical and premature because of

- ❖ the achievements of the Tribal Grazing Land Policy (TGLP) of 1975,
- ❖ the contents of the White Paper on National Policy on Land Tenure (1985), and
- ❖ the contents of the present agricultural policy paper (1991)

The paper supports this view by analysing the TGLP, whose objectives were focused on the prevention of environmental degradation and the stimulation of a more commercial approach to cattle farming. It also highlights the achievements of the TGLP

The White Paper on national policy stipulates that there will be no land tenure change with regard to communal land and that action will be taken to curb the general misuse of grazing land by cattle owners

The procedural shortcomings with regard to the implementation of the present agricultural policy, and the problems resulting from individuals fencing communal areas, are discussed. The paper also recommends an alternative community-based communal area management programme

Available from

V P Keijsper
PO Box 95, 1900 AB Castricum
The Netherlands

ENVIRONMENTAL INFORMATION

Environmental impact assessment of commercial forestry in forest reserves in Chobe district, northern Botswana

Wegge, Per
Agricultural University of Norway, Norway
Mar 1992 En 25p

Chobe is one of the districts in Botswana in the north and it covers 22,500 km² of deep Kgalagadi sands. The forest resources in Chobe consists of a mixture of miombo woodlands and a southern extension of mukusi forests, with mopane woodlands scattered on shallower soils.

All five forest reserves are subjected to wild fire, logging and pressure from elephants. As a result, the canopy cover is reduced and the natural successions are set back to more open wooded and scrub savanna with more fire- and elephant-resistant species.

An environmental impact assessment study of the district was undertaken to determine the effect of past forestry activities, changing the elephant population, the increasing incidents of wildfires and their attendant effects on the ecosystem, particularly the quality of standing timber and its regeneration.

This report summarises the conclusions of the study and it presents an array of likely outcomes from the area according to various management and landuse options. It also includes a description of the natural resources in Chobe, a human population and landuse history, an assessment of the logging practice.

Also included are different scenarios such as different management measures: no human intervention, when only salvage cutting occurs, fire-control only, fire- and elephant-control.

Available from
Agricultural University of Norway
N-1432 As
Norway

National forestry research action plan

Division of Forestry and Range Ecology,
Gaborone, BW
Mar 1992 En 58p

This is a draft National Forestry Research Action Plan (NFRAP) which presents a number of forestry research programmes aimed at improving the livelihoods of the people in Botswana and their environment.

The introduction gives summaries of the activities of the agricultural, energy and forestry sectors, and future national economic and environmental challenges. The major environmental challenge is the need to reverse degradation of Botswana's soils and vegetation.

A review of past and present forestry, and current research on forest products being conducted by various organisations is presented. General research objectives, which mainly stem from the National Conservation Strategy are outlined. These stress sustainable utilisation of forests and forest resources.

The proposed research programmes cover areas such as natural woodland management and wood use, utilisation of non-wood forest products (veld products), agroforestry, rehabilitation of degraded areas, and fuelwood energy.

The forestry research support programme will consist of the following

- ❖ strengthening of infrastructure and facilities for forestry research,
- ❖ training and education,
- ❖ library services,
- ❖ dissemination of research results,
- ❖ tree-seed supply,
- ❖ administration and accounts, and
- ❖ other institutional strengthening requirements

Financial and other implementation requirements for this plan are also listed

Available from

Division of Forestry and Range Ecology,
 Ministry of Agriculture
 P Bag 003, Gaborone
 Botswana
 Tel ++(267) 350513
 Fax ++(267) 307057

Botswana urban household energy strategy study

*World Bank, Washington DC US
 May 1991 En 106p tables*

Botswana is well endowed with two primary energy resources, namely coal and wood. Coal is used to generate most of the electricity, but the country also imports a coal and electricity from South Africa. Sixty-nine percent of the energy consumed is locally produced and 31 percent is imported.

Households are the largest users of energy, accounting for 48 percent of consumption, industry and transport account for 22.5 percent each.

This report outlines the first detailed study and comprehensive energy strategy for the urban household sector in Botswana. It identifies an investment programme for the period 1991 - 1995, reflecting the current economic situation, the condition of the energy supply systems, the most pressing needs of the consumers, and the need for managing renewable indigenous resources.

The report also recommends a set of energy policies and technical assistance activities designed to facilitate the achievement of the urban household energy strategy's objectives which are to

- ❖ provide adequate, reliable, least-cost energy supply, especially for low income households,
- ❖ ensure that energy is used in an efficient manner, meet energy needs in an environmentally sound way, and
- ❖ ensure adequate maintenance of the energy supply systems and the viability of the responsible producers/suppliers

Available from

Industry and Energy Department,
 The World Bank
 1818 H Street N W
 Washington DC 20433
 USA

ENVIRONMENTAL INFORMATION

Botswana's agricultural policy critical sectoral issues and future strategy for development

*Ministry of Agriculture, Gaborone, BW
Feb 1991 En 51p tables, graphs*

About three-quarters of the population in Botswana live in rural areas and derive their livelihood mainly from agriculture. The dominant production activity in this sector is livestock, primarily cattle. The objectives of the agricultural policy are to provide adequate and secure livelihoods for the farmers, increase agricultural output, increase food self sufficiency, conserve agricultural land resource and to provide employment in the sector.

This document reviews the performance of the agricultural sector over the last two decades, highlighting livestock production, small stock — sheep and goats — production and the arable farming sub-sectors.

Generally, the cattle population increased steadily from the mid-sixties to the early eighties, but declined due to the drought in 1982. Cattle productivity is much higher in commercial farming sector than the communal sector under which the majority of farmers fall.

*Available from
Ministry of Agriculture*

Agricultural sector assessment a strategy for the development of agriculture in Botswana

*Edwards, Edgar O [et al]
Ministry of Agriculture, Gaborone, BW
May 1989 En 247p tables*

A study of the agricultural sector of Botswana was conducted with the aim of providing the government with a better information base for planning programmes to ensure national and household food security, increase agricultural production and employment, and improve rural income distribution. Part of the study involved an assessment of the fiscal and monetary policies which are of importance to agriculture.

The study also addressed some of the broader aspects of rural development such as conservation of natural resources, the sources of rural incomes, and institutional and manpower constraints on development. The report recommends that agricultural development in Botswana is best achieved through a wider diversification of agricultural products, uses of natural resources, technologies of agricultural production, and markets.

The government's role in supporting diversification is through

- ❖ conservation of natural resources,
- ❖ the establishment or improvement of rural markets,
- ❖ support for private sector development,
- ❖ the provision of agricultural credit,
- ❖ research and extension, and
- ❖ drought relief and drought recovery programmes

The role of institutions in implementing the strategy is also outlined. The report ends with some recommendations which address actions needed to implement the various forms of diversification that lie at the heart of the strategy proposed for the future development of agriculture in Botswana.

*Available from
Ministry of Agriculture*

The contribution of wildlife to the economy of Botswana

*Department of Wildlife and National Parks, Gaborone, BW
FGU-Kronberg & Engineering GMBH, Koenigstein, Germany
Jul 1988 En 48p tables*

Botswana's wildlife resources are concentrated in national parks and game reserves. In this report, the economic contribution of wildlife to the economy is investigated and recommendations are made regarding further research requirements.

Government statistics and analysis of hunting licence allocations were used to derive selected economic aggregates describing the economic contribution of wildlife. In 1986, the total gross output of the wildlife industry was P50.63 million, while the investment in fixed assets was P20.62 million. The gross value added for the sector was P21.55 million and this was 42.6 percent of gross output.

In 1986, the contribution to the Gross Domestic Product (GDP) within the wildlife sector was P21.55 million, which amounts to one percent of the GDP.

The contribution of wildlife to the economy has been growing at an average rate of 6.35 percent annually since 1975, and has almost doubled over this period. The greatest contribution to this increase has been in game viewing tourism.

In 1986, an estimated 2,022 people were employed full time in the sector, while 1,000 more potential jobs existed. The study also found out that there was an urgent need for research into the less tangible social, environmental and aesthetic impacts of the wildlife industry.

*Available from
Department of Wildlife and National Parks*

Water conservation strategy

*Krook J O
Department of Water Affairs, Gaborone, BW
Sep 1987 En 50p*

The paper starts with highlights of water related problems being faced by Botswana and some of the problems are linked to the National Conservation Strategy. The problems include, conflicting policies for water development and usage, pollution of water resources and increasing costs of water supply. A section of the paper takes a glimpse at past experiences, to avoid making the same mistakes, before criteria for solutions to the water problems is given.

Botswana is mainly a desert or semi desert environment and, therefore, water is a limited and scarce resource. Thus, the water sector, for example, is preparing for the execution of a National Master Plan project intended to take stock of the country's water resources, estimate demand for the next 30 years and give guidance for orderly, environmentally acceptable and cost effective development of the water resources.

Details of the present water consumption in the country which adds up to about 137.5 million cubic metres per year are given. Estimates of future water demand are listed by sectors, for example, urban areas, major villages, mines, energy and irrigation water demands. From a surface water point of view, the country could be divided into five regions namely Limpopo and Makgadikgadi basins, Kalahari, Okavango and Chobe/Zambezi.

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These regions are discussed in detail. The next section of the paper is about groundwater because Botswana is heavily dependent on its groundwater resources due to a poor surface water system.

The paper is concluded with highlights of the importance of the water sector in national development and the problems related to water protection and conservation.

Available from
Department Water Affairs

Development or dereliction - Botswana's wildlife crisis sound ecology makes good economic sense

*FGU-Kronberg Consulting + Engineering,
Konogstein, Germany
Department of Wildlife and National Parks,
Gaborone, BW
Aug 1987 En 59p tables*

A consolidated development programme for the Department of Wildlife and National Parks of Botswana is presented.

It contains details of information on countrywide staffing and infrastructural development required to raise the Department to a level at which it can effectively execute its functions and implement the Wildlife Conservation Policy objectives.

The infrastructural requirements provide for offices and staff accommodation, including accommodation of all industrial class posts except labourers, covering both field headquarters and camps.

The staffing plan provides for mobile tactical law enforcement units in addition to camps, and also introduces an economics unit, district wildlife planning officers, and district computer units.

There is also provision for a National Parks and Game Reserves system. The field development programme largely continues the existing departmental programmes.

Available from
Department of Wildlife and National Parks

The TGLP [Tribal Grazing Land Policy] the impact of commercial ranching and land allocation on people formerly deriving their livelihood from those lands

*Morapedi, Ntwaetsile T
NIR, University of Botswana, Gaborone, BW
Jan 1987 En 92p tables, maps*

The objective of this study was to find out the fate of people who, prior to the introduction of the TGLP (Tribal Grazing Land Policy), derived some livelihood from the lands now allocated for commercial ranching. The first chapter outlines the history of agriculture in Botswana, highlighting agrarian reforms. It then describes the TGLP introduced into the Botswana Land Tenure System in 1975.

The poor implementation of the policy jeopardised some of the objectives the policy intended to serve. The second chapter addresses problems encountered, the main one being that of people pursuing different types of livelihood within and around the ranching zone.

This section also provides a literature review on matters pertaining to the affected groups, highlighting the groups which were to be affected by the TGLP. Chapter three gives background information on the area under study which is the Lepasha and Kweneng.

The following chapter is an analysis of occupational activities, livestock distribution and the educational background of the community. It also assesses whether the identified means of livelihood of the community at the time of the study were affected by ranching.

Chapter five analyses how different groups of people were affected by the introduction of commercial ranches. The study concludes that the TGLP benefitted the rich at the expense of the poor majority who in the past, derived their livelihood from the land allocated to commercial ranching.

Available from

National Institute of Development Research and Documentation (NIR)

Spreading deserts or spatially confined environmental impacts? Land degradation and cattle ranching in the Kgalagadi of Botswana

Perkins, Jeremy S. Thomas, David S. En 29p tables, maps, diagrams

The Kgalagadi of Botswana is increasingly being utilised for livestock particularly through the establishment of ranches dependent on borehole water supplies.

The literature on the environmental impact study of such dryland use practices is conflicting, with borehole and well-supplied livestock systems being regarded in some studies as centres for the spread of desertification and in others as having environmental impacts that are over-ridden by the effects of natural climatic variability.

This paper reports the results of an environmental study focused on a block of borehole ranches established in the eastern Kgalagadi as part of Botswana's Tribal Grazing Land Policy dating from the 1970s. Investigations concentrate on ecological, soil chemistry and soil erosion impacts on the study ranches.

Although important changes in ecology and soil nutrient status of the ranches are identified, their contribution to environmental degradation must be viewed in terms of stocking levels, the radial nature of range usage, giving rise to marked spatial variations in impact, and natural climatic variability. Impacts are not solely detrimental, but long-term monitoring, especially in relation to climatic fluctuations, needs to be undertaken to fully establish the dynamic interactions of variables.

Available from

Department of Environmental Science, University of Botswana

National Conservation Strategy wildlife (animals)

Nchunga, Mushanana L. Department of Wildlife and National Parks, Gaborone, BW. n.d. En 54p tables

ENVIRONMENTAL INFORMATION

The report presents a national conservation strategy for wildlife resources in Botswana. It begins with an overview of the wildlife resources, highlighting the uses made of wildlife, habitats in the country, the management of wildlife resource, and their economic and social significance.

The major problems impeding conservation for development according to the report include poaching, animal deaths due to natural habitat changes and human activities such as clearing forests for agriculture, drought, poor management of the resource and inadequate equipment and financial resources for institutions which manage wildlife.

The report assesses the causes and impacts of these problems on wildlife. Long-term goals which emphasise sustainable utilisation of wildlife are also presented, and the possible barriers which could inhibit the realisation of these goals are identified.

The report also presents a strategy to bypass these barriers and achieve the stated goals. It concludes by outlining actions to be undertaken to achieve sustainable utilisation of wildlife.

Available from

Department of Wildlife and National Parks

NATIONAL CONTACTS

Agricultural Resources Board (ARB)

P Bag 003, Gaborone

Botswana

Tel ++(267) 351171

Contact **Mr Dipholo Dipholo**
Secretary

Association of Wildlife Clubs of Botswana

PO Box 131, Gaborone

Botswana

Tel ++(267) 371405

Fax ++(267) 312354

Contact **Ms L Machangana**

The Association promotes the promotion of wildlife clubs in schools, colleges, polytechnics and the University of Botswana, and services them once formed. Wildlife members are taught about conservation through participation in activities such as tree planting, excursions to national parks and game reserves, songs, poems, drama and art competitions.

Botswana Technology Centre (BTC)

P Bag 0082 Gaborone

Botswana

Tel ++(267) 314161

Fax ++(267) 374677

Contact **Mr Keadire Basaako**

The BTC is involved in the collection and dissemination of information on technology, monitoring and evaluation of alternative technologies.

The Centre's main disciplines are energy resources, industry and engineering, water resources, economics and data management.

Botswana Society

PO Box 71,

Gaborone

Botswana

Tel ++(267) 351500

Fax ++(267) 359321

Contact **Mrs A Scales**
Mr A Campbell

The Botswana Society has been in existence for 27 years and it publishes semi-scientific papers and books, and holds symposia and workshops of national development importance to Botswana.

Botswana Wildlife Training Institute

PO Box 368,

Maun

Botswana

Tel ++(267) 660376

Fax ++(267) 660053

Contact **Mr M Mangubuli**

The Institute offers training in the following conservation and protected areas wildlife resources biological sciences and ecology and environmental assessments.

In addition, it organises seminars and workshops for the department and local authorities.

ENVIRONMENTAL ORGANISATIONS

Chobe Wildlife Trust

PO Box 55,
Kasane
Botswana
Tel ++(267) 650516
Fax ++(267) 650223

Contact **Ms Joanne Addy**

The Chobe Wildlife Trust is a national non-governmental organisation which was formed by residents of the Chobe District for the conservation of the natural resources in northern Botswana

Conservation International

PO Box 448,
Maun
Botswana
Tel ++(267) 660017
Fax ++(267) 660205

Contact **Dr Karen Ross**

The primary objectives of Conservation International are to support environmental education and community development in the Okavango Delta, and to promote sustainable utilization of the Delta's natural resources

Cooperation for Resource Development and Education (CORDE)

PO Box 1895,
Gaborone
Botswana
Tel ++(267) 323865
Fax ++(267) 323971

Contact **Mr S Sekate**

CORDE is concerned with community mobilisation and the promotion of small enterprises and sustainable agriculture. They are also involved in the evaluation of NGOs, strategic planning processes, NGO management, community work and organisational development

Department of Crop Production and Forestry

P Bag 003,
Gaborone
Botswana
Tel ++(267) 350500

Department of Environmental Science

University of Botswana
P Bag 0022,
Gaborone
Botswana
Tel ++(267) 351151
Fax ++(267) 356591

Contact **Prof R. Silitshena**

The Department offers courses in the following disciplines: water resources, biological sciences and ecology, wildlife resources, environmental planning and environmental assessments. It also undertakes environmental consultancies

Department of Meteorological Services

P O Box 10100,
Gaborone
Botswana
Tel ++(267) 352241

BOTSWANA

Department of Water Affairs

P Bag 0029,
Gaborone
Botswana
Tel ++(267) 360710
Fax ++(267) 303508
Telex 2557 BO

Contact **B B.J Khupe**
Director

Department of Wildlife and National Parks

P O Box 131,
Gaborone
Botswana
Tel ++(267) 371405
Fax ++(267) 312 354

Contact **Sedia Modise**

Energy Society of Botswana

P O Box 2178,
Gaborone
Botswana

The objective of the Society is to bring together energy specialists and workers in Botswana on a single platform where they could discuss and exchange views on matters related to energy sources, technologies, demands and their management

Environmental Conservation Society

University of Botswana
P Bag 0022,
Gaborone
Botswana
Tel ++(267) 351151

Forestry Association of Botswana (FAB)

P O Box 2088, Gaborone,
Botswana
Tel ++(267) 351660
Fax ++(267) 314431

Contact **Mr Walker**

The Association promotes public awareness of the importance of trees, forests and tree planting by means of extension, education, social and agroforestry programmes. It also promotes and develops applied research in forestry and related disciplines

Forum on Sustainable Agriculture (FONSAG)

P Bag BO 136, Bontleng
Gaborone,
Botswana
Tel ++(267) 301961
Fax ++(267) 301961

Contact **Mr Richard Kashweeka**
Coordinating Secretary

Kalahari Conservation Society (KCS)

PO Box 859, Gaborone
Botswana
Tel ++(267) 374557
Fax ++(267) 314259
Telex 2410 BD

Contact **Ms Debra Leonard**
Chief Executive Officer

The Society promotes knowledge of Botswana's wildlife resources, facilitates research on the conservation of these resources, promotes and supports conservation policies

ENVIRONMENTAL ORGANISATIONS

Khama Wildlife Sanctuary Trust

PO Box 60,
Serowe
Botswana
Tel ++(267) 430420
Fax ++(267) 430992

Contact **Mr Ray Watson**

The main objectives of the Trust are

- to establish, develop, and manage the Khama Rhino Sanctuary on behalf of the community,
- to protect the environment within the Sanctuary and protect and nurture endangered species or subspecies of the rhinoceros and other fauna and flora

Ministry of Agriculture

P Bag 003, Gaborone,
Botswana
Tel ++(267) 350500
Fax ++(267) 356027
Telex 2543 VET BD

Contact **Mr K K Mmopi**
ALDEP Coordinator

Ministry of Mineral Resources and Water Affairs North-South Carrier

P Bag 0085, Gaborone,
Botswana
Tel ++(267) 352454
Fax ++(267) 303453
Telex 2503 BD

Contact **Mr Moremi Sekwale**
Coordinator

National Conservation Strategy Coordinating Agency

P Bag 0068,
Gaborone
Botswana
Tel ++(267) 302050
Fax ++(267) 302051

Contact **Mr Charles Ntwaagaen**
Executive Secretary

National Institute of Research (NIR)

University of Botswana
P Bag 0022,
Gaborone
Botswana
Tel ++(267) 356364
Fax ++(267) 357573

Contact **Mr J Khatola**

The NIR is active in the following disciplines
human resources and social development,
environmental assessment, rural development,
education, extension and training

Permaculture Trust of Botswana

P Bag 47,
Serowe
Botswana
Tel ++(267) 431463
Fax ++(267) 431463

Contact **Mr Russell Clark**

It conducts permaculture design courses and
establishes permaculture demonstration gardens
Publications include a handbook on
permaculture

BOTSWANA

Somareland Tikologo

P Bag BO 36, Bontleng
Botswana
Tel ++(267) 301961
Fax ++(267) 307506

This is an environmental NGO whose main objectives include raising awareness about urgent environmental issues affecting ordinary Batswana. Among the activities undertaken to date are the staging of several workshops, seminars and panel discussions on environmental topics, and arranging several tree planting and clean-up events

Thusano Lefatsheng

P Bag 00251 Gaborone
Botswana
Tel ++(267) 372273

Contact **Mr M Moruakgomo**

Tshomarelo Okavango

Conservation Trust
P Bag 13, Maun
Botswana
Tel ++(267) 660552

Contact **Ms Gae Moetse Maher**

United Nations Development Programme (UNDP)

P O Box 54, Gaborone
Botswana
Tel ++(267) 352121
Fax ++(267) 356093
Telex 2412 BD

Contact **Mr Kagiso Keatimilwe**

University of Botswana

P Bag 0022, Gaborone
Botswana
Tel ++(267) 351151
Fax ++(267) 356591

Veld Products Research

P O Box 2020, Gaborone
Botswana
Tel ++(267) 347047
Fax ++(267) 347047

Contact **Mr Frank Taylor**
Managing Director

Veld Products Research is involved in the identification and development of a wild range of veld products including foods, medicines, essential oils, insects and building material. It also processes indigenous fruits into jams, jellies, juices, and dried fruit products

World Conservation Union (IUCN)

P Bag 00300, Gaborone
Botswana
Tel ++(267) 371584
Fax ++(267) 371484

Contact **Mr Ruud Jansen**
Country Representative

IUCN seeks to influence, encourage and assist societies to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. Examples of work are the development of the National Conservation Strategy and the Review of Southern Okavango Integrated Water Development Project

ENVIRONMENTAL POLICY OVERVIEW

The guns have fallen silent in Mozambique after almost two decades of a bitter war, ushering in a new era of peace

The conflict not only displaced millions of Mozambicans to ecologically sensitive areas in neighbouring countries and along that country's fragile coast, but also exerted excessive pressure on the environment, polluting those areas, decimating wildlife in national parks, causing widespread land degradation and disrupting environmental management

For Mozambique, the past is prologue the beginning of a long period of reconstruction and rehabilitation One of the areas needing government attention is the environment The foundation for an environmental ethic in Mozambique has already been laid it is the 1992 Constitution It obliges the state to promote efforts to guarantee the ecological balance, and the conservation and preservation of the environment, seeking to improve the quality of life for citizens

Under Fundamental Rights, Duties and Freedom, **Article 72**, says Mozambican citizens shall have the right to live in a balanced natural environment and shall have the duty to defend that environment **Article 80** further provides Mozambicans with the opportunity to compel the state to protect, inter alia, their environmental rights

It says "All citizens shall have the right to present petitions, complaints and claims before the relevant authority to obtain the restoration of rights that have been violated, or in defence of the public interest "

Vista Geral da Política Ambiental de Moçambique

As armas silenciaram-se em Moçambique depois de quase duas décadas de uma amarga guerra, iniciando uma nova era de paz

O conflito não só deslocou milhões de Moçambicanos para áreas ecologicamente sensíveis, em países vizinhos e ao longo da costa do país, como também exerceu uma enorme pressão sob o meio-ambiente, poluindo essas áreas, dizimando a fauna nos parques nacionais, causando uma extensa degradação do solo e interrompendo a implementação da gestão ambiental no país

Para Moçambique, o passado é prólogo o começo de um longo período de reconstrução e reabilitação Uma das áreas que precisa de especial atenção por parte do governo é o meio-ambiente As bases para uma ética ambiental em Moçambique já foram estabelecidas a Constituição de 1992 Esta Constituição obriga o Estado a promover esforços no sentido de garantir o balanço ecológico e a conservação do meio-ambiente, com o objectivo de melhorar a qualidade de vida dos cidadãos

Sob o tema Direitos Fundamentais Deveres e Liberdade, o Artigo 72 da Constituição cita que os cidadãos Moçambicanos têm o direito de viver num equilibrado ambiente natural, tendo o dever de defendê-lo O Artigo 80 dá aos Moçambicanos a oportunidade de obrigar o Estado a proteger, entre outros, os seus direitos ambientais

ENVIRONMENTAL INFORMATION

It further adds “All citizens shall have the right not to comply with orders that are illegal or which infringe upon their rights ”

Since the democratic elections in 1994 which ushered in a new era of democracy in that country, President Joaquim Chissano’s government has established a full environment ministry, replacing the National Environment Commission which was responsible for overseeing environmental issues in that country

The national parks system which was under threat due to the disruption of management and infrastructure by war are now, once again, certain to receive greater attention than in the past two decades if not longer. In fact, the National Directorate of Forestry and Wildlife (DNFFB) has initiated a project to assess the present situation and distribution of fauna, and several programmes for the reintroduction of management activities in protected areas are now being implemented

Emphasis is being placed on participatory management involving local communities. In Zumbo, Tete Province, there is a project through which communities are already benefitting directly from the wildlife utilisation. The Global Environment Facility (GEF) will fund a project for the conservation of transfrontier national parks and reserves, which promotes international linkages and joint conservation activities

Another major project is the rehabilitation of the Gorongosa-Marrromeu conservation area, covering Gorongosa National Park and Marrromeu Buffalo Reserve, with funds from the European Union and technical support from IUCN

