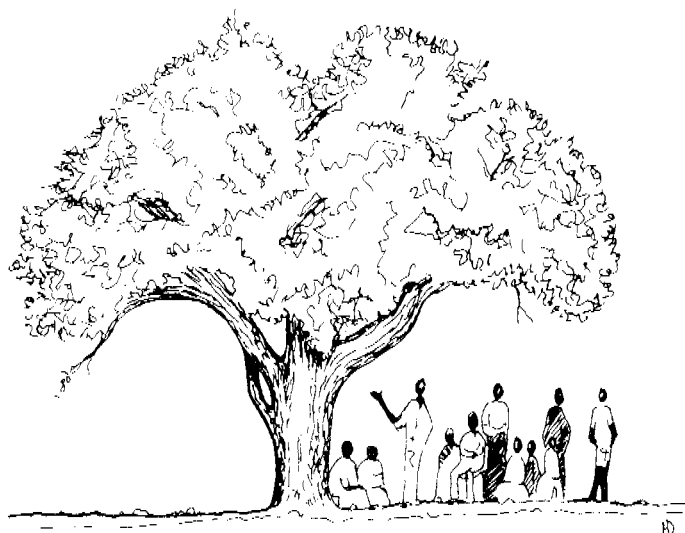
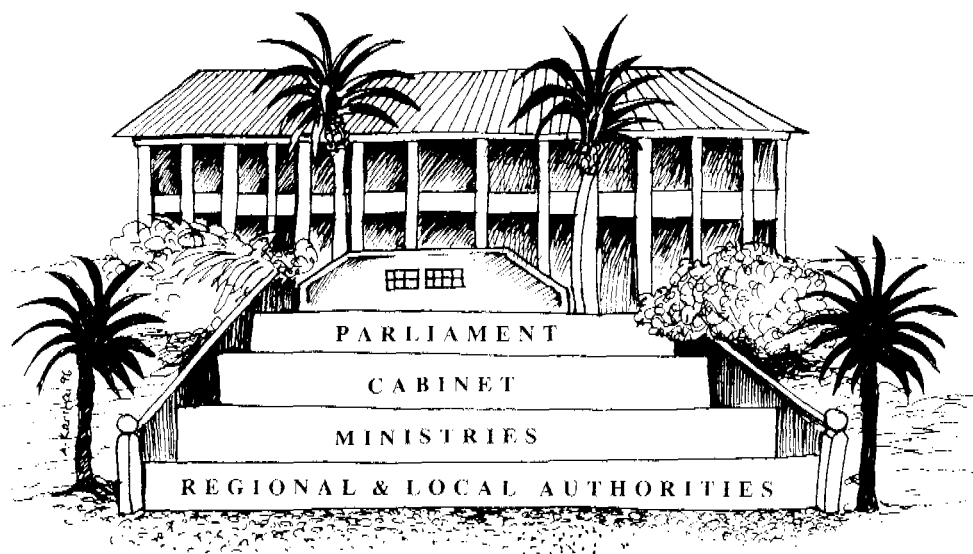


Namibian Programme to Combat Desertification



Policy Factors & Desertification — Analysis & Proposals

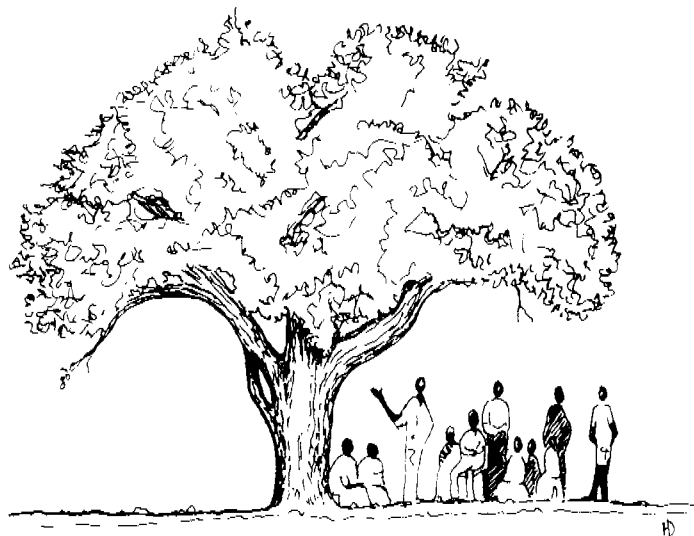


NAPCOD Steering Committee (April 1996)

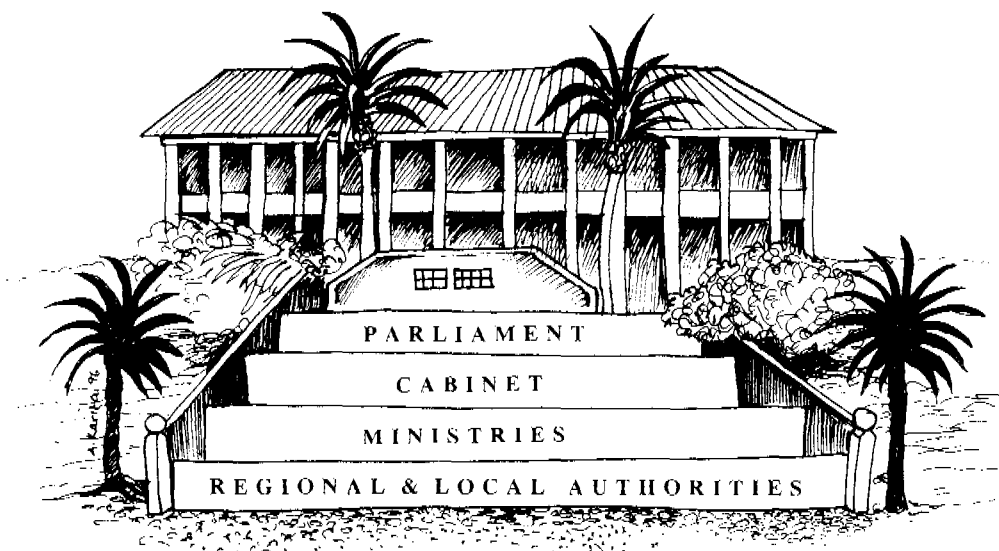
NAPCOD is a joint initiative of the Desert Research Foundation of Namibia, the Ministry of Environment and Tourism and the Ministry of Agriculture, Water and Rural Development with financial assistance from the German aid agency, GTZ

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Namibian Programme to Combat Desertification



Policy Factors & Desertification — Analysis & Proposals



NAPCOD Steering Committee (April 1996)

NAPCOD is a joint initiative of the Desert Research Foundation of Namibia, the Ministry of Environment and Tourism and the Ministry of Agriculture, Water and Rural Development with financial assistance from the German aid agency, GTZ

The following institutions are represented on the NAPCOD Steering Committee:

Ministry of Environment and Tourism
Ministry of Agriculture, Water and Rural Development
Ministry of Lands, Resettlement and Rehabilitation
Ministry of Regional and Local Government and Housing
Desert Research Foundation of Namibia
Namibia Agricultural Union
Namibia National Farmers' Union
Namibia Development Trust
Namibia Economic Policy Research Unit

Preface

This study seeks to inform decision makers of the impact of policy instruments on desertification and makes recommendations for reform. While the study is in large part a tool for guiding future NAPCOD work, key target audiences include politicians and senior/mid-level public servants.

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Prepared for NAPCOD by Richard Dewdney

Desertification

Land degradation in arid, semi-arid and dry, sub-humid areas, resulting mainly from negative human impacts combined with difficult climatic and environmental conditions

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Acronyms & Abbreviations

ABN	Agricultural Bank of Namibia
AEZ	Agro-Ecological Zone
CBNRM	Community-Based Natural Resource Management
CMA	Common Monetary Area
COMESA	Common Market for Eastern and Southern Africa
CSO	Central Statistics Office
DARD	Department of Agriculture and Rural Development (MAWRD)
DoWA	Department of Water Affairs (MAWRD)
DRFN	Desert Research Foundation of Namibia
DRWS	Directorate of Rural Water Supply (DoWA, MAWRD)
EPZ	Export Processing Zone
EU	European Union [formerly European Community]
EWFIU	Early Warning & Food Information Unit (OPM)
GATT	General Agreement on Tariffs and Trade [now WTO]
GDP	Gross Domestic Product
GNI	Gross National Income
GNP	Gross National Product
GRN	Government of the Republic of Namibia
INCD	Inter-governmental Negotiating Committee to Combat Desertification
LRAC	Land Reform Advisory Commission
LSU	Large Stock Unit
LUEB	Land Use and Environment Board
MAWRD	Ministry of Agriculture, Water and Rural Development
Meatco	Meat Corporation of Namibia Ltd
MLRR	Ministry of Lands, Resettlement and Rehabilitation
MRLGH	Ministry of Regional and Local Government and Housing
MTI	Ministry of Trade and Industry
NAB	Namibian Agronomic Board
NACP	National Agricultural Credit Programme
NamPost	Namibia Post Ltd
NAP	National Agricultural Policy
NAPCOD	Namibian Programme to Combat Desertification
NAU	Namibia Agricultural Union
NCAs	Northern Communal Areas
NDC	Namibia Development Corporation [formerly FNDC]
NDHS	Namibia Demographic and Health Survey
NDP1	First National Development Plan
NEAP	National Environmental Action Plan
NEPRU	Namibia Economic Policy Research Unit
NGO	Non-Governmental Organisation
NHIES	National Household Income and Expenditure Survey
NNFU	Namibia National Farmers Union
NPC	National Planning Commission
NRA	Natural Resource Accounting
NRM	Natural Resource Management

Acronyms & Abbreviations

PTA	Preferential Trade Area
RSA	Republic of South Africa
SACU	Southern Africa Customs Union
SADC	Southern African Development Community [formerly SADCC]
SARDEP	Sustainable Animal and Range Development Programme
SSD	Social Sciences Division of the MRC (UNAM) [formerly NISER]
SSU	Small Stock Unit
STA	Second Tier Authority
UNCED	United Nations Conference on Environment and Development
WASP	Water And Sanitation Policy
WTO	World Trade Organisation [formerly GATT]

Summary & Principal Recommendations

Overview

Desertification is land degradation resulting mainly from negative human impacts combined with difficult climatic and environmental conditions. There are a wide range of policy factors which affect how natural resources are used and managed. In the past, many policies have not ensured sustainable use and have promoted land degradation. This Report looks at those human impacts which can be influenced by policy reform to reverse or halt losses in land productivity and ensure that renewable natural resources are managed on a more sustainable basis.

There remains considerable uncertainty about the exact extent, causes and costs of land degradation. That land degradation has, and is continuing to, take place at an alarming rate is an undisputed fact. There is therefore an urgent need to reform the policy framework to reduce that land degradation which is doubtlessly occurring.

In some cases, the impact of policy reform on land degradation *per se* may be unclear but change nonetheless desirable because it promotes *sustainable* natural resource management (proper pricing of water resources is a good example). Where there is doubt about the likely consequences of intervention, change should be incremental.

The Report as a whole is divided into three Parts. Part I addresses proximate policy factors which have a more direct influence on desertification and which are easier to tackle in the short term. These are grouped around each of the key natural resource sectors: land and overall natural resource management, water, agriculture and forestry. Part II considers more ultimate policy factors where the impact is somewhat removed and change is only likely in the longer term (poverty, population, and economic policies). Part III prioritises the detailed recommendations contained in each section and considers how policies might be changed and what immediate steps should be taken by NAPCOD.

This Summary integrates the analysis of the four sectors identified in Part I to give a conceptual overview of the different types of policy causes of degradation and to illustrate the main themes of the Report.

A complementary summary listing the principal recommendations from each of the sections in Parts I and II is shown in Table 1 and Table 2.

Institutional reform: natural resource tenure

Many of the instances of over-use of natural resources which result in degradation are a consequence of the fact that rural communities do not have secure, exclusive tenure over land and natural resources. While they bear the costs of overgrazing, deforestation and excessive water extraction, they are not in a position to reap the benefits of sustainable management of these natural resources. Other communities cannot currently be excluded from using natural resources which have been well managed by someone else.

The problem is exacerbated by the increasing tendency for wealthy private individuals to fence off rangelands for their own exclusive use. This practice reduces both the amount of land available to the majority and the mobility of livestock (an essential feature in extensive subsistence systems with high variation in rainfall and hence vegetation). The inevitable consequence is heavy overgrazing of the remaining open access land.

The introduction of secure, exclusive tenure at the community level is the single most important policy reform needed to prevent degradation. Without it, many of the other proposed changes in this Report will have little effect.

Another key element of this institutional reform is that it should embrace *all natural resources on the land* (grazing, trees, wildlife, water). For example, it would be meaningless to grant exclusive tenure over rangeland while allowing open access to all livestock at water points (or vice versa). This holistic approach must be reflected in the forthcoming National Land Policy and Communal Land Reform Bill. Sectoral legislation and policy should fit within such a framework.

Tenure is not, however, a panacea. Rural communities will still face pressures from poverty, population growth, high expectations and wealthy individuals. A related institutional reform which is required is the *creation of local bodies capable of managing natural resources within their community*, with the support of regional and national State institutions.

Strategic/cross-sectoral planning

Failure to plan at a strategic (and cross-sectoral) level has resulted in poor resource management. The seemingly separate planning of land management and resettlement is a case in point. The resources currently devoted to the purchase of commercial farmland for resettlement of poor farmers are far too low to have any significant impact on alleviating pressure in communal areas, with the consequence that degradation continues. If communal areas continue to be (semi-) commercialised, then far more resources will need to be invested in resettling poor farmers to commercial farmland. If communal areas are communalised — which is the view of this Report — then the resettlement programme will need to take on a completely different focus, moving large communal farmers to commercial areas. However this issue is ultimately resolved, *resettlement and land management (in the commercial and communal areas) must be planned together.*

Subsidised agricultural irrigation is an example of sector-driven policy which has adverse implications for the use of a resource which is needed throughout the economy. The desire for food self-sufficiency has spawned the current policy of subsidised water for irrigation without consideration of the value of water use in other economic activities. The rising opportunity cost of water means that *it is foolish to invest heavily in irrigated agriculture now where water will have a greater value in industrial, commercial and domestic uses in the medium/long term.*

Markets: pricing

A central theme running throughout this Report is the need to treat natural resources as economic resources. This implies that they are scarce resources which should be allocated to their *most valuable use*, through properly functioning markets where possible.