Este artigo diz que “Todos os cidadãos devem ter o direito de apresentar petições, queixas e reclamações a autoridade relevante para obter o restabelecimento dos direitos que têm sido violados, ou em defesa do interesse público ” O artigo acrescenta ainda “Todos os cidadãos devem ter o direito de não cumprir com ordens ilegais ou que infringem os seus direitos ”

Desde as eleições democráticas, em 1994, que o país embarcou numa nova era de democracia e o governo do Presidente Joaquim Chissano estabeleceu o Ministério para a Coordenação da Acção Ambiental, substituindo a Comissão Nacional do Meio-Ambiente, que era responsável pelos assuntos ambientais em Moçambique

O sistema de parques nacionais, cujas gestão e infraestrutura estavam ameaçadas devido a guerra, está agora a receber mais atenção em relação as passadas duas décadas ou mais. De facto, a Direcção Nacional de Florestas e Fauna Bravia (DNFFB) iniciou um projecto de pesquisa sobre a presente situação e distribuição da fauna, e estão agora a ser implementados vários outros projectos para a reintrodução das actividades de gestão em áreas protegidas

A gestão de áreas protegidas com a participação das comunidades locais tem sido enfatizada. No Zumbo, Província de Tete, está a decorrer um projecto no qual as comunidades estão já a beneficiar directamente do uso da fauna bravia. A Facilidade Ambiental Global (GEF) irá custear um projecto para a conservação de parques nacionais e reservas trans-fronteiras, o que promoverá os elos de ligação internacionais e actividades colectivas de conservação

Other than the environment ministry, other, government institutions, such as the Ministry of Health, are also responsible for the environment in one form or another

The laboratory of Food and Water Hygiene of the Ministry of Health facilitated in the decision by government to declare the Bay of Maputo out of bounds for swimming and fishing because of the high level of pollution

Special focus is being given to the capacity building of these institutions to enable them to carry out the required planning, monitoring and implementation activities

Other departments conduct surveys of the resources, plan their utilisation and define the best techniques and cultural methods to use them in relation to local ecological resources

The government has also created an enabling environment for non-governmental organisations to participate in various environment projects. However, there are not many Mozambican organisations whose goal is the protection of the environment

The Environment Working Group (GTA), a Mozambican non-governmental organisation, was involved in the establishment of the governmental institution of environment in that country

GTA has prepared a report on the country's environment situation in 1990, with support from NORAD, and has been involved in projects concerning environmental education and the management of natural resources by local communities

Outro importante projecto é a reabilitação da área de reserva Gorongosa-Marromeu, que cobre o Parque Nacional da Gorongosa e a Reserva de Búfalos de Marromeu, com fundos doados pela União Europeia e apoio técnico da IUCN

Além do Ministério para a Coordenação da Acção Ambiental, outras instituições governamentais, como o Ministério da Saúde, são também, de uma forma ou de outra, responsáveis pelo meio-ambiente

O Laboratório de Alimentos e Higiene da Água, do Ministério da Saúde, facilitou a decisão do governo de declarar a Baía de Maputo como interdita a natação e a pesca, devido ao extremo nível de poluição

Tem sido dada especial atenção a reestruturação destas instituições de modo a capacitá-las no desempenho das actividades necessárias de planificação, controle e implementação

Outros departamentos estão a levar a cabo um levantamento dos recursos, planear sua utilização e definir as melhores técnicas e métodos tradicionais para os usar, em relação aos recursos ecológicos locais

O governo criou também um ambiente favorável para a participação de organizações não-governamentais em vários projectos do meio-ambiente. No entanto, não existem muitas organizações Moçambicanas cuja meta é a protecção do meio-ambiente

O Grupo de Trabalho Ambiental (GTA), uma organização moçambicana não-governamental, estava envolvido no estabelecimento de instituições ambientais governamentais no país

ENVIRONMENTAL INFORMATION

One of GTA projects currently underway is the publicising, through workshops at provincial and district levels, of the government's new National Environment Management Program (NEMP)

"Amigos de Mocambique" (Friends of Mozambique) was founded after the oil spill of the Greek oil tanker *Katina P* in the Mozambique Channel, in 1992, but its presence seems to have declined over the years. Some grassroots organisations exist in some provincial capitals such as Maputo, Beira, Lichinga, Quelimane and Pemba. Rural people have been empowered to run afforestation programmes at village level.

In addition to policies and national institutions, Mozambique is also actively involved in the activities of the Southern African Development Community and is a signatory to the SADC Treaty, which among other things, commits member states to environmental protection.

Mozambique is also a signatory to the following international conventions and treaties:

- ❖ 1972 - World Cultural and Natural Heritage Sites,
- ❖ 1973 - Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES),
- ❖ 1985 - Protection of the Ozone Layer,
- ❖ 1987 - Montreal Protocol on Substances that Deplete the Ozone Layer,
- ❖ 1992 - Framework Convention on Climate Change,
- ❖ 1992 - Convention on Biological Diversity, and
- ❖ 1994 - Convention on the Law of the Sea,

It has also considered the following:

- ❖ 1971 - Wetlands of International Importance,

O GTA preparou um relatório sobre a situação ambiental do país em 1990, com o apoio da NORAD, e tem estado envolvido em projectos relacionados com educação ambiental e gestão dos recursos naturais pelas comunidades locais.

Um dos projectos do GTA em curso no momento é a publicidade, através de workshops a níveis provincial e distrital, ao novo Programa Nacional de Gestão do Meio-Ambiente (NEMP), lançado pelo governo Moçambicano.

"Amigos de Moçambique" foi fundada após o derramamento de óleo do navio-tanque de óleo Katina P, no canal de Moçambique, em 1992, mas a sua existência parece ter decaído ao longo destes anos. Algumas organizações populares existem em algumas capitais provinciais como Maputo, Beira, Lichinga, Quelimane e Pemba. A população rural tem sido autorizada a gerir programas de reflorestamento a nível das aldeias.

Além das políticas e instituições nacionais, Moçambique está também activamente envolvido em actividades da Comunidade de Desenvolvimento da África Austral (SADC) e é signatário do Tratado da SADC, que, de entre outros, compromete os estados membros a proteger o meio ambiente.

Moçambique é também signatário dos seguintes tratados e convenções internacionais:

- ❖ 1972 - Locais Culturais e Naturais de Património Mundial,
- ❖ 1973 - Convenção Internacional sobre o Comércio de Espécies Selvagens de Fauna e Flora em Perigo (CITES),

MOZAMBIQUE

- ❖ 1989 - Basel Convention on Transboundary Movement of Hazardous Wastes, and
- ❖ 1991 - Bamako Convention on the Ban on Import into Africa and the Control of Transboundary Movement of all Forms of Hazardous Wastes within Africa

At regional level, Mozambique signed, along with the eight other SADC Countries the Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) region, in August 1995

- ❖ 1985 *Protecção da Camada de Ozono*
- ❖ 1987 - *Protocolo de Montreal sobre as Substâncias que Danificam a Camada de Ozono*
- ❖ 1992 - *Convenção sobre a Mudança Climática*
- ❖ 1992 - *Convenção sobre a Diversidade Biológica e*
- ❖ 1994 *Convenção sobre a Lei do Mar,*

Moçambique tem também considerado os seguintes

- ❖ 1971 - *Terras Humidas de Importância Internacional,*
- ❖ 1989 - *Convenção de Basel, sobre o Movimento Trans fronteiras de Desperdícios Perigosos, e*
- ❖ 1991 - *Convenção de Bamako sobre a Interdição da Importação de Todas as Formas de Desperdícios Perigosos em África*

A nível regional Moçambique assinou também, juntamente com os outros 8 países da SADC, o Protocolo sobre os Cursos de Água Compartilháveis na região da África Comunidade de desenvolvimento da Austral em Agosto de 1995

ENVIRONMENTAL INFORMATION

BIBLIOGRAPHIC ABSTRACTS

The following documents are cited starting with the most recent and covering environmental issues from a national perspective, followed by documents focusing on provincial, district and/or sub-national issues, and finally by sectoral documents. The name of the publisher or distributor of each document is provided at the end of each citation. Where full address is not immediately provided, refer to section on national contacts.

Os seguintes documentos são citados, começando pelos mais recentes e abrangendo assuntos ambientais, através de uma perspectiva nacional, seguidos de documentos focando assuntos provinciais, distritais e/ou sub-nacionais, e finalmente documentos por sector. O nome do editor(s) ou distribuidor(s) de cada documento encontra-se no fim de cada citação. Onde não é fornecido o endereço completo, consulte a secção de contactos nacionais.

Mozambique environmental synopsis **Moçambique sinopse ambiental**

*IUCN, Gland, CH
Commission of the European Communities
1993 En Pt 37p maps, tables*

The synopsis begins with some background information on Mozambique on natural resources, demography, health, education, industry, pollution and some economic indicators. The following have been identified in the synopsis as key issues, effects of war on the population, poverty, agriculture, water resources management, deforestation, protected areas, biological diversity, development potential, aid and government action.

Mozambique has one government ministry and several government departments which are responsible for environmental matters. About 130 international NGOs are providing mainly technical and relief assistance.

There is a need to review and improve the present environmental policies and legislation. Cultural aspects of resource utilisation are analysed. The next section looks at the state of the environment in Mozambique, first, by undertaking an inventory of natural resources such as water, forests, agriculture, livestock, non-renewable resources, protected areas and wildlife. Industry is discussed with emphasis on energy sources and consumption.

The population in Mozambique is not evenly distributed with concentrations in coastal and urban areas due to the displacement of people from rural areas because of the war. Millions more of the population are refugees in neighbouring countries.

The last section of the synopsis covers environmental problems faced in Mozambique such as water pollution and shortages, soil erosion and degradation and deforestation. The section also covers biodiversity, marine environment, the coastal zone, urban environment, energy and industry.

O resumo começa com informações de antecedentes sobre os recursos naturais, demografia, saúde, educação, indústria, poluição e indicadores económicos em Moçambique. No resumo indentificam-se as seguintes questões-chave: efeitos da guerra sobre a população, pobreza, agricultura, gestão de recursos aquáticos, desflorestamento, áreas protegidas, diversidade biológica, desenvolvimento

potencial, ajuda humanitaria e acção governamental Moçambique tem um ministerio e varios organismos governamentais que são responsaveis por assuntos ambientais Cerca de 130 ONGs internacionais estão fornecendo sobretudo apoio técnico e de emergência

É preciso revêr e melhorar a actual politica ambiental e a legislação Analisam-se aspectos culturais da utilização de recursos A secção seguinte analisa a situação ambiental em Moçambique, começando por fazer um inventario dos recursos naturais incluindo agua florestas agricultura gado recursos não renováveis, areas, protegidas e fauna bravia A industria e também discutida com destaque nos recursos e consumo de energia

A população em Moçambique não esta igualmente distribuida concentrando-se mais nas áreas urbanas e costeiras devido ao deslocamento de pessoas das areas rurais como resultado da guerra civil

Milhões de pessoas estão refugiadas em paises vizinhos O ultimo capitulo da sinopse aborda os problemas ambientais que Moçambique enfrenta, tais como a poluição e falta de agua erosão e degradação do solo e desflorestamento A secção abrange igualmente assuntos relacionados com a biodiversidade o ambiente marinho a zona costeira o ambiente urbano energia e indústria

Available from
A disposição na
IUCN

(Refer to end of Introduction for address)
(Veja o enderenco no fim da Introdução)

Country report for UNCED '92 **Relatorio nacional para a UNCED'92**

National Commission for the Environment
Maputo MZ
Aug 1991 En 178p tables maps

The document lists goals which aim to, among other things, redress the environmental damage, embark on a nationwide environmental awareness campaign, create employment, and encourage community participation in the management of the natural resources

Some basic principles for environmentally sensitive and sound management are given and these include

- ❖ having environmental impact assessment carried out for all projects
- ❖ adopting a prevention rather than a cure approach to environmental problems and the principle of co-existence with nature rather than against it

General and specific recommendations are given in areas such as legislative action, environmental education, agriculture and rural zones coastal zone, climate, water, wildlife, forests, tourism, mining and industry These recommendations point to sustainable utilisation

O relatorio enumera objectivos que visam entre outros aspectos compensar os prejuizos ambientais lançar uma campanha nacional de sensibilização sobre o meio ambiente criar emprego e encorajar a participação da comunidade na gestão dos recursos naturais

ENVIRONMENTAL INFORMATION

Apresenta alguns princípios básicos sobre a gestão ambiental, nomeadamente

- ❖ *realização de estudos sobre o impacto ambiental para todos os projectos,*
- ❖ *adopção de medidas preventivas em vez de medidas curativas de problemas ambientais e o princípio de coexistência com a natureza e não contra ela*

O documento apresenta recomendações gerais e específicas relacionadas com a legislação, educação ambiental, agricultura e zonas rurais, zonas costeiras, clima, água, fauna bravia, florestas, turismo, minas e indústria. Estas recomendações apontam para um uso sustentável dos recursos naturais

Available from

A disposição no

Ministry for Coordination of Environmental Affairs

(Refer to national contacts list for address)

(Veja o endereço na lista de contactos nacionais)

Mozambique the present environmental situation 1990

Moçambique a situação actual do ambiente 1990

Chonguica, Ebenizario [et al]

NORAD, Maputo, MZ

Grupo de Trabalho Ambiental Maputo, MZ

1990 En Pt 2 vols maps, tables graphs + annexes

The objectives of this study were to make a preliminary survey of the state of the environment in Mozambique

The report links the population to the economy, analysing the implications for the state of the environment in the separate units such as in rural and urban settings. It also highlights the country's environmental problems, including the current and potential impact of industrial production on the environment.

An analysis of the agricultural sector is presented, and this also covers the natural conditions which determine agricultural potential. The report also discusses the exploitation of water resources, environmental impact of surface and groundwater, and the environmental problems associated with the international hydrographic basins.

The ecosystems of the coastal zones are described. It goes on to highlight the potential exploitation of marine resources systems and how this exploitation could impact the environment. The problems of the national parks and reserves in terms of their inventories, present state and their importance for the preservation of natural resources, scientific studies and research are analysed. The report concludes with some recommendations on ways to improve the present situation of the environment. It includes annexes.

Este estudo teve como objectivo fazer uma pesquisa preliminar da situação ambiental em Moçambique

O relatório faz uma ligação entre a população e a economia, analisando as implicações para o meio ambiente quer a nível rural quer urbano. Destaca também os problemas ambientais do país incluindo o impacto actual e potencial da produção industrial sob o meio-ambiente

É apresentada uma análise do sector agrícola, abrangendo as condições naturais que determinam o potencial agrícola. O relatório abrange a exploração dos recursos aquáticos, impacto ambiental da água superficial e subterrânea e os problemas ambientais ligados com as bacias hidrográficas internacionais

Os ecossistemas das zonas costeiras, incluindo o potencial dos recursos marinhos, sistemas de exploração e seu impacto ambiental são também discutidos. Analisa-se a problemática dos parques nacionais e reservas em relação aos seus inventários, estado actual e sua importância na conservação dos recursos naturais, estudos científicos e investigação. O documento termina com algumas recomendações sobre modos de melhorar a presente situação do meio-ambiente. Inclui anexos

Available from

A disposição no

Grupo de Trabalho Ambiental

CP 5678, Maputo

Moçambique

Tel ++(258-1) 460503

Fax ++(258-1) 565407

Norwegian aid and the environment in Mozambique the issues
Ajuda Norueguesa e o meio-ambiente em Moçambique as questões

Cherret, I [et al]

Chr Michelsen Institute Fantoft Norway

1990 En 82p tables, maps

This paper identifies the major environmental issues in Mozambique under the war conditions and economic crises

The war has displaced many rural people from their homes who are now concentrated in safer areas, mainly, cities, transport corridors and the coastal zone

The natural resources around these areas have been subject to a lot of pressure. This problem is also spread to neighbouring countries hosting over a million Mozambican refugees in camps. According to the report, the onus of managing the environment should be on the farmers who will do so with assistance from the government and aid agencies.

Desertification, soil erosion and deforestation are the major environmental problems, at local levels (especially in the concentrated zones). In the absence of war, Mozambique has a good natural resource base — land, marine, geological and water resources. Agriculture dominates the economy and the majority of the population are farmers.

Wood, the main fuel used in the country, provides over 80 percent of the total energy requirements. The second part of the paper specifies those sectors and interventions where the Norwegian aid programme have a greater environmental impact. Assistance has been given in categories like resource surveys, relief to displaced persons, agriculture and fisheries, infrastructure, industry and health. The paper concludes with some recommendations for further impact studies.

O documento identifica as principais questões ambientais sob os efeitos da guerra e da crise económica em Moçambique. A guerra fez deslocar muita população rural de suas terras para áreas mais seguras, sobretudo cidades, ao longo de corredores de transporte e zonas costeiras

ENVIRONMENTAL INFORMATION

Assim, os recursos naturais destas zonas ficaram sujeitos a uma maior pressão. Este problema afectou também os países vizinhos que alojaram mais de um milhão de refugiados moçambicanos. Segundo o relatório, a tarefa de gerir o meio-ambiente devia recair sobre os camponeses, com apoio do governo e das organizações de ajuda.

Desertificação, erosão do solo e desflorestamento são considerados os maiores problemas ambientais, a nível local (especialmente nas zonas de concentração). Na ausência da guerra, Moçambique tem uma boa base de recursos naturais—recursos terrestres, marinhos, geológicos e aquáticos. A agricultura domina a economia e a maioria da população é camponesa.

A madeira, principal combustível usado no país, fornece cerca de 80% do total das necessidades de energia. Na segunda parte, o documento especifica os sectores e as intervenções em que o programa de ajuda norueguesa tem maior impacto ambiental. Tem sido dada ajuda nos seguintes sectores: levantamento de recursos, ajuda a deslocados, agricultura e pescas, infraestruturas, indústria e saúde. O documento termina com algumas recomendações para futuros estudos sobre o impacto da guerra sob o meio-ambiente.

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Chr Michelsen Institute,
Dept of Social Science and Development
Fantoftvegen 38, N-5036 Fantoft
Norway

Tel ++(47) 5574000

Fax ++(47) 5574001

Mozambique a country profile Moçambique perfil de um país

King, Dennis J

Evaluation Technologies Inc

USAID, Arlington, US

Apr 1987 En 81p charts, maps, tables

Designed to provide baseline data on Mozambique in support of the planning and relief operations of the Office of U S Foreign Disaster Assistance, this document presents general information about Mozambique on topics such like, ethnic groups and culture, language, history, government, and communications, discusses Mozambique's vulnerability to disaster by providing a description of its physical environment and its susceptibility to natural disasters, for example, (droughts, famine/food shortages, epidemics and diseases, cyclones, and storms), and discusses local resources which could be drawn upon in the event of a natural disaster.

This latter section includes, but is not limited to, a description of Mozambique's lead disaster relief organisation, road, air, rail, and marine transport, housing, health, and voluntary agencies. Mozambique's natural resources are also discussed in brief. The focus is on water and energy resources, both of which are in short supply, only about 10 percent of the population has access to clean water and over 50 percent of the country's energy consumption is derived from imported oil.

Appendices include case reports on disasters that occurred in Mozambique in 1984 and 1985. A two-page bibliography (1982-87) is included.

Com o intuito de fornecer informações básicas sobre Moçambique para apoiar o planeamento e operações de ajuda do Departamento dos Estados Unidos para Assistência a Calamidades no Estrangeiro, o documento apresenta informações gerais sobre grupos étnicos, cultura, língua, história, governo e comunicações, analisa a vulnerabilidade de Moçambique quanto a desastres naturais, fornecendo uma descrição do meio-ambiente físico e sua susceptibilidade a calamidades naturais (seca, fome/falta de alimentos, epidemias e doenças, ciclones e tempestades), e faz referência aos recursos locais que podem ser usados em caso de desastre natural

O último capítulo inclui, entre outros, a descrição da organização moçambicana de combate as calamidades, transporte rodoviário, aéreo, ferroviário e marítimo, habitação, saúde e agências voluntárias. Os recursos naturais de Moçambique são também referidos resumidamente. Salientam-se os recursos aquáticos e energéticos, ambos insuficientes, apenas 10% da população tem acesso a água limpa e mais de 50% da energia consumida no país é derivada do petróleo importado. Os apêndices incluem relatórios sobre desastres naturais que ocorreram em Moçambique em 1984-85. O documento inclui ainda uma bibliografia de 2 páginas de 1982-87

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**A status quo assessment of the Maputo transfrontier conservation area
Uma avaliação status quo da área de conservação transfronteira de Maputo**

Hatton, JC [et al]
IUCN-ROSA, Harare, ZW
World Bank, Maputo, MZ
Jan 1995 En Pt 1 vol

A 1991 study identified Maputo as one of the three areas in Mozambique whose natural resources are most degraded and in dire need of conservation efforts. The study was based on biodiversity, social and economic criteria. This report is based on a more detailed ecological and sociological study carried out in the Maputo Transfrontier Conservation Area.

It begins with a description of the population (including the anticipated number of refugees and displaced people expected to return to this area after the war), geomorphology and natural resources — soils, vegetation, flora and fauna — found in the area.

An analysis of the land and natural resource use patterns revealed the following as the main ones:

- protected areas,
- fishing,
- agriculture,
- plantation forestry and
- tourism

The report recommends landuse issues such as the management of the natural resources by the government as well as the local community. The management issues include planning, sourcing funding, human resources requirements, technology and ways of dealing with the local community to avoid conflict.

ENVIRONMENTAL INFORMATION

Um estudo feito em 1991 identificou Maputo como sendo uma das três áreas em Moçambique, cujos recursos naturais estão mais degradados e com extrema necessidade de conservação. O estudo baseou-se na biodiversidade e em critérios sociais e económicos. Este relatório aborda um estudo ecológico e sociológico mais detalhado realizado na área de conservação transfronteira de Maputo.

Começa com uma descrição da população (incluindo o número previsto de refugiados e deslocados que regressarão a esta área, após a guerra), geomorfologia e recursos naturais — solos, vegetação, flora e fauna — encontrados na área.

Uma análise da terra e padrões de uso dos recursos naturais, revelou os seguintes como os mais importantes:

- áreas protegidas,
- pesca,
- agricultura,
- plantação de florestas e
- turismo

O relatório termina com algumas recomendações sobre o uso da terra, a gestão dos recursos naturais pelas autoridades governamentais e pela comunidade local. Os aspectos relacionados com a gestão incluem planeamento, fontes de fundos, necessidades de recursos humanos, tecnologia e modos de lidar com a comunidade local evitando conflitos.

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The natural resources of Mecufi district Os recursos naturais do distrito de Mecufi

*Hatton, John Massinga, Alfredo
Comissão Nacional do Meio Ambiente, Maputo,
MZ NORAD, Maputo, MZ
Jun 1994 En Pt 42p tables, maps, ill*

This is a survey of the natural resources of the Mecufi district, a coastal zone area in Mozambique. An assessment of the vegetation was done and the results show that cultivated cashew trees dominate. The area also has mangrove and riverine forests, tidal flats, dune vegetation, woodlands and swamp grasslands.

A survey of terrestrial and aquatic species was done and it identified 29 fish species belonging to 15 families, the majority of which reside in the coral reefs.

The survey also covered marine invertebrates, marine mammals (dolphins being the most common), marine turtles (five species identified) and corals. Much of the original woodland habitat of the district has been cleared for cultivation and, therefore, few terrestrial mammals are found, mainly small to medium-sized species such as antelopes, warthogs, bush-pigs and monkeys.

Use patterns of the plant species were identified and the main ones are medicinal, house and boat construction, furniture-making and for firewood.

Fishing, hunting, intertidal gleaning, and salt harvesting are common activities in Mecufi district. The report recommends that utilisation of natural resources needs to be controlled and programmes which will have direct economic benefit for the local communities be introduced.

Este documento é uma pesquisa dos recursos naturais do distrito de Mecufi, uma área da zona costeira de Moçambique. Foi feita uma avaliação da vegetação e os resultados mostram que dominam os cajueiros cultivados. A área também possui mangais e florestas ribeirinhas, vegetação de dunas, florestas e pantanais.

Foi feito um levantamento das espécies terrestres e marinhas e identificaram-se 29 espécies de peixes pertencendo a 15 famílias, a maioria das quais reside em habitats dos recifes coralinos. A investigação também abrangeu invertebrados marinhos, mamíferos marinhos (sendo os golfinhos os mais comuns), tartarugas marinhas (cinco espécies identificadas) e corais. A maior parte da floresta do distrito tem sido destruída para cultivo e são encontrados alguns mamíferos terrestres, na sua maioria de tamanho pequeno-médio, como antílopes, javalis e macacos.

Os padrões de uso das espécies vegetais foram identificados e os mais importantes são uso medicinal, construção de casas e barcos, fabrico de mobília e para lenha. Pesca, caça, apanha de moluscos entre-marés e colheita de sal são as actividades comuns no distrito de Mecufi. O relatório recomenda que a utilização dos recursos naturais precisa de ser controlada e devem ser introduzidos programas que tenham benefício económico directo para as comunidades locais.

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Ministry for Coordination of
Environmental Affairs
Av. Acordos de Lusaka, 2115, Maputo
Moçambique
Tel ++(258-1) 465848/43
Fax ++(258-1) 465849
Telex 6-962 CNAM MO
EMail CNAM0Z@AMBIENT UEM MZ

Land tenure security and state farm divestiture in Mozambique case studies in Nhamatanda, Manica and Montepuez districts

Segurança da posse de terra e desapropriação das machambas do estado em Moçambique casos estudados nos distritos de Nhamatanda, Manica e Montepuez

Myers, Gregory West, Harry Eliseu, Julieta
University of Wisconsin-Madison, US
Ministry of Agriculture Maputo MZ
USAID, Maputo, MZ
Jan 1993 En Pt

In 1989, the government of Mozambique recognised the need to restructure the state agricultural sector and sell, lease or close many of the state farms which had failed.

The government then commissioned a study on the process of state farm divestiture, with emphasis on security of land tenure for recipients of state farms and the impact of divestiture on agricultural productivity.

The main objectives of the project were to inform government about the divestiture process, and provide technical assistance by formulating policy recommendations with regard to divestiture and stimulating dialogue over land policy reform in Mozambique.

Case studies of three districts — Nhamatanda, Manica and Montepuez — looked at the following:

- ❖ the situation during the colonial period,
- ❖ the situation soon after independence and the formation of state farms at Lamego, Vanduzi and Cabo Delgado,

ENVIRONMENTAL INFORMATION

- ❖ divestiture of assets and land at these three farms,
- ❖ smallholder agriculture by the family sector, and
- ❖ lists the concerns raised in each district

The report concludes with intermediate and long-term recommendations to address the problems of land policy reform in Mozambique

Em 1989, o Governo de Moçambique reconheceu a necessidade de reestruturar o sector agrícola do estado e vender, alugar ou encerrar muitas das machambas do Estado que provaram não ter sucesso

O governo, então, encarregou-se de um estudo sobre o processo de desapropriação destas machambas, com destaque na segurança da ocupação da terra e o impacto da desapropriação na produtividade agrícola

Os objectivos principais do projecto foram informar o governo sobre o processo de desapropriação, fornecer assistência técnica através da formulação de políticas em relação a desapropriação e estimular o dialogo sobre as políticas de reforma da terra em Moçambique

Casos estudados em três distritos — Nhamatanda, Manica e Montepuez — estiveram virados para

- ❖ a situação durante o período colonial,
- ❖ a situação logo após a independência e a formação das machambas do estado em Lamego, Vanduzi e Cabo Delgado,
- ❖ desapropriação de bens e terras nestas três áreas,
- ❖ agricultura de pequena escala pelo sector familiar e,

- ❖ *lista as preocupações levantadas em cada distrito*

O relatório conclui com recomendações intermédias e a longo prazo para endereçar os problemas da política de reforma das terras em Moçambique

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Gorongosa - Marromeu management plan for integrated conservation and development 1995-1999

Gorongosa-Marromeu plano de gestão para conservação e desenvolvimento integrados, 1995-1999

DNFFB, Maputo, MZ

En Pt 1 vol

The Gorongosa region in Sofala Province of central-coastal Mozambique, has some protected areas which include a national park, two forest reserves and a special reserve

The objective of this policy plan is to promote conservation and sustainable use of wildlife and forest resources in the Gorongosa/Marromeu areas in support of the national and local economies while ensuring the long-term conservation of the area's biodiversity. Due to the civil war, management of natural resources has been impossible and the Government is working toward the re-introduction of management of natural resources

This management is divided into two parts, the first is a short-term period (January 1995-June 1996) emergency programme set to re-establish management in the area. It also aims to resolve immediate problems and to create a base for longer term integrated management of resources.

Issues covered in the first part include demilitarisation, community participation, settlement of returning people displaced by the war, sport hunting and capacity building.

The second part is long-term (July 1996-December 1999) and it describes the management unit, law enforcement, community-based resource management, use of wildlife and forest produce, tourism, awareness promotion and capacity building. The report also discusses personnel, technological requirements and project funding.

A região da Gorongosa na Província de Sofala, zona central da costa de Moçambique tem algumas áreas protegidas incluindo um parque nacional, duas reservas florestais e uma reserva especial

O objectivo deste plano de políticas e de promover a conservação e uso sustentáveis dos recursos faunísticos e florestais na área de Gorongosa/Marromeu em apoio as economias local e nacional assegurando a conservação da biodiversidade da área a longo prazo. Devido a guerra civil, a gestão dos recursos naturais tem sido impossível e o governo esta a dirigir esforços no sentido de reintroduzi-la

Esta gestão esta dividida em duas partes a primeira é um programa de emergência a curto prazo (Janeiro 1995-Junho 1996) elaborado com o fim de restabelecer a gestão na área resolver os problemas imediatos e criar uma base

para uma gestão integrada dos recursos a prazo mais longo. Assuntos abrangidos na primeira fase incluem a desmilitarização, participação da comunidade, instalação da população deslocada pela guerra, caça desportiva e formação

A segunda parte é um programa a longo prazo (Julho 1996-Dezembro 1999) e descreve a unidade de gestão, o cumprimento da lei gestão de recursos com base na comunidade, uso de produtos faunísticos e florestais, turismo, promoção de consciencialização e formação

O plano também discute as necessidades técnicas, necessidades de pessoal e de fundos para o projecto

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Mozambique urban local government and the environment sector review
O governo urbano local de Moçambique e a revisão do sector ambiental

World Bank Maputo MZ
En Pt

Mozambique is undergoing rapid urbanisation under acute economic problems as a result of the civil war.

The war also displaced many people from rural areas to urban centres, causing excessive pressure on the infrastructure and the natural resources.

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This study analyses the main problems facing local governments in Mozambique in the areas of legal and institutional framework, organisation, staffing, and human resources development, financial management, and urban services and infrastructure. It also discusses the major environmental issues causing urban degradation.

Environmental degradation in Mozambique is a result of colonial policies, inadequate post independence management and the civil war. The urban infrastructure and environment are degrading rapidly now because of deferred maintenance, inadequate skilled labour and financial resources.

The report recommends the strengthening of local governments in the country by

- ❖ promoting local autonomy through legal, institutional and financial reforms,
- ❖ training personnel,
- ❖ creating the local capacity for environmental management, and
- ❖ rehabilitating land use planning that incorporates environmental parameters and sustainable development.

The report also recommends the coordination between the government and the donor community in the reform process of local governments.

Moçambique está a sofrer uma rápida urbanização sob condições de crise económica como resultado da guerra civil. A guerra fez deslocar muitas pessoas das áreas rurais para os centros urbanos causando uma excessiva pressão nas infraestruturas e nos recursos naturais.

O estudo analisa os principais problemas enfrentados pelos governos locais, de âmbito legal e institucional, organização, pessoal, e desenvolvimento de recursos humanos, gestão financeira, serviços urbanos e infraestruturas. Discute também as principais questões ambientais que levam a degradação urbana.

A degradação ambiental em Moçambique é um resultado da política colonial, de má gestão após a independência e da guerra civil. As infraestruturas e o ambiente das cidades estão-se agora degradando rapidamente devido a falta de manutenção, mão de obra mal preparada e falta de recursos financeiros.

Com o intuito de fortalecer os governos locais, o relatório recomenda

- ❖ a promoção de autonomia local através de reforma legais, institucionais e financeiras,
- ❖ formação de pessoal,
- ❖ criação de capacidades locais em gestão ambiental, e
- ❖ a reabilitação baseada no planeamento do uso da terra que incorpore parâmetros ambientais e de desenvolvimento sustentável.

O relatório também recomenda que a coordenação entre o governo e a comunidade doadora é essencial no processo de reforma dos governos locais.

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Supplemental environmental assessment of pest management and pesticide use in the private voluntary organisation support project of USAID/Mozambique
Avaliação ambiental suplementar do manejo de pestes e uso de pesticidas no projecto de apoio da organização privada voluntária USAID/Moçambique

*Fisher, Herbert Matteson Patricia
 Knausenberger, Walter I
 USAID, Maputo, MZ
 Jan 1994 En 2 vols + annexes*

The report complements USAID's Programmatic Environment Assessment Programme report. The objective of this study was to examine the current and probable future pest control and pesticide management aspects of the Private Voluntary Organisation (PVO) projects.

The PVO Support Project seeks to reduce poverty induced by the civil war which ended in 1992. The project focuses on small-scale programmes and most beneficiaries are smallholder farmers.

Farmers have been using homemade pesticides because there was very little commercial pesticides available in Mozambique soon after the war. Pesticides are necessary to enhance productivity but farmers are unfamiliar with pesticide-related risks and there is great potential for pesticide misuse. Farmers in PVO projects will get training in pesticide management — emphasising on ecological (non-chemical) pest control methods — which safeguards human health and the environment.

In order to have limited and controlled use of pesticides, no pesticide subsidies will be granted by the government and the donor community.

Pesticide-free buffer zones have been established mainly in protected wildlife zones and forest areas.

Este documento e um complemento do relatório da USAID sobre a avaliação Programática do Meio-Ambiente. O objectivo deste estudo é examinar o controlo actual e futuro de pestes e da gestão de pesticidas, nos projectos da organização privada voluntária (PVO).

O projecto de apoio as PVOs procura reduzir a pobreza provocada pela guerra civil que terminou em 1992, e inclui programas de pequena escala, tendo como principais beneficiários os pequenos agricultores.

Os agricultores têm estado a usar pesticidas de fabrico caseiro por haver falta de pesticidas comerciais em Moçambique assim que a guerra terminou. Os pesticidas são necessários para melhorar a produção, mas os agricultores não estão a par dos perigos relacionados com os pesticidas e existem fortes probabilidades do uso indevido destes.

Os agricultores nos projectos das PVOs receberão treino em gestão de pesticidas — com ênfase nos métodos ecológicos (não químicos) de controlo de pestes — que protegem a saúde humana e o meio-ambiente. Para conseguir uma utilização limitada e controlada de pesticidas, nem o governo nem a comunidade doadora fornecerão subsídios para pesticidas.

Têm sido criadas zonas livres de pesticidas sobretudo nas áreas de fauna bravia e florestas protegidas.

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USAID*

CP 783, Maputo
Moçambique

Tel ++(258-1) 490726

Fax ++(258-1) 492098

Programmatic environmental assessment of USAID/Mozambique transition program

***Pesquisa programática ambiental do
programa de transição da USAID/
Moçambique***

USAID, Maputo, MZ

Chemonics International, Washington DC, USA.

Austral Consultoria, Maputo, MZ

*Institute for Development Anthropology, New
York, US*

Sep 1993 En 1 vol tables

USAID has a programme to facilitate the reintegration, rehabilitation and development of people who were displaced by the war. This document assesses USAID's transition programme in Mozambique.

It looks at the impact or the potential impact of the projects on the environment in the short and long-term. The projects cover agriculture, roads and water supply. The potential negative impact is on land and soil resources, water resources, biodiversity and population dynamics.

The review found that resources that can be potentially most affected are (in order of severity)

- forest resources,
- biodiversity,

- water resources and
- land and soil resources

USAID will implement its programmes through private voluntary organisations (PVOs) because the government does not have the institutional capacity to work effectively.

The report recommends the following

- ❖ the integration of the Programmatic Environment Assessment into the mission's long term strategic plans,
- ❖ USAID's support to PVOs,
- ❖ facilitation of spontaneous settlement, and
- ❖ the improvement of the agricultural market and prices

The report concluded that there is no potential for the transition programme to have a significant negative environmental impact in the short term, but there could be in the long term if the programme is not properly implemented.

A USAID tem um programa para facilitar a reintegração, reabilitação e desenvolvimento de deslocados de guerra. Este documento avalia o programa de transição da USAID em Moçambique.

O programa analisa o impacto potencial dos projectos sobre o meio ambiente, a curto e longo prazos. Os projectos abrangem a agricultura, estradas e abastecimento de água. O impacto potencial negativo está nos recursos da terra e solos, recursos de água, da terra, biodiversidade e dinâmicas populacionais.

O estudo chega a conclusão de que os recursos que podem ser mais afectados são (por ordem de gravidade)

- *recursos florestais*
- *biodiversidade*
- *recursos de água e*
- *recursos da terra e solo*

A USAID implementara os seus programas através de organizações voluntárias privadas (PVOs) porque o Governo não tem capacidade institucional para funcionar eficazmente

O relatório recomenda o seguinte

- ❖ *a integração da Avaliação Programática Ambiental nos planos estratégicos a longo prazo da missão*
- ❖ *apoio da USAID as PVOs*
- ❖ *facilitar o estabelecimento espontâneo e*
- ❖ *melhorar o mercado agrícola e os preços*

O relatório conclui que não ha potencial para que o programa de transição tenha um impacto ambiental negativo a curto prazo mas podera haver, a longo prazo se o programa não fôr devidamente implementado

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Moçambique

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**Global Environment Facility
Mozambique transfrontier national parks
and institution strengthening project -
report from first preparatory mission**

Facilidade Global do Ambiente projecto de reforço de parques e instituições nacionais transfronteiras em Moçambique - relatório da primeira missão preparatória

World Bank, Maputo, MZ

Environment and Development Group Oxford UK

Jan 1992 En 134p

This report documents the results of the first stage in a preparatory process for the development of a biodiversity conservation project for Mozambique

It gives some background information on conservation and development, and a detailed analysis of biodiversity and conservation efforts in the country highlighting the fauna, flora, and the various ecosystems and protected areas

The natural resources can contribute substantially to national development. The report considers various forms of consumptive and non-consumptive utilisation of resources including tourism, safari hunting, fishing, wildlife cropping ranching and the use of forest products. Conservation threats posed by high human populations are included and the report suggests alternative land uses to agriculture

The overall institutional framework in Mozambique was found to be weak due to several reasons including, lack of an institution with overall responsibility for environmental development programmes. But, the National Directorate of Forestry and Wildlife was found to have the capacity to manage the national conservation programme

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A provisional programme design is outlined and its components are

- ❖ institutional development,
- ❖ training,
- ❖ conservation area investment,
- ❖ community development programme,
- ❖ education programme,
- ❖ management research,
- ❖ policy-making,
- ❖ conservation area planning and legislative review

Este relatório apresenta os resultados da primeira fase do processo preparatório para o desenvolvimento de um projecto de conservação da biodiversidade em Moçambique

Fornece alguma informação sobre os antecedentes da conservação e desenvolvimento e uma análise detalhada da biodiversidade e esforços de conservação no país, com destaque para a fauna, flora e vários ecossistemas e áreas protegidas. Os recursos naturais podem contribuir substancialmente para o desenvolvimento nacional. O relatório considera varias formas de utilização consumível e não-consumível dos recursos, incluindo o turismo, safaris, pesca, uso e criação de fauna bravia e o uso de produtos florestais

Refere-se também as ameaças a conservação devido a concentração de populações humanas, e sugere usos alternativos da terra para agricultura. Considera o quadro institucional geral em Moçambique fraco por vários motivos, nomeadamente a falta de uma instituição com responsabilidade geral sobre os programas de desenvolvimento ambiental, no entanto, a Direcção Nacional de Florestas e Fauna Bravia possui capacidade para gerir o programa nacional de conservação

O relatório apresenta um programa provisorio, cujos componentes são

- ❖ desenvolvimento institucional,
- ❖ formação,
- ❖ investimento em áreas de conservação,
- ❖ programas de desenvolvimento comunitario,
- ❖ programas de educação,
- ❖ pesquisa em gestão,
- ❖ elaboração de politicas,
- ❖ planeamento de áreas de conservação e revisão da legislação

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World Bank

(Refer to national contacts list for address)

(Veja o endereço na lista de contactos nacionais)

A provisional programme for the forestry wildlands sector Um programa provisório para o sector de florestas virgens

*Catterson, Thomas [et al]
Ministry of Agriculture, Maputo, MZ
UNDP, Maputo, MZ
FAO, Maputo MZ
Dec 1991 En 1 vol*

Mozambique is a country with vast forests, mainly the dry woodlands and savanna forests. Development of these forests is hindered by several factors such as the civil war, scarce financial resources, lack of skilled human resources and institutional weaknesses.

This document outlines the forestry wildlands programme, which is a component of an overall agricultural sector programme. The programme aims to contribute to sustainable natural resource management and utilisation through improved, efficient and cost-effective forestry and wildlands activities.

The report identifies important areas of activity in the development programme of the sector:

- ❖ contribute to the resettlement process and the establishment of proper land use practices in post-war Mozambique,
- ❖ support sustainable agricultural productivity and food security,
- ❖ participate in the decentralisation process,
- ❖ generate and capture more revenue for the government,
- ❖ promote community participation in the conservation and management of natural resources,
- ❖ provide woodfuels to urban areas,
- ❖ provide sustainable supplies of timber for wood industries,
- ❖ provide sector based employment opportunities, and
- ❖ conserve and manage parks reserves and protected areas.

Policy issues important for sector development are also included. A detailed outline of the programme elements is given.

Moçambique é um país com vastas áreas de floresta, sobretudo florestas secas e savanas. O desenvolvimento destas florestas é afectado por vários factores tais como a guerra civil, falta de recursos financeiros, falta de pessoal especializado e fraqueza institucional.

O documento descreve o programa de florestas e terras virgens, que é componente de um programa geral para o sector agrícola. Este programa visa contribuir para a gestão sustentável dos recursos naturais e sua utilização através de actividades florestais mais eficientes e rentáveis.

O relatório identifica as seguintes como áreas importantes de actividade para o programa de desenvolvimento do sector:

- ❖ contribuir para o processo de reinstalação da população e estabelecimento de técnicas apropriadas do uso da terra no moçambique pos-guerra,
- ❖ apoiar a produção agrícola sustentável e segurança alimentar,
- ❖ participar no processo de descentralização,
- ❖ gerar e captar mais receitas para o governo,
- ❖ promover a participação da comunidade na conservação e gestão dos recursos naturais,
- ❖ fornecer lenha as áreas urbanas,
- ❖ fornecer abastecimentos sustentáveis de madeira para a indústria madeireira,
- ❖ criar oportunidades de emprego por sector, e
- ❖ conservar e administrar parques, reservas e áreas protegidas.

Inclui também aspectos regulamentares importantes para o desenvolvimento do sector e fornece uma descrição detalhada dos componentes do projecto.

Available from
A disposição no
 Ministry of Agriculture
 C P 1406, Maputo
 Moçambique
 Tel ++(258-1) 460011/7

ENVIRONMENTAL INFORMATION

Water quality studies for environmental impact analysis a case study from the Pequenos Libombos Reservoir, Mozambique

Estudos da qualidade da água para análises do impacto ambiental um caso estudado na Represa dos Pequenos Libombos, Moçambique

Sundstrom, Tina

University of Technology, Lulea, Sweden

1991 En 39p photos, tables, graphs, maps

Artificial lakes in the tropics often lead to siltation and premature filling of the lakes, water quality impairment due to the build-up of pollutants and salts from agricultural activities. Eutrophication and thermal stratification are the other problems that facilitate the spread of waterborne diseases.

This research project deals with environmental impacts from the construction of a dam in 1987 on the Umbeluzi river at Pequenos Libombos, 35 kilometres from the Mozambican capital city of Maputo. The main objective was to supply water to Maputo.

The study focused on the questions of salinisation, eutrophication, pesticide and heavy metal pollution. Part of the study also involved studying of data from the 1970s and 1980s on the Umbeluzi river basin. The water quality of the reservoir was examined and the results show that the Pequenos Libombos Reservoir is a eutrophied lake, with very low concentration of heavy metals and pesticides in sediment and fish.

Cadmium and lead concentrations are also very low. Therefore, the water in the reservoir was found to be of good quality, though algae could present problems during water treatment.

To prevent further eutrophication, the researchers recommended that the land along the shoreline be kept from further grazing and cultivation, and that efforts be made to prevent heavy erosion from the cultivated areas around the lake and along its tributaries. It is also recommended that the sources of pollution in the Calichane river and the use of pesticides around the lake be monitored.

A construção de lagos artificiais nos trópicos origina muitas vezes problemas de assoreamento e enchimento prematuro dos lagos, diminuição na qualidade da água devido ao aparecimento de poluintes e sais provocado por actividades agrícolas. Eutroficação e estratificação termal são outros problemas que facilitam a propagação de doenças derivadas da água.

Este projecto analisa o impacto ambiental da construção em 1987 da barragem dos Pequenos Libombos, situada a cerca de 35 Km da cidade capital Maputo, no Rio Umbelúzi com o objectivo principal de fornecer água a Maputo. O estudo foca as questões de salinização, eutroficação e poluição das águas por pesticidas e metais pesados.

A pesquisa inclui também a análise de dados dos anos 70 e 80 na bacia do Rio Umbelúzi. A qualidade actual da água da represa foi examinada e os resultados indicam que a represa dos Pequenos Libombos e um lago eutroficado, com muito pouca concentração de metais pesados e pesticidas nos sedimentos e no peixe.

A concentração de Cádmio é também muito baixa. Por isso, a água da represa é considerada boa, embora a presença de algas possa causar problemas durante o processo de tratamento.

Para impedir uma maior eutroficação, os investigadores recomendam que a terra ao longo das margens não seja mais cultivada e que se tente impedir a erosão das áreas cultivadas a volta do lago e ao longo dos seus afluentes. Recomenda-se ainda o controlo da poluição no Rio Calichane e do uso de pesticidas ao redor do lago.

Available from

A disposição na

Division of Sanitary Engineering

Lulea University of Technology

95187 Lulea

Sweden

Tel ++(46) 92091000

Integrating environmental issues into a strategy for sustainable agricultural development the case of Mozambique
Integrando aspectos ambientais numa estratégia para o desenvolvimento agrícola sustentável o caso de Moçambique

Dejene, Alemneh Olivares, José

World Bank, Washington DC, USA

1991 En [40p] maps tables

This paper provides information on the environmental risks associated with agricultural development and suggests ways to reduce risks. The paper also discusses developments in other economic and social spheres that have an impact on the agricultural sector and rural development.

The key environmental problem in Mozambique is identified as the civil war, which has displaced some two million people.

The displaced population is concentrated in provinces with the highest agricultural potential, their settlements near major towns/cities of the coastal zones and safe rural areas have created severe land shortages, increased the demand for woodfuel and fishery resources, and threatened Mozambique's mangrove ecosystems, which are vital to the country's shrimp and prawn industries.

The civil war has also made wildlife areas inaccessible, and the rebels caused widespread destruction of the wildlife population, both for food and revenue generation. In identifying policy issues, the report cautions against the construction of large dams for hydro-power and irrigation.

These projects often cause soil salinisation, sedimentation, and water borne diseases, and Mozambique lacks water management skills to deal with such problems.

O documento fornece informação sobre os riscos para o meio-ambiente, associados com o desenvolvimento agrícola e sugere formas de os reduzir. Aborda também outros aspectos económicos e sociais que têm impacto sobre o sector agrícola e o desenvolvimento rural.

O principal problema-chave em Moçambique é a guerra civil que fez deslocar cerca de dois milhões de pessoas. A população deslocada concentra-se nas províncias com maior potencial agrícola, a sua fixação junto as principais cidades costeiras e zonas rurais mais seguras, criou sérios problemas de falta de terras, aumentou a procura de lenha e peixe, e pôs em perigo os ecossistemas dos mangais que são vitais para a indústria do camarão.

ENVIRONMENTAL INFORMATION

A guerra civil também tornou inacessíveis as áreas de fauna bravia e os rebeldos destruíram a população faunística para a obtenção de alimento como de receitas. Ao identificar os aspectos regulamentares, o documento adverte quanto a construção de grandes barragens para fornecimento de energia hidroeléctrica e para irrigação

Estes projectos causam, geralmente, a salinização do solo, sedimentação e doenças derivadas da água, e Moçambique não tem capacidade de gestão para lidar com tais problemas

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World Bank Publications Department
1818 H Street, N W , Washington DC 20433
USA

Tel ++(1-202) 4731155

Fax ++(1-202) 6760581

Telex RCA 248423

National survey of biomass/woodfuel activities in Mozambique

Pesquisa das actividades nacionais relacionadas com o combustível lenhoso em Moçambique

Pereira, Carla R

SADCC, Luanda, AN

Mar 1990 En 1 vol photos, tables, diagrams

Biomass is the main source of energy for Mozambique and it represents 80 percent of the total energy consumption. Most energy consumption is used for domestic purposes in both rural and urban households, while industry is the second largest consumer of woodfuel.

Mozambique has a 10-year afforestation plan for energy purposes in which about 275,000 hectares must be planted for rural, urban and industrial consumption. Research, training and awareness programmes are carried out and efforts have been made to increase biomass supply through, for example, large-scale urban woodfuel plantations and afforestation programmes in rural areas.

People are being encouraged to switch to other energy sources such as coal and kerosene. Recommendations based on the results of the survey are made in policy and planning, research, training, awareness programmes, increase in biomass supply and improved utilisation efficiency. Regional cooperation is encouraging biomass programmes in areas such as research and staff training.

O combustível lenhoso é a principal fonte de energia em Moçambique, representando 80% do consumo total de energia. A maior parte do consumo de energia destina-se a fins domésticos tanto nas áreas rurais como urbanas, sendo a indústria o segundo maior consumidor de lenha.

Moçambique tem um projecto de 10 anos para reflorestamento com fins de obtenção de energia, durante o qual devem ser plantados cerca de 275 000 ha para consumo rural, urbano e industrial. Estão sendo realizados programas de pesquisa, formação e sensibilização e tem-se tentado aumentar o fornecimento de lenha, através, por exemplo de plantações urbanas de grande escala e programas de reflorestamento nas áreas rurais.

As pessoas têm sido encorajadas a utilizar outros recursos de energia como o carvão e o querosene. Com base na pesquisa feita fazem-se recomendações sobre políticas e planeamento,

pesquisa, formação, programas de consciencialização, aumento do fornecimento de combustível lenhoso e formas de sua utilização mais eficiente

Apela-se a cooperação regional em programas sobre combustíveis lenhosos nas áreas de pesquisa e formação de pessoal

Available from
A disposição na
SADC
 C P 2876 , Luanda
 Angola
 Tel ++(244) 345288
 Telex 4090 TAUANG

**Land suitability assessment Vol I
 methodology and country results**
**Avaliação da aptidão da terra Vol I
 metodologia e resultados ao nível nacional**

(Assessment of land resources for rainfed crop production in Mozambique)
 Kassam, A.H [et al]
 FAO, Rome, Italy
 May 1982 En 111p tables maps diagrams

Volume I of this report presents a brief description of the methodology developed to obtain crop-specific land suitability assessments for rainfed crop production. The methodology allows a computation of extents of land variously suited to the production of crops, linked to agronomically attainable yields.