Pricing has a critical role to play here for certain resources, in particular water. At the moment, nobody pays even the cost price for water, which encourages over consumption and the development of water-intensive industries (especially agricultural irrigation). Increasing prices to *at least* current cost-recovery levels would enhance the sustainable utilisation of this resource and reduce any associated land degradation (damage to groundwater and ephemeral river systems). However, *additional price increases are urgently required for urban consumers* where the long-run cost of increased provision is much greater than the current cost (because of the need to extend the carrier network to the Okavango or build expensive desalination plant). Water prices should also reflect costs passed on to other users and find some means of compensation (for example, ephemeral river degradation as a result of upstream use), and reflect opportunity cost where this is greater than financial cost (which may be the case for many irrigation schemes in the future).

Currently, no charge is attached to the use of most natural resources on communal land (unlike commercial land which is sold and rented). This encourages unsustainable use as there is no cost attached to using resources. If set at a high enough level, a *natural resource user fee* would reduce levels of utilisation (for example, stocking rates) by imposing a cost on use (and help to redistribute resources to poorer communal farmers — who use less land/water — through spending funded by the fee, especially if it were progressive). *A progressive natural resource user fee collected and spent at the community level should be introduced.*

Regulation

Where markets do not function well to limit consumption to sustainable levels, *regulation* of resource offtake is required through proper planning and enforcement. Rural water and forestry are good examples. The extraction of rural water resources needs to be managed through better siting of water points, including the introduction of seasonal and human-only boreholes to prevent overuse by livestock and sedentarisation. *Limits on the proximity of rural water points should be established in the new Water Act.*

Rights over renewable natural resources should be given to communities (tenure reform) but *in conjunction* with an assessment of what constitutes sustainable offtake. If agreed offtake levels are exceeded, rights to manage the resource will need to be reviewed.

Policy failure

"Policy failure" occurs when a policy designed to achieve one objective has an unintended, adverse impact on another objective — in this case, sustainable use of natural resources. These failures can often be addressed by redesigning policy instruments to eliminate such negative impacts while continuing to target their original objective.

The provision of livestock fodder subsidies during drought is a good example. The policy is principally intended to ensure that farmers have a viable, productive herd once the drought is over. However, the policy leads to degradation of rangeland because it discourages farmers from destocking to levels which the land can support during drought. The policy should be redesigned to ensure both that farmers have a viable herd when the drought ends and that livestock numbers efficiently track grazing availability and do not exert undue pressure on the range. *The policy should be overhauled to promote such long-term drought coping strategies through increased expenditure on:*

- *land reform; and/or*
- *destocking/restocking initiatives.*

Summary & Principal Recommendations

The resettlement programme as currently conceived also inadvertently promotes land degradation both because its high unit costs mean that few people can be moved from stressed communal areas, and because, in some cases, management practices do not appear to respect the constraints of the farming system (permanent grazing on previously rotational commercial livestock farms). In order to overcome these problems, *Government should reorient its resettlement programme by expanding communal areas through the purchase of neighbouring farms — and opening of some new areas — and by moving large communal farmers to commercial areas.*

Supply & productivity

There is some potential to reduce pressure on natural resources in the short run by increasing supply and raising the productivity of existing resources. Expansion of water supply to major new sources and improved agricultural inputs for crop growing are two examples, but, generally speaking, there is limited scope for reducing pressure by increasing supply.

Growth

Growth has conflicting implications for natural resource use:

- growth *reduces* rural poverty and therefore degradation through reducing dependence on the land and primary production.
- growth *increases* the demand for natural resources from industries and urban households (particularly water and energy).

This heightens the need to ensure that the *structure* of growth promotes rural poverty reduction and that growth occurs in sectors which place relatively little demand on natural resources. Useful Government interventions would include:

- extending investment incentives to services (especially tourism).
- promoting growth in rural areas.
- promoting growth in high value-adding activities.
- developing an environmental protection levy (as part of the Environmental Investment Fund).
- liberalising trade in wildlife products (if sustainable in the long term).

Principal recommendations by sector

Three criteria have been used to prioritise the recommendations contained in each section of the Report for future action:

- how great an *impact* will the change have on land degradation?
- how *possible* is it to introduce the proposed change — are there overwhelming constraints?
- is there a "*window of opportunity*" to pursue the proposed change in the near future?

The priority recommendations identified in this way are shown in Table 1 and Table 2. All recommendations judged to have a potentially significant impact are shown. Those recommendations which are rated particularly strong or weak against the changeability and window of opportunity criteria are marked "Y" and "N" respectively; where there is a strong doubt, "?".

Summary & Principal Recommendations

Table 1 Prioritising Recommendations — Specific Resources

Sector/Recommendation	Possible to change	Window of Opportunity
Land & Natural Resource Management		
4.1 & 4.9		Y
4.3	?	
4.2 & 4.4		Y
4.6	?	Y
4.8		Y
Water		
4.1 & 4.8		Y
4.10	N	Y
4.16	?	
4.6		Y
4.16 & 4.18	N	
4.13		
Agriculture		
4.1	N	
4.3	?	
4.4	Y	Y
4.8		
Forestry		
4.2 & 4.3		Y
4.1		
4.9		

Notes: Y = strongly positive N = strongly negative ? = serious doubt
numbers cross-reference back to recommendations in each section

Summary & Principal Recommendations

Table 2 Prioritising Recommendations — Development Strategies

Sector/Recommendation	Possible to change	Window of Opportunity
Poverty		
4.2	Anti-poverty measures should be "environmentally neutral", therefore avoid subsidies to use of natural resources (livestock, water, drought relief) intended as poverty alleviation/reduction measures. Instead increase access to/tenure of natural resource assets (land, wildlife, forestry) so that the poor can earn income through sustainable management	
4.3 & 4.4	Long-term anti-poverty measures should reduce the dependency of the poor on primary production — labour-intensive public works, regional growth centres, processing	
Population		
4.1	Ensure Population Policy allocates adequate resources to prioritised objectives in order to achieve its optimistic reductions in the growth rate	Y
4.2	Amend draft Population Policy to ensure that implications of current growth for changes needed in natural resource management are addressed	Y
Economic Policy		
4.1	Change the composition of growth towards "environmentally-friendly" sectors through:	
	Investment incentives for services (especially tourism)	?
	Growth in rural areas and high-value adding activities	
	Environmental protection levy	Y
	Trade in wildlife products	?
4.2	Integration of Natural Resource Accounts into economic planning	

Notes: Y = strongly positive N = strongly negative ? = serious doubt
 numbers cross-reference back to recommendations in each section

The most promising options from an overall perspective (importance, changeability, window of opportunity) are, in rough order of significance:

- Land management and resettlement reform, including tenure.
- Water pricing.
- Redesigning drought aid livestock subsidy.
- Natural Resource Accounts integrated into economic planning.
- Amending Population Policy.
- Investment incentives for services.

Policy Research

Priority policy-related research proposals are shown in Box 1.

Box 1 Research Priorities

Land & Natural Resource Management

- To guide land reform, policy-oriented research is required to compare the costs and benefits — including environmental ones — of communal (subsistence) and commercial (cash) systems, different tenure arrangements, and different land-use options.
- Comprehensive research is urgently needed into the extent and nature of fencing of communal land to decide how Government should approach the problem of reduced mobility.
- Research should be conducted into the reasons different groups of people have for using land to inform a strategy to reduce pressure on communal land.
- Research is needed to support the design and introduction of a natural resource user fee and appropriate local institutions to manage common property resources.
- Research is required into the economic viability of subsidised clearance of bush encroached land (to provide charcoal to people in deforested areas or as part of a resettlement programme).
- Further research into the economic returns and environmental impact of game/wildlife relative to livestock is needed.

Water

- Research into the responsiveness of water demand to price and income (price/income elasticity of water demand) to guide future supply policy.
- Research into the value of alternative water use options to assess the opportunity cost of water use (including which industries and locations are more appropriate).
- Quantify the cost of externalities such as damage to ephemeral rivers to inform decisions on pricing and allocation.

Agriculture

- Research the costs and benefits of different destocking/restocking mechanisms.

Forestry

- There is a need for research into the subsistence value of forest resources to compare alternative land uses and to develop forestry as a complementary land-use.
- Government should increase research on alternative energy resources and building materials, in particular the potential to subsidise access to kerosene/gas, possibly through a tax on fuelwood consumption.

Economic Policy

- Research into the natural resource demands of different industries would enable policy makers to plan economic growth within natural resource constraints.
- Government should conduct an environmental impact assessment of the policies, programmes and growth strategy presented in NDP1.

Introduction

1. Background to NAPCOD

International context

1.1 The Namibian Programme to Combat Desertification (NAPCOD) has grown out of *Namibia's Green Plan*, the Government's post-Independence framework environmental policy document prepared for the United Nations Conference on Environment and Development (UNCED) in Rio in 1992. The *Green Plan* is an alternative to the standard World Bank-sponsored National Environmental Action Plan (NEAP). NAPCOD represents one cross-sectoral component of the strategy to operationalise the *Green Plan* which recognises that poverty, population growth and desertification are intimately linked.

1.2 Considerable pressure was exerted at the Rio Conference — especially by African nations but with the active support of the Group of 77 developing countries — to address desertification issues. This pressure resulted in a resolution from UNCED to request the United Nations to support the negotiations to establish an International Convention to Combat Desertification. In 1994 the International Convention to Combat Desertification was agreed and Namibia has become one of over one hundred signatories (the Convention will be submitted to the Namibian Parliament for ratification within the coming year).

NAPCOD Phase 1

1.3 Following the Rio Conference, the Ministries of Environment and Tourism (MET) and Agriculture, Water and Rural Development (MAWRD) teamed up with the Desert Research Foundation of Namibia (DRFN) to develop a proposal for a programme to combat desertification. Funding was secured, principally from GTZ and INCD.

1.4 Phase 1 of NAPCOD — which began in February 1994 and was completed in January 1995 — accomplished its three key objectives:

- To raise general, national awareness of desertification in Namibia.
- To conduct a preliminary assessment of the basic state of desertification in Namibia.
- To incorporate the findings from the preliminary assessment into a proposal for a second, long-term programme [NAPCOD Phase 2 — now started].

1.5 These objectives were pursued within an overall philosophy of addressing desertification as a cross-sectoral, multidisciplinary problem, linking biophysical processes to the broader socioeconomic and national policy situation which together constitute the framework for land management practices. This approach continues to prevail in Phase 2 of the Programme.

1.6 One of the milestones of Phase 1 was a National Workshop held in July 1994 with over 225 local and international participants. The National Workshop produced a draft Policy to Combat Desertification (see Appendix 5) and identified an overall goal with eight contributory objectives to direct Phase 2 of the Programme (see Box 2).

Box 2 NAPCOD Objectives

The National Workshop held during Phase 1 of NAPCOD in July 1994 identified the overall goal of the Programme:

- **To combat the processes of desertification by promoting the sustainable and equitable use of natural resources suited to Namibia's variable environment for the benefit of all Namibians both present and future.**

The Workshop also identified eight subsidiary objectives, the achievement of which will contribute to the overall goal:

- 1 **Key players** are identified and their capacity is established/improved.
- 2 **Mechanisms for information** collection, analysis and communication are established, strengthened and functioning
- 3 **Integrated planning** and strategies at all levels developed and introduced on the basis of clearly defined policies.
- 4 **Appropriate inter-disciplinary research** programme elaborated and implemented.
- 5 **Appropriate training and education** provided according to needs at all levels.
- 6 **Natural resource users and managers** empowered to plan and implement **sustainable management practices** in an integrated and decentralised manner.
- 7 **Frame conditions**, incentives and decision making affecting sustainable resource management identified, monitored and influenced.
- 8 **Organisational management structure** established and functional.

NAPCOD Phase 2

1.7 Using these objectives as a framework, a detailed action plan has been drafted for Phase 2 of the Programme. Working Groups have been constituted for each of objectives 2-7 and their activity is overseen and directed by the NAPCOD Steering Committee. The Working Groups for Policy and Planning merged in January 1996 to promote joint consideration of these closely related areas.

2. Rationale & Scope of Consultancy

2.1 The Working Group for objective 7 refined its understanding of "frame conditions" and interpreted the objective to mean that the:

- Social, economic, legal and political environment — and policies — which affect natural resource use should be identified, and where possible improved.

2.2 After an initial exercise where members of the Working Group pooled their ideas about key elements of the policy framework, it was decided to hire a consultant to take the work forward.

Terms of Reference

2.3 In summary, the purpose of the consultancy was to investigate the existing policy framework with respect to its influence on the processes leading to desertification, and to suggest modifications that would enhance sustainable use of Namibia's natural resources.

Tasks

2.4 The tasks for the policy consultant were:

- to investigate the existing policy framework as it influences desertification (particularly any cross-sectoral or integrated effects of existing policy, or the lack of it).
- to document aspects of the existing policy framework that affect desertification, negatively or positively.
- to provide a synthesised overview of the existing policy framework and its influences on desertification.
- to elaborate on potential modifications and interventions to existing or planned policies that might reduce negative impacts and enhance positive impacts on desertification.
- to devise a procedure to evaluate the impacts of a modified policy framework on desertification in Namibia.

Methodology

2.5 The consultancy was steered by members of the Policy and Planning Working Group.

2.6 Two key instruments were used:

- review of existing and on-going research and documentation.
- interviews with those involved in policy formation, implementation and evaluation.

2.7 "Policy" was interpreted very broadly to cover the following dimensions:

- national, regional and local aspects
- laws, regulations, policies, unwritten customary practices
- immediate as well as ultimate factors
- positive as well as negative impacts

2.8 Working Group members have heavy workloads and frequent commitments outside Windhoek. This is a major constraint on the speed of progress of the Programme and needs to be addressed when considering future work in the policy area.

Outputs

2.9 A presentation was made by the consultant at the NAPCOD Planning Meeting (25-27 September 1995) giving an overview of progress at that time. Extensive speaking notes were circulated to all participants. Discussion and feedback were minimal as the main purpose of the meeting was to devise a process for NAPCOD field site selection.

2.10 A Preliminary Report was circulated to Working Group members in October 1995 and, later, to a few other interested individuals and organisations.

Scope

2.11 *It was clearly not within the remit of this consultancy to assess the exact extent of desertification or to precisely delineate its causes*; much work has been done and is on-going in these critical areas. In some situations — where costs of policy changes are high or benefits are low — uncertainty will demand that additional research is conducted before change is pursued, or that change is made gradually and its effects observed. On the other hand, many of the proposals in this Report are essential for sustainable resource management, almost regardless of their precise impact on the extent of desertification (for example, water pricing). In this sense, many of the recommendations are applicable to sound environmental and economic management rather than simply to desertification *per se*.

2.12 A parallel exercise addressing *planning* issues was undertaken by another consultant under the NAPCOD Programme. While policy and planning are closely linked (for example, land use planning), this Report generally avoids discussing institutional and organisational arrangements.

2.13 In addition to planning (objective 3), the policy framework is closely linked to research (objective 4): existing research should inform proposals for policy change, and proposed policy changes should be the subject of new research.

3. Structure of Report

3.1 The Report is divided into three main parts:

- Part I — Immediate Policy Factors
- Part II — Underlying Policy Factors
- Part III — Action Plan & Next Steps

3.2 Part I addresses proximate policy factors which have a more direct influence on desertification and which are easier to tackle in the short term. Part II considers ultimate policy factors where the impact is somewhat removed and change is only likely in the long term. In reality, policies do not fall neatly into two discrete categories but lie on a continuum. However, this is a helpful distinction for the purposes of presentation.

3.3 Part III considers how to prioritise and proceed with the many recommendations made in Parts I and II. It also looks at how to monitor progress and evaluate the extent to which policy changes have improved the situation.

3.4 A standard structure has been adopted in Parts I and II to assist analysis:

1. Existing and Planned Policy
2. Problem Statement [includes discussion of positive factors]
3. Possible Solutions
4. Recommendations

4. Guiding Principles

Overview

4.1 A number of guiding principles have been adopted throughout the analysis which underpin many of the recommendations. For the sake of transparency, these are explicitly stated here.

4.2 Much is being done within the existing framework of Government policies, and national and international constraints, to understand and reduce land degradation. Such efforts include information gathering, (bio-physical, socio-economic and adaptive on-farm) research, extension, training and education. However, these interventions will not succeed on their own. Radical changes in Government policy are needed to address the proximate and ultimate causes of desertification and to ensure sustainable resource utilisation.

4.3 It is important to see natural resources as economic resources (that is, scarce resources with value). From this perspective, many of the causes of desertification can be conceptualised as arising from market and policy failures. However, not all land degradation problems can be reduced to simple matters of economic calculus. There are conflicts between policy objectives which go beyond economics: social (equity) and political considerations will often override economic efficiency.

4.4 It is difficult enough for Government to address the market and policy failures which are proximate causes of desertification, but it is even harder to tackle ultimate causes such as poverty and population growth. However, tackling both is imperative for long-term success.

Natural resources as economic resources

4.5 Box 3 gives a breakdown of the various use and non-use values attributed to natural resources by economists.

4.6 A crucial principle running through this Report is that there is a close link between land degradation and the economic incentives provided by Government policies. To ensure the sustainable utilisation of natural resources and prevent desertification, natural resources must be seen as economic goods which generate a stream of income for their users. Adapting policies to modify economic incentives will change resource use. Policy reforms such as securing land tenure, removing subsidies to livestock production, and ensuring effective water pricing, will alter the costs and benefits of natural resource-based activities, thereby enhancing sustainable resource use and reducing land degradation.

4.7 Viewing natural resources as economic resources has a number of implications and implies that they should be allocated to their most highly-valued use. First, the price of natural resources should reflect their **opportunity cost** to promote optimal allocation and sustainable use. The opportunity cost is the value of a resource in its next best use. For example, the price of land in a prime tourism location should reflect the income that could be earned from the land if it were used as a lodge rather than for grazing. Second, the **market** should be used wherever possible to allocate natural resources through the pricing mechanism rather than rationing use through centralised allocation and law enforcement. Prices indicate the relative scarcity of natural resources and ensure that they are allocated to their most highly-valued use.

Box 3 Economic Values of Natural Resources

Economists divide the worth of natural resources into **use** and **non-use** values:

Use values

- *Direct* use values are derived from the immediate use of natural resources. Direct use values can be further subdivided into:
 - consumptive use values — for example, harvesting fuelwood, livestock, crops.
 - non-consumptive use values — for example, game viewing, hiking in the wilderness.
- *Indirect* use values are mediated and not directly derived. Game animals which browse and thereby help to inhibit bush encroachment deliver an indirect use value on a livestock farm.

Non-use values

- *Option* values are derived from the conservation of natural resources in order to retain the possibility of using those resources in future (this is particularly important in situations of uncertainty, irreversibility or risk aversity). In this sense, option values could also be thought of as future use values.
- *Existence* values are attributed to natural resources simply because they exist and not because any current or future use value might be derived from them by human beings. For example, people are prepared to contribute to the conservation of species and habitats from which they have no intention of deriving any use benefit.

While it is relatively straightforward to quantify use values, estimating the value of non-use values has proved to be extremely difficult because of both conceptual and empirical obstacles.

[Note: the value of natural resources is sometimes distinguished from *environmental* resources, with environmental resources used to designate the value of the system as a whole and natural resources its component parts (water, air, land, forests)].

Market failure

4.8 However, the fact that natural resources are often not, in practice, treated like other economic goods can help to explain why they are overused (degraded). "Market failure" can arise in a number of situations:

- It is very difficult or expensive to establish markets for some natural resources because they are **public goods** — nobody can be excluded from their consumption and hence it is impossible to charge for their use (for example, access to oshanas). This is the so-called "free-rider" problem.
- Markets do not function well without **property/user rights**. For many natural resources such rights are either absent or customary rights are being undermined.
- Market prices do not reflect benefits and costs which accrue to society at large rather than to the individual user; these are so-called positive and negative "**externalities**" (for example, reduced availability of water downstream on an ephemeral river as a result of upstream extraction). Wherever feasible, externalities need to be taken into account — "internalised" — often through taxes and subsidies.

- A particular type of inter-generational externality arises when natural resources are not used sustainably or their use is irreversible (for example, all non-renewable natural resources). Even well-functioning markets will not take into account the needs of future generations (option values — see Box 3).
- Some natural resources are most efficiently provided by a single supplier because of the massive capital costs involved in establishing infrastructure; these are so-called "**natural monopolies**" (for example, urban water supply).
- Market prices take no account of **equity** issues (ability to pay) — subsidies may well be justified for the provision of basic needs (for example, lifeline water supply; this can benefit the State — reduced health costs, increased output — as well as the individual and as such represents a positive externality).
- When there are high costs involved in establishing a market — and expected benefits are relatively low — there is a strong disincentive to reaching agreement. This is known as the problem of "**transaction costs**". For example, conservancies may well be more profitable — and environmentally sustainable — than ranches for game and livestock production but do not develop because of the effort involved in bringing many farmers together to manage resources collectively.
- Markets require competition to ensure efficient allocation, but many natural resources are in finite supply.

4.9 The appropriate response in each situation will depend on a number of factors. However, it should be clear that the market will not always allocate resources efficiently and thus Government will have to intervene. This is particularly true with regard to natural resources.

4.10 In theory, the price of natural resources should reflect their full economic (opportunity) cost. Very crudely, this is at least equal to the financial cost of providing the resource adjusted for externalities, including the cost of replacing the (renewable) resource or substituting for the (non-renewable) resource. In practice, all of these elements can be very difficult to quantify for conceptual and empirical reasons. Nonetheless, the Government would be going a long way in the right direction if it were simply to charge the financial cost for key resources (especially water).

Policy failure

4.11 The problem of so-called "policy failure" occurs when a policy designed to achieve one objective has an unintended, adverse impact on another objective. These failures can often be addressed by redesigning policy instruments to eliminate such negative impacts while continuing to target their original objective. If so, they are generally referred to as cases of policy failure.

4.12 There are many examples of policy instruments which undermine sustainable use of natural resources but which could be corrected while still achieving the original objective. The case of livestock subsidies for fodder during drought is a good example. The policy is principally intended to ensure that farmers have a viable, productive herd once the drought is over. However, the policy leads to degradation of rangeland because farmers fail to destock to levels which the land can support during drought. The policy could be redesigned to achieve its objective by introducing destocking and/or restocking incentives. It would then ensure both that farmers have a viable herd when the drought ends and that livestock numbers efficiently "track" food availability and do not exert undue pressure on the range.

Subsidies

4.13 Government should generally avoid using direct **subsidies** — except where correcting for market failures — because they often promote unsustainable use of a resource and distort relative prices. For example, subsidising water use can lead to the development of inappropriate, water-intensive industries. Even when subsidies are introduced for sound economic reasons, care must be taken to ensure that they do not result in unsustainable use of a resource. Although, for example, the benefit of improved community health can justify subsidising rural water supply (for which some communities cannot afford to pay), efforts need to be made to ensure that this does not encourage excessive or wasteful consumption.

4.14 In general, rather than providing direct subsidies, Government should focus energies on creating an **enabling environment** for development (in agriculture, for example, improved rural infrastructure, appropriate extension and research).

Policy conflict

4.15 It is not always possible to redesign policies to harmonise different objectives. Sometimes policies are simply in conflict with one another and a decision needs to be made about their relative priority. Economists often fail to appreciate such conflicts by ignoring the fact that there are sometimes non-economic considerations at work.

4.16 One good example is large-scale agricultural irrigation. This is subsidised through very low unit costs, presumably in order to promote the *political* objective of food self sufficiency (and the political appeal of "greening the desert"). While it may be possible to convince policy makers that this represents a poor allocation of water in economic terms, they may decide to pursue the policy for other ends.

4.17 Another good example is the resettlement programme. Because of pressure to resettle large numbers of landless farmers for *social* (equity) reasons, very many people and livestock are being settled on Government-owned land in commercial areas. This appears to be causing degradation as rotational management systems — appropriate on commercial farms where mobility is relatively controlled — come under pressure from livestock numbers and all areas are permanently grazed. Nonetheless, it will be extremely difficult to change this policy because of the (legitimate) demands of the landless who will — at least in the short run — almost certainly be worse off under any alternative arrangements.

Decentralised user rights, decision making and planning

4.18 Allocation of user rights, decision making and planning of natural resources should be decentralised to the lowest appropriate level, where those who bear the costs of — and gain the benefits from — resources, have concomitant rights and responsibilities. Communities which do not have the right to control the resources in their area have little incentive to plan for their sustainable use.

4.19 This "subsidiarity" approach needs to go hand-in-hand with viewing natural resources as economic resources: one without the other will have little impact.

Incremental change

4.20 Policy changes should generally be incremental and phased. This is desirable both to cushion the effects during a transitional period — for example, of economic water pricing — and because the effects of change are sometimes uncertain or difficult to reverse.

5. Strategy

5.1 Different strategies will be required to tackle desertification in the short and long term. The policy framework has an important role to play in both.

5.2 In the short term, the threat and pace of desertification can be ameliorated by:

- increasing the **productivity** with which natural resources are used (including better resource management and extension of non-agricultural land uses, particularly wildlife and community based tourism).
- increasing the **supply** of natural resources available.
- improving **demand management** (partly through economic pricing).

5.3 In the medium to long term, however, more radical change is also required. The following elements will all be important:

- reducing **poverty**, largely through the creation of sustainable employment opportunities.
- **diversifying** income and employment opportunities away from agriculture and other direct land use, into the manufacturing and service sectors of the economy, and preferably towards those industries which make relatively small demands on the country's natural resource inputs.
- significantly reducing the **population growth rate** to a level where those left on the land can make a reasonable living from it, and those working in urban areas have a decent chance of finding employment.

**PART I —
IMMEDIATE POLICY FACTORS**

Chapter 1 — Land & Natural Resource Management

This section covers policy on land, overall natural resource management concerns (including wildlife), and the related issue of resettlement.

1. Existing and Planned Policy

Overall

1.1 There is currently no comprehensive Government policy document on land allocation or natural resource management. The 1991 National Conference on Land Reform and the Land Question made a number of recommendations but these have not been formally accepted as Government policy. The Ministry of Lands, Resettlement and Rehabilitation (MLRR) recognises that this is a problem and has announced that it wishes to undertake a consultative National Land Policy formulation process (presumably along the lines of the recent National Agricultural Policy process). This Policy will set the framework for the Agriculture (Communal) Land Reform Bill and may require revisions to the Agriculture (Commercial) Land Reform Act.

1.2 NDP1 sets the following primary objectives for the Land sector:

- to provide adequate access to land for landless people.
- to promote, facilitate and coordinate access to, and control over, land at all levels following integrated land-use planning techniques involving all sectors so as to support long-term sustainable development for all Namibians.

1.3 The principle policies to help achieve these goals, as set out in NDP1, are:

- land reform and improved land administration to reduce unjust land allocation.
- creation of an integrated land-use planning capacity which coordinates land-use planning at all levels.
- improved access to land by regulating and regularising land tenure in the communal areas.
- introduction of land-use planning in all communal areas and unproclaimed State land before new allocations are made.

Commercial land

1.4 Land in the so-called "commercial" areas is owned by individuals under freehold title. Commercial land:

- covers 44% of the country (362,000 km²).
- comprises 6,300 farms belonging to 4,200 farmers (mainly white).
- was expropriated unevenly (Nama, Herero and San groups in central and southern areas were greatly affected; Ovambo and other northern areas relatively unaffected).

Agricultural (Commercial) Land Reform Act

1.5 The principal aim of the Agricultural (Commercial) Land Reform Act (No. 53 of 1995) is for the State to acquire commercial farmland for the purposes of resettlement (to accommodate the land-hungry, especially the historically disadvantaged). According to NDP1, some N\$ 100 million — N\$ 20 million per year — will be set aside over the Plan period to purchase agricultural land.

1.6 Currently, only Part I of the Act — establishing the Land Reform Advisory Commission (LRAC) — is in force.

1.7 The principle of "willing seller, willing buyer" (adopted at the 1991 National Conference on Land Reform) has been diluted by the Act. Land continues to be held under freehold title but the Government now has a preferential right of purchase (first refusal) should the land be offered for sale. The Act permits the compulsory acquisition of commercial agricultural land by the State where:

- it is underutilised.
- it is held in excessive amounts (more than two "economic units").
- it has been acquired by a foreign national after the promulgation of the Act for a period exceeding ten years.

1.8 The Act provides for compensation at prevailing market rates.

1.9 The Act makes provision both for the subdivision of land into so-called allotments and for its alienation (sale). It also enables the Minister to set a land tax.

1.10 The Act established the LRAC to counsel the Minister in the implementation of the Act. The LRAC has been appointed but the interpretation of concepts such as "underutilised" and "economic unit" has yet to be resolved. In any case, there is sufficient land currently coming on to the market for the State to purchase and so these powers are unlikely to be used in the near future [Note: assuming a rough average price of N\$ 200 per hectare, each year N\$ 20 million will purchase approximately 100,000 hectares, or 10 commercial farms of 10,000 hectares].