Country results of land suitability assessments of eight crops (maize, sorghum, pearl millet, wheat, soybean, groundnut, cassava and cotton), at two levels of inputs circumstances are presented. Additionally, generalised agro-climatic suitability maps for each crop are presented.

Este Volume I do relatório apresenta uma breve descrição da metodologia desenvolvida para obter avaliações da aptidão da terra para produção em sequeiro, específicas para cada cultura

A metodologia permite a computação de áreas da terra com diferentes classes de aptidão para a produção das culturas (em sequeiro)

Cada classe de aptidão representa um nível de rendimentos atingíveis agronomicamente. Os resultados, ao nível nacional, da avaliação da aptidão agrícola das terras, para oito culturas, em duas condições de entradas de factores de produção são apresentados. Também são apresentadas as cartas generalizadas da aptidão agro-climática para cada cultura

Available from
A disposição na
FAO
 Via delle Terme di Caracalla,
 00100 Rome
 Italy
 Tel ++(39-6) 57974779
 Fax ++(39-6) 57975137

ENVIRONMENTAL INFORMATION

Supplemental environmental assessment for potential USAID assistance to locust/grasshopper control operations in Mozambique

Pesquisa ambiental suplementar para assistência potencial da USAID a operações de controle de gafanhotos em Moçambique

*USAID, Maputo, MZ
Government of Mozambique, Maputo, MZ
Sep 1993 En 74p tables, maps*

This assessment complements the Programmatic Environmental Assessment for Locust and Grasshopper Control in Africa and Asia (1989) It provides specific information on the country profile and agro-ecological zones related to the locust/grasshopper problem in Mozambique Economic losses have been experienced due to crop damages caused by locusts and grasshoppers

Collaboration is required between the government, private sector, donor agencies, NGOs and international organisations in taking prevention measures and controlling damages by these pests The present environment legislation in Mozambique does not adequately address the issue of environmental protection from hazards such as pesticides

But the country is in the process of drafting a National Environmental Management and Action Plans which will strengthen the present environmental regulations Pesticides management is essential for human and environmental safety and Mozambique has reasonable pesticide regulations in place, but not enough technical staff to implement and enforce the laws

The document recommends that pesticide use programmes should always have environmental impacts assessments of pesticides, including effects on non-target organisms

Este estudo complementa a Avaliação Programática Ambiental para o Controle de Gafanhotos em África e na Ásia (1989) Fornece informação específica sobre o país e zonas agro-ecológicas relacionadas com o problema dos gafanhotos em Moçambique Os prejuízos económicos registados devem-se a destruição de culturas pelos gafanhotos É necessária uma colaboração entre o governo, sector privado, agências doadoras, organizações não governamentais e organizações internacionais para se tomarem medidas no sentido de controlar os prejuízos causados por estas pragas A actual legislação ambiental em Moçambique não aborda devidamente a questão de protecção ambiental contra perigos como os pesticidas O país está neste momento a elaborar um Plano Nacional de Gestão e Acção Ambientais que virá reforçar os actuais regulamentos sobre o meio-ambiente

A gestão de pesticidas é essencial para a segurança humana e ambiental e Moçambique possui suficientes regulamentos sobre pesticidas, mas não tem pessoal técnico necessário para os implementar e fazê-los cumprir O documento recomenda que os programas de uso de pesticidas sejam sempre acompanhados de estudos sobre o impacto ambiental, incluindo os seus efeitos em organismos não-alvos

Available from
A disposição na
USAID CP 783, Maputo
Mozambique
Tel ++(258-1) 490726
Fax ++(258-1) 492098

NATIONAL CONTACTS
(CONTACTOS NACIONAIS)

Appropriate Technology (APROTEC)
Caixa Postal 1574, Maputo
Moçambique
Fax ++(258-1) 431029
Telex 6-555 URM CB MO

Contact. **Mr Henrique Lopes**
Director

CENACARTA
Caixa Postal 83
Avenida Josina Machel, 537, Maputo
Moçambique
Tel ++(258-1) 30486

Contact **Mr M F G Ferrão**

Department of Forestry Engineering
Departamento de Engenharia Florestal
Faculdade de Agronomia
Universidade Eduardo Mondlane
Caixa Postal 257, Maputo
Moçambique
Tel ++(258-1) 492142, 490009
Fax ++(258-1) 492176

Contact **Mr Abilio Sitor**
Forestry Engineer

The Department carries out research on forest planting and training of graduates

Este departamento leva a cabo investigações sobre plantação de florestas e formação de graduados

Department of Biological Sciences
Departamento de Ciências Biológicas
Faculdade de Ciências
Universidade Eduardo Mondlane
Caixa Postal 257, Maputo
Moçambique
Tel ++(258-1) 490009, 492142
Fax ++(258-1) 492176

Contacts **Mr Adriano Macie**
Head of the Dept

Dr John Hatton
Biologist/Ecologist

The Department gives lectures on biology (ecology, zoology, botany, fisheries, etc) and carries out research on ecology of coastal zones. The Department is also responsible for the Marine Biology Research Station in Inhaca Island.

Ensino de Biologia (ecologia zoologia botânica pescas etc) e investigação na área de biologia das zonas costeiras. É também responsável pela Estação de Biologia Marítima da Ilha da Inhaca

Environment Working Group
Grupo de Trabalho Ambiental (GTA)
Caixa Postal 2775, Maputo, Moçambique
Tel ++(258-1) 493102
Fax ++(258-1) 493049
Telex 6-962 CNMA

Contact **Ms Helena Mota**
Biologist

Mozambican non-governmental organisation conducting research, education and consultancies in the environment field

ENVIRONMENTAL ORGANISATIONS

Organização não-governamental moçambicana vocacionada em investigação, educação e consultoria na área do meio-ambiente

Fisheries Research Institute
Instituto de Investigação Pesqueira
Caixa Postal 4603
Avenida Mao tse Tung, 387, Maputo
Moçambique
Tel ++(258-1) 490307, 490536
Fax ++(258-1) 492112

Contact **Dr Maria Imelda Sousa**
Director

The institute conducts research on marine resources, oceanography and in-shore and off-shore resources, including artisanal and industrial fishing

O instituto realiza investigações sobre recursos marinhos, oceanografia e recursos litorais e de alto-mar, incluindo as pescas artesanais e industriais

Information and Documentation Centre for the Agricultural Sector
Centro de Informação e Documentação para o Sector Agrário
Ministerio da Agricultura e Pescas
Caixa Postal 406
Praça dos Heróis, 3º andar
Maputo,
Moçambique
Tel ++(258-1) 460137
Fax ++(258-1) 460187

Contact **Mr Luis Majope**
Director

This centre coordinates all the other documentation centres and libraries that fall under the Ministry of Agriculture and Fisheries

Este centro coordena todos os outros centros de documentação e bibliotecas dependentes do Ministério da Agricultura e Pescas

Institute of Animal Production
Instituto de Produção Animal (IPA)
Caixa Postal 1410
Avenida da Namaacha, Km 11,5
Maputo,
Moçambique
Tel ++(258-1) 450395/6

Contact **Mr G E Nhantumbo**
Director

This institute falls under the Ministry of Agriculture and Fisheries

Instituição dependente do Ministério da Agricultura e Pescas

Institute of Rural Development
Instituto de Desenvolvimento Rural (INDER)
Caixa Postal 1310
Avenida Eduardo Mondlane, 2221, 2º andar
Maputo
Moçambique
Tel ++(258-1) 424621, 424680
Fax ++(258-1) 424623

Contact **Ms Judite Muxlhanga**
Dir Regional Planning

The institute carries out projects for the development of rural communities

MOZAMBIQUE

O instituto desenvolve projectos para o desenvolvimento das comunidades rurais

Ministry for Coordination of Environmental Affairs

Ministério para a Coordenação da Acção Ambiental

Caixa Postal 2020, Avenida Acordos de Lusaka, 2115, Maputo, Moçambique

Tel ++(258-1) 465843/51

Fax ++(258-1) 465849

Telex 6-962 CNAM MO

EMail CNAM0Z@AMBIENT UEM MZ

Contact **Ms Jacinta Carlos**
Infoterra National Focal
Point

Replacing the previous National Environment Commission, the Ministry coordinates all environment activities carried out in the country, maintaining close contacts with other government agencies. It is responsible for the national environment policy and legal framework. It also undertakes research and projects related to management and conservation of natural resources.

Substituindo a anterior Comissão Nacional do Meio-Ambiente este ministério coordena todas as actividades relacionadas com o meio - ambiente no país mantendo contactos estreitos com outros departamentos governamentais. O ministério é ainda responsável pela política nacional do meio ambiente e seu enquadramento legal. Realiza também pesquisas e projectos relacionados com a gestão e conservação dos recursos naturais.

National Directorate of Forests and Wildlife Direcção Nacional de Florestas e Fauna Bravia (DNFFB)

Ministerio da Agricultura e Pescas

Caixa Postal 1408

Praça dos Heróis, Maputo

Moçambique

Tel ++(258-1) 460036

Fax ++(258-1) 460060

Contacts **Mr Sergio Chitara**
Director

Mr Arlindo Coco
Forestry Engineer

Government body responsible for the conservation of forest and wildlife resources in the country, including the management of protected areas and control of their use.

Departamento estatal responsável pela conservação dos recursos florestais e faunísticos no país, incluindo a gestão de áreas protegidas e controlo de seu uso.

National Directorate of Water Direcção Nacional de Aguas (DNA)

Caixa Postal 1611

Avenida 25 de Setembro 942, 9º andar

Maputo

Moçambique

Tel ++(258-1) 431364

Fax ++(258-1) 423632, 421403

Contacts **Ms Suzana Saranga**
Mr Luis Almeida

ENVIRONMENTAL ORGANISATIONS

National Institute for Agricultural Research
Instituto Nacional de Investigação Agronómica (INIA)

Caixa Postal 3658
Avenida das FPLM, Maputo
Moçambique
Tel ++(258-1) 460190
Fax ++(258-1) 460074

Contact **Mr Carlos B Zandamela**
Director

Institute involved in agricultural research

Instituto envolvido em investigações agronómicas

National Institute of Meteorology
Instituto Nacional de Meteorologia (INAM)

Rua Mukumbura, 164, Maputo
Moçambique
Tel ++(258-1) 490064
Fax ++(258-1) 491150

Contact **Dr Sergio Ferreira**
Director

South Regional Water Administration
Administração das Águas da Região Sul (ARA-SUL)

Avenida Samora Machel, 30, 7º andar
Maputo
Moçambique
Tel ++(258-1) 431055/7
Fax ++(258-1) 431058

Contact **Mr Issufo Chitumia**
Director

Involved in the management of Pequenos Libombos, Massingir and Corruman dams

Administra as barragens dos Pequenos Libombos, Massingir e Corrumana

Southern African Research and Documentation Centre (SARDC)

Centro de Documentação e Pesquisa para a África Austral

Caixa Postal 957
Rua Dom Afonso Henriques, 141, Maputo
Moçambique
Tel ++(258-1) 490831
Fax ++(258-1) 491178

Contact **Ms Maria da Luz P Dias**
Documentalist/Project
Manager

SARDC is involved in the collection, analysis and dissemination of information about the southern African region. This is done through special reports and news features, factsheets, policy analyses, technical expertise, topical seminars and other specialist services. In Maputo, SARDC has a database and a library to provide information on Mozambique. The Maputo Office also houses material on the environment which is accessible to researchers.

SARDC está envolvida na recolha, análise e disseminação de informação sobre a África Austral. Isto é feito através de relatórios especiais e artigos noticiosos, serviços especializados de análises políticas, assessoria técnica, seminários e outros. Em Maputo, a SARDC possui uma base de dados e uma biblioteca com informação sobre Moçambique.

MOZAMBIQUE

**United Nations Development Programme
(UNDP)**

*Programa das Nações Unidas para o
Desenvolvimento*

Caixa Postal 4595
Avenida Kenneth Kaunda, 945,
Maputo
Moçambique
Tel ++(258-1) 490334/7/8
Fax ++(258-1) 491691
EMail UDP 185

Contact **Ms Marielle Rowan**
Jnr Professional Officer,
Programme Unit I

**WORLD BANK
BANCO MUNDIAL**

Caixa Postal 4053
Avenida Kenneth Kaunda,
1224, Maputo Moçambique
Tel ++(258-1) 492841
Fax ++(258-1) 492893

Contact **Mr Rod de Vletter**
Operations Officer
Environment and Natural
Resources

**United Nations Food and Agricultural
Organisation (FAO)**

*Organização das Nações Unidas para
Agricultura e Alimentação*

Caixa Postal 1928, Maputo
Moçambique
Tel ++(258-1) 491136
Fax ++(258-1) 491906

Contact **Mr Julio Gonzalez**
Representative

ENVIRONMENTAL POLICY OVERVIEW

Covering a total area of about 752,610 km², Zambia is endowed with a natural resource base of land, wildlife, forests, fisheries, minerals and water. It has more than 100 species of mammals, 700 of birds and 4,600 of plants.

In addition to its natural resource base, Zambia is also one of a few most urbanised countries in the SADC region with more than 50 percent of its 9.8 million people living in urban areas.

The Zambian economy is heavily dependent on mining, and this has resulted in air and water pollution in some areas. The Copperbelt, the Kafue industrial centre and Lusaka are the main areas of industrial pollution but little data is available. The country's high level of urbanisation has also exacerbated not only pollution but also environmental degradation in urban and surrounding areas.

Zambians have not only acknowledged the environmental problems that they face, but have also taken measures to address them both at national and local levels.

Over the years, the country has supported many environmental studies, spawning such documents as *The State of the Environment Report of Zambia*, *the National Conservation Strategy for Zambia* and *the National Environmental Action Plan*. Such studies have not only involved government departments but also different non-governmental organisations whose main objective is to steer the people along the road toward sustainable development.

The foundation has already been laid in some sectors. The country has about 20 national parks and more than 30 game-management areas to help conserve the country's wildlife which is threatened by overexploitation. About 224,100 km², representing about 30 percent of that country's land area, have been set aside as protected areas.

The government has also introduced different community-based wildlife management programmes such as the Administrative Management Design for Game Management Areas (ADMAGE) and the Luangwa Integrated Resource Development Programme (LIRDP) through which wildlife in and around rural areas is managed and utilised for the benefit of the local people. The lead department in wildlife management is the Department of National Parks and Wildlife Services.

Environmental management in Zambia now also extends to pollution control, particularly since the introduction of the Environmental Protection and Pollution Control Act in 1992. The law, under which the National Environmental Management Council of Zambia (NEC) was established, has made the environment one of the most important issues in development in Zambia, giving teeth to monitoring and enforcement measures.

Unlike many environmental watchdogs, the NEC has powers to prosecute and jail senior managers and directors of companies for up to three years if they are found violating its regulations.

ENVIRONMENTAL INFORMATION

The council also coordinates the activities of all ministries and other bodies concerned with the protection of the environment and advises on cooperation between national and international organisations. Since its establishment, the NEC has identified a number of plans and projects that promote protection of the environment. It is monitoring trends in the use of natural resources and their impact on the environment.

Other government institutions concerned with the environment include the departments of agriculture, of fisheries, of energy, of natural resources, and the meteorological department and the Ministry of Tourism.

In Zambia, there is a limited number of environmental NGOs involved in education, research and anti-poaching campaign exercises. But an enabling environment has been created for NGOs to be fully involved in environmental programmes.

The Zambia Environment Education Programme (ZEEP) coordinates and supports all the institutions involved in the production and publication of environmental education materials. A number of educational pamphlets have been printed and distributed to different institutions, including Zambian schools and training centres.

The Wildlife Conservation Society of Zambia plays an important role in wildlife conservation. It, however, also covers the management of other natural resources. In addition to policies and national institutions, Zambia is also actively involved in the activities of SADC and is a signatory to the SADC Treaty, which among other things, commits member states to environmental protection.

Zambia is also a signatory to the following international agreements, conventions and/or treaties:

- ❖ 1963 - Treaty Banning Weapon Tests in Atmosphere, Outer Space and underwater,
- ❖ 1967 - Treaty on Activities of states in Exploration and use of Outer Space, including Moon and Celestial Bodies,
- ❖ 1971 - Treaty, Prohibiting Emplacement of Nuclear and Mass Destruction Weapons on Sea-Bed and Ocean Floor and Subsoil,
- ❖ 1971 - Ramsar Convention on Wetlands,
- ❖ Convention on the Law of the Sea,
- ❖ 1972 - World Cultural and Natural Heritage Sites,
- ❖ 1973 - Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES),
- ❖ 1982 - Convention on the Law of the Sea,
- ❖ 1985 - Protection of the Ozone Layer,
- ❖ 1987 - Montreal Protocol on Substances that Deplete the Ozone Layer,
- ❖ 1991 - Bamako Convention on the Ban on Import into Africa and the Control of Transboundary Movement of all Forms of Hazardous Wastes within Africa,
- ❖ 1992 - Convention on Biological Diversity,
- ❖ 1992 - Framework Convention on Climate Change, and
- ❖ 1994 - Convention to Combat Desertification and Drought

At the regional level, Zambia has ratified the Action Plan for the Zambezi River. It is considering the Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) region which was signed by eight SADC countries in August 1995.

BIBLIOGRAPHIC ABSTRACTS

The following documents are cited starting with the most recent and covering environmental issues from a national perspective, followed by documents focusing on provincial, district and/or sub national issues, and finally by sectoral documents. The name of the publisher or distributor of each document is provided at the end of each citation. Where full address is not immediately provided refer to section on national contacts.

Concept paper on Environmental Support Programme (ESP) of National Environmental Action Plan (NEAP)

*Ministry of Environment and Natural Resources
Lusaka, ZM
Dec 1994 En 10p tables diagrams*

Zambia's National Environmental Action Plan (NEAP) identifies environmental issues, analyses their underlying causes and recommends actions and strategies required to resolve them. The NEAP aims at integrating environmental concerns into social and economic development planning efforts. The Environmental Support Programme (ESP) is the mechanism for the implementation of this NEAP. The main objective of this paper is to present a common understanding between all key sectors in Zambia and donors on the approach to the preparation and implementation of the ESP.

The paper discusses the strategy and components of the ESP which include direct sectoral investments in resource management, institutional capacity building, environmental education and public awareness, and environmental research and investment studies.

The institutional framework for the preparation and implementation of the ESP is outlined. The programme will be carried out in three phases and each will consist of a series of projects. These will be constituted from identified activities needed to address the priority environmental concerns which are deforestation, water and air pollution, inadequate sanitation, soil degradation, and wildlife depletion.

Available from

Ministry of Environment and Natural Resources

State of Environment in Zambia

*Chipungu, Patrick Kunda, Douglas (eds)
Environmental Council of Zambia, Lusaka, ZA
CIDA, Lusaka ZA
NORAD, Lusaka ZA
Jun 1994 En 115p photos, tables, maps*

The state of the environment report reviews Zambia's natural resources, highlighting the quantities, types, uses, and level of degradation of each resource.

Agriculture is a major activity though the potential land is not fully utilised. The major environmental problems are poaching, deforestation, soil degradation, lack of professional human resources, equipment and pollution from agrochemicals and industrial chemicals. Laws have been passed to control pollution, especially from mining activities.

Forests are estimated to cover approximately 55 percent of the total land surface and the rate of forest destruction is very high. The fisheries resources from rivers, lakes, swamp streams and dams provides employment for over 30,000.

ENVIRONMENTAL INFORMATION

people who harvested over 70,000 tonnes of fish in 1992. Zambia's main energy sources are electricity, coal, wood fuel and petroleum which is imported. The government is encouraging the use of renewable energy such as solar energy.

The country has enough water resources for domestic, agriculture and hydro-electricity generation purposes, but the supply and quality of water for domestic use is poor. Waste management is poor and wastes are a health hazard. The environmental legislation and institutions in Zambia need strengthening to adequately address the problems, some of which are a result of lack of environmental impact assessments, before development projects are started. The level of environmental awareness is low and needs boosting.

Available from

Environmental Council of Zambia

National environmental action plan

*Ministry of Environment and Natural Resources,
Lusaka, ZM
Jun 1994. En 150p tables*

The National Environmental Action Plan (NEAP) is an update of the National Conservation Strategy which was adopted in 1985.

The NEAP is founded on three fundamental principles which are

- ❖ the right of citizens to a clean and health environment,

- ❖ community and private sector participation in natural resources management, and
- ❖ obligatory Environmental Impact Assessments (EIAs) of major development projects in all sectors

The overall objective of the NEAP is to integrate environmental concerns into the social and economic development planning process of the country. The NEAP identifies environmental problems and issues, analyses their causes and recommends the required action to resolve those issues.

It further recommends an implementation strategy for each sector, proposing the action, priority ranking and a time frame for its implementation. It also identifies the responsible agency for the implementation of the strategy.

The NEAP is divided into nine main categories and these are

- ❖ institutions and environmental legislation,
- ❖ economic development and the environment,
- ❖ agriculture,
- ❖ renewable natural resources (water, forests, wildlife and fisheries),
- ❖ tourism,
- ❖ mining,
- ❖ industry,
- ❖ human population and
- ❖ energy resources

Available from

Ministry of Environment and Natural Resources

Report on the proceedings of the workshop on environmental impact assessment policy formulation

*Environmental Council of Zambia, Lusaka, ZM
1993 En 20p*

The purpose of the workshop was to acquire information to be used to generate a draft national policy on environmental impact assessment

The aim of an EIA is to control environmental pollution and lessen environmental degradation associated with most development activities

The main objectives of the workshop were to

- ❖ review contemporary environmental principles,
- ❖ procedures and techniques in the field of environmental impact assessment,
- ❖ study the role of environmental assessment in project appraisal,
- ❖ assess the current status of environmental assessment guidelines within the Zambian development process,
- ❖ identify key local institutions with a role to play in environmental impact assessment application in Zambia, and
- ❖ formulate guidelines for the development of an environmental impact assessment policy and programme for Zambia

The workshop programme included lectures on the role, procedures, quality control and the management of environmental impact assessments. Technical papers were also presented to highlight the local situation on development and the environment

Participants went on field trips to local development projects to assess the need for impact assessment. The recommendations were based on the group discussions

Available from
Environmental Council of Zambia

The environmental impact of the 1991-2 drought on Zambia

*Tiffen, Mary Mulele, M R
IUCN, Lusaka, ZM
1994 En 108p charts, maps, tables*

This study assesses the impact of the drought on the rural communities of Zambia. The 1991/92 drought came at a time when the country was experiencing other problems, such as economic crisis and the AIDS epidemic

The study first analyses the rainfall patterns over the years and the results show that droughts are cyclic and, therefore, recur after some years of good rains. The study also highlights the impact of the drought in various parts of the country. The drought did not cause total destruction to all living resources, but rather affected the most sensitive such as the maize crop

The study discusses in detail the impact of the drought on the bio-physical environment, that is, crop production, surface water, groundwater, natural vegetation, trees, livestock production, fisheries, wildlife and soils. With depleted water sources, the most affected were crops, while the other natural resources were more resilient

ENVIRONMENTAL INFORMATION

The government worked in conjunction with non-governmental organisations to reduce the impact of the drought by providing and distributing food aid to the rural people. People were left impoverished by the drought because they had to sell assets such as livestock and seeds to survive.

The study recommends several initiatives to plan for droughts and enable Zambia to better manage such disasters in future.

Available from
IUCN Zambia

Zambia's national report to UNCED

*Ministry of Environment and Natural Resources,
Lusaka, ZM
1992 En 48p graphs, tables*

Zambia, which has been heavily dependant on copper for decades and has rich deposits of cobalt, coal, lead and zinc, is committed to achieving equitable development. This report looks at the environmental impact of mining in the country. Agricultural land is underutilised and most of it is used for grazing by livestock. The impact of agriculture on the environment is mainly land degradation, especially soil erosion.

Zambia has large forest resources, the most common being, wet *miombo* woodland and *mopane* woodland. Most Zambians use biomass energy for domestic use and forests are also being cleared for agriculture.

A wild variety of wildlife species can be found but overexploitation of wildlife and the destruction of the habitat are the major problems.

Water resources are extensive but many people do not have access to clean or piped water. A National Conservation Strategy has been adopted by the government but the country has weak legislation on environment matters. Environment education caters for all sectors starting in the school curricula, and public participation in environmental issues is encouraged.

Research and human resources training are ongoing. The report concludes with action plans, recommendations and development strategies for the sustainable development of Zambia's environment.

Available from
Ministry of Environment and Natural Resources

The state of the environment report of Zambia

*Natural Resources Department, Lusaka, ZM
Apr 1990 En. 28p graphs, tables*

The paper gives a brief overview of the environment of Zambia. It begins with short descriptions of the physical features, the climate, the population and the economy. Though Zambia has a good supply of freshwater resources, many people do not have access to either piped or clean water due to industrial pollution which has a major impact on human health.

The paper cites the Kafue and Zambezi as some of the rivers whose waters are of poor quality. Air pollution is a problem at local rather than at national level, especially from mining activities and traffic emissions.

The four agroecological zones of the country are described and the criteria for division is, average altitude, rainfall, climate, soils and suitability to crops. The agricultural sector has an enormous potential, but the overall crop production has been poor. Most of the vegetation cover is the *miombo* woodlands which cover about 70 percent of the country.

Fish production has been on the increase over the years and the Fisheries Act prohibits overexploitation, but pollution of the water resources is a problem to fish production. Zambia has an abundance of wildlife species and effort is being put in the development of the tourism industry.

Poaching has led to a drastic decline of the black rhino and elephant populations. The government is taking measures to counter this problem and one method being used is sharing revenue from tourism with local people. They are encouraged, in return, to report poachers activities in their areas. Firewood is the main supplier of energy (about 50 percent) while the mining industry accounts for about 50 percent of total consumption.

The country is self-sufficient in electricity from the Kafue and Kariba stations, and it also exports electricity to neighbouring countries.

The draft Environmental Protection and Pollution Act discussed in the last section of the paper is a step toward controlling pollution.

Available from
Natural Resources Department

Nature of Zambia

Carwardine, Mark
IUCN Gland Switzerland
1988 En 71p ill, maps

With 100 species of mammals, 700 of birds, and 4 600 of plants, Zambia is among the richest African countries in wildlife. Several species, including Thornicroft's giraffe and some 200 plants, are endemic. Zambia's relatively small urban and rural population has made possible an extensive system of protected areas, including 19 national parks, and 31 game management areas. However, numerous species found in Zambia are threatened, including the wild dog, cheetah, black rhino, elephant, leopard, and *lechwe*, the Nile and slender-snouted crocodiles, the shoebill, wattle crane, and slaty egret.

Zambia's forest resources are also abundant, with 70 percent of the country covered by *miombo* woodland, an open mixture of shrubs, various trees of moderate height, and tall grasses. The report gives an overview of Zambia's history, culture, geography and economics.

Following an assessment of natural resources, the report identifies the major conservation problems, which include rhino and elephant poaching, deforestation, agro-chemicals pollution, soil erosion and infertility, and water shortage. It highlights the importance of wildlife as biological capital. The following section covers agriculture, tourism, industrial development and population growth. Finally, a national conservation strategy is outlined.

Available from
IUCN - The World Conservation Union
Publications Department
(Refer to end of Introduction for address)

ENVIRONMENTAL INFORMATION

Zambia country study and Norwegian aid review

*Chr Michelsen Institute, Fantoft, Norway
1986 En 202p maps, tables, graphs*

The study first looks at the political, economic and social development in Zambia. The Zambian economy, once prosperous, has suffered a serious decline over the last 10 years due various reasons such as the drop of copper prices on the world market and the debt problem. Although the government has been trying to expand the economy, especially through the development of the agricultural sector and other industries besides mining, little progress has been made.

There is a great potential for the development of agriculture. A new government policy aims to make agriculture the leading sector in the economy for Zambia to achieve self-reliance and self-sufficiency in staple food.

The study also analyses issues such as employment, health, education, water supply and human rights, assessing the government's performance in those areas. The second section of the study discusses Norway's development cooperation with Zambia since 1966. Norway has assisted Zambia in areas such as agriculture, water and power supply, industry, education, transport and health. Some of the aid has been at regional level through SADCC which is now SADC.

The study further reviews major areas of bilateral cooperation such as financial support, technical assistance, rural development projects, and water supply. The rural development projects include settlement schemes, village agricultural programmes, soil productivity research programmes, and the extension and training

project. The study concludes by offering options for the future and recommendations.

Available from

Chr Michelsen Institute, DERAP
Fantoftvegen 38, N-5036 Fantoft
Norway
Tel ++(47) 475284410
Telex ++40006 CMI N

National conservation strategy for Zambia

*IUCN, Gland, Switzerland
Ministry of Lands and Natural Resources,
Lusaka, ZM
1985 En 96p ill*

Zambia's recent shift in economic emphasis from mining to agricultural development underscores the importance of natural resource management.

This report summarises the environmental issues related to forestry, agriculture, human settlements, industry and mining, water, population, wildlife and tourism, and energy. Due to ill-planned development activities and population pressures, Zambia already faces many environmental problems. The most serious are deforestation, soil erosion, degradation of traditional pastures, pollution and poaching.

Other problems include land sterilisation under mining dumps, inappropriate urban development, the reduction of wildlife habitats, overfishing, and the reduction of genetic diversity.

In response, the Zambian government has formulated a National Conservation Strategy (NCS) to improve natural resource management

The report details a wide range of activities proposed in the strategy to integrate conservation with development planning. These include a new conservation coordinating body and supporting provincial committees whose responsibilities would be to support

- ❖ conservation education for politicians, planners, students, and the public,
- ❖ more integrated, conservation-oriented extension services,
- ❖ community participation in conservation activities, natural resource management training, and
- ❖ related inventories and research

Guidelines for specific interventions are also presented. The appendices provide information on, inter alia, environmental regulations, impact assessments, standards, and design briefs for settlements

Available from

IUCN - The World Conservation Union
(Refer to end of Introduction for address)

Environmental profile, western province, Zambia

*Gils, Hein van Aongola G
International Institute for Aerospace Survey and Earth Sciences,
Enschede, Netherlands
Provincial Planning Unit Lusaka, ZM
May 1988 En 37p charts, maps tables*

The state of the environment in Zambia's Western Province is generally good. This report assesses the province's forest, agricultural, and wildlife resources, along with its livestock, fisheries, water supply, and related health, legal, and institutional issues.

The Western Province is distinguished from the rest of the country by the domination of Kgalagadi sand plains. In fact, about 75 percent of the province is covered by forests containing primarily *mukusi*, *mukwe*, and *muzauli* hardwoods, all of which occur only on Kgalagadi sand plains. Such forests are generally highly resilient to shifting cultivation, fuelwood cutting, cattle grazing, and fire. However, according to the report, current timber exploitation rates (20,000 cu m annually) threaten the *mukusi* forests. Additional threats to the environment include the decline in some larger wildlife species such as elephants, *red lechwe*, due to poaching and loss of habitat, and soil erosion caused by poor traditional drainage technology.

The report also discusses the province's considerable potential for agricultural development, while identifying some possible localised negative impacts, including soil erosion, bilharzia, and overgrazing and overfishing.

It concludes by stating that existing statutory and customary laws in the province provide a strong framework to prevent environmental degradation.

Available from

International Institute for Aerospace Survey and Earth Sciences
PO Box 6, 7500 AA Enschede
The Netherlands

ENVIRONMENTAL INFORMATION

Regional environmental action plan

*Ministry of Environment and Natural Resources,
Lusaka, ZM
Jul 1994 En 94p tables, maps*

The Regional Environmental Action Plan (REAP) is a follow up to the National Environmental Action Plan (NEAP) and it covers all the nine provinces of Zambia. The proposed actions and strategies will form the basis for the formulation of the Environment Support Programme (ESP), which will help in implementing the NEAP and the REAP.

The regional plan describes the physical and socio-economic characteristics of each province. It goes further to identify the environmental issues and problems by region. These include poor health due to lack of clean water supplies and sanitation, soil erosion, deforestation, depletion of wildlife and fisheries resources, and air and water pollution.

The report recommends actions and strategies to address these problems in each province, and the institutional framework required to implement the plans.

It also sets out the time frame and the specific location for each activity. Environmental education and awareness campaigns are a priority in most provinces.

Available from
Ministry of Environment and Natural Resources

Environmental audit of the Kabwe mining operation

*Lundgren, Tom Lundberg, Bo
SADC-Mining Coordinating Unit, Lusaka, ZM
ZCCM-Kabwe Division, Kabwe, ZM
Swedish Geological AB, Sweden
Mar 1994 En 44p photos, tables, maps, graphs*

The Kabwe lead-zinc mine involves underground mining, ore treatment, fuming and leaching to produce zinc metal. Previously it also produced other metals, particularly lead. The operations at Kabwe have been carried out with a minimal regard to the protection of the environment, resulting in a considerable environmental liability.

This audit was carried out over four weeks and its general scope was to make a general survey of the environmental issues related to the present and previous operations at Kabwe. The results showed that the surrounding environment at Kabwe is polluted by mining wastes, the working environment is deficient and there is little environmental planning for both present and future operations. This is a result of absolute priority of production over environmental concerns and the lack of funds due to unprofitable operations at the mine.

The report recommends remedial planning and action such as the discontinuation of discharge of toxic substances to the environment, and mitigation of polluted sites. Specific recommendations are also included.

Available from
SADC Mining Coordinating Unit
(Refer to regional contacts section for address)

Environmental impact assessment of limestone mining at RP3 Chilanga quarry

*Aongola, Lubinda M
Chilanga Cement, Lusaka ZM
Sep 1993 En 67p maps, tables, diagrams*

Chilanga is south of Lusaka and the study area has limestone rock, a mineral required in cement-making. The study was carried out, before a limestone mining project got underway, to find out the project's possible environmental impacts and ways to address them.

Potential impacts of the quarry development identified were on air quality, water, ecology, geology and soils, landscape, and human health, but the majority of these potential impacts were absent in the study area.

The study found that air was most likely to be polluted by dust caused by traffic movement, while the water quality of the nearby Mungu stream was likely to be affected if current plans of the quarry water disposal were not regulated.

The mitigation plan recommends the following:

- ❖ the installation of special water pipes to reduce water pollution,
- ❖ regular watering of the roads leading to the mine to reduce dust generated by traffic,
- ❖ the introduction of patrols in the area to reduce deforestation and uncontrolled burning by trespassers, and
- ❖ for the quarry to be fenced for rehabilitation after mining ceases because the underground water source will likely be polluted.

The plan also recommends constant monitoring of the air, water and vegetation for unpredicted impacts.

Available from
Chilanga Cement Works
PO Box 350099,
Chilanga
Zambia
Tel ++(260-1) 278417

The effect of mining activities on water quality in the Kafue River, Copperbelt, Zambia a pilot study

*Pettersson, Ulf Ingri, Johan
Lulea University of Technology, Lulea, Sweden
1993 En 1 vol tables, ill*

Water pollution from the mining industry is a major health risk to both the people and living water resources. In the mining process, from the extraction of ore from the bedrock, to refined pure metal, a lot of waste materials are produced and emitted into the air and water.

In Zambia, mining activities are concentrated in the Copperbelt area, which is located in the upper part of the Kafue river catchment, in the north-western region of the country. The Kafue is one of the major rivers in Zambia which supply water to both urban and the farming areas. The purpose of this pilot study was to investigate the influence of the mining on water quality and trace element composition in the Kafue river. Suspended and deposited sediment, and water samples from six locations along the river have been analyzed.

ENVIRONMENTAL INFORMATION

The results show that when the river enters the mining areas, the concentrations of the major dissolved elements such as sulphur, calcium, sodium and potassium increase significantly

Available from

Lulea University of Technology,
Division of Applied Geology
95187 Lulea
Sweden
Tel ++(46) 92091000

**Bangweulu swamps a gill net survey
of the Chikuni sector**

*Nabuyanda, Misery M Mubamba, Raphael
Department of Fisheries, Chilanga, ZM
1993 En 75p maps, tables, diagrams, graphs*

A gill net survey was conducted in the Chikuni Sector of the Bangweulu Swamps to determine the composition, abundance and the potential for exploitation of fish in the area

During the study period, the level of the water in the swamp was receding and it was brown. The water temperature was 21°C and throughout the study period, the weather was calm with clear skies. The highest density of plankton was found at the estuary of the Lukulu river, followed by the swamp proper and Lukulu river itself, respectively. There were 1,011 fish caught in 19 days of night fishing and the total weight of fish caught was 147 kilogrammes. The majority of all the small fish were caught in 25 mm mesh size, followed by 37 mm. Most of the fish species caught during the study were juveniles and immature

The few adults caught were in a spent or resting stage. The sex ratio observed in all the fish examined was nearly 1:1. Examination of the gut contents showed that the fish fed on each other, the larger fish feeding on the smaller species.

An analysis of the age, growth and mortality parameters has shown that the exploitation ratio of *C. gariepinus* is 0.87, suggesting the species is highly overfished. The management implications of the results obtained in this study are discussed and recommendations made.

Available from

Department of Fisheries

**Environmental effects of agricultural
change and development in the Northern
Province, Zambia**

*Zambia Provincial Planning Unit, Lusaka, ZM
[et al]
Dec 1989 En 169p + 6 appendices ill, maps,
charts, tables*

The major environmental issue linked to agriculture and resource use in Zambia's Northern Province is increasing deforestation due to the extensive practice of *chitemene*, a long-standing shifting cultivation practice whereby the products of burnt branches are used to enrich soil fertility. If such practices continue, complete deforestation of the province may occur within a few decades. Government and donor-supported efforts to encourage transitions to more permanent farming methods have met with limited success.

However, some gradual transitions independent of outside interventions, have been noted in areas where deforestation already limits the potential for *chitemene* cultivation

This study examines the environmental effects of agricultural production and natural resource use in the province. The document provides information on the study methodology and discusses the main issues, briefly describing the province's climate, geography, and natural resources for agriculture, livestock farming, forestry, fishing, wildlife preservation, etc

It provides demographic information, including farmer profiles. The document further analyzes current agricultural and natural resource management policies and planning, and the environmental effects of landuse practices

It also identifies policy and institutional shortcomings. The study recommends programme, policy and institutional options for sustainable resource utilisation. It includes a bibliography

Available from

IUCN - The World Conservation Union
Publications Department
(Refer to end of Introduction for address)

Policy for wildlife in Zambia

*National Parks and Wildlife Service Lusaka, ZM
Aug 1993 En 11p*

The policy statement presents some guidelines on the management and uses of wildlife in Zambia

The Government, through the Department of National Parks and Wildlife Service (NPWS), has direct responsibility for all wildlife in national parks and other protected areas. It provides legal protection and advice on the management of wildlife outside the protected areas. A Parks and Wildlife Board advises on policy and its implementation, while the NPWS is responsible for the implementation of the policy and legislation

A National Wildlife Technical Committee comprising representatives from government ministries and agencies at national, provincial and district levels, involved in rural development, ensures full liaison on all matters relating to the conservation and management of wildlife and national parks. The Minister may set up Integrated Resource Development Authorities (IRDA) outside national parks to manage the wildlife in particular areas

The policy also outlines the functions of the NPWS within and outside national parks, and the management of wildlife outside national parks in game management areas and in open areas which are neither national parks nor game management areas

Available from

Department of National Parks and Wildlife Service

The National crocodile conservation plan

*National Parks and Wildlife Service, Chilanga, ZM
Apr 1993 En 6p tables*

ENVIRONMENTAL INFORMATION

Crocodiles are an ancient group of reptiles and they could be in danger of extinction due to overexploitation for their valuable skins as well as through habitat destruction and fishing activities

The introduction of ranching and the creation of artificial lakes in Zambia has removed the crocodiles from the endangered list This national conservation plan begins with distribution and population status facts on crocodiles in Zambia

There are two species of crocodiles found in Zambia, the African slender snouted crocodile and the Nile crocodile with the latter being more widely distributed Population estimates of the Nile crocodile in 16 major rivers and lakes in the country are given Population figures for crocodiles on ranches and an estimated egg demand are also stated

The estimated total populations on rivers is 82,440, on lakes 151,680, and on ranches 30,512, while the total egg demand is 27,400 Zambia is allowed under the CITES convention to export crocodile products — skins, skulls and teeth — to countries such as France, Japan and Singapore

The crocodile is recognised as a game animal and, therefore, can only be hunted under license The last section of the document covers the policy and management plan Crocodile populations are closely monitored and regulated, for example, crocodile ranching operators are required to submit annual reports covering all aspects of the operation A list of principles and objectives to be followed by the management plan and policy is given

Available from

Department of National Parks and Wildlife Service

NATIONAL CONTACTS

Chongololo Wildlife Conservation

PO Box 820085, Chisamba

Zambia

Tel ++(260-1) 254226

Contact **Mr D Sakala**

Chongololo is an non-governmental organisation involved in environmental education. They teach on wildlife conservation to the local communities in Zambia at district and provincial levels. Their main target groups are the youth, women and community organisations.

Chinfumshi Wildlife Orphanage

PO Box 11190, Chingola

Zambia

Tel ++(260-2) 311100

Contact **Mrs S Siddle**

Chinfumshi is an orphanage for chimpanzees from all over Africa. The orphanage also provides lecture services to visitors on chimpanzees and their protection.

Department of Agriculture

PO Box 50291, Lusaka

Zambia

Tel ++(260-1) 253933

Contact **Mr Russell Mulele**

The aim of the department is to raise the standard of living for the rural population by teaching them new methods or improved methods of agriculture so that they can increase per unit area.

This will, in turn, reduce food importation. The department is also responsible for the country's food security.

Department of Fisheries

PO Box 350100, Chilanga

Zambia

Tel (260-1) 278418

Contact **Mr H Mudenda**
Director

The Department coordinates the development of fishing and aquaculture development in Zambia. It provides extension services in fish culture and fishery management services. The Department also conducts training programmes for fishermen.

Department of Energy

PO Box 36079, Lusaka

Zambia

Tel ++(260-1) 253761

Contact **Mr D Mbewe**

The Department carries out research into energy requirements and consumption in the country. It also organises workshops and seminars on energy consumption and demand.

Department of National Parks and Wildlife Service

P Bag 1, Chilanga

Zambia

Tel ++(260-1) 278366

Fax ++(260-1) 278113

Contact **Mr Ackim Mwenya**
Director

ENVIRONMENTAL ORGANISATIONS

The Department is responsible for protecting, conserving and managing national parks, game management areas and bird sanctuaries, as well as controlling hunting activities. The Department also has an environmental education programme which are conducted at Tree Tops and Nyamaluma school camps.

Energy and Environment Group (EEG)
University of Zambia, Department of Physics
PO Box 32379, Lusaka
Zambia
Tel ++(260-1) 260632
Fax ++(260-1) 253952

Contact **Prof P Cam**

The aim of the Group is to provide information on the environment and energy for sustainable development and planning.

Members are also available for consultancy work on Environmental Impact Assessment, and any research on energy. The Group organises workshops, seminars and demonstrations.

Entomological Society of Zambia
PO Box 49, Chilanga
Zambia
Tel ++(260-1) 278158

Contact **The Chairman**

The Society is a membership of agriculturists who are involved in plant protection activities. The Society provides consultancy services on plant protection and pest control.

**Environmental Conservation
Association of Zambia**
PO Box 30395, Lusaka
Zambia
Tel ++(260-1) 223222

Contact **Mr Colin Heygate**

This is an association within the Zambia National Farmers' Union. The Association's main objective is to promote awareness for environmental protection amongst farmers and to develop networking non-governmental organisations, aid groups, the media, schools and rural communities. It also acts as a lobbyist and pressure group.

Environment and Population Centre
PO Box 35614, Lusaka
Zambia
Tel ++(260-1) 220156/222679
Fax ++(260-1) 224325

Contact **Ms Wanga Mumba**
Executive Director

Creates awareness on the relationship between population and environment.

Environmental Council of Zambia
PO Box 35131, Lusaka
Zambia
Tel ++(260-1) 286435
Fax ++(260-1) 223123

Contact **Mr James Phiri**
Director

The aim and objective of the Council is to provide for the protection of the environment.

and control of pollution as provided for under the Environmental Protection and Pollution Control Act of 1990. The Council also carries out environmental awareness programmes and publications such as the *1994 State of the Environment Report for Zambia*.

Forest Department

PO Box 510095, Chipata
Zambia
Tel ++(260-62) 21264

Contact **Mr H Nyau**

The Department aims to control and manage forest areas, and protect land against floods, erosion and desiccation. Other activities include research on indigenous forests, training of people in forestry work, and educating the public on the value of forests and the dangers of deforestation.

Integrated Environmental Development (IED)

PO Box 50105, Lusaka
Zambia

Contact **Mr Victor Kazembe**
Executive Secretary

IED aims to promote social and ecological stability through environmental protection and people-centred approaches to development. The environmental awareness campaigns integrate traditional and scientific methodologies in conserving biodiversity.

Kasanka Wildlife Trust

PO Box 36657 Lusaka
Zambia
Tel ++(260-1) 260106

Contact **Mr David Frost**

The Trust has an open membership to people with interest in the conservation of natural resources. The Kasanka Wildlife Trust has conservation activities to protect the wildlife and other resources in the Kasanka National Park.

Luangwa Integrated Resource Development Project (LIRD)

PO Box 510249 Chilanga
Zambia
Tel ++(260-1) 21406

Contact **Mr F Munyenembe**

LIRD is a multi-sectoral project whose objectives are to ensure sustainable utilization of natural resources through the community participation in order to improve the standard of living of the people in the project area. Luangwa has a national park and a game management area.

Meteorological Department

PO Box 70474 Ndola
Zambia
Tel ++(260-2) 613022

Contact **Mr C Ngwira**

The Department is charged with observation of weather and any weather related parameters as well as the exchange of such information with

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interested individuals and institutions so as to further the application of meteorology to aviation, agriculture, water and other human activities

Ministry of Agriculture, Food and Fisheries

PO Box RW 50291, Lusaka
Zambia
Tel ++(260-1) 253933/253520

Contact **Dr Austin Sichinda**
Permanent Secretary

The objectives of the Ministry are to stimulate the agriculture sector to produce sufficient food for the nation, contribute to government revenue, generate employment, generate export earnings, and ensure that increased output and revenue improves the quality of life among the people by stabilising prices

Ministry of Environment and Natural Resources

PO Box 50694, Lusaka
Zambia
Tel (260-1) 229624, 250156

Contact **Mr Peter Mwemfuli**
Permanent Secretary

The Ministry is charged with the responsibility of coordinating environmental issues and carrying out activities laid down by the appropriate legislation

The Ministry has various wings which include the Environmental Council of Zambia and the Natural Resources Department

Ministry of Tourism

PO Box 30575, Lusaka
Zambia
Tel ++(260-1) 227645

Contact **Mr Xenophone Vlehekis**
Permanent Secretary

The Ministry is charged with the responsibility of developing and exploiting Zambia's tourism potential, which is based mainly on wildlife and other natural resources, such as the waterfalls, lakes and rivers

Munda Wanga Trust (National Zoological & Botanical Trust)

PO Box 30048, Lusaka
Zambia
Tel ++(260-1) 278266

Contact **Mr J Pope**

Munda Wanga Trust is a non-governmental organisation involved in the management of zoological facilities and botanical gardens. The Trust has a library with information on natural resources management

Natural Resources Department

PO Box 50042, Lusaka
Zambia
Tel ++(260-1) 222117

Contact **Mr Mathias M Banda**

This is the government department responsible for disseminating information on land policy, resource management, land economy, urban and regional planning, land reform and resettlement

The department also gives lectures and provides consultancies on the conservation of natural resources

National Heritage Conservation Commission (NHCC)
 PO Box 60124 Livingstone
 Zambia
 Tel ++(260-3) 321593
 Fax ++(260-3) 324509

Contact **Mr N Katenekwa**

The Commission coordinates the preservation of protected areas in Zambia which include 19 national parks 24 game management areas and 18 game ranches. The Commission also gives advice on environmental planning and on conduction environmental impact assessments

National Museums Board of Zambia (NMBZ)
 PO Box 50491 Lusaka
 Zambia
 Tel (260-1) 228805

Contact **Dr Francis Musonda**
 Project Director

The Museum preserves historical artifacts and it promotes awareness through lectures on history archaeology conservation ethnography and art

UNEP-Infoterra
 Information Services Unit
 National Council for Scientific Research
 PO Box 310158 Lusaka
 Zambia
 Tel ++(260-1) 281081
 Telex 40005 ZA
 Email unepzam@unza.apc.org

Contact **Mr Wycliff Mushipi**

Wildlife Conservation Society of Zambia (WCSZ)
 PO Box 30255, Lusaka
 Zambia
 Tel ++(260-1) 254226
 Fax ++(260-1) 222931
 Telex ZA 44630

Contact **Ms Nikki Ashley**

The Society is primarily involved in wildlife conservation but it also covers the management of other natural resources. WCSZ does environment awareness programmes through the *Chongololo Magazine* and conservation clubs

World Conservation Union (IUCN)
 PO Box 50694
 Giacomini Building
 Plot 189 Luansha Road
 Lusaka
 Zambia
 Tel ++(260-1) 223276
 Fax ++(260-1) 223276

Contact **Mr Maswabi M Mambolwa**
 Country Representative

ENVIRONMENTAL ORGANISATIONS

IUCN's mission is to provide leadership and promote a common approach for the world conservation movement in order to safeguard the integrity and diversity of the natural world, and to ensure that human use of nature resources is appropriate, sustainable and equitable

World Wide Fund for Nature (WWF)

PO Box RW50551
Anglo-American Building,
74 Independence Avenue, Lusaka
Zambia
Tel ++(260-1) 253749
Fax ++(260-1) 253749
Telex 41190 ZA

Contact **Mr Richard Jeffery**
Country Representative

WWF is an international organisation with offices in countries all over the world which promote environmental conservation. In Zambia, WWF is involved in the protection of wetlands. It supports wetlands projects at Kafue flats and Bangweulu flats.

Zambia Environmental Education Programme (ZEEP)

PO Box 50551
Lusaka
Zambia
Tel (260-1) 227249
Fax (260-1) 227249

Contact **Ms Juliana Chileshe**
Coordinator

The aim of ZEEP is to introduce environmental education into the school curriculum in Zambia. Part of the programme involves organising exhibitions and workshops on environmental education.

ENVIRONMENTAL POLICY OVERVIEW

Zimbabwe, which covers about 390,580 km² is located in the heart of south-central Africa. As with most of the countries in the region, Zimbabwe is rich in natural resources, including wildlife.