Communal land

1.11 All so-called "communal" land is owned by the State. Communal land:

- covers 41% of the country (335,400 km²).
- is home to 138,000 households.

1.12 At Independence, ownership of all land set aside for the exclusive use of the various "native" population groups was vested by the Constitution in the Government of Namibia. Likewise, the Constitution transferred the powers, duties and functions of the SWA Administrator-General in relation to this land to the Namibian President.

1.13 The legal (*de jure*) status of land allocation in communal areas in the absence of the Communal Land Bill is somewhat confused (in particular with respect to whether traditional authorities or district magistrates have the authority to make allotments and demarcate them with fences). One post-Independence legal opinion to the MLRR found both the allocation (and fencing) of land by traditional authorities and payment for it to be extra-statutory (if not simply illegal) under prevailing legislation and regulations^[116].

1.14 However, the *de facto* situation is one where land allocation within a community on the basis of customary law is being undermined both by fencing of rangelands — sometimes in return for payment to a headman or chief — and conflicts between communities over access to scarce natural resources.

Agricultural (Communal) Land Reform Bill

1.15 An internal draft has been drawn up but not widely circulated outside the Ministry. The Bill is unlikely to be passed before the approval of the Council of Traditional Leaders Bill since there is a Constitutional requirement for this Council to be consulted on land control and utilization (Article 102(5)). In addition, it would seem premature to pass the Agricultural (Communal) Land Reform Bill before the National Land Policy has been approved. A commitment in NDP1 to introduce the Bill in Parliament before the end of 1995 was not realised.

1.16 The Bill — as currently conceived — will establish Regional Land Boards as the primary agent to implement its provisions. The Regional Boards will be based on existing political regions but be separate from the Regional Council structure. While some members may be elected, it appears most will be appointed centrally by the Minister of Lands from regional, local and community levels as well as the MLRR itself (and some other relevant Ministries such as MAWRD and MET).

1.17 Communities which have traditionally occupied land will continue to do so on the basis of customary tenure; vacant communal land will be allocated by Land Boards according to nationally-specified criteria. Both land held under customary tenure and newly-allocated land might be made available for lease. When vacant land is being alienated from the State, the Minister might set aside some parts for common grazing.

1.18 The issue of fencing of rangelands will be addressed in the Bill, either legitimising the status quo or obliging wealthy communal farmers to remove fences.

1.19 A natural resource user fee is being considered for communal land.

Traditional Authorities Act

1.20 The recently promulgated Traditional Authorities Act (No. 175 of 1995) is silent on the role of traditional leaders in allocating land within their communities. However, the Act clearly invalidates any customary law which is in conflict with either the Constitution or any national statutory law (Section 11.(1)(b)). The role to be played by traditional leaders will thus have to be addressed in the Communal Land and Council of Traditional Leaders Bills.

Wildlife, tourism & conservancies

1.21 Namibia's tourism policy — formalised in the 1994 *White Paper on Tourism* — recognises that the fragile nature of the country's natural resources means that Namibia should pursue a policy of high-value added, low-volume tourism. This is to be applauded from a desertification viewpoint because it means that demands on natural resources will be low for any given level of desired income (high "value-added" per unit of natural resource input). However, even low-volume tourism development will need to be sensitive to environmental constraints, particularly in certain fragile areas which have some of the greatest potential for development.

1.22 In March 1995 Cabinet passed a policy document entitled *Wildlife Management, Utilisation and Tourism in Communal Areas*. The policy provides for the extension of user rights over wildlife — and other natural resources — to a legally-constituted body with clear (but unfenced) boundaries on communal land, to be known as a conservancy.

1.23 The Nature Conservation Ordinance (No. 4 of 1975) has been amended to give those on communal land similar rights to commercial operators over wildlife utilisation once incorporated as a conservancy (passed by National Assembly, March 1996). The rationale is to allow residents of communal lands similar rights to use wildlife (and other natural resources) as those granted to commercial farmers in 1967 which have helped significantly to increase game numbers on commercial farmland and to raise wildlife-based incomes (both consumptive, and non-consumptive photo-tourism). A similar success on communal lands will promote the twin objectives of sustainably raising living standards for the rural poor and conserving wildlife.

1.24 The formation of a conservancy entails obligations as well as rights. In particular, the conservancy will have to demonstrate that it is capable of sound wildlife management and sustainable utilisation in order to gain wildlife-use rights.

1.25 As in commercial areas, wildlife utilisation in communal areas will usually be a complementary activity to agricultural land use (especially cattle farming), partly because this is the best way to maximise income and partly because it will not be possible to exclude cattle from conservancies.

Resettlement

1.26 There is no single, overall resettlement policy document. However, according to NDP1, resettlement policy prioritises the following groups:

- returnees who have no land and no job.
- demobilized ex-servicemen and their dependants who have no land and no job.
- small scale livestock farmers with a maximum of 15 head of cattle and 90 head of small stock.

1.27 Since Independence, Government has resettled some 16,000 people on twelve or so projects. Government hopes to resettle a further 80,000 during the next five years [*New Era*, 28/9/95]. There are currently some 10,000 people on waiting lists. Unit costs of resettlement are high, partly because in addition to land, Government provides social infrastructure (housing, water, electricity, roads, schools and clinics), marketing facilities, inputs and training. In high rainfall areas, settlers are typically involved in subsistence crop production working individual plots of 4-7 hectares. Income generating activities are encouraged to augment and diversify crop production. In drier areas, livestock predominates.

1.28 It is Government policy that resettlement projects should be self-sustaining after a 3-5 year period.

1.29 The Herero Repatriation Programme is intended to resettle some 5,000 households and 50,000 cattle from Botswana by the year 2000 in the Gam area. This is a highly ambitious project in a marginal area. Repatriation was postponed during 1995/96 due to cattle lung sickness.

1.30 The LRAC is scheduled to meet soon to review a draft policy document on resettlement and to define selection criteria for commercial farmland purchased under the Commercial Land Reform Act. The criteria selected will largely define how the land is to be used and hence the potential for degradation.

2. Problem Statement

Overall

2.1 The absence of an *overall* (communal and commercial) land policy framework is a serious constraint on planning and development throughout the country and thereby inadvertently encourages short-term overuse of resources and desertification. It would appear that the problem is more severe in communal than commercial areas.

2.2 Uncertainty about the likely extent of land reform can encourage commercial farmers to take an unduly short-term view towards their resources. A clearer statement by Government of the expected extent and nature of land reform could help to reassure commercial farmers and encourage them to use their grazing more sustainably.

2.3 The failure to explicitly address *all* uses of land in the land reform process — rather than just agricultural land use — has downplayed the importance of non-agricultural land use, especially in communal areas. In many of the areas vulnerable to desertification, wildlife-related activities offer a supplementary source of income which can be more sustainable than traditional agriculture.

2.4 Resettlement is treated as if it were a separate issue rather than an integral part of the land reform process. It is impossible to decide who, where and how to resettle without having an overall strategy for both commercial and communal areas.

Commercial land

Overutilisation

2.5 A number of factors may encourage commercial farmers to overutilise their land and cause degradation:

- i) **Uncertainty about land reform** leading to short-term profit maximisation. Although it appears unlikely that any commercial farmer will suffer compulsory purchase in the short to medium term — because more land is coming onto the market than the State can afford to purchase — many farmers still feel uncertain about the future. They particularly want to avoid having their land classified as "under-utilised" and therefore feel under pressure to maintain stocking rates.
- ii) **Low profitability** leading to overstocking. Even though farmers know that this will create long-term problems, they feel they have no alternative in the short-term.
- iii) **Drought relief subsidies** which encourage farmers not to destock.

2.6 There is some evidence that Government purchase of commercial farmland has increased land prices (although this may just be for those farms purchased by Government rather than in the market as a whole). To the extent that this means that farmers have to increase output to cover increased land costs, it could encourage overstocking.

2.7 On the positive side, the granting of user rights over wildlife in 1967 has increased and diversified farm incomes and wildlife numbers while promoting a sector which generally puts less pressure on the environment. Wildlife is generally more "environmentally friendly" than livestock — causing less overgrazing and land degradation — because it has evolved with the indigenous vegetation, has a diversified feeding range (browsers as well as grazers), is much more mobile and less dependent on water points, and is more drought resistant. However, although more efficient and adapted, wildlife can also be overstocked and cause degradation.

Bush encroachment

2.8 Bush encroachment is partly caused by overstocking, but other factors such as fire prevention, reduction in the number of browsers and long-term ecological cycles are also thought to play an important role.

2.9 The financial cost of lost cattle production as a result of bush encroachment — and hence reduced grazing and output — on farms in the northern commercial areas has been conservatively estimated at around N\$ 100 million per year⁽⁹¹⁾. The estimate assumes that 10 million hectares have been encroached reducing available grazing and output by 30% compared with 40-50 years ago. Production costs are assumed to represent 50% of sale value. The valuation, of course, will fluctuate with the cattle price.

Communal land

Overutilisation

2.10 Overutilisation and sub-optimal allocation of land is caused by the following principal factors:

- i) **Insecure tenure** on communal lands is the major desertification-related problem in this sector. Without security of tenure, the incentive and opportunity to manage renewable natural resources (rangeland, forestry, wildlife, wetlands) in a sustainable manner is significantly reduced. Communities are unable to seek redress against individuals/communities who infringe on their traditional lands.
- ii) **Sedentarisation** with the expansion of permanent water points (and reduced options for transhumance as a result of private fencing).
- iii) Increasing **pressure** on communal lands caused by:
 - **private fencing** of grazing areas by wealthy farmers for their sole use, thereby reducing the amount of pasturage available to the rest of the community which in turn comes under increasing pressure and suffers overgrazing; in addition, since many of these fenced-off areas are seasonal pastures, the mobility of cattle during times of drought is reduced and vulnerability to drought significantly increased.
 - **population growth** exceeding the increase in the quantity and quality of available resources (thereby encouraging inappropriate land husbandry/cropping practices).
- iv) **Livestock** and limited household crop production being considered the only possible land use (no rights to wildlife, trees).

2.11 The overall extent of fencing and its impact on transhumance (seasonal migrations for pasture) patterns is not known and should be researched. The issue is complicated by the fact that many fences appear to be partial: rather than fencing off an entire area, one side is often left open (perhaps to avoid confrontation and in readiness for a time when fencing is permitted). However, this can have the same affect as a complete fence if water is not available along the new, enforced migration route.

2.12 A discussion of estimated costs of land degradation in the Northern Communal Areas is shown in Box 4.

Box 4 What is the Cost of Land Degradation in the Northern Communal Areas?

Long-term land degradation (desertification) has been estimated to cost households in the northern communal areas (NCAs) around N\$ 80 million per year in lost income (fewer — or less accessible — cattle and goats because of the increased impact of drought with desertification) and increased expenditure (for fuelwood, fencing, substitutes for reduced crop and milk output)^[9]. One important consideration to bear in mind here is that cattle have other uses (draught power, manure to fertilise crops, milk, store of wealth) which are not typical of commercial cattle ranching.

There are some methodological problems with the approach adopted in this assessment with its focus on households rather than aggregate output (this approach was itself necessitated by the lack of such aggregate data). The most obvious difficulty is that while available resources *per household* may have fallen, *total* output may have risen or stayed constant.

Some of the costs which have been measured result from increasing *competition for resources* from a rapidly growing population rather than land degradation (and not because population growth leads to desertification). The problem is not simply one of reduced supply — which is undoubtedly happening — but also of increasing demand. Even if there had been no land degradation — and the supply of natural resources had remained constant — households would have had to bear additional costs. For example, part of the cost of replacing lost fuelwood and fencing reflects increasing demand from the growing population.

The reduction in livestock and milk output partly arises because of *changing land use*. With an increasing population, more land around villages is used for crop production with the consequence that the remaining rangeland is less accessible, becomes degraded and households have fewer cattle and less milk output. While the *cost* of degradation has been taken into account, no attempt was made to value the *benefit* of increased crop production.

Nonetheless, even though part of these costs should be attributed to population growth rather than desertification, policy makers still have to find solutions.

Resettlement

Programmatic approach

2.13 The role of resettlement policy needs to be reconsidered and become more focused. This in turn is dependent on a clear decision being made on the nature of communal land reform.

2.14 In theory, resettlement should *alleviate desertification* by moving poor farmers to commercial areas and alleviating pressure on communal land. However, in practice, resettlement is moving very slowly. The greatest problem with the resettlement programme as regards desertification is that a small budget, high unit costs and continued dependency (most show little sign of being self-sustaining in the 3-5 year period set by Government), all mean that the Government can move fewer people to resettled lands, thereby maintaining pressure on resources in the communal areas from which resettlers come.

2.15 In addition, the resettlement programmes risk *causing desertification* because its component projects appear to be poorly designed and managed and do not respect the constraints of the physical environment in which they operate. With resettlement of stock farmers on commercial farmland, land has both been overstocked and effectively sub-divided ("parcelled") so that previous rotational grazing practices have been replaced by permanent grazing. This will almost certainly lead to land degradation as cattle are unable to move to find grazing in times of shortage.

2.16 There has been little success encouraging large communal farmers to move to commercial areas and thereby reduce pressure on the land. The Affirmative Action Loans Scheme has been extended to fewer than 100 farmers (only N\$ 34 million granted in four years since March 1992) and there is evidence that some of these farmers continue to operate in communal areas, despite provisions to the contrary. The Government has only committed itself to moving an additional 100 large communal farmers over the entire NDP1 period¹⁴³.

2.17 The Herero Repatriation Programme may have particular problems. The lack of water in the Gam resettlement area means that people are looking to move north into former Bushmanland. This will increase pressure in a fragile ecosystem which is unlikely to be able to cope with all of the 50,000 additional cattle.

Commercial Land Reform Act

2.18 From the perspective of desertification, it is not entirely clear whether *excessive* land ownership and *underutilised* land — defined as targets for resettlement in the Agricultural (Commercial) Land Reform Act — have a negative or a positive impact. However, in increasingly marginal commercial areas affected by bush encroachment, multiple-farm ownership may in fact enable a more extensive system of rangeland management to be followed and encourage sustainable use. Also, land left fallow (especially during drought) — and hence "underutilised" — by part-time commercial farmers with alternative sources of income, will contribute to range recovery (at the expense of lost output in the short-term). There may, then, be a conflict between sustainable use and resettlement programmes in commercial areas. The answer will depend on the criteria used for selecting farmers, and how well their resettlement is managed.

3. Possible Solutions

Overall

3.1 The formation of a National Land Policy is an essential prerequisite for providing a coherent framework for land reform in both communal and commercial areas and for driving resettlement policy. Without a clear resolution of land tenure issues desertification will increase. Resettlement policy contained in the existing Commercial Land Reform Act will have to be reassessed in light of the overall resettlement policy.

3.2 Equity and environmental issues — in addition to efficiency — should also be important considerations in determining the National Land Policy. However, it should not simply be assumed that commercial production is more efficient than subsistence production or that it causes less land degradation (witness bush encroachment on commercial farms). Subsistence communal farmers use cattle for a number of purposes (draught power, milk, manure), and not simply for sale, and these benefits need to be recognised and quantified, as do the benefits of increased mobility under common property systems. Economic analysis of livestock use in other southern African countries shows much higher returns per hectare to communal systems than commercial ones^[96]. Research in Namibia is thus essential to guide policy makers in determining the direction of the land reform process. Any research programme to guide land reform should include cost-benefit comparisons of:

- **communal** (subsistence) and **commercial** (slaughter) systems.
- different **tenure** arrangements — freehold, leasehold, communal (including consideration of the *size* of the rangeland).
- different **land use** options — livestock, mixed livestock/cropping, tourism.
- different tenure and land use options **over time**.

3.3 The National Land Policy and up-coming Communal Land Reform Bill should not be restricted to consideration of agricultural land use. A holistic approach is required to allow communities to plan for sustainable use of *all* resources in their area. For example, it would be meaningless to give exclusive user rights to a community over rangeland but allow open access to water points for livestock. This means that the Communal Land Bill should be an "umbrella" bill setting out the rights and responsibilities of communities to all natural resources on their land, with satellite legislation in each sector where needed.

3.4 Such an integrated approach will give communities a clear indication of their rights over resources — and reduce the confusion caused by different Ministries pursuing different paths — in turn reinforcing sustainable use. While there will clearly be difficulties with resources shared *between* communities — wildlife is an obvious example — it is important that communities form the basic "building blocks" for natural resource management.

Commercial land

Overutilisation

3.5 Recalling the factors set out as causing degradation (see ¶2.5), the continuing uncertainty felt by commercial farmers would be best dealt with by speeding up the National Land Policy formulation process.

3.6 The long-term decline in profitability is a much more difficult issue. Commercial farmers should be encouraged, where possible, to switch to other land uses (see below). The alternative — increased subsidies — is not attractive, either economically or environmentally.

3.7 Drought relief subsidies are being reconsidered (see Chapter 3 — Agriculture).

Bush encroachment

3.8 The cost of dealing with existing bush encroachment on commercial farmland is greater, in most cases, than the value of the land and thus not financially viable for farmers^[91]. The one exception appears to be charcoal production *for export* using labour-intensive techniques. This approach has not yet been widely adopted. One explanation is that farmers face significant management problems having large numbers of people clearing bush on the land for an extended period.

3.9 The Agricultural Bank offers very low (4%) interest loans on *herbicide* purchase to tackle bush encroachment. Given that some farmers are reluctant to use chemicals and, in any case, it may not be the best option, this facility should be extended to other anti-encroachment techniques (this is being considered by the ABN).

3.10 Clearing bush encroached land may be *economically* viable — benefits to society as a whole greater than costs — if:

- it is used to produce charcoal for *domestic use* in areas at risk of severe deforestation.
- the land cleared is used for *resettlement*.
(the Government has recently drafted a proposal to combine labour-intensive clearing with resettlement, precisely to combat desertification^[46]).

3.11 Further research is required here to see if Government subsidies can be justified. The case of charcoal production for domestic use appears especially problematic. It will not be easy to develop a mechanism to pass on the subsidy to consumers and there are likely to be significant cultural barriers to introducing charcoal as a fuelwood substitute. Clearing bush-encroached land for resettlement has great intuitive appeal but could prove to be very costly if run as a Government programme.

3.12 Given these problems, a more sustainable strategy may be to try to:

- prevent *further* encroachment through enforcement of carrying capacities (see Chapter 3 — Agriculture).
- encourage wildlife use on land which is already badly encroached (both for consumptive and photo-tourism use), where possible.

3.13 Photo-tourism probably puts less pressure on the land than mixed cattle/consumptive game use — which in turn is probably better than a simple cattle system. However, more research is required on the rates of return of game relative to livestock, including considerations of environmental sustainability.

3.14 If returns are similar but livestock production causes more degradation, Government should consider ways of encouraging the switch to wildlife, particularly to conservancies which enjoy economies of scale over ranches and allow more extensive range management. The enabling environment could be improved through increased technical advice and support from Government (MET) and better marketing of venison by the private sector. Perhaps assistance could be targeted to those areas most at risk of desertification. The potential for photo-tourism is, of course, not uniform across the country and will only be an appropriate strategy in certain areas.

3.15 Direct subsidies for game production — at least in commercial areas — should be avoided. In any case, the likely fall in cattle prices available to Namibian producers (with the decline in protection of the South African and EU markets), the increase in tourism and likely expansion of game meat markets, all indicate that a gradual shift towards game will take place in commercial areas.

Communal land

3.16 The four factors identified (see ¶2.10) as causing overutilisation and sub-optimal allocation of land are:

- i) insecure tenure.
- ii) sedentarisation.
- iii) increasing pressure on communal lands caused by:
 - private fencing.
 - population growth.
- iv) livestock/crops being considered the only possible land use.

3.17 These are addressed in turn after an introduction to the options available for land reform (which focus mainly on livestock land-use).

Strategic options

3.18 A number of land reform options were considered for the 1991 Land Reform Conference (see Table 3). Each of the options — which are essentially those still relevant today — were crudely graded on the basis of equity and efficiency. An additional column has been added to indicate their likely desertification impact. The equity and degradation impacts may be different when selecting several items from the menu to form a land reform package.

3.19 A choice needs to be made between two broad strategies for communal land, incorporating elements of options A-D in Table 3 and considered in conjunction with resettlement:

- a) **removing fences, expanding communal areas through the purchase of adjacent commercial farmland — "communalising" communal land**
[resettling large communal farmers on commercial farmland]
- b) **accepting fences, creating ranch-size semi-commercial units for a few on communal land — "commercialising" communal land**
[resettling the subsequent landless in commercial areas]

Table 3 Land Reform Options: Costs & Benefits

Description	N\$ 000 per h/hold (1991)	Equity	Efficiency	Likely Degradation Impact	
Communal Areas					
A	Communal area expansion ¹ :				
	i) without housing	11-13	High	Low	Low/Medium
	ii) with housing	29-31	High	Low	Low/Medium
B	Communal area commercial development ¹ :				
	i) individual holding	444-478	Low	Medium	Medium
	ii) 8 participants	56-61	Medium	Medium	Medium/High
C	Community based wildlife utilisation	n/a	High	High ⁵	Low
Commercial Areas					
D	Commercial farm purchase for communal area expansion	19-63 ²	High	Low	Low/Medium
E	Settlement of stock farmers on commercial farms	125 ³	Low	Low	Medium/High
F	Settlement of small (crop) farmers and landless on commercial farms	39	High	Medium	Medium/High
G	Purchase of commercial farms by communal area farmers	4	Low	Medium	Low/Medium

- Notes:
- ¹ 5,000 hectare unit
 - ² assuming 8 households per 5,000 hectares
 - ³ 1,250 hectare cattle unit (minimum viable size)
 - ⁴ depends on Government's subsidy policy, but is likely to be high
 - ⁵ because it allows complementary game and cattle production

Source: adapted from *Economic Analysis of Land Reform Options in Namibia*, table 15, NEPRU Working Paper No. 41, July 1994 [produced for 1991 Land Reform Conference]

3.20 Strategy a) recognises the value of increased mobility and non-slaughter uses in disequilibrium, subsistence systems, while strategy b) focuses on extending cash income through animal slaughter. From a land degradation perspective, the perceived benefit of commercialisation is a lowering of livestock levels from "ecological" to "economic" carrying capacity in order to maximise offtake. The costs of commercialisation, however, are considerable and include the loss of:

- **land** for the poor majority outside ranches which increases pressure on remaining common property resources.
- **mobility** — because ranches are not accessible to other users — which reduces the carrying capacity of the range in disequilibrium systems and promotes degradation if livestock levels do not adjust.
- **non-slaughter benefits** within ranches which can reduce total land productivity and the number of people supported, increasing pressure on resources outside ranches.

3.21 More research (see ¶3.2) is required into the relative merits of the systems (for example, the SARDEP programme would appear to resemble option a) while NOLIDEP represents option b), and much could be learnt from a comparative analysis of these programmes).

Tenure

i) Criteria

3.22 Any land reform package in the communal areas needs to provide **secure tenure** embracing the following criteria to promote sustainable use and prevent land degradation:

- **exclusive** to community — with other communities having access through purchase, for example, of pasture, or by mutual agreement.
- **comprehensive** (holistic) — *all* natural resources on the land should be covered (water, grazing, trees, crops, wildlife).
- **enforceable** — communities must be able to call on the State (Land Boards, police, courts) to ensure protection of their rights.
- **decentralised** — to allow local institutions to allocate resources *within* any community, with Regional Land Boards to decide demarcation disputes *between* communities.
- **appropriate size** — for rangelands, the area must be large enough for significant transhumance, but small enough to enforce exclusive rights.
- **mobility** — livestock have to be able to move to emergency grazing in times of extreme stress.
- **flexible** — there is a wide diversity of environments and natural resources, land management systems and practices within Namibia, all of which need to be accommodated.
- **equitable** — poverty is a major cause of desertification: simply entrenching the status quo will entrench poverty and desertification.
- **gender neutral** — women must be assured equal rights and access.
- **feasible** — it is not possible simply to legislate against wealthy communal farmers: incentives in communal and commercial areas have to be brought into line.

3.23 There will, of course, be trade-offs between some of these criteria; for example, between enforceability and size for rangelands and between equity and feasibility.

3.24 The size of the appropriate unit may vary for different resources. Tree products may be best managed by the household (or groups of households), rangeland by the larger community, and wildlife by several communities. These differences need to be accommodated without establishing multiple and unmanageable institutional layers.

3.25 The tenure regime should be determined by the nature of the farming system. Extensive, subsistence regimes require maximum mobility and large cattle numbers while intensive, commercial ones need less mobility and smaller herds. *Which of these regimes does more damage to the environment is not clear, but imposing an intensive system on areas with high variability in rainfall and/or large numbers of subsistence farmers is unwise.*

3.26 The case for *private* ownership/user rights of rangeland (freehold, leasehold) in an extensive, disequilibrium range system has yet to be proven — particularly from a land degradation perspective because of the pressure placed on the remaining open access land. It is the assumption of this Report that communities are best placed to manage resources in extensive systems. The size of a community will clearly vary and depends on self-definition, but in principle a community will cover an area where in most years it can meet its grazing needs from within its own borders through seasonal (but not inter-annual) movements.

3.27 The ability of communities to impose limits on resource use within the community is a central concern from a degradation perspective. If they cannot control numbers of trees harvested or of livestock held, then private tenure may ultimately lead to less degradation. Communities will also need to be able to negotiate access rights with neighbours for grazing in times of stress.

3.28 It may be politically impossible to remove private fences which have been erected. If this is the case, private farmers should be charged a rent payable to the community *at least* at a level commensurate with rent in commercial areas (and much higher than the equivalent natural resource user fee — see ¶3.40 onwards).

3.29 The issue of community fences is difficult. However, it is almost certainly better to begin by negotiating borders with neighbouring communities, and the relief on the system brought about by the removal of private fences would make this easier.

3.30 Uncertainty about returns to different tenure arrangements heightens the need for research (see ¶3.2).

ii) Land management institutions (State vs. traditional)

3.31 There is a tendency in developing countries — and Namibia is no exception — for modern, statist concepts and structures to vie with customary, traditional ones. This is manifest in debates over appropriate local institutions for natural resource management. As part of establishing policy and legislation for natural resource use in communal areas, there is a need to assign institutional responsibilities for particular functions. The allocation of these responsibilities could have serious implications for land degradation.

3.32 The key functions which need to be assigned to institutions include:

- allocation of rights *within* a community.
- allocation of rights *between* communities (boundaries, shared resources).
- arbitration of disputes within and between communities.
- assessment, collection and spending of natural resource user fees (see below).

3.33 It has been proposed that Regional Land Boards perform most of these functions, with the key exception of allocating rights within communities where there remains much uncertainty [local institutions will be more than mere *administrators* of policy determined at national/regional level, regardless of what legislation might say]. A range of community institutions could perform this function, covering the spectrum from customary to civil bodies:

- Traditional Authorities.
- Community Land Trusts/Associations (along the lines of the MET conservancy principle).
- Village Development Committees (proposed by DoWA, MRLGH; presumably formally elected and part of the State).

3.34 Traditional authorities have the distinct advantage of being widespread and already in existence. However, many are discredited and others would protect vested interests against reform. While it may ultimately be desirable to move towards an elected tier of government at the local level, the cost may be prohibitive. If unelected institutions are used, they should be given much less autonomy.

3.35 However this debate is resolved, there will be a need for a major capacity building effort.

3.36 There does not seem to be a very strong case for establishing Regional Land Use and Environment Boards as well as Regional Land Boards (cost, potential confusion and conflict over roles). The relationship between Regional Councils and Regional Land Boards also needs to be more clearly defined. Current thinking appears to have strong centralising tendencies.

Sedentarisation

3.37 Sedentarisation is partly a consequence of reduced mobility caused by private fencing, and as such requires these fences to be removed. However, sedentarisation is in large part caused by siting water points in areas once used for seasonal grazing. Any solution to this problem requires better planning of water provision to ensure seasonal and human-only use in certain areas (see Chapter 2 — Water).

Pressure on land

3.38 Increased pressure on communal land caused by private fencing and population growth can, to some extent, be tackled by opening up un- and under-utilised land.

3.39 However, there appears to be some confusion about the amount of additional — mainly grazing — land which could be opened up in the communal areas (option A). Table 4 shows the amount of un- and under-utilised land in the communal areas which might become productive. Of the 9 million hectares estimated to be available by MAWRD, only one third is probably suitable for settlement, since at least 2 million hectares are already being used for seasonal grazing, and the cost of providing water to another 4 million hectares would be prohibitive.