It is in the area of wildlife management that Zimbabwe is most famous. About 13 percent of its land has been set aside as protected areas. While in the past wildlife management was protectionist and marginalised the majority of the people, since independence in 1980, the government has embraced a community-based wildlife management programme.

The Department of National Parks and Wildlife Management has introduced the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE), giving communal people custody and the responsibility to manage wildlife in their areas. The people benefit through income, employment and in kind. So far, 24 of Zimbabwe's 52 districts in seven provinces have been granted authority to manage wildlife in their areas.

One of the most controversial activities of wildlife management in Zimbabwe is the culling of animals, particularly elephants, so that populations don't exceed the carrying capacity, thereby placing sensitive habitats at risk. The major legal instruments for the management of wildlife in Zimbabwe's protected areas are the 1975 Parks and Wildlife Act, the Trapping of Animals Control Act, and other statutory instruments such as the Bees Act and the Forest Act.

While Zimbabwe is among the leading countries in wildlife management in the region, the

government acknowledges that one of the major weaknesses of its environmental laws is the fragmentation of responsibilities among different departments. Despite that the Ministry of Environment and Tourism, created in the early 1990s thereby elevating the environment in government planning, has overall jurisdiction over environmental issues, its efforts are sometimes frustrated by other government ministries and departments with competing interests.

The Mines and Minerals Act, which is administered by the Ministry of Mines is the best example of legislation which has placed severe strain on the effective management of the country's environment. It supersedes any other legislation when it comes to mining and mineral prospecting. Other ministries also have a stake in environmental management.

The following are some of the environmental laws administered by some ministries other than that of Environment and Tourism:

- ❖ The Atmospheric Pollution Prevention Act which is administered by the Ministry of Health and Child Welfare. The same ministry is responsible for air pollution control.
- ❖ The Hazardous Substances and Articles Act which is also administered by the Ministry of Health.
- ❖ The Water Act, administered by the Ministry of Lands and Water Resources.
- ❖ The Fertiliser, Farm Feeds and Remedies Act administered by the Ministry of Agriculture.
- ❖ The Regional, Town and Country Planning Act, administered by the Ministry of Local Government, Rural and Urban Development.

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- ❖ There are also a number of other subsidiary legislation which relate to environmental management in one form or another

In terms of energy, the Ministry of Transport and Energy, is promoting sustainable forms of energy, especially solar and the new energy conserving stoves, like the tsotso stoves which cut firewood use by about 60 percent. The rural energy consumption accounts for over 60 percent of the national energy use.

The present current complex nature of environmental management has led the Ministry of Environment to engage lawyers to review all current legislation and “recommend options for the development of a more comprehensive environmental law for the country, taking into consideration the current sustainable development thrust,” a senior Ministry official. The disparate interests in environmental management as manifested in the multitude of legislation is also evident on the institutional side with many stakeholders laying claim to one aspect of environmental management or another. Many non-governmental organisations (NGOs) are involved in environmental issues. While others are obviously competitors, many have close links, cooperating in various areas.

The institutions range from community-based NGOs to urban-based lobby voluntary groups. The activities of these organisations vary from wildlife management which is the main area of focus for the Wildlife Society of Zimbabwe to sustainable natural resource management as advocated by the Zimbabwe Energy and Environment Research Organisation (ZERO). On the educational side, the Centre for Applied Social Sciences (CASS) and the Institute of Environmental Studies both of which are at the

University of Zimbabwe, are promoting environmental studies, thereby building the country’s human resource capacity.

In addition to policies and national institutions, Zimbabwe is also actively involved in the activities of the Southern African Development Community and is a signatory to the SADC Treaty, which among other things, commits member states to environmental protection.

Zimbabwe is also a signatory to the following international agreements, conventions and/or treaties:

- ❖ 1973 - Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES),
- ❖ 1982 - Convention on the Law of the Sea,
- ❖ 1985 - Protection of the Ozone Layer,
- ❖ 1987 - Montreal Protocol on Substances that Deplete the Ozone Layer,
- ❖ 1987 - World Cultural and Natural Heritage Sites
- ❖ 1989 - Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their disposal,
- ❖ 1991 - Bamako Convention on the Ban on Import into Africa and the Control of Transboundary Movement of all Forms of Hazardous Wastes within Africa,
- ❖ 1992 - Convention on Biological Diversity,
- ❖ 1992 - Framework Convention on Climate Change, and
- ❖ 1994 - Convention to Combat Desertification and Drought

At regional level, Zimbabwe signed, along with eight other countries in the region, the Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) region in August 1995.

BIBLIOGRAPHIC ABSTRACTS

The following documents are cited starting with the most recent and covering environmental issues from a national perspective, followed by documents focusing on provincial district and/or sub-national issues and finally by sectoral documents. The name of the publisher or distributor of each document is provided at the end of each citation. Where full address is not immediately provided, refer to section on national contacts

Balancing rocks environment and development in Zimbabwe

*Lopes, Carlos (ed)
UNDP Harare Zimbabwe
1996 En 227p tables*

The book discusses environment and development issues in Zimbabwe. It starts by presenting historical information of the country discussing the political, economic and social setting. The major challenges facing Zimbabwe are land resettlement, equitable distribution of income and indigenisation of the economy.

Human population and its impact on natural resources are discussed, and the importance of a development-oriented population policy is emphasised. Environmental problems such as deforestation, soil erosion, water scarcity and their causes are highlighted.

Under sustainable agricultural development, the book looks at land reform and resettlement, resource sharing and utilisation, sectoral investment and the role of institutions in changing policy.

The energy sector is reviewed focusing on its objectives, energy supply and demand, and the contradictions in energy policy objectives and energy supply development. The impact of industry on the environment is analysed and a proposal for an action plan to promote cleaner industrial production is presented.

The report also looks at the role of grassroots movements in conservation, and at Zimbabwe's response to Agenda 21, which includes the National Conservation Strategy and sectoral implications of Agenda 21. The book concludes with recommendations on achieving sustainable development in all themes discussed in the report.

Available from
United Nations Development Programme

Zimbabwe national conservation strategy institutional requirements for implementation

*Ambrose, John Nyon, Joshua
IUCN ROSA, Harare, ZW
Sep 1994 En 56p diagrams, tables*

The main objective of the National Conservation Strategy (NCS) is to develop and implement action plans that will ensure that the utilisation of the country's natural resources is undertaken in an equitable, productive and sustainable manner. Since the publication of the Zimbabwe NCS in 1987, very little has been done to implement it.

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This is a follow-up study to the Cobham study — which addressed implementation options for the NCS — and it recommends effective mechanisms, institutional needs and linkages that should be considered to ensure the effective implementation of the NCS. The study notes that the existing legislation is out of date and fragmented, falling under various ministries, and making it difficult to administer.

An assessment of various institutions, which range from the Ministry of Environment and Tourism and its departments, to the private sector and non-governmental organisations, is given, as well as each institution's responsibilities and current activities.

The study also looks at the constraints faced in the implementation of the NCS. The mission came up with some recommendations which include the updating of the NCS, the preparation of a clear mandate for the Ministry of Environment and Tourism, the updating of relevant legislation to meet present needs, and putting in place a mechanism for the implementation of the NCS.

*Available from
IUCN-ROSA
(Refer to regional contacts section for address)*

Zimbabwe environmental impact assessment policy

*Ministry of Environment and Tourism, Harare, ZW
Jul 1994 En 16p diagrams*

Environmental impact assessment (EIA) has been defined as “the assessment of a

development project in terms of its impact on the environment” The EIA programme in Zimbabwe is not yet compulsory. This EIA policy paper serves to minimise confusion and uncertainty for both project developers and the government regarding ongoing EIA activities.

The paper lists EIA goals and 10 principles under which all development projects should be assessed. Among other requirements, the local community is to be consulted from project planning and compensated for any losses suffered as a result of any development project. The principles of the EIA policy are:

- ❖ EIA must enhance development by contributing to its environmental sustainability, not inhibit it,
- ❖ EIA is a means for project planning, not just evaluation,
- ❖ identifying means for managing project impacts is an essential component of the EIA policy,
- ❖ the EIA policy depends on the normal regulatory functions of permitting authorities to implement EIA results,
- ❖ the EIA policy involves the participation of all government agencies with a mandated interest in the costs and benefits of a project,
- ❖ the EIA policy pays particular attention to the distribution of project costs and benefits
- ❖ and public consultation is an essential part of the EIA policy.

The EIA policy is administered by the Ministry of Environment and Tourism and no project will proceed before and “EIA Acceptance” has been granted by the Ministry.

A list of prescribed activities which require EIA, as well as some screening guidelines conclude the policy paper.

Available from

Ministry of Environment and Tourism

Environmental assessment in Zimbabwe - policy discussion paper public discussion document

Ministry of Environment and Tourism, Harare, ZW

Jul 1994 En 21p diagrams

The government of Zimbabwe, through the Ministry of Environment and Tourism, has been working on its new environmental assessment policy by encouraging different stakeholders to comment on its discussion paper

In September 1993, the government published a "Prospectus for Environmental Assessment Policy in Zimbabwe" This was followed with a workshop at which the prospectus report was discussed and recommendations made

The purpose of this report is to encourage the public to evaluate the proposed policy and suggest approaches that can most practically meet the goals and objectives that have been established for environmental assessment in the country

The report presents the final goals and objectives for the overall Environmental Assessment Policy, together with proposed means for dealing with major issues identified in the consultation process. It describes alternative courses of action and suggests various advantages and disadvantages of each

Positions are posed for mandating environmental assessment, providing for environmental

assessment reviews and approvals, decentralising certain applications of environmental assessment and ensuring compliance

Policy positions have also been proposed concerning appeals on environmental assessment decisions and compensations for losses suffered by virtue of development activities

Available from

Ministry of Environment and Tourism

Towards national action for sustainable development the report on the national response conference to the Rio Earth Summit

Southern Centre for Energy and Development, Harare, ZW

Ministry of Environment and Tourism, Harare, ZW

Mar 1993 En 96p photos, tables

The report is a summary of the proceedings of Zimbabwe's National Response Conference to the UNCED. It highlights priority areas for future action to achieve environmentally sustainable development in Zimbabwe. The main objective of the conference was to define a national response strategy to Agenda 21.

In achieving this objective, the conference also sought to

- ❖ evaluate the relevance of Agenda 21 to Zimbabwe's National Conservation Strategy (NCS),

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- ❖ assess the relationship between the programmes outlined in Agenda 21 to Zimbabwe's current environmental and development priorities,
- ❖ examine the linkages between environmental and economic development activities in Zimbabwe, and
- ❖ define national actions for responding to Agenda 21

The conference produced the basis for action planning on a wide range of issues affecting environmental conservation in the country. These issues touched on policy, institutional and legislative factors, public awareness and education, human and financial resources, empowerment of specific social groups, and environmental research.

For example, alleviating poverty was identified by the participants as the main area needing attention in developing the community. The report recommends national environmental actions to bring about suitable conditions for achieving environmentally sustainable development in Zimbabwe.

Available from

Ministry of Environment and Tourism

Government of the Republic of Zimbabwe national report to the United Nations Conference on Environment and Development

Ministry of Environment and Tourism, Harare, ZW

Jun 1992 En 73p tables

The report outlines the major environmental issues in Zimbabwe. The first chapter describes the natural resource base, population issues and some of the environmental problems faced by the country. Zimbabwe is an agriculture-based country with a growing population, the majority of whom live in rural areas.

The country is endowed with natural resources such as wildlife, plants and minerals. But, it also faces a number of environmental problems which include land degradation, deforestation, water and air pollution, the latter mainly caused by industrial and municipal effluent. Another major problem which stems from the history of the country is of population distribution and development.

Under colonialism, the majority of the people were forced to settle in communal areas with poor soils, and the general development of infrastructure in these areas was also neglected. This resulted in extensive land degradation. The environmental policy — most of the statutes adopted from the colonial system — does not adequately address the environmental problems, especially in the communal areas. A National Conservation Strategy has since been formulated and it seeks to bring development into balance with the environment, and attempts to restore harmony between humans and nature.

Some of the government's recommendations to the UNCED include coming up with a coherent environment policy, increasing budgetary allocation for environmental programmes, stepping up the current environment awareness programme, and investing in communal areas so that farmers can diversify their activities.

Available from

Ministry of Environment and Tourism

Environmental synopsis of Zimbabwe

*Stone, Paula Dalal-Clayton Barry [et al]
IIED, London GB
UK-ODA, London, GB
Apr 1992 En 32p maps tables*

Zimbabwe's peasants remain concentrated in the relatively infertile communal lands to which they were once restricted under colonial rule. Today, these areas suffer severe environmental problems, including deforestation, overgrazing, and soil erosion.

According to this report, these problems are related to a high rate of population growth, large livestock numbers, lack of financial and personnel resources for sustainable land management, and a land tenure system that promotes overgrazing.

The report summarises Zimbabwe's environmental institutions, legislation, and training opportunities, assesses the natural resource base, and identifies primary environmental problems. The government has attempted to reduce population pressure on communal lands by resettling peasants on newly acquired commercial farms.

However, the new settlements have been associated with massive environmental destruction. Settlers fell trees for fuelwood and building their homes, and most are poorly equipped to manage the environment.

Another serious problem is the unconstrained establishment of mines which has led to the creation of large dumps of usually sterile, and sometimes toxic, wastes. In contrast to much of Africa, urban sanitation is not a major problem.

However, there are localised problems due to overcrowding and the shortage of adequate housing and services. Includes bibliography.

*Available from
IIED
(Refer to end of Introduction for address)*

The case for sustainable development in Zimbabwe: conceptual problems, conflicts and contradictions

*Gore, Charles Katerere, Yemi Moyo, Sam
ENDA-Zimbabwe, Harare, ZW
ZERO, Harare, ZW
1992 En 155p tables, photos, maps*

Zimbabwe gained independence after 90 years of colonial rule which promoted unequal access to natural resources, support services and infrastructure. After over 10 years of self-rule, the colonial legacies remain entrenched and have not totally been dismantled.

As a result, the environmental degradation and poverty cycle which began in the colonial era, continues today. The majority of the people are concentrated on limited, ecologically fragile land and natural resources while a small proportion have exclusive rights to the bulk of the country's resources.

A profile of the natural resources — land, soils, water, vegetation, wildlife and minerals — includes availability, utilisation and management of those resources. The environmental problems faced in the country include soil erosion, deforestation and water, air and soil pollution.

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Resource use conflicts occur and are a result of the historical legacy of inequitable land and natural resources access, policy and institutional failures and contradictions in perceptions of resources' value among different users

These conflicts are, for example, illegal utilisation of wildlife, land and minerals. The basis of the institutional problem in Zimbabwe is that many laws related to the environment were inherited from the colonial system and are inappropriate in the Zimbabwe of today

Local knowledge and traditional management systems have been rendered illegitimate. Coordination and linkages between national and international institutions are weak and need strengthening for better communication. Includes annexes and a bibliography

Available from
ENDA-Zimbabwe
(Refer to national contacts list for address)

The State of the environment report Zimbabwe 1992

*Department of Natural Resources, Harare, ZW
1992 En 1 vol tables, maps*

The report presents an overview of the state of Zimbabwe's environment. It discusses land tenure systems in relation to the environment

Agricultural development has altered the country's soils, vegetation, wetlands and water supply systems. Industrial and mining activities cause pollution, damaging the local environment

The major environmental problems are

- land degradation,
- erosion,
- siltation,
- population pressure,
- damage from gold panning activities,
- industrial pollution and
- deforestation

With annual population growth rate of 3.1 percent, pressure is increasing on the natural resources, weakening its ability to support sustainably human and animal populations

The report lists Acts pertaining to the environment, giving brief comments on each. Institutional constraints experienced by the government include shortage of human resources, lack of skilled personnel, transport and travel related problems. Recommendations on how to overcome these problems are also included

Available from
Department of Natural Resources

Zimbabwe dossier on environment and conservation issues

*IUCN-ROSA, Harare, ZW
UNDP, Harare, ZW
Dec 1991 En 81p*

This paper assesses the suitability of Zimbabwe as a candidate for UNDP's Global Environment Facility (GEF) - Small Grants Facility Programme (SGF)

The report gives background information on the environment, highlighting the changes which have taken place from pre-colonial, colonial, and the post-colonial periods

The main environmental problems — increasing resource conflicts, incapacity to cope with drought, deforestation, environmental degradation, environmental policy formulation, agro-chemical pollution, mining and industrial pollution — are also highlighted

The paper further examines the current major programmes and initiatives, assessing the effectiveness of the environmental policy in Zimbabwe in relation to the National Conservation Strategy. It also covers priority issues and action for the SGF which should seek to find a balance between funding issue-specific projects and more general capacity-building initiatives by non-governmental organisations (NGOs) in the environment field

The last part of the paper outlines the institutional framework for the SGF, recommending the programme's implementation stages and the appropriate types of NGOs and personnel with which to work

Available from
IUCN-ROSA
(Refer to regional contacts section for address)

State of the environment Zimbabwe - the perspective of two NGOs

IIED, London, GB
ZERO, Harare, ZW
ENDA-Zimbabwe, Harare, ZW
Oct 1991 En [141p] maps, tables

Zimbabwe is locked in a vicious cycle of poverty and environmental degradation. Sustainable environmental management may be the only way to break this cycle.

However, colonial legacies and the continuing influence of developed nations perpetuate attitudes, societal arrangements, and institutional models that are not conducive to appropriate environmental action.

Two Zimbabwe-based NGOs, Environment and Development Activities (ENDA) and Zimbabwe Environmental Research Organisation (ZERO), were invited to prepare this report for the 1992 United Nations Conference on Environment and Development (UNCED).

Underlying the report's conclusions is the conviction that the developing countries in the world's southern regions need to develop and adopt uniquely "southern" approaches to sustainable development. The introduction of the book compares conditions in Zimbabwe to the problems facing developing countries worldwide. It explores the historical roots of Zimbabwe's problems. A profile of resources and other environmental issues is given.

The policy and institutional setting for environmental action is discussed, as well as the roles of central government and contributions of NGOs. The book also addresses development trends, their effect on environmental degradation, and future direction. The conclusion emphasises the importance of land reform and institutional development.

Available from
ENDA-Zimbabwe

ENVIRONMENTAL INFORMATION

Zimbabwe an environmental profile

*Katerere, Yemi Moyo, Sam Ngobese, Peter
ZERO, Harare, ZW
1991 En 66p tables*

Sustainable development is defined in relation to Zimbabwe. A historical background of the state of the environment is broken down into three eras, the pre-colonial, the colonial era of over 100 hundred years and the post-independence period, since 1980.

The main physical features are analysed as well as the potential use of natural resources in, for example, agriculture, water, forestry, wildlife, energy and industry. Legislation which relates to natural resources such as the Parks and Wildlife Act, Bees Act and the Communal Lands Act is discussed in the profile. It also looks at demography and land use.

The two factors cause pressure on limited available resources. Under demography, the profiles discuss population size and growth, density, distribution and movement. Most people in Zimbabwe live in rural areas and depend on subsistence agriculture.

Land tenure and land use are discussed. Zimbabwe's environmental problems, which include soil erosion, deforestation, overgrazing, pollution and pests are discussed. The last chapter looks at strategies and solutions for environmental sustainability and rural transformation.

*Available from
ZERO*

Zimbabwe's environmental dilemma balancing resource inequities

*Moyo, Sam (ed)
ZERO, Harare, ZW
1991 En 165p maps, tables*

The book begins by discussing the concept of sustainable development and the history of conservation before, during, and after colonial rule.

The principal environmental issues are also identified. It also describes Zimbabwe's physical features and resources, and the present and future ways of utilising these resources. Population issues are also covered. The issue of skewed land distribution between settlers and local people is also dealt with, highlighting the present day land distribution whereby the whites own commercial farms and the majority of the black people reside in communal areas.

The former are located in areas with the best soils for agriculture, while the latter are generally peasant farmers in areas with poor soils. The adequacy and accessibility of some natural resources such as soils, water resources and wildlife, are assessed. The legislation, policies and institutions relevant to natural resources management are also analysed. It concludes by discussing how sustainable development can be achieved.

*Available from
ZERO*

A review of Zimbabwe's natural resources and land use legislation and some options for implementing an integrated management approach to natural resources to achieve environmentally sound sustainable development a report to the Canadian International Development Agency and the Ministry of Environment and Tourism

Henley, Doreen C
Government of Zimbabwe, Harare, ZW
1990 En 203p

The major Zimbabwe statutes governing natural resources and environment are based on a "Command Control" legislative model. This report provides a preliminary review of the mechanisms set out in major legislative provisions which currently govern the development and conservation of natural resources and environmental concerns in Zimbabwe. In addition, the report identifies where new legislation and, or amendments to existing statutes are needed.

Available from
 Department of Natural Resources

Pre-study of environmental issues for the Zimbabwe country study

Gumbo, Davison Whist, Erik [et al]
Zimconsult, Harare, ZW
Hifab International, Oslo, NO

Norway Ministry of Development Co-operation,
Oslo NO
Jun 1989 En 116p tables

The report examines Zimbabwe's natural resource base and its interaction with socio-economic and policy demographic factors and land tenure.

The following topics are covered

- ❖ history of environmental conservation,
- ❖ physical features such as soil, water resources, vegetation, wildlife, and insects,
- ❖ present and potential uses of natural resources,
- ❖ demography, human settlements, and land tenure,
- ❖ major environmental problems (relating to soil, water resources, forest products, pastoral land, wildlife and biogenetic resources, and pollution, waste disposal, and pest control), and
- ❖ legal and institutional instruments for natural resource management

Final sections of the report identify options for sustainable development, examine the environmental impact of foreign assistance, and recommend proposals for future Norwegian assistance. Includes bibliography.

Available from
 Norwegian Ministry of
 Development Cooperation
 Postboks 8114-Dep, 7 Juni Plass 1
 Oslo 1
 Norway
 Tel ++(47-2) 204170

ENVIRONMENTAL INFORMATION

Nature of Zimbabwe

*Carwardine, Mark. Jones, David
IUCN, Gland, Switzerland
1988 En 87p ill, maps*

The distribution of Zimbabwe's population is perhaps the most unfortunate legacy inherited from the country's colonial past. Population patterns shaped in the years of land division along racial lines persist to this day, with black Zimbabweans concentrated on the least productive, most easily degraded land.

This has placed growing pressures on the natural resource base, as people are forced to abuse the land just to survive. Following background information on Zimbabwe's history, geography, people, and economy, this report assesses the country's natural resources.

Zimbabwe's rich wildlife resources, including some 270 species of mammals, about 640 birds, and 153 reptiles. Special emphasis is given to the problem of rhinoceros and elephant poaching. Zimbabwe is one of the last strongholds for the black rhino in the wild in Africa and also has a thriving elephant population of about 40,000.

The economic value of Zimbabwe's plentiful wildlife — via safari hunting, game ranching, fishing, and the reaping of medicinal and other wild plants — is outlined. The report then examines environmental issues related to agriculture, including the problems of soil erosion, overgrazing, and tsetse fly infestation.

The country's deforestation rate is addressed and efforts to alleviate this problem is evaluated.

Zimbabwe's environment is then examined with respect to industrial development. Final sections address implications for the future of Zimbabwe's natural resource base and outline the national conservation strategy.

Available from

IUCN - The World Conservation Union
Publications Department
(Refer to end of Introduction)

National conservation strategy - Zimbabwe's road to survival

*Ministry of Information, Posts and
Telecommunications, Harare, ZW
Apr 1987 En 36p ill, charts, maps*

The Zimbabwe government's objective and strategy for the protection, sustained utilisation, and development of national resources is outlined.

According to the report, overgrazing and burning of non-arable lands are the most serious causes of land degradation in the country.

Poaching and deforestation (due to clearing of land for cultivation, increasing demand for fuelwood and building materials, localised destruction by elephants, and fires) are also cited as major threats.

Due to the country's high population growth rate (one of the highest in the world), family planning promotion is emphasised as central to achieving overall national conservation strategy objectives.

Additional aims are to preserve biodiversity, develop urban industry, provide formal environmental education, carry out legislative reform, and strengthen environmental monitoring, pollution control, and programme management

Available from

Ministry of Information, Posts and
Telecommunications
PO Box CY 1276, Harare
Zimbabwe
Tel ++(263-4) 703891
Fax ++(263-4) 703891

**Zimbabwe country study and
Norwegian aid review**

Hifab International, Oslo, NO
Zimconsult, Harare, ZW
Jul 1989 En 335p maps, graphs, tables

The study is divided into three parts

- ❖ the first describes the country,
- ❖ the second looks at the Norwegian Development Assistance (NDA) to Zimbabwe, and
- ❖ the third part is an assessment of future prospects

The country description starts with a brief historical background and this has a political and economic bias. The present political and institutional structure in relation to development are analyzed

The following social issues are also discussed, population and social development, socio-

cultural transformation, the economy, land tenure and environmental degradation. The second part on NDA assistance first gives an overall picture on the Overseas Development Assistance (ODA) programme and an overview of the Norwegian development assistance

The subsequent chapters under this part cover NDA sector by sector such as rural water supply, dairy farming, population, and non-governmental organisations (NGOs). The last part looks at the future of Zimbabwe in general and the ODA and NDA assistance

Available from

Zimconsult
PO Box A228, Harare
Zimbabwe
Tel ++(263-4) 302496
Fax ++(263-4) 302496

**Nyamandlovu aquifer pipeline project
a socio-economic impact study**

Mpande, Rodger
ZERO, Harare, ZW
DANIDA, Harare, ZW
Department of Water Development, Harare, ZW
Feb 1995 En 32p tables + annexes

Matabeleland North and South provinces in Zimbabwe have for decades experienced water problems which have impacted negatively on their overall economic growth. During the 1991/92 drought, the area received less than 200 mm of rainfall, resulting in a serious water rationing scheme

ENVIRONMENTAL INFORMATION

Some industrial and manufacturing firms relocated to other provinces. Following consultations by various authorities, it was decided that water be pumped from the Nyamandlovu aquifer, situated 47 km north of Bulawayo, the only industrial centre in the two provinces.