Table 4 Estimates of Un/Under-Utilised Land in Communal Areas

million hectares				
<i>Former region</i>	Total Area	Un/under-utilised:		Suitable for settlement NEPRU estimate
		MAWRD estimate	NEPRU estimate	
Ovambo	5.6	3.2	2.2	1.2
Kavango	4.8	2.0	1.7	1.7
Hereroland	6.0	2.7	2.0	0
Bushmanland	1.8	1.0	1.0	0
Total	18.2	8.9	6.9	2.9

Note: excludes Kaokoland and Damaraland because of ecological fragility

Source: *Economic Analysis of Land Reform Options in Namibia*, table 1, NEPRU Working Paper No. 41, July 1994 [produced for 1991 Land Reform Conference]

3.40 Another possible way to reduce pressure on communal land is through the introduction of a natural resource user fee. While there is a cost attached to the use of land in commercial areas (loan repayment or imputed rent for owners), there is none on communal land. With lack of tenure and increasing competition for land, this encourages overuse and promotes degradation. In addition, it is extremely inequitable as those who make a large claim on natural resources in communal areas do not compensate their neighbours for lost opportunities.

3.41 A natural resource user fee could serve a number of purposes:

- reduce overstocking and degradation by imposing a cost on use.
- encourage communities to manage resources sustainably (because the resources would become a source of income).
- redistribute resources from richer to poorer communal area residents through spending on community development.
- provide an income base for local development.
- help to level the playing field between production costs in commercial and communal areas for large livestock owners — thereby encouraging large communal farmers to relocate to commercial farms (perhaps with assistance of a reformed resettlement programme).

3.42 The fee should be proportionate to the amount of use (usually number of livestock), but this will be very difficult to implement. It would achieve its objectives more easily if it were heavily progressive (with exemptions for lowest users). Otherwise, the fee is unlikely to have a substantial effect on reducing the number of livestock held by large communal farmers.

3.43 To provide these benefits it would be best for the fee to be collected and managed at the community level. Allocating these functions to the regional level (Regional Councils, Regional Land Boards) will dilute the benefits and could create compliance problems (especially with regard to livestock-related fees). However, if fees are to be collected and spent locally, it will be necessary to establish strong community institutions (administration, financial propriety, enforcement). The State will have a key supporting role (capacity building, policy advice on level of charges, enforcing against defaulters).

Alternative land use

3.44 The option which appears to come out best in overall terms on the three criteria shown in Table 3 is community-based wildlife utilisation as an additional land use (although it may prove to have high start-up costs if restocking is considered, and heavy demands for capacity-building inputs). While the potential for expansion is limited, Government needs to move swiftly to implement the provisions in the amended Nature Conservation Ordinance to allow communities to benefit from wildlife utilisation.

3.45 Conservancies would help promote the development of "buffer zones" adjacent to protected areas, where there is greatest potential for growth in community-based non-agricultural incomes (estimated at 4-5 times existing use¹¹¹). These areas should be zoned predominantly for wildlife use, with appropriate incentives and disincentives. Care has to be taken through planning to ensure that excessive or inappropriate development does not destroy the tourism product.

3.46 Some qualifications need to be made about the role that conservancies and wildlife utilisation in general can play:

- Although an excellent *complement* to agricultural production, community-based wildlife utilisation will rarely be an *alternative* (except, perhaps, in marginal but scenic areas such as former Damaraland) — this may reduce its usefulness as an anti-desertification strategy.
- There is little scope for community-based wildlife utilisation within the Ovambo regions, where most rural people live and desertification pressure is high.
- The potential to expand national — and community — income from non-agricultural land use is high but not limitless; recent research in four communal areas suggests that national income could increase by 2.2 times with existing non-agricultural natural resource stocks and slightly more (2.5 times) with improved stocks.
- Conservancies are not necessarily the solution in all cases, even where possible; other community-based alternatives — such as joint venture lodges, camp sites and so on — could develop without conservancies.

Resettlement

Programmatic approach

3.47 Resettlement policy cannot be considered separately from communal land reform. It should be discussed as a key component in the National Land Policy formulation process.

3.48 There are three broad options for resettlement policy:

- i) continue the *ad hoc* purchase of farms to resettle relatively large numbers of farmers.
[options E & F in Table 3]
- ii) begin the *ad hoc* purchase of farms to resettle smaller numbers of communal farmers with large numbers of livestock.
[option G in Table 3]
- iii) begin to purchase farms adjacent to existing communal areas which could be expanded and developed in line with the forthcoming Communal Land Reform Act.
[option D in Table 3]

3.49 Given the (albeit limited) experience of the current resettlement programme — and in particular its likely impact on degradation through overpopulation and breakdown of management systems and structures — it would be better to consider options ii) and iii).

3.50 Although the general strategy should be to level costs between communal and commercial areas (see Chapter 3 — Agriculture), consideration should be given to using the resettlement programme to encourage large communal livestock farmers to move. This might involve a major grant element in purchasing a farm. Strict controls to prevent dual grazing would be necessary: if these cannot be enforced, this option should not be considered. Any package of support must include training and extension support to enable farmers to optimise the use of their land under commercial rather than subsistence farming methods, which will reduce degradation as well as increase income.

3.51 Option ii) could also help smooth the way for the removal of private fences in the communal areas.

3.52 Option iii) may include compulsory purchase if Government has enough resources to buy more than comes on to the market (or is deemed to be underutilised/excessive). This would require the Commercial Land Reform Act to be revised.

3.53 When resettling livestock farmers on commercial farms, the farm must be managed as one unit and sub-division prevented.

Commercial Land Reform Act

3.54 When targeting commercial land for resettlement, it is essential to ascertain why land is "idle" and to ensure an appropriate definition of under-utilisation as both excessive and underutilised land holdings may be being used efficiently and sustainably. For example, sustainability may require lower stocking rates, or the switch to an alternative use such as wildlife; excessive and underutilised holdings can be one and the same where a farmer sets aside large areas as part of a range management strategy.

3.55 The interpretation of "economic unit" is fraught with difficulties. An economic unit for a subsistence farmer is quite different from an economic unit for a relatively wealthy commercial farmer. Even if a level of income could be agreed upon, the related farm size would fluctuate between locations — and over time with output prices and rainfall — and vary depending on whether any value-adding enterprises existed on the land. Implementation of the excessive holdings provision would thus appear to require either formidable (and expensive) administrative capacity or inflexible rules which undermine the fairness of the policy. It is not clear how to resolve this dilemma.

3.56 The Namibia Agricultural Union has suggested that an economic unit for commercial livestock farmers might be 200 LSUs (in the past, it was deemed to be 400 LSUs). This means that a farmer could own land which supports up to 400 LSUs (two economic units). Because of lower income expectations, a number of communal livestock farmers could make a living from smaller (unit) herds on the same land. *However, it is essential to recognise the constraints of the farming system.* Commercial farms restrict mobility of livestock and attempts to increase total livestock numbers will encourage degradation in times of drought and disrupt rotational management practices.

3.57 A land tax has been proposed, among other things to encourage more land to come onto the market.

3.58 In principle, the advantages of a progressive land tax in commercial areas are that it could promote land redistribution — and thereby relieve pressure on overutilised resources — by:

- reducing excessive holdings of land.
- depressing the price of land.
- encouraging use of underutilised land.
- funding the opening up of new areas (but avoid those at high risk of desertification).

3.59 However, international experience suggests a land tax would:

- not necessarily make land more affordable to others as reduced prices are offset by the liability to pay the land tax.
- be expensive to collect.
- be difficult to enforce (for example, transfer ownership to a company or to relatives).
- force over-exploitation of land to cover costs.
- encourage commercial farmers to sub-divide holdings into units which are too small to be ecologically viable and which reduce total land productivity (although there is legislation to prevent this to some extent).

3.60 There are probably more efficient — and more environmentally-benign — ways to achieve land redistribution. One important problem with the land tax — and the approach to land reform in commercial areas in general — is that Government has no control over *where* land becomes available. There are strong arguments in favour of purchasing farms — perhaps compulsorily in areas adjacent to existing communal land (see Resettlement).

3.61 The former Deputy Minister of MLRR has called for the compulsory purchase of farms with *absentee* owners (National Assembly, 15/3/96). While this criterion may have the advantage of being easier to define than "excessive" or "under-utilised", it should not simply be assumed that farms with absentee owners are "idle" (see ¶3.54).

4. Recommendations

Overall

- 4.1 The National Land Policy must also directly address resettlement policy.
- 4.2 The Communal Land Reform Bill should be an "umbrella" Bill assigning rights to communities to *all* natural resources on the land including water, wildlife and forestry as well as agricultural land.

Communal land

- 4.3 Government should "communalise" communal areas — remove fences, expand by purchasing neighbouring commercial farms, and resettle large communal livestock farmers — both to sustain the greatest number of people in communal areas and to minimise land degradation. In any event, Government must make a strategic decision between "communalising" or "commercialising" communal land, and design a resettlement policy consistent with this decision.
- 4.4 Any Communal Land Bill should provide exclusive, secure tenure which is, *inter alia*, comprehensive (all natural resources) and allows for mobility on rangeland.
- 4.5 While additional research is required, tenure should principally be assigned to communities.
- 4.6 Government should declare an immediate moratorium on new fencing. All existing "illegal" fences should be removed, while those erected with the approval of a traditional authority should only be approved by Land Boards if adequate common property land is available.
- 4.7 Government must undertake a major capacity-building effort to develop community institutions capable of allocating land rights and managing natural resources sustainably.
- 4.8 A progressive natural resource user fee collected and spent at the community level should be introduced.

Resettlement

- 4.9 As part of the "communalisation" of communal areas, Government should reorient its resettlement programme by expanding communal areas through the purchase of neighbouring farms and by moving large communal farmers to commercial areas. If "commercialisation" is pursued, Government should significantly increase the rate at which small communal farmers are resettled, and improve the management of resettled areas.
- 4.10 Commercial land that is "under-utilised" for sound environmental reasons should not be the target of resettlement schemes.

Policy Research

- 4.11 To guide land reform, policy-oriented research is required to compare the costs and benefits — including environmental ones — of communal (subsistence) and commercial (cash) systems, different tenure arrangements, and different land-use options.
- 4.12 Comprehensive research is urgently needed into the extent and nature of fencing of communal land to decide how Government should approach the problem of reduced mobility.
- 4.13 Research should be conducted into the reasons different groups of people have for using land to inform a strategy to reduce pressure on communal land.
- 4.14 Research is needed to support the design and introduction of a natural resource user fee and appropriate local institutions to manage common property resources.
- 4.15 Research is required into the economic viability of clearance of bush encroached land (to provide charcoal to people in deforested areas or as part of a resettlement programme).
- 4.16 Further research into the economic returns and environmental impact of game/wildlife relative to livestock is needed.

Chapter 2 — Water

1. Existing and Planned Policy

General

1.1 The national policy on water supply (and sanitation) is set out in the 1993 Water Supply and Sanitation Policy (WASP) document.

1.2 The WASP assigns the following priorities for the allocation of water:

- 1st — "Water for domestic purposes, including livestock watering for both subsistence and commercial farming." [Note: amended — see ¶1.6].
- 2nd — "Water for economic activities such as mining, industries and irrigation. Priorities for these activities will in each individual case have to be determined by their respective value in relation to the overall development objectives and plans for the country."

1.3 The pricing principles set out in the WASP are as follows:

- Urban — "a low price for a defined minimum lifeline volume of water and progressively increasing rates for increased consumption."
 - "rates for commercial enterprises and industries should as far as possible recover the **full financial cost** of water supply."
- Rural — "payment by the community should as a general rule cover **operation and maintenance** costs although there may be cases where a subsidy may apply." [Note: amended — see ¶1.6].
- Irrigation — "in all cases where irrigation water is supplied by the State it is to be charged for at an **economic rate** which may be reduced through a special subsidy determined by the value of the produce relative to its socio-economic benefits."

[Note: presumably this should have read **financial** rate reduced to economic rate after consideration of positive externalities, as described — see Introduction for discussion of externalities which are costs/benefits not borne by the enterprise.]

Urban [including industrial and commercial]

1.4 Full cost recovery on bulk water supply schemes is meant to be phased in over a five-year period — partly in order to facilitate the commercialisation of the sub-sector but principally to ensure sustainable levels of supply — and will require prices to increase to around *2-3 times their current level* (for example, from N\$ 1.20 per m³ to N\$ 2.80 per m³ for supply to the Windhoek Municipality).

1.5 Most industries are supplied by local authorities and continue to receive water at well below cost price (even if they are charged more than local authority residential customers). Mines supplied directly by DoWA are in theory charged full cost — including capital — but in practice they have paid less because of confusion in calculating capital costs of infrastructure shared with other users (a DoWA-guestimated shortfall of about 30% at Rossing Uranium, for example).

Rural

1.6 Policy on rural water supply has been amended and supplemented by more recent statements from the Water Supply and Sanitation Committee (WASCO) and as part of an on-going review of how to implement cost recovery in rural areas^[72]:

- **Pricing** — cover operation and maintenance costs over the next three years, progressing incrementally over the subsequent six years to achieve full cost recovery in nine years time.
- **Priorities** — water for human consumption has been assigned a higher priority than water for subsistence livestock.
- **Lifeline tariff** for basic needs paid for by **cross-subsidies** within regions.
- **Disincentive tariff** — "including a natural resources user fee combined with a limitation of water supply, will be applied to control overgrazing by livestock and assure the long-term sustainability of the environment".

1.7 Cost recovery from rural communities is still at a very early stage. Some communities with borehole pumps pay for diesel and/or related transport costs. Very few water point committees are collecting fees from residents to cover expected operation and maintenance costs.

Irrigation

1.8 Users of irrigation water are massively subsidised. The Hardap, Etunda and Naute schemes charge around 1.5 cents per m³, perhaps only 5% of the total unit costs which are thought to be *at least* 30 cents per m³ [Note: DoWA guestimate based on proposed new ephemeral-river scheme; estimating the capital cost of some of these schemes is extremely difficult].

Other

New Water Act

1.9 A layman's draft of the proposed new Water Bill — to replace the 1956 Water Act — is currently being discussed within MAWRD prior to inviting comments from the broader public. It is a large, composite Bill which provides both a broad framework for the management of water resources and detailed legislation governing the operation of water and sewerage utilities, water quality standards and so on. From a desertification viewpoint, the following items in the Bill are of particular interest:

- **National Water Policy** — the Minister of MAWRD has the responsibility to promote a National Policy for Water, including with due regard to "the proper use" of water resources.
- **Supply/demand data** — the Minister is obliged to collect and publish information allowing an assessment of current and future supply and demand levels.

- **National Water Resources Board** — a GRN/private sector body with very broad responsibilities, going beyond simple consumer representation:
 - "regulation of water resources".
 - prevention of water pollution.
 - "enhancement of the natural environment" with regard to water.
 - advising the Minister on the National Water Policy.
 - monitoring of extraction and capacity of "controlled waters" (boreholes, rivers); *all* boreholes and dams (including existing ones) may require a permit.
- **National Water Development Fund** — a fund sourced from charges to be levied against license holders for the express purpose of promoting "sustainability of the water sector".

Consumption

1.10 Figure 1 shows the upward trend in bulk water consumption by broad sector over the last fifteen years or so [Note: only covers water supplied by DoWA; domestic includes urban industrial]. Table 5 adds rural water consumption and irrigation not provided by DoWA (which is only responsible for the Hardap scheme).

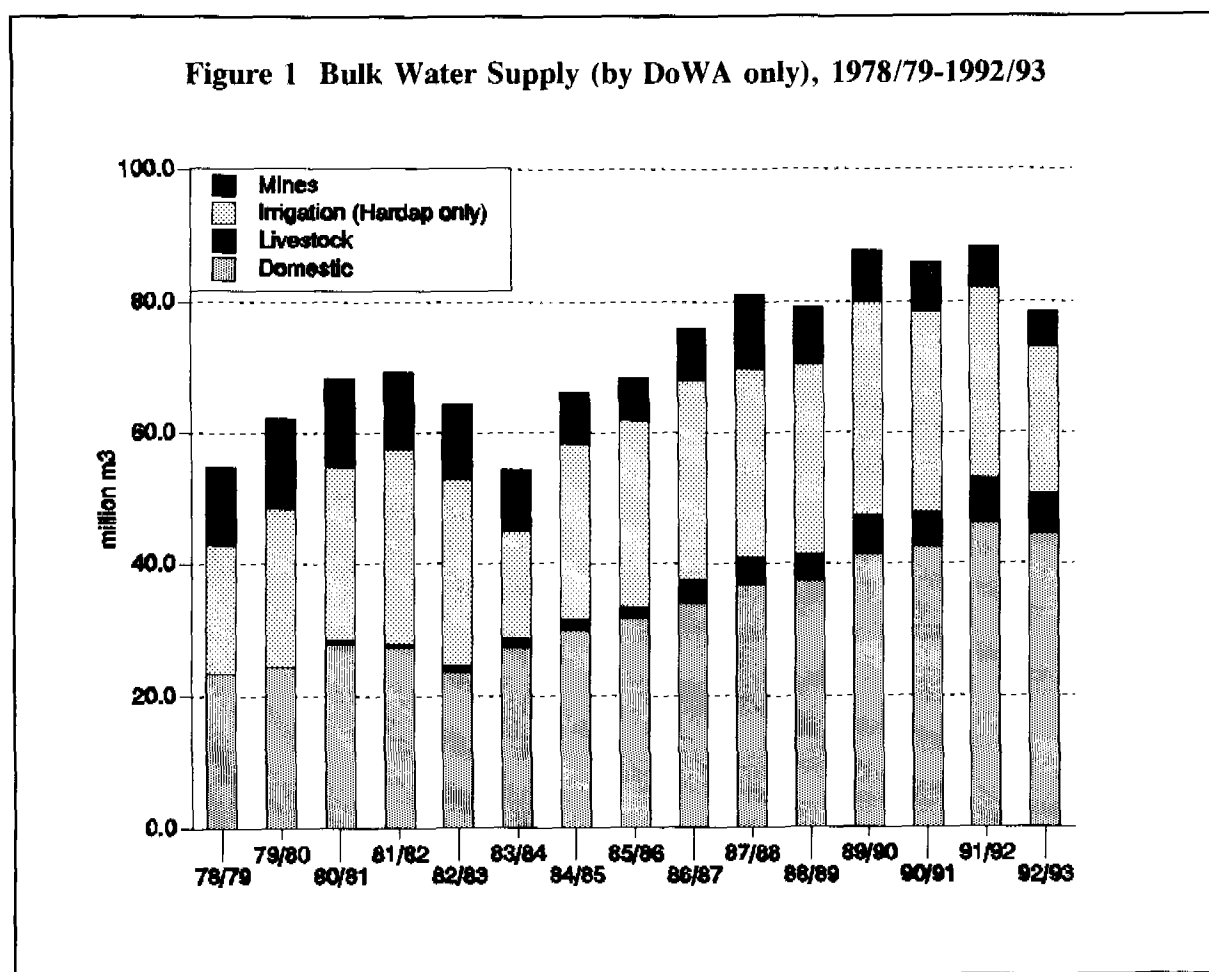


Table 5 Estimated Water Consumption by Sector, 1980/1 & 1993/4

	1980/81		1993/94		Change, 1980-1993	
	million m ³	% of total	million m ³	% of total	total	annual
Department of Water Affairs						
livestock	1	1%	8	3%	772%	18.1%
irrigation (Hardap)	28	18%	25	10%	-11%	-0.9%
urban	18	12%	51	21%	176%	8.1%
mines	14	9%	6	3%	-55%	-6.0%
Rural consumption (non DoWA), rough estimates						
livestock	25	16%	30	13%	20%	1.4%
domestic rural	7	4%	10	4%	54%	3.4%
irrigation	60	39%	110	46%	83%	4.8%
Estimated total						
livestock	26	17%	38	16%	45%	2.9%
irrigation	88	58%	135	56%	53%	3.3%
domestic rural	7	4%	10	4%	54%	3.4%
urban	18	12%	51	21%	176%	8.1%
mines	14	9%	6	3%	-55%	-6.0%
TOTAL	153	100%	239	100%	57%	3.5%

Source: DEA Research Discussion Paper No. 7, September 1995, figure 3

1.11 As can be seen:

- total consumption has increased at an annual rate of 3.5% over the period.
- urban consumption has increased at the fastest rate, 8.1% per year over the period.
- mining consumption has fallen (but is subject to world market fluctuations and could increase dramatically when planned mining ventures — such as the Haib copper mine — come on-stream).
- irrigation continues to account for more than one half of all consumption, followed by urban (domestic and commercial) use and livestock; the share of irrigation water is, of course, related to its use close to source (therefore relatively cheap) whereas potable water is delivered further from source (therefore more expensive).

1.12 Future consumption will depend on the implementation of policies on pricing and demand management as well as the ability to extend existing — and develop new — sources of supply. However, if consumption continues to grow at the same rate as over the period in Table 5 — 3.5% per year — water consumption will double every 20 years, so that an additional 240 million m³ would have to be found by 2015.

NDPI targets

1.13 Targets for the sector set in NDPI are shown in Box 5. Currently, around one half of rural households do not have adequate access — currently defined as within 2.5 kilometres of the home — to potable water. The target of 80% access by 2000 was put back to 2010 by the National Planning Commissioners.

1.14 Bulk water consumption growth is to be "restrained" to a 3% annual increase — presumably through higher prices — because this is thought to reflect the additional extraction which is sustainable over the Plan period. There are to be 50 new rural water points each year during NDPI (much more effort is to be directed towards rehabilitation and maintenance of existing water points, especially boreholes).

Box 5 NDPI Water Targets

Outcome

- Maintain current levels of urban access to potable water (95% +)
- Achieve 80% rural access to potable water by 2010
- Restrict bulk water consumption growth to 3% per annum

Physical

- Establish 8 regional water offices
- Establish 50 new rural water supply points a year during NDPI

Institutional & Policy

- Achieve 95% of rural population represented on water committees at district level by 2000
- Create bulk water parastatal by 1996
- Introduce stepped economic water pricing by 1996

Legislative

- Introduce enabling legislation for bulk water parastatal by 1996

2. Problem Statement

General

2.1 The new pricing policy for rural, urban and irrigation use is only beginning to be implemented, and significant subsidies remain. From the 1970s until Independence, the politically-driven policy was to charge less than the cost price of water in order to encourage economic development (and adequate water supplies were thought to be available to sustain this policy). While this may have been a contributory factor to the fast growth of the 1970s, the policy has helped to create unsustainable expectations of water use, particularly when consumers are charged much less than the full cost, and when the long-run cost is much higher than the current cost (see ¶2.11).

2.2 Subsidised prices have encouraged high consumption. This has necessitated the development of new sources before such development can be justified economically.

2.3 Because it is much cheaper to do so, the DoWA has expanded the use of domestic water sources rather than build expensive infrastructure to border rivers or build desalination plant. There are concerns that this is leading to unsustainable offtake from certain water tables (eg, Omaheke, south Kunene, Erongo) and ephemeral rivers (critically the Kuiseb and Omaruru), and giving rise to water quality problems. If prices were increased to their full (current) cost level, this would both reduce demand — and pressure on existing water resources — and narrow the gap between the cost of further exploiting domestic resources and extending the Eastern National Water Carrier (ENWC) and desalination. The lower the cost differential, the less the temptation to overutilise existing resources.

2.4 It is difficult to determine the precise extent of over-extraction because of temporal and spatial variability in rainfall (many of these systems have at least 20-30 year cycles). DoWA estimates that 15 of the 180 or so groundwater schemes are being used unsustainably. If mined below a certain level, long-term damage of such extraction could include permanent loss of storage capacity as well as damage to water quality. Damaging groundwater resources needs to be avoided.

2.5 The pricing policy has distorted economic development by encouraging some water-intensive industries (but see ¶3.12), particularly *irrigated agriculture*. No serious attempt has been made to assess the socio-economic benefits (positive externalities) referred to in the WASP to justify subsidies to irrigated agriculture. To the extent that pricing policy creates unsustainable demands on the nation's water resources, it will be contributing to land degradation as well as economic inefficiency.

2.6 In some cases, costs are passed on to other consumers (negative externalities). For example, mining a groundwater source to supply urban consumers can create a cost for rural farmers if the water becomes saline and reduces agricultural productivity. Reduced flow on an ephemeral river resulting from over-abstraction can damage the ecosystem and undermine people's livelihoods.

2.7 Some "downstream" users have reduced access to water as a result of "upstream" consumption — this is particularly so on ephemeral rivers and where there is no market for water (see ¶2.14). The price of water should thus represent its *opportunity cost*: its value in the next best use.

2.8 Activities aimed at conservation of water appear to be having little impact in the absence of proper pricing. There have been some successes: water consumption in Windhoek was the same in 1995 as in 1990 (albeit partly as a result of the introduction of stepped pricing). But there is little incentive under the current pricing policy for most users to reduce consumption. For example, industries will not adopt water-saving technologies unless they save them money. Where conservation efforts have worked well, it appears to have been in conjunction with more realistic pricing. For example, it is estimated that the Rossing mine has reduced (cumulative) consumption by 60 million m³ since 1980, an amount equal to three quarters of the 80 million m³ remaining in the Kuiseb. There are, however, limits to the introduction of water-saving technologies: additional investment in water-saving equipment will not be worthwhile for Rossing until the price rises to N\$ 10 per m³ [pers. comm., Piet Heyns & Martin Harris, DoWA].

Urban

2.9 While the current aim is to limit the increase in bulk water supply to 3% per annum (see Box 5) — compared with an estimated 5%-11% increase if the policy continued simply to be one of meeting demand at the prevailing price — this still means that Namibia has to double the amount of water supplied every 23 years.

2.10 It is not at all clear where such volumes of water can come from at prices people are able or willing to pay. A worst-case scenario has to be avoided where:

- groundwater/ephemeral river resources continue to be overused — because they are the cheapest available source and Government is not prepared in the short-run to pay the cost of securing more sustainable supplies.
- demand continues to grow and groundwater resources are mined, downstream users of ephemeral rivers are denied any water — with potentially permanent damage to these systems and the rural communities they support.
- Government at last decides it would like to secure more sustainable supplies but consumers are not willing/able to pay the higher units cost this would involve.
- either Government is left with a huge bill or households and industries have to make do with a reduced supply of groundwater.

2.11 To avoid this scenario, proper pricing has a clear role to play by choking off the demand which has actually been *created* by water subsidies. Indeed, there is a strong case for increasing the price *above* current cost price where the long-run cost — the cost of extending the supply network to the next major source — is much higher than the current cost (see Box 6). Good examples include extending the Eastern National Water Carrier to the Okavango river and building a desalination plant at the coast (which are both thought to cost *about* N\$ 7 per m³, but varying significantly depending on the volume). A phased increase in the price above current cost allows a better assessment of whether or not people are prepared to pay the price or would prefer to cut consumption. This is particularly important in the case of Windhoek where it may be more sensible for industries to relocate to areas where long-run water costs are lower.

Box 6 Long-Run Water Pricing

What price should be charged for water now when the cost of additional supplies in the future is much greater than the current cost?

In the short run, it is possible to expand supply incrementally. In the case of water supply, this would be by drawing more on existing sources, and by introducing new groundwater and ephemeral river schemes. The marginal unit cost of this additional supply may be only slightly more than the average unit cost of current supply. Price rises are therefore small and it is a reasonable assumption that consumers will be willing to pay the increased average cost.

However, in the long-run major new investments are required. In the case of water in Namibia, the long-run *marginal* unit cost could be twice the current *average* unit cost (N\$ 7 per m³ compared to N\$ 3½ per m³). Even though this increased cost will be spread over all consumption, the long-run *average* unit cost is significantly higher than the current average unit cost (perhaps by N\$ 1½ over the next 15-20 years). The long-run cost of providing water is therefore far higher than the short-run cost. It is no longer reasonable to assume that all consumers will be prepared to pay the increased cost.

This means that the DoWA (or the new bulk water parastatal) must start *now* to increase prices above short-run cost to ascertain how much increased supply will be necessary. It may be the case — combined with the increases necessary to get to current cost price — that the demand for water will fall so much, that — with increased conservation promoted by the price rise — it will be possible to postpone the need to extend the ENWC to the Okavango.

Note — this analysis takes no account of the fact that:

- i) prices already have to double/treble just to get to *short-run* average cost!
- ii) externalities and opportunity costs may justify yet further increases in price.

Rural

2.12 The fact that most communities do not contribute towards water costs has created unsustainable expectations and has led to wasteful consumption in many areas.

2.13 Poor planning and coordination of water point (especially borehole) placement — exacerbated by emergency drought relief provision — has encouraged permanent settlement (sedentarisation) and grazing in some areas previously used seasonally. The reduced distance between water points has enabled livestock to graze entire areas and has increased vulnerability in times of drought because there is less seasonal grazing available.

2.14 In some areas — especially on ephemeral rivers — there are downstream users of water who suffer reduced supply because of extraction upstream⁵²¹. The price charged to upstream users may be less than the value derived from the water downstream, but there is no mechanism to ensure that upstream prices reflect this opportunity cost. [Note: even if downstream use has less value, there may be equity arguments for continuing supply].