This study is one of a series of studies to assess socio-economic impacts of the Nyamandlovu aquifer project. The purpose of this study is to incorporate in the Nyamandlovu project, a planning tool which identifies a plan for environmental protection and enhancement, and identifies possible socio-economic impacts of the project at local and regional levels. Possible positive and negative impacts resulting from the construction of the pipeline are identified.

Recommendations, which upon implementation, will reduce or offset the negative impacts of the project are provided. The study also provides a basis for establishing a long-term monitoring programme.

Available from
ZERO

Physical resource inventory of the communal lands of Zimbabwe: an overview

*Anderson, I P [et al]
Natural Resources Institute, Chatham, GB
1993. En 186p maps, photos, tables*

This overview of the physical resources of the communal lands of Zimbabwe is based on a compilation and condensation of the results of reconnaissance soil surveys undertaken between 1985-1991.

A total of 170 communal lands, covering 42 percent of Zimbabwe's total surface area were surveyed and mapped. Fifty land units, identified by interpretation of aerial photography and defined on a broad geological and landform basis, are used as the framework for describing and mapping the communal lands.

Following an introduction to the physical environment of those communal lands, each unit is described according to land characteristics and resources relevant to an assessment of potential for agricultural improvement.

The units are classified as felsic igneous and metamorphic rocks, mafic igneous and metamorphic rocks, arenaceous sedimentary rocks, Kgalagadi sands, argillaceous sedimentary rocks, alluvium, and land units containing more than 50 percent non-arable land.

Available from
Natural Resource Institute
Central Avenue, Chatham
Kent ME4 4TB
UK

The Zambezi Valley environmental impact study: a review

*Mutizwa-Mangizwa, N D [et al]
Ministry of Environment and Tourism, Harare, ZW
Jun 1990. En 16p*

The document reviews the results of an environmental impact assessment study on the Zambezi Valley which was carried out by an oil company wanting to explore the area for possible oil mining.

Environmental impact assessment (EIA) as a concept is reviewed in terms of what it should cover, the timing, and the techniques. Against this background, the authors review the general methodological adequacy of the Zambezi Valley study.

The results show that the study does not fulfil the internationally accepted requirements for an environmental impact assessment in terms of procedures taken — an EIA should be conducted before any agreement is signed and in this case, the EIA was done after signing. It offered no alternative sites or methods of implementation, and no field research on the impact to the ecosystem was conducted.

The reviewers recommend the use of seismic operations technology appropriate for the Zambezi Valley.

The following are some potential impacts, identified by the authors, of the exploration that were not taken into account by the study, soils and soil erosion, vegetation, wildlife, aquatic ecology, agriculture, human health, cultural and archaeological sites and the local population.

Since the agreement had already been signed between the government and the oil company, the recommendations made by the authors relate to environmental legislation and organisation of monitoring the programme to reduce any possible environmental damages.

Available from
Ministry of Environment and Tourism

The Zimbabwe country report the Zambezi basin profile

Mpofu Thomas P
Department of Natural Resources, Harare, ZW
Jun 1985 En 29p

The Zambezi river is the largest river in southern Africa, running through eight countries in the region, including Zimbabwe. It forms the northern international boundary between Zambia and Zimbabwe.

The paper gives a description of the geology, soils, climate, minerals, vegetation, groundwater resources, wildlife and aquatic resources of the Zambezi basin. Part of the Zambezi Valley area is state land which is mainly national parks, safari areas, recreational parks and forest areas. The paper gives a brief description of each of the protected areas, and the state forest areas located in the Zambezi basin.

Human population in the area is sparse, and agriculture is a major human activity in the communal, commercial, and resettlement areas. Crop and livestock production are practised but yields are less in the communal areas than the commercial areas due to a number of factors such as poor soils and lack of capital for communal farmers.

Wildlife is abundant and management is mainly under state because most of the game populations are found on state land. There are several industries operating in the Zambezi basin and they include mining, fishing, tourism and manufacturing.

ENVIRONMENTAL INFORMATION

The paper concludes with some environmental problems faced in the area which are associated with socio-economic developments

It also includes some proposed solutions to these problems

Available from

Department of Natural Resources

Small scale gold panning in Zimbabwe - economic costs and benefits and policy recommendations results of a pilot study in Mashonaland Central Province for 1993

*Milne, G R. Marongwe, D A. (eds)
Ministry of Environment and Tourism, Harare, ZW
Mar 1995 En 73p tables, graphs, diagrams*

Gold panning in riverbeds and along river banks is increasingly becoming a popular activity in Zimbabwe. While was changed in 1991 to legalise small scale miners, little research had been done prior to the amendment

A study, with the aim of collecting socio-economic data and conducting a cost-benefit analysis as an aid for policy development, was done in Mashonaland Central province

The province has a long history of gold panning which has resulted in severe environmental degradation. The report estimates that in 1993 there were about 2,100 panners in the province who mined 56 kg of gold

The environmental impacts of panning were found to be siltation, soil erosion, air and water pollution from chemicals used in processing the gold, and the destruction of vegetation around rivers

The study also found that the economic, social and environmental costs of gold panning far outweighed the benefits. It, therefore, recommends that permit charges be increased and a portion of this revenue be held in trust and returned to the permit holder after the mined site has been inspected and approved, based on environmental guidelines

Other recommendations include the introduction of higher fines for miners operating illegally, training and educating gold panners

Available from

Ministry of Environment and Tourism

Rural water supplies and sanitation

*Morgan, Peter
Ministry of Health Blair research Laboratory,
Harare, ZW
Published by Macmillan
1994 En 358p ill*

The two-part book describes various methods of building the Blair toilet, improved wells and springs, the fitting and maintenance of handpumps and many other aspects of rural water supply

The volume presents the latest techniques being used in Zimbabwe, focusing on principles of design and basic concepts, which future designers can adapt for use in other countries. The first part on Water Supplies, deals with gaining access to a water supply and ensuring that it is a clean -- the essential factor behind good health.

Part Two on Rural Sanitation examines the actual construction and maintenance of the Blair toilet and its variants.

Available from

Powerful Information
21 Church Lane
Loughton, Milton Keynes, MK5 8AS
UK
Tel ++(44) 1908 666 275
E-Mail powerinfor@pc.org

National master plan for rural and water supply and sanitation

Ministry of Energy and Water Resources and Development, Harare, ZW
Interconsult Harare, ZW
NORAD, Harare ZW
En 8 vols tables, ill

This master plan proposes a cost-efficient plan of investment in rural water and sanitation facilities. Its goal is to provide the entire communal and resettlement area population with access to safe and adequate facilities by the year 2005. These areas have been neglected in terms of water supply and sanitation facilities.

The recommendations of the master plan seek to

- ❖ provide a framework within which specific programme plans can be developed,
- ❖ optimise use of available resources,
- ❖ establish appropriate institutional structures and financial and manpower plans for programme implementation,
- ❖ define a policy framework to enhance health, social and economic benefits from sectoral investment.

The master plan is presented in 19 volumes and these cover

- the executive summary,
- hydrology,
- hydrogeology,
- water quality,
- rural water supply programme,
- population and development,
- soil and water conservation,
- inventory of existing water supply situation,
- water tariff study,
- outline of a health profile,
- social studies,
- health education,
- sanitation technology,
- operation and maintenance,
- management,
- human resources development
- a design manual and
- a water engineering design

The master plan also includes an implementation guide.

Available from

Department of Water Resources Development

ENVIRONMENTAL INFORMATION

The Save study relationships between the environment and basic needs satisfaction in the Save catchment, Zimbabwe

*Campbell, B M Du Toit R.F Attwell, C A
University of Zimbabwe, Harare, ZW
1989 En 119p tables maps graphs*

The Save catchment area, in the south-east of Zimbabwe, is a major agricultural area. The study analyses the links between basic needs satisfaction and patterns of land use, documents people's views on human-environment perceptions, and the economic, social and environmental measures required to promote protection and improve the environment.

Two wards, Chiweshe and Zviyambe, were studied and the results show that, in resource use and agricultural production, more and more of the land is used for crop production while a very small percentage is left fallow every year. The main crops are maize, cotton, and sorghum, while cattle, goats and sheep are the most common livestock.

The constraints on agricultural production are draught and manure shortage, late planting and inappropriate seed variations. Wood is used for fuel, fencing and house construction, but the wood resources are decreasing in the area.

Environmental degradation occurs in the Save catchment area in the following forms, deforestation, overgrazing, water shortage, soil erosion, siltation, and declining soil fertility. The people in the area are aware of the environmental degradation and have made suggestions on how to combat some of the problems.

But because they have no affordable alternatives, for example, for fuelwood, they are forced to continue cutting down trees. The infrastructure in the area — transport network, water supplies, sanitation, health, housing, agricultural facilities and services, and education facilities — is generally poor. After linking the environment and basic need satisfaction, the authors conclude that a healthy environment results in the better basic need satisfaction.

The study recommends policies and programmes that will help protect the environment, while satisfying people's basic needs.

Available from

University of Zimbabwe Publications
PO Box MP 45, Harare
Zimbabwe

Tel ++(263-4) 303211
Fax ++(263-4) 333407

Economic policy, wildlife and land use in Zimbabwe

*Muir, Kay Bojo, Jan Cunliffe, Robert
World Bank, Washington DC, USA.
Sep 1994 En 30p tables, graphs*

Zimbabwe has a wide variety of wildlife and mammal species. The wildlife legislation has been amended to allow land owners to benefit from wildlife conservation through utilisation.

This has resulted in a significant increase of wildlife in commercial farmlands as safari hunting, live animal sales and tourism are incorporated into the farm system.

In the communal areas, there has been a marked increase in the awareness of the contribution of wildlife, but the institutions developed so far still do not effectively link costs and benefits

Wildlife enterprises on the large-scale commercial ranches are often more financially profitable than cattle enterprises. Safari hunting accounts for the bulk of the revenue earned in communal areas. A ban on imports of hunting trophies, particularly elephants, would have a very negative impact on community wildlife schemes. Reductions in macro-economic distortions and a more competitive marketing system have already resulted in marked increases in district returns from wildlife.

However, poaching and new settlements threaten areas with viable wildlife populations. Until the local population receive their full share of benefits from wildlife, they will continue to poach wildlife and destroy habitat.

Available from

World Bank
1818 H Street, NW
Washington DC 20433
USA

Tel ++(1-202) 4731155
Fax ++(1-202) 6760581
Telex RCA 248 423

Policy for wildlife

MURERWA, Herbert
Ministry of Environment and Tourism, Harare
ZW
Department of National Parks and Wild Life
Management, Harare, ZW
Jan 1992 En 40p

Zimbabwe is imbued with a variety of wild life. The flora and fauna of the country are a major source of income mainly through tourism. The conservation of these important resources should be of concern to every Zimbabwean.

However, prior to 1992, only a small section of the population participated meaningfully in the wildlife industry at the exclusion of the majority of the population. In an effort to redress this anomaly, the government has developed new policy guidelines towards protected areas and wildlife, stating its aspirations and intentions.

This policy document supersedes previous wildlife policies, but does not preclude supplementary policy statements to cover issues not addressed. The statement aims to promote enhanced sustainable rural development and a more equitable distribution of the country's natural resources.

Available from

Ministry of Environment and Tourism

Zimbabwe policy for wildlife

Department of National Parks and Wildlife
Management Harare, ZW
Sep 1989 En 28p

This policy document defines more precisely the general objectives for the Department of National Parks and Wildlife Management as outlined in the National Conservation Strategy. It is intended to give a clear brief to the department in fulfilling its national role in a world of changing conservation priorities and perceptions.

ENVIRONMENTAL INFORMATION

Some specific responsibilities of the department are protecting endangered species from poachers, for example, and the biological diversity as a whole with the anticipation of having long-term benefits from wildlife

Though all wildlife in the country belongs to the state, people are allowed to manage wildlife on private land for their own direct benefit. But, this will be monitored in case of mismanagement. The department is responsible for the Parks and Wildlife Estate and all the wildlife in Zimbabwe. To adequately manage the Estate, it is expected to compile and follow a master plan which will guide its operations.

The master plan will encompass constitutional, organisational, management and financial aspects. In addition, long-term policies and objectives must be defined for each of its areas of responsibility, such as the various national parks and fisheries. The people will have a say in the management of the wildlife through a Parks and Wildlife Board which will have representatives from the public and the government. Tourism will be promoted only in as far as it does not interfere with the well-being of either the local people or biological diversity. The department will work with non-governmental organisations, both local and international and, it will participate in international conventions.

Lastly, a full environmental impact assessment will be required prior to any major development which may affect the integrity of the Parks and Wildlife Estate or the well-being of wildlife.

Available from

Department of National Parks
and Wildlife Management

Elephant management in Zimbabwe

Martin, R B Craig, G C Booth, V R (eds)
Department of National Parks and Wild Life
Management
Jan 1992 En 124p

The document is a product of a workshop held in March 1989 by the University of Zimbabwe Department of Terrestrial Ecology and the Department of National Parks and Wildlife Management. The book, updated in 1992, aims to clarify controversial aspects of elephant management in the country for the benefit of the public and conservationists worldwide.

The book concludes that despite the international ban on ivory trade, if Zimbabwe wants to conserve its elephants and their habitats, large numbers of the elephants will have to be culled over the years, whether or not the ivory is sold. By 1992 figures, the elephant population was estimated at 77,000 and grew at a rate of five percent per annum.

In this light, the study recommends that elephant densities should be reduced to 0.5 per square kilometre to bring about an equilibrium between rates of tree loss and regeneration.

Available from

Department of National Parks
and Wildlife Management

Ivory production and sales in Zimbabwe

Murphree, Michael
Department of National Parks and Wild Life Management, Harare, ZW
Jan 1992 En 56p tables

Data reflecting ivory production and trade in Zimbabwe during the period 1 January 1985 to 30 June 1991. This follows the provision of authority to district councils in the country by the government to be responsible for the sale and production of ivory in their areas of authority.

The data was also compiled to provide the Parks Department accurate information in light of the raging debate over ivory and the international ban on its trade. The document provides the methods used in data collection and analysis.

Available from
 Department of National Parks
 and Wildlife Management

Wildlife relic of the past, or resource of the future? the realities of Zimbabwe's wildlife policymaking and management

Zimbabwe Trust Harare, ZW
Environmental Consultants Harare, ZW
En 48p

Zimbabwe has a wide diversity of wildlife. This book analyses wildlife policies, and the management of wildlife in Zimbabwe.

A historical background of the relevant laws and institutions to wildlife management is given, highlighting the Parks and Wildlife Act of 1975 — which forms the legislative framework for wildlife management.

The Department of National Parks and Wildlife Management is responsible for wildlife management within the protected Parks and Wild Life Estate. The book identifies elements influencing wildlife policymaking: ecological viability, economic practicability, social acceptability, ethical admissibility and international responsibility.

It discusses the constraints of the wildlife policy in relation to management, including the limited use of resources within the protected areas and the financial constraints faced by the Department of National Parks. Recommendations of changes to the policy which will improve on the management of resources are given.

Available from
 Zimbabwe Trust

Protected species of animals and plants in Zimbabwe

Parks and Wild Life Board, Harare ZW
Ministry of Environment Tourism, Harare, ZW
Department of National Parks and Wild Life Management, Harare ZW
Department
Jan 1991 En 69p

Results of a workshop convened by the Department of National Parks and Wildlife Management in Harare on July 11 1988.

ENVIRONMENTAL INFORMATION

The workshop sought to revise and recommend on section 34 of the then sixth schedule of the Parks and Wildlife Act, 1975

The document looks at the range of animals and plants protected by the 1975 wildlife legislation. A list of the protected species under the old legislation is given. In addition a revised list, with amendments is also provided. Recommendations to change the 1975 Act in line with current national and international wildlife protection trends are also given.

Available from

Department of National Parks
and Wildlife Management

DDT in the tropics: the impact on wildlife in Zimbabwe of ground-spraying for tsetse fly control

*Douthwaite, R J Tingle C C (eds)
Natural Resources Institute, Chatham, UK
1994 En 195p tables, maps, photos, ill*

The environmental impact of DDT used in ground-spraying operations to eradicate tsetse flies from north western Zimbabwe was assessed in field studies between 1987-1991. Fauna monitored included populations of bats, birds, lizards, fish and insects. Microbial processes contributing to soil fertility were also checked.

Despite the relatively low application rate, and rapid dissipation of residues, adverse effects on a landscape scale were found in populations of four bird and one lizard species. The comparative scarcity of several bird and terrestrial invertebrate species in sprayed areas may also have been due to DDT.

Residue concentrations in at least five bat species posed a significant risk to survival during drought. No significant effects were detected in fish or on soil processes. Effects on the majority of rare species are unknown.

The effects are reversible, probably within 10-20 years, and are less serious than those caused by habitat loss due to human settlement and elephant damage. In economic terms the environmental cost of using DDT for tsetse fly control was very low. The adverse effects of ground-spraying with DDT can be mitigated by alternative control techniques or by substituting deltamethrin, a less persistent insecticide, for DDT.

However, if substitution increases costs significantly, wildlife conservation would benefit more from the retention of DDT and investment of savings in projects to manage wildlife habitat than from substitution.

Available from

Natural Resources Institute
Central Avenue
Chatham Maritime
Kent ME4 4TB
UK

Short and medium term action plans for black rhinoceros

*Department of National Parks and Wild Life
Management, Harare, ZW
April 1992 En 68p tables*

The black rhino is faced with extinction due to poaching. This book outlines the short and medium term action plans for the conservation of the black rhino in Zimbabwe.

The plan starts with a list of short-term priorities, followed by another list of medium-term priorities. The short-term priorities include a dehorning programme, increase of human resources and the provision of emergency budgets for field operations.

The medium-term priorities include soliciting funds to provide the budget necessary for the survival of the rhino, the inception of controlled legal trade in rhino products, the inception of an aggressive public relations campaign to highlight the plight of the rhino, and the consolidation of viable breeding groups of rhino in more secure areas.

The action plan is based on the objectives of the Zimbabwe Black Rhino Conservation Strategy which has the following objectives: conservation of large wild rhino populations in the Parks and Wildlife Estate, establishment of new breeding nuclei under extensive conditions in safer areas of the country, establishment of a Captive Breeding Centre in Zimbabwe, support for an *ex situ* captive breeding programme.

A fifth objective not in the Strategy was added to the list and this is to place a high commercial value on rhino through such activities as a controlled legal trade in rhino horn and other products, sport hunting of rhino, and using fee-paying outsiders to participate in dehorning operations.

The components which affect each of these objectives are listed and considered in terms of priority and of the actions needed both in short and medium term. The annexes give detailed plans of how the objectives can be fulfilled in terms of human resources, capital equipment, and transport.

Available from

Department of National Parks
and Wildlife Management

Zimbabwe black rhino conservation strategy

*Department of National Parks and Wildlife Management, Harare, ZW
Jan 1992 En 69p tables, maps*

The population of the black rhinoceros is down to a few thousand animals the world over and is faced with extinction. Zimbabwe has the highest population of the black rhino, but, because of poachers, the remaining animals need protection.

This conservation strategy lays out ways of protecting the rhino population in Zimbabwe and possibly the increase in numbers over the years.

It recommends the protection of rhinos in their natural habitats and in protected areas, setting up captive breeding centres where small groups of rhinos are held and protected for breeding purposes and through support of an international *ex-situ* captive breeding programme.

A lot of money is required to support such a strategy and revenue could be generated by farming the rhino and by permitting a small quota of animals for sport hunting.

The annexes give a detailed execution plan which includes budgets and staff requirements, breakdown of estimated rhino population by areas, the research programme for captive breeding centre and the monitoring of law enforcement efforts and illegal activities.

ENVIRONMENTAL INFORMATION

Available from

Department of National Parks
and Wildlife Management

Building on indigenous natural resource management forestry practices in Zimbabwe's communal lands

Clarke, Jeanette

Forestry Commission, Harare, ZW

1994 En 55p photos, tables diagrams

Trees are an integral part of the indigenous farming systems of Zimbabwe

Trees and woodlands provide wild foods including fruit, honey, mushrooms and insects, fuelwood, poles for building-construction, medicines to treat many ailments. They also provide fodder for livestock

Due to this dependence of rural people on woodlands, a conservation ethic has been built into their culture, traditions and religion. Though colonialism, successive droughts, high population growth rates and the resulting demand for tree products and crop land have led to unprecedented deforestation, there remains a deep respect for trees and a detailed knowledge of tree species and their uses

This book emphasises the need to use existing resource management practices as the building blocks for sustainable development

It provides the development community with guidelines for recognising existing practices, for assisting with the spread and growth of such

practices and for supporting local communities in the management of their own resources

The book also includes case studies from different parts of Zimbabwe on the following living fences, customary woodland management practices, bee-keeping and family woodland management programmes

Available from

Forestry Commission

Facilitating sustainable agricultural development in Zimbabwe key factors and necessary incentives

Otzen, Uwe [et al]

*German Development Institute, Berlin,
Germany*

ENDA-Zimbabwe, Harare, ZW

1994 En 99p maps, tables, charts

This study is a move toward achieving some of the goals outlined in Zimbabwe's national report to UNCED. The study analyses the complex problems of natural resource degradation in the semi-arid zones of Zimbabwe, and identifies the underlying causes. Mutoko district is used as a case study

The document analyses the national policy related to the use of natural resources, and the concept of sustainable agriculture and rural development. The degree of natural resource degradation is highlighted and the main resources affected are soils, forests and water. Various issues are linked to this degradation and they include the land tenure system, the institutions involved in natural resources

management, the economic situation, the legal framework, socio-cultural factors and land use practices

The constraining factors are identified as economic, resource use conflicts, legal distortions, institutional inadequacies, lack of efficient decentralisation and unsuitable land use systems

Available from
ENDA-Zimbabwe

Savanna land use policy and practice in Zimbabwe

Murphree, M W Cumming D H
CASS, Harare, ZW
WWF, Harare, ZW
Jan 1991 En 33p tables, maps, graphs

Zimbabwe's vegetation is predominantly wooded savanna. This paper looks at the policies and practices relating to the use of the savanna regions. The first section of the paper is about the evolution of savanna land use in Zimbabwe 1890-1980. This section describes the coming of the white settlers into the country and the subsequent changes that occurred in land use patterns.

The colonialists occupied the fertile areas and practised commercial agriculture. Policies were introduced which covered agriculture, natural resources and land use. The policies protected the white settlers and marginalised the black majority to unproductive areas, forcing them to abandon farming and work as labourers on farms, in mines and industries.

The second section looks at land use policy since 1980. After independence, the government introduced a new agricultural policy which generally aimed to redress the skewed land distribution inherited from the colonial era and to generally promote the welfare of the rural population, while at the same time taking steps to conserve the environment.

The paper describes the resettlement programme introduced by the government and the macro-economic and trade developments that have occurred. The third section is about current constraints and challenges in policy and practice. These constraints are mainly related to commercial land acquisition for the resettlement of black farmers.

It concludes with recommendations on equity, economics and ecology, macro-economic structures and policies, diversification of natural resource utilisation, land tenure and the institutions of land and resource management.

Available from
Centre for Applied Social Sciences (CASS)

Land degradation in Zimbabwe a geographical study

Whitlow Richard
University of Zimbabwe Department of
Geography Harare ZW
Department of Natural Resources Harare ZW
1988 En 62p ill, charts, maps, tables

Zimbabwe's soil erosion problems are extremely complicated involving the interaction of many political, social, economic and environmental factors.

ENVIRONMENTAL INFORMATION

An estimated 1.8 million hectares, or about 4.7 percent of Zimbabwe's total area, is eroded.

Most of this erosion has occurred in the communal lands, where population pressures are greater and resource management practices weaker than in the intensive commercial farming areas. In addition, most of the erosion seems to date back to the civil war period in the 1960s, when conservation efforts were neglected due to the liberation war. This report traces the history of the erosion problem in both large-scale commercial farming areas and communal lands.

It then describes the methodology of an innovative national erosion survey which was conducted in 1986, and assesses erosion throughout the country according to type of land tenure, natural regions, and occurrence within cropland and non-cropland.

Final sections examine the influence of physical factors such as rock outcrops and sodic soils, and human factors such as population density, agriculture, grazing and wetlands degradation, on erosion. It includes references.

Available from

Department of Natural Resources

Zimbabwe land sub-sector study

*World Bank, Harare, ZW
Sep 1986 En 48p tables, maps*

The document discusses the land issue in Zimbabwe, focusing on land policy and land use patterns. It describes the evolution of land policy in the pre-colonial era, the colonial era and the post-independence period.

About 85 percent of the total surface areas in Zimbabwe is designated as agricultural land, while the remaining land is national parks, state forests, urban and state land. The land has been affected by soil erosion which is a result of overgrazing, improper cultivation methods, and deforestation. This land degradation has limited the prospects for further agricultural development. The Soil and Water Conservation Unit and the Forestry Commission have programmes to address these problems.

The document presents recommendations on land use and planning, the land market, resettlement of people, environmental conservation, local boundary demarcation, land tenure, formulation of a land use strategy and the implementation of the conservation strategy.

Available from

World Bank
PO Box 2690, Harare
Zimbabwe

Tel ++(263-4) 704053
Fax ++(263-4) 708659

Working towards a biomass energy strategy for Zimbabwe

*Campbell, B M Mangono, J J
Ministry of Environment and Tourism, Harare, ZW
Jan 1995 En 15p graphs*

In Zimbabwe, almost all rural households and 10-40 percent of low-income urban households use wood as the main cooking fuel. This paper reviews some of the factors that need to be considered if wood is to be incorporated into central energy planning.

It concentrates on wood consumption patterns, a knowledge of which is central to preparing a biomass energy strategy. At present, paraffin and electricity are the only real substitutes for firewood, but this is largely in urban areas. It is highly unlikely that reductions in firewood consumption will be achieved in the next decade through greater use of gas, solar power or coal in rural and urban areas, or through electricity or biogas in rural areas.

The report suggests that household management of fires results in fuel efficiencies that are as good as fuel-efficient stoves. To increase fuelwood supply, more detailed ecological work is required on wood production from natural woodlands, as one of the greatest limitations to any work on consumption and supply of wood is related to poor supply-side data.

To address deforestation, attention should be directed toward the clearing of land for agriculture rather than fuelwood use. The report recommends that the Department of Energy should concentrate on integrated energy planning, one component of which would incorporate biomass.

Available from
Ministry of Environment and Tourism

Zimbabwe energy planning for national development

Hosier, Richard H [et al.]
The Beijer Institute Stockholm Sweden
The Scandinavian Institute of African Studies
Stockholm, Sweden
1986 En 206p tables graphs maps

The book is based on the major findings of the Zimbabwe Energy Accounting Project, which was initiated to fill the gap left by the lack of integrated energy planning in Zimbabwe. It addresses the role of energy in the economic development of the country. It goes on to discuss energy consumption by the following, rural and urban communities, industry and transport sectors, with the rural energy consumption accounting for over 60 percent of the national energy use.

The current energy supply of fuel and the balance between the demand-and-supply of energy is also analysed. The results of the demand and supply study were used to make projections for energy planning for future years. Problems that could face the industry are discussed, sector by sector, in both the technical and contextual framework. Some of the problems are wood shortage, coal pollution, outdated inefficient equipment and insufficient ethanol supplies. The importance of integrating the planning for both energy demand and supply is further discussed.

Policy initiatives which are intended to solve the identified problems, and to support further energy development in Zimbabwe are given. Two policy scenarios were developed for the examination of an integrated energy programme.

The book also looks at the directions for the energy sector, taking into account the current problems, progress in other developing countries and energy.

Available from
The Scandinavian Institute of African Studies
PO Box 1703, S-75147 Uppsala
Sweden
Telex 8195077 AFRICAN

ENVIRONMENTAL INFORMATION

Tourism and environment in the Victoria Falls area an assessment of the environmental impact of tourism developments

*Chaubva, Shem [et al]
Department of Natural Resources, Harare, ZW
Apr 1994 En*

Victoria Falls is one of seven wonders of the world and is a major tourist attraction for Zimbabwe. Uncontrolled development of tourism activities in the area is gradually leading to the degradation of the natural resource base. This has led to a study to determine the environmental impacts of tourist-related activities and developments in the area and to make recommendations for sound environmental management of future tourism development projects.

The report gives an environmental overview of the area. Due to an increasing number of tourists, infrastructure developments have occurred with little or no considerations of environmental conservation.

The issues identified and discussed in the report include the expansion of tourist infrastructure such as lodges and hotels, the potential degradation of the Falls and rainforest area, constraints on wildlife movements through the town area, poor management of development at the river edge, wood supply for fuel and curio-making, aircraft viewing of the Falls, preservation of the aesthetic environment, waste disposal, and wildlife viewing outside the national parks.

Specific environmental management recommendations pertaining to these issues are given.

It also recommends the need for more authority to be granted to the Victoria Fall Town Council to ensure better planning and management, a Tourism Development Master Plan, and environmental awareness campaign.

*Available from
Department of Natural Resources*

A profile of forestry and forestry related activities in Matabeleland North Province the impact of the Zambezi - Bulawayo pipeline and the development of a forestry management strategy

*ZERO, Harare, ZW
Matabeleland Zambezi Water Project Trust,
Bulawayo, ZW
En*

Matabeleland North province is the largest province in Zimbabwe and it holds the largest share of the country's forest resources.

This report is an impact assessment of the proposed pipeline to supply the city of Bulawayo with water from the Zambezi river.

It also discusses the importance of developing a forestry management strategy for the area. The report begins with a description of the forest resources and woody biomass in Matabeleland North Province, highlighting distribution, land tenure and forest development.

The forests in the area support several activities which include commercial timber exploitation, wildlife habitats, tourism and hunting, livestock

and fodder, mining, and rural industries (eg brick- and bread-making)

The report identifies negative results of building the pipeline such as deforestation during construction of pipeline, and pressures of settlements which will develop as a result of water availability in the province

But, with proper planning — to ensure sustainable utilisation of the forests — the report recommends that these negative impacts will only be short-term. It also proposes roles that should be assumed by government departments, NGOs, and local organisations in the province in the management of the forest resources

The report discusses the potential benefits to the province of a developing a management strategy

Available from
ZERO

Population policy and development balancing people with resources

UNFPA, Harare, ZW
Central Statistical Office, Harare, ZW
Jan 1993 En 104p tables

The world population is on the increase with the developing countries having the highest population growth rates. Zimbabwe's annual growth rate is 3.1 percent. In comparison with other developing countries, Zimbabwe's population control programme is one of the most successful. Nevertheless, it is important for each country to have a population policy for planning purposes

This document presents proceedings from a national symposium on the development of a national population policy. The working papers, discussions and group recommendations are given. The keynote paper at this workshop was entitled, 'Population, the Environment and Sustainable Development'

Other papers discussed the integration of population variables into development planning, population growth, food resources and the environment, population and social development, population distribution, migration, and urbanisation

The workshop concluded that the country's population growth rate is too high and incompatible with neither available natural resources and the pace of economic development

It also noted the need for an awareness and understanding promotion among the people, the establishment of a Population Policy Unit involving government officials, technical personnel, and representatives from the private sector and NGOs

The establishment of an evaluating and monitoring system on the progress of the Population Development Programme was also deemed vital

Available from
Central Statistical Office
PO Box CY 342,
Harare
Zimbabwe
Tel ++(263-4) 706681
Fax ++(263-4) 708854

ENVIRONMENTAL ORGANISATIONS

NATIONAL CONTACTS

Africa 2000 Network

PO Box 4775,
60 Selous Avenue
Harare, Zimbabwe
Tel ++(263-4) 703577
Fax ++(263-4) 728695
Telex 24668 ZW

Contact **Mrs Khetiwe Moyo-Mhlanga**
National Coordinator

Africa 2000 Network supports participation of rural communities to create awareness of the environmental situation and promote changes in behaviour and attitude in their relationship with their surrounding environment. It empowers rural communities to be in control of their environment and advocates full participation by the community.

Agricultural Technical and Extension Services (AGRITEX)

PO Box CY 639, Causeway
Makombe Building, H Chitepo Avenue
Harare, Zimbabwe
Tel ++(263-4) 730821/6
Fax ++(263-4) 730525

Contact **Dr Johannes Makadho**
Director

AGRITEX operates under the Ministry of Agriculture. The key objectives of AGRITEX are to provide technical, developmental, extension liaison and regulatory services, to stimulate the adoption of proven agricultural practices, to promote human development, sustainable and agricultural development.

Association of Zimbabwe Traditional Environmental Conservationists (AZTREC Trust)

P Bag 9286, Masvingo
Zimbabwe
Tel ++(263-39) 62294

Contact **Mr Cosmas Gonese**
Director

The Association is involved in permaculture and afforestation activities and it raises indigenous seedlings and fruit trees in Masvingo Province. It also conducts training courses on woodland management and permaculture.

Biodiversity Foundation for Africa

PO Box FM 730, Famona
2 Fifth St, Suburbs,
Bulawayo
Zimbabwe
Tel ++(263-9) 61226
Fax ++(263-9) 74839

Contact **Mr Alan Sparrow**
Project Coordinator

The Biodiversity Foundation for Africa is an NGO established by a group of scientists and environmentalists. Its principle objective is to improve scientific knowledge of African biodiversity to support its sustainable management at the landscape and ecosystem scale.

The foundation is currently active in carrying out biological inventories and monitoring of *miombo* woodland in the catchment area of the Zambezi river basin.

Biomass Users Network (BUN)
 P Bag 7768, Causeway
 Makombe Building, H Chitepo Avenue
 Harare
 Zimbabwe
 Tel ++(263-4) 793395/6
 Fax ++(263-4) 793313
 Telex 26610 BUN ZW
 EMail BIOMASS@MANGO ZW

Contact **Dr David Mazambani**
 Director

The mission of the Biomass Users Network is to help develop and strengthen national capabilities in developing countries, and to increase production and use of biomass resources as a means of advancing economic and social well-being, primarily in rural areas

Centre for Applied Social Sciences (CASS)
 University of Zimbabwe
 PO Box MP 167, Mount Pleasant,
 Harare
 Zimbabwe
 Tel ++(263-4) 303211
 Fax ++(263-4) 732828
 Telex 26580 UNIVZ ZW

Contact **Prof Marshall Murphree**
 Director

CASS is responsible for an interdisciplinary applied social science research and teaching programme at the University of Zimbabwe. CASS provides teaching services which include the MSc in Tropical Resource Ecology. UNEP has designated CASS and the Department of Biological Sciences a regional tertiary level environmental training centre for Eastern and Southern Africa

Chipangali Wildlife Orphanage
 PO Box 1057, 8 Worringham Road
 Bulawayo
 Zimbabwe
 Tel ++(263-9) 70764
 Fax ++(263-9) 72187

Contact **Mr Kevin Wilson**
 Director

Chipangali provides a sanctuary for problem wild animals, medical attention to wildlife, breeding of endangered species, public education and tourist facilities. It also conducts research into aspects of wildlife and its ecology

Communal Areas Management Programme for Indigenous Resources Association (CAMPFIRE)
 PO Box 661, Mukuvisi Woodlands
 Glenara South Avenue, Harare
 Zimbabwe
 Tel ++(263-4) 747152
 Fax ++(263-4) 795150

Contact **Mr Taparendava Maveneke**
 Director

CAMPFIRE is a programme which seeks to promote natural resource utilisation, including wildlife, as an economic land-use option in Zimbabwe's communal areas. There are altogether 25 rural district councils which are full members of the CAMPFIRE Association. The CAMPFIRE Association networks with Government departments and other NGOs who all form the CAMPFIRE Collaborative Group which provides different services to Campfire Rural District Councils

ENVIRONMENTAL ORGANISATIONS

**Confederation of Zimbabwe Industries
Environment Committee**
PO Box 3794
Fidelity Life Tower, Cnr Luck/Raleigh Streets
Harare
Zimbabwe
Tel ++(263-4) 739833
Fax ++(263-4) 750953

Contact **Mr Charles Chisvo**
Secretary

CZI is the voice of the manufacturing sector in Zimbabwe. CZI promotes members' interests and has a number of Standing Committees, chaired by top businessmen which look at various facets of the economy that affect manufacturers. These include economic affairs, taxation, transport, energy, telecommunications, environment, labour, trade development and small industries development.

**Department of Energy Resources and
Development**
P Bag 7758, Causeway
Makombe Building, H Chitepo Avenue
Harare
Zimbabwe
Tel ++(263-4) 791760/9
Fax ++(263-4) 721967

Contact **Mr Cornelius Muzezewa**
Director

The Department coordinates the nation's energy demand and supplies. It also carries out research into new and renewable sources of energy. The Department also advises on legislation that affects energy resources in Zimbabwe.

Department of Meteorology
PO Box BE 150, Belvedere
Bishop Gaul Avenue, Belvedere
Harare
Zimbabwe
Tel ++(263-4) 704955
Fax ++(263-4) 733156
Telex 40004 ZW

Contact **Dr Marufu Zinyowera**
Director

The Department is Zimbabwe's authority in climate data acquisition, monitoring and assessing impacts of climate variability on the environment. Its personnel provide expertise in national and international organisations, which include IPCC, INC, UNEP, UNITAR as well as UNFCCC activities and projects on Global Warming and Climate change.

**Department of National Parks
and Wildlife Management**
PO Box CY 140, Causeway
Cnr Sandringham & Borr Streets, Harare
Zimbabwe
Tel ++(263-4) 792786
Fax ++(263-4) 724914

Contact **Mr W Makombe**
Acting Director

The Department is a conservation agency under the Ministry of Environment and Tourism. Its mandate is to conserve the wildlife resources of Zimbabwe which includes the fisheries resources. The wildlife agency is a streamlined, efficient, professional organisation, judiciously balancing its conservation mandate with the need to contribute significantly to sustainable development.

Department of Natural Resources
 PO Box CY 385, Causeway
 Makombe Building, H Chitepo Avenue
 Harare
 Zimbabwe
 Tel ++(263-4) 705661
 Fax ++(263-4) 793123
 EMail UNEPZIM@MANGO ZW

Contact **Mr Moses Munemo**
 Director

The mission of the Department is to conserve natural resources of Zimbabwe and ecosystems and processes upon which they depend for their survival. It coordinates, catalyses and stimulates action for the survival of the environment and assist all other private and public groups ensuring the wise use of the biosphere.

Department of Research and Specialist Services (DRSS)
 PO Box CY 594, Causeway
 5th Street Extension
 Harare
 Zimbabwe
 Tel ++(263-4) 704531
 Fax ++(263-4) 728317
 Telex 22455 AGRIC ZW

Contact **Dr Ntombie Gata**
 Director

The DRSS facilitates national food security and sustainable natural resource management and economic development through the provision of agricultural research and development. It undertakes research in most commodities and disciplines. It also provides various services to the agricultural industry, including major regulatory functions such as plant quarantine,

dairy, farm seeds and fertilisers registration and inspection, seed certification, meat and cattle grading, and pesticide registration. In addition, it provides advisory services such as plant and weed identification, pest and diseases diagnosis, pesticide residues analysis and soil analysis for fertiliser recommendations and land degradation.

Department of Water Resources Development
 P Bag 7712, Causeway
 Makombe Building, H Chitepo Avenue
 Harare
 Zimbabwe
 Tel ++(263-4) 707861
 Fax ++(263-4) 722752

Contact **Mr Vavarirai Choga**
 Director

The main functions of the Departments are to plan and coordinate development of water resources, to regulate services, to give address on policy, to manage water resources, and provide consultancy services.

Development Innovations and Networks (IRED)
 PO Box CY 3, Causeway
 Silke Building, Cnr R Mugabe Way & 4th Street
 Harare, Zimbabwe
 Tel ++(263-4) 796853
 Fax ++(263-4) 722421
 Telex 22055 ZMMT ZW
 E-Mail IRED@MANGO ZW

Contact **Mrs R Chitiga-Machingauta**
 Director

ENVIRONMENTAL ORGANISATIONS

IRED is a global network which facilitates exchanges of experiences and communication, and organises with its partners technical support in institutional capacity strengthening. It is also involved in small-scale enterprise development and operates as a support centre for a network of grassroots organisations in the region.

Development Technology Centre (DTC)

PO Box MP 167, Mt Pleasant
University of Zimbabwe
Harare, Zimbabwe
Tel ++(263-4) 303211
Fax ++(263-4) 333407
Telex 26580 UNIV ZW

Contact **Mr William Ascough**
Director

The Development Technology Centre provides research, training and extension for men, women and youth in low resource base rural and informal sectors. The Centre works with Zimbabwean grassroots development programmes in agriculture, alternative energies, and agro-industrialisation which are aimed at improving client's living standards without damaging the environment.

Environment and Development Activities (ENDA-Zimbabwe)

PO Box 3492,
1 Waterfield Road, Mt Pleasant
Harare, Zimbabwe
Tel ++(263-4) 301156
Fax ++(263-4) 301162
E-Mail ENDA@MANGO ZW

Contact **Mr Davison Gumbo**
Director

ENDA-Zimbabwe's main focus is on sustainable natural resources management through wealth generation. Emphasis is placed on community participation, who are small-scale farmers in rural areas, and small-scale enterprises in urban areas. ENDA works through such channels as field implementation, research, training, documentation, publicity and advocacy.

Environment and Remote Sensing Institute

PO Box 6640,
Lonhro House, Union Avenue
Harare, Zimbabwe
Tel ++(263-4) 731045
Fax ++(263-4) 731049

Contact **Dr Caxton Matarira**
Director

ERSI is an institute of the Scientific & Industrial Research & Development Centre (SIRDC). The Institute specialises in application-oriented training, demand-driven services and consultancy and technology-oriented research in remote sensing and Geographic Information Systems for resource detection and environmental monitoring and assessment.

Environment 2000

PO Box A639, Avondale
10 Lawson Avenue, Milton Park
Harare, Zimbabwe
Tel ++(263-4) 339691
Fax ++(263-4) 339691

Contact **Ms Charlene Hewatt**
Secretary General

Environment 2000 promotes environmental awareness, education and action, aimed at

uplifting socio-economic sustainability and enhancing the earth's environment. This is achieved through discussion and dialogue, initiating action programmes on a project basis, highlighting problems and their solution through the media, and working towards a united global approach to environmental issues.

Environmental Forum of Zimbabwe

PO Box BW 294, Borrowdale
Harare, Zimbabwe
Tel ++(263-4) 883865
Fax ++(263-4) 883864
Telex 22126 ZW

Contact **Mr H D Gatskell**
Chairman

The Environmental Forum of Zimbabwe started in 1993 and now has 73 members from a wide cross-section of commerce, industry, agricultural and mining companies, as well as municipalities. It was a co-host to the Second Southern African International Conference on Environmental Management which was held in October 1994, in Zimbabwe. Currently, the follow-up procedure to that conference are being conducted with a hope that it will have an influence in the region.

Fambidzana Permaculture Training Centre

PO Box CY 301, Causeway
4 Dovedale Road, Stapleford, Mt Hampden
Harare, Zimbabwe
Tel ++(263-4) 397037
Fax ++(263-4) 723056

Contact **Ms Bridget O'Connor**
Coordinator

The Centre promotes sustainable land uses and technologies primarily to farmers in Zimbabwe through practise and training of permaculture and other appropriate development tools. Courses offered include permaculture design, natural pest control, beekeeping, holistic resource management and participatory rural appraisal.

Forestry Commission

PO Box HG 139, Highlands
1 Orange Grove Drive, Highlands
Harare, Zimbabwe
Tel ++(263-4) 498436
Fax ++(263-4) 497066
EMail FORESTRY@MANGO ZW

Contact **Mr A Ncube**
Acting General Manager

The Forestry Commission is a multi-faceted organisation with heavy involvement in environmental management, forestry research and development, management of indigenous forests and wildlife, development, management and exploitation of exotic wood plantations, and marketing of forest and forest-related products.

Institute of Environmental Studies

University of Zimbabwe
P O Box MP167, Mount Pleasant
Harare, Zimbabwe
Tel ++(2634) 303211 x1937
Fax ++(2634) 333407

Contact **Prof Bruce Campbell**
Director

The mission of the Institute of Environmental Studies is to contribute to the development and

ENVIRONMENTAL ORGANISATIONS

sustained well-being of the people of Zimbabwe and Africa through education, research, information and consultancy services on the environment

Ministry of Environment and Tourism
P Bag 7753, Causeway
Karigamombe Centre, S Machel Avenue
Harare, Zimbabwe
Tel ++(263-4) 757881
Fax ++(263-4) 755006

Contact **Mr July Moyo**
Permanent Secretary

The mission of the Ministry is to formulate and implement policies which manage and conserve the environment whilst facilitating the development of Zimbabwe's tourism and natural resource potential and optimal utilisation of natural resources on a sustainable basis, in order to maximise the social and economic benefits to all Zimbabweans

Mukuvisi Woodland Association
P O Box 4665,
Harare
Tel ++(263-4) 747152
Fax ++(263-4) 731596

Contact **Mr Gavin Ford**
General Manager

Founded in 1980, the Association's major objective is to use its facilities of 265 ha of natural and semi-natural habitat as a demonstration area for environmental education.

Natural History Museum of Zimbabwe
PO Box 240
Cnr Centenary Park / L Takawira Avenue
Bulawayo, Zimbabwe
Tel ++(263-9) 60045
Fax ++(263-9) 64019

Contact **Mrs R Sithole**
Acting Regional Director

The Natural History Museum of Zimbabwe collects objects (mainly faunal) from the natural world and preserves them in the institution for perpetuity, to support research, interpretation, exhibition and educational activities on the identities, distribution, life-histories and ecology of animal species occurring in the Afrotropical region, with particular reference to Zimbabwe

United Nations Development Programme (UNDP)
PO Box 4775
Takura House, Union Avenue
Harare, Zimbabwe
Tel (263-4) 792681
Fax (263-4) 728695

Contacts **Ms Thelma Awori**
Resident Representative

Mr Tom Mpofo
Environmental Advisor

United Nations Development Programme (UNDP) is the world's largest organisation providing grant assistance to developing countries UNDP has 135 country officer and finances programmes in more than 170 countries

UNDP has an annual budget of approximately US\$1.7 billion. UNDP's overall mission is to promote sustainable human development.

Wildlife Society of Zimbabwe
 PO Box HG 996, Highlands
 Cnr Hillside & Glenara south Roads
 Harare, Zimbabwe
 Tel ++(263-4) 747500
 Fax ++(263-4) 700451

Contact **Mr Peter Kunjeko**
 Executive Director

The Wildlife Society encourages all people to take an active interest in Zimbabwe's wildlife heritage through conservation oriented educational and research projects, cooperation with government, local authorities, and other local and overseas organisations. It also operates a Wildlife Emergency Fund for times of national emergency.

World Food Programme (WFP)
 P O Box 4775 Harare Zimbabwe
 Takura House, 67 Union Avenue
 Harare, Zimbabwe
 Tel ++(263-4) 739984
 Fax ++(263-4) 734932
 Telex 26338 ZW
 E-Mail 109/183,601

Contact **Ms Nicole Menage**
 Country Director

WFP is the food aid organisation of the United Nations system. It provides food aid to vulnerable groups and in emergency situations such as drought relief and refugees.

WFP also provides food for rural development through food for work projects such as road construction, rural afforestation, gully reclamation and agricultural development projects.

World Wide Fund for Nature (WWF)
 PO Box CY 1409, Causeway
 10 Lanark Road, Belgravia
 Harare, Zimbabwe
 Tel ++(263-4) 730599
 Fax ++(263-4) 730599

Contact **Dr David Cumming**
 Project Leader

The WWF programme in Zimbabwe is focused on community-based conservation and wildlife management and on rhino conservation. Emphasis is placed on ecological and economic research and monitoring, land use planning, training and technology transfer at community level within the CAMPFIRE programme to achieve long term resource conservation.

Zambezi Society
 P O Box HG774, Highlands
 Harare, Zimbabwe
 Tel ++(263-4) 747152
 Fax ++(263-4) 731596

Formed to promote the maintenance of biological diversity and the ecological, aesthetic and other natural resources of the Zambezi region, the society keeps a constant watch on legislation and development schemes in the area.

ENVIRONMENTAL ORGANISATIONS

Zimbabwe National Early Warning Unit (ZINEWU)
PO Box CY 639, Causeway
Makombe Building, H Chitepo Avenue
Harare, Zimbabwe
Tel ++(263-4) 794601
Fax ++(263-4) 730525
EMail ZIMEWU@MANGO APC ORG

Contact **Mr Amos Chitambira**
Coordinator

The Zimbabwe National Early Warning Unit was set up with a mandate to provide advance information on food security issues including the release of stock and their replenishment. To coordinate the collection of food security data among various government agencies and participating in the continuing development of the methodology involved in the measurement, collection and analysis of relevant crop data.

Zimbabwe Institute of Religious Research and Ecological Conservation (ZIRRCON)
P O Box 652, Masvingo
Zimbabwe
Tel ++(263-39) 64749

Contact **Mrs Fieke Vermeulen**
Advisor

ZIRRCON is the green movement of Masvingo. Established in 1984, it is fighting the "War of the Trees". Its ecological conservation activities mobilise grassroots communities through religion both traditional and christian.

There are more than 100 independent churches and more than 100 traditional chiefs, spirit mediums and ex-combatants actively involved in the "War of the Trees".

Zimbabwe National Environment Trust (ZIMNET)
PO Box CY 358, Causeway
18 Mitchell Road, Greendale
Harare, Zimbabwe
Tel ++(263-4) 496105
Fax ++(263-4) 496105

Contact **Mr Joseph C Tasosa**
Director

The main objective of ZIMNET is to coordinate, collect, manage and distribute funds for environmental and developmental NGOs' projects or programmes in Zimbabwe. ZIMNET also promotes, initiates and supports environmental legislation, and it educates the public on the environment and conservation of natural resources.

Zimbabwe Trust
PO Box 4027
4 Lanark Road, Belgravia
Harare, Zimbabwe
Tel ++(263-4) 730543
Fax ++(263-4) 795150

Contact **Mr Robert Monro**
General Secretary

Zimbabwe Trust aims to promote the relief of poverty and improving the quality of life through the application of its resources to purposes which serves these ends. The Trust's policy of assistance focuses on the enhancement of the institutional development, management skills, and productive capacity of villages, wards and districts based on the sustainable use of land and natural resources. Zimbabwe Trust is primarily involved in institutional development activities in CAMPFIRE.

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Information should be sent to

INTERAISE PROJECT

India Musokotwane Environment Resource
Centre for Southern Africa (IMERCSA)
15 Downie Avenue, Belgravia, P O Box 5690, Harare
Zimbabwe

Tel ++(263-4) 737 301/720 814

Fax ++(263-4) 738 693

Telex 26035 ZPH ZW

Email IMERCSA@MANGO ZW