2.15 The new bulk water parastatal will provide piped water to rural communities via the DoWA (which will then essentially be responsible only for rural water supply). Unless there is a mechanism to ensure that DoWA has an incentive to enforce collection of money due, communities are unlikely to moderate their consumption. Receipts currently simply go to the State Revenue Fund.

Irrigation

2.16 The heavily subsidised use of water for current irrigation schemes is a major desertification-related concern, not simply because of downstream effects (on perennial and ephemeral rivers) but because in the long run the water will be required for uses with much higher value-added. *It is foolish to invest heavily in irrigated agriculture now when that water will have a far greater value for industrial, commercial and domestic users in the medium/long term.* This is particularly so given the long-run cost of extending Namibia's water supply sources: diverting water from irrigation to other uses — combined with sensible pricing — may obviate the need for massive investment to increase water supply. However, this will only be true to the extent that the water currently used for irrigation really *can* be used elsewhere. For example, water from the Orange river is unlikely to find an alternative use (but even here there is a small but growing tourism industry which might suffer, and the large new copper mine at Haib will require much water — and probably be able to pay more for it than irrigated farms).

2.17 There are a number of proposed irrigation schemes on ephemeral rivers. For various technical reasons, a dam at Brukkaros on the Fish River is perhaps the best-case scenario for ephemeral river agricultural development. The returns to such investments, however, look extremely marginal. The Brukkaros pre-feasibility study calculated the financial rate of return for its agricultural component to be just under 7% (excluding dam construction costs). Given real interest rates between 6%-10% — and the degree of risk associated with such a project — Brukkaros would be extremely unlikely to attract private sector finance. The social benefits mentioned in the WASP are unlikely to be realised since the project is only viable under commercial farm development (the estimated financial return using smallholder farms is *negative* at -8%). There are also social *costs* to take into account (which might give the project a lower economic than financial return). The study accepts that downstream users will have less, more saline water. No attempt was made to quantify these costs.

2.18 Irrigation is to a large extent driven by agricultural policy, including the goal of food self-sufficiency, and the two policies will need to be considered jointly (see Chapter 3 — Agriculture).

3. Possible Solutions

General

3.1 Proper pricing — combined with security of tenure over water resources in rural areas — should be the main approach to managing this scarcest of natural resources and preventing associated land degradation. However, even if proper pricing is the agreed strategy, there are still many questions to answer in deciding what price to charge, to whom, for what sort of use.

3.2 Unless the pricing proposals in the WASP (and later WASCO statements) are rapidly introduced, some areas face the prospect of severe water shortages. In addition to this disruption, groundwater systems could be permanently damaged by the increasing burden placed on them. This means *at least* a rapid move towards full-cost recovery is needed.

3.3 The fact that the long-run cost of provision in many key areas is greater than the current cost justifies additional increases to ascertain the extent to which users would prefer to cut consumption rather than pay the real cost of water.

3.4 In addition, the existence of negative externalities justifies price increases above cost in certain areas where other users can be shown to be adversely affected. Better assessment of environmental impacts is required by Government and project developers.

3.5 Finally, where the opportunity cost of water is greater than the value of current use, then the price of water must be adjusted to reflect this. The price paid by upstream users on an ephemeral river must reflect the value which downstream users derive from it (if it is higher). If irrigation reduces supply for other water users, the price paid by irrigators must reflect the value other users would derive from the water. If upstream ephemeral river users and irrigation projects cannot afford such a price, then the water should be used in those other, higher-value uses.

3.6 The slow pace of progress towards implementing the WASP pricing policy is worrying. For example, with regard to bulk water commercialisation, Cabinet has accepted *nominal* increases in tariffs of 20% in the first two years, with subsequent years by agreement between the parastatal and the Minister. Given inflation of around 10%, it would take 7-14 years to increase tariffs just to a cost-recovery level (if, on average, that is 2-3 times their current level).

3.7 Given the slow pace at which the water price is likely to move towards even full-cost recovery (let alone long-run cost), research is needed into the *likely* responsiveness of demand to price and income in order to guide supply policy, assuming that eventually consumers will pay long-term cost. Given current growth in consumption, it may *look* as if it is urgently necessary to extend the ENWC to the Okavango, but this may not be the case if the full cost is recovered.

3.8 Improved water pricing will do much but there is a role for other demand management activities such as conservation^[15]. However, these will only work well in combination with adequate pricing mechanisms which themselves provide the incentive for the development and use of water-saving technology.

3.9 Where the market does not function well — such as in rural areas — there is a need for greater regulatory control of extraction through better planning and setting of limits on extraction. While the DRWS is committed to developing plans for ten broad catchment areas (incorporating demands on the area from bulk water schemes), it is under-resourced and none are yet complete.

Urban

3.10 The WASP statements should be clarified to explain that *all* urban consumers — individuals as well as industry and commerce — should pay *at least* the full financial cost of water. The implied price rises can be made more palatable politically by pushing for very progressive stepped tariffs for cross-subsidy to the poorest, low-volume consumers.

3.11 It is unreasonable to expect the bulk water parastatal to have an overriding interest in demand management and sustainable use. The principal responsibility must be assigned elsewhere, presumably to the proposed National Water Resources Board.

3.12 Proper pricing of water will promote development in locations where water is relatively abundant, and encourage the development and dissemination of water-saving technologies. While some water-intensive industries may be discouraged, the majority of industries will only be marginally affected because water represents a small proportion of total costs (and firms are more concerned about securing sustainable supplies than price increases) [pers. comm., Martin Harris, DoWA]. In the absence of adequate pricing mechanisms, Government must ensure that development is directed towards industries and locations which make efficient use of water, and will need to consider how to promote water-saving technologies which may be economically but not financially viable (worth it to society but not to individual consumers). This is a formidable challenge.

Rural

3.13 Existing policy will oblige communities to meet an increasing proportion of the costs associated with their water consumption (with subsidies from GRN when considered appropriate — although it is envisaged that there will never be subsidy for operation and maintenance costs, only capital costs). Where the amount of water consumed can be varied (pipeline water), this should be related to the volume of water consumed.

3.14 The best solution to overgrazing around water points is a comprehensive land reform package which gives rights to communities over all renewable natural resources on the land (see Chapter 1 — Land and Natural Resource Management). Recovery of water costs should be incorporated into a natural resource user fee collected and managed by the community. The fee should usually be based on livestock numbers and communities should be encouraged to introduce a progressive structure.

3.15 Water point placement needs to be improved, and this is recognised by the DRWS which plans to work with SARDEP and NOLIDEP to establish appropriate distances between water points. In addition to sensitive siting, there should be more widespread use of seasonal and human-only water points (for example, seasonal borehole used by SARDEP in a test area in Otumborombonga — see Appendix 1).

3.16 More planning is necessary to ensure that water is being used optimally in systems where there is no market for water (for example, tourism potential of westward-flowing ephemeral rivers). Downstream users need to be compensated for their lost access to water resources with prices for upstream users adjusted to reflect this opportunity cost.

Irrigation

3.17 *Unless the supposed social benefits of irrigated agriculture can be convincingly quantified, there seems to be no justification for subsidising existing schemes or promoting new ones.* A rapid move to at least full cost recovery should then be made. This may require some schemes to switch to higher value-added production, and others to cease production.

3.18 Increases to opportunity cost levels will be necessary if there are other actual *or potential* high value uses of the water — that is, if the opportunity cost is greater than the financial cost. While this may not be the case *now*, the situation needs to be closely monitored by Government. Irrigation schemes should not be allowed to acquire a permanent "priority" access to water resources where it has a higher value in other uses in the medium to long term.

4. Recommendations

General

- 4.1 Government should phase in price increases to full financial cost more rapidly than currently envisaged. If consumption continues to rise, Government must quickly increase prices to long-run cost levels and/or expand sustainable supply (Okavango, desalination).
- 4.2 Regional variations in costs should be reflected in regional variations in price in order to promote sustainable development by encouraging people and industries to locate to areas with relatively secure water supplies.
- 4.3 Cross-subsidies through progressive stepped tariffs should be used for lifeline supplies within a local authority/utility area, and through Government subsidies to areas with particularly high costs and/or particularly low levels of income.
- 4.4 Wherever there are external costs these should be internalised into tariffs to compensate those affected.
- 4.5 Prices charged should equal the estimated opportunity cost where this is thought to be higher than the financial cost (likely for some ephemeral rivers and irrigation schemes).
- 4.6 Where water pricing has a limited role because of the absence of a properly functioning market, access to water resources should be carefully managed and planned at the lowest appropriate level.
- 4.7 The Namibian Water Resources Board proposed under the forthcoming Water Bill should be given the lead responsibility for ensuring sustainable use of water resources and ensuring proper planning between bulk and rural supply institutions.

Urban

- 4.8 Urban consumers should pay the full financial cost of water supply within **3 years**.
- 4.9 The Bulk Water Supply parastatal should not be charged with the *primary* responsibility for demand management policy which should vest in the proposed National Water Resources Board, implemented by water providers (local authorities, MRLGH).

Rural

- 4.10 Rural consumers should pay the full financial cost of water supply within **4-5 years** (but will be more eligible for subsidies based on ability to pay).
- 4.11 Water point management should be part of a comprehensive land reform/natural resource management Bill/policy to encourage sustainable use of all resources on the land (this is particularly important with regard to rangeland management and the introduction of permanent water points in grazing areas currently without such sources).
- 4.12 Water costs should be recovered as part of an integrated natural resource user fee, ideally a progressive fee based on livestock numbers.

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- 4.13 Limits on the proximity of rural water points should be established in the new Water Act (or secondary legislation) to promote better planning of the location, type (human/livestock) and seasonality of water points.
 - 4.14 Additional resources should be allocated by DoWA to catchment planning, especially in catchment areas where the pricing mechanism cannot be used well to allocate water.
 - 4.15 Government should introduce and enforce tighter controls on water extraction by commercial farmers where this resource is, or could be, shared with other consumers.

Irrigation

- 4.16 Irrigation projects should pay the full financial cost of water supply within **3 years**. Payment at opportunity cost levels should be phased in after this time where this is thought to be greater than the financial cost.
- 4.17 No new irrigation projects should be supported which do not show an acceptable economic rate of return — including capital costs — under likely future market conditions.
- 4.18 A transparent set of rules should be established by Government for the quantification of "socio-economic benefits" of irrigation schemes as an integral part of the appraisal of all irrigation schemes.
- 4.19 There should be no major irrigation schemes on ephemeral rivers before the DoWA can estimate the damage to ecosystems and the opportunity cost of downstream use (and provide appropriate compensation).

Policy Research

- 4.20 Research into the responsiveness of water demand to price and income (price/income elasticity of water demand) to guide future supply policy.
- 4.21 Research into the value of alternative water use options to assess the opportunity cost of water use (including which industries and locations are more appropriate).
- 4.22 Quantify the cost of externalities such as damage to ephemeral rivers to inform decisions on pricing and allocation.

Chapter 3 — Agriculture

1. Existing and Planned Policy

1.1 Namibia's National Agriculture Policy (NAP) has been approved by Parliament following a process of participatory development. It is largely complementary to the policy as set out in NDP1. The goals and targets for the sector according to NDP1 are shown in Box 7.

1.2 The Policy will be operationalised through a series of strategies to be completed in 1996.

1.3 One important difference between NDP1 and the NAP is that NDP1 contains a commitment to national food self sufficiency — albeit qualified and by an unspecified date — in addition to household food security (see Box 7). This commitment appears to have been imposed on the MAWRD by the NPC.

1.4 Key relevant policies within the NAP include:

- concentrating resources on promoting **grain** and **red meat** production in the short term.
- integrating communal farmers into domestic and export **markets**.
- promoting the **diversification** of agricultural production (especially into high value-added non-traditional products for export).
- concentrating **extension services** in the communal areas — which have the greatest potential for growth — and divesting extension workers of the responsibility for supplying those farmer support services which are better provided by the private sector.
- conducting **research** which is multi-disciplinary, market-orientated, decentralised, adaptive and on-farm (rather than on-station).
- phasing out agricultural **subsidies** which distort input and output prices; supporting private sector to ensure that all necessary inputs are available.
- removing **price distortions** caused by monopoly and monopsony powers of parastatals and statutory boards.
- moving away from direct Government intervention in **price setting**.
- establishing an agricultural **financing system** which uses market-linked interest rates and mobilises private savings.
- strengthening **cooperatives** and credit unions (through capacity building and enabling environment).
- introducing **natural resource user fees** linked to promoting sustainable resource management (agricultural and non-agricultural).

Box 7 Agriculture Goals & Targets in NDP1

Goals

The overall agricultural sector objective is to bring about the continued growth in agricultural incomes, across the broadest possible socio-economic base, in a sustainable manner. This will thus provide a secure foundation for equitable growth throughout the economy.

The immediate objectives for the sector are to:

- improve levels of household food security nationally with an ultimate goal of achieving food self-sufficiency.
- raise the value of agricultural exports and/or reduce the value of agricultural imports.
- create productive employment opportunities.
- increase the value added within the country to national agricultural output.

Targets

Outcome

- Increase subsistence agriculture output by 5% a year from 1997
- Increase subsistence agriculture employment by 30,000 by 2000
- Increase subsistence agriculture labour productivity by a total of 10% between 1994 and 2000
- Increase non-traditional crop and livestock output to 5% of total output by 2000

Physical

- 10,000 members of registered agricultural cooperatives by 2000
- Relocate 100 large communal farmers to commercial land by 2000 [in conjunction with MLRR]
- Increase extension field staff from 150 to 170 by 2000
- Increase the number of cattle north of the Veterinary Cordon Fence processed through formal channels from 18,500 in 1994 to 30,000 by 2000
- Increase the area of land under irrigation by 5,000 ha by 2000

Institutional & Policy

- Government withdrawal from non-extension duties by 1997
- Finalise National Agricultural Policy by 1995
- Finalise National Agricultural Strategy by 1995 *[now 1996]*

Financial

- Work towards import parity pricing of grain from 1996

1.5 In very general terms, the NAP promotes the role of Government as the facilitator of private sector development — providing a favourable macro-economic environment, conducting research, providing extension services, credit, and marketing information — and intervening where markets fail. Some agricultural services — especially farm inputs and marketing of farm produce — are to be provided by the private sector. The human and financial resources saved will be used for more important services, such as extension.

1.6 One major new initiative is the National Agricultural Credit Programme (NACP), which started in 1995/96. The NACP is far larger than any of the previous agricultural loans schemes (which will cease), and larger than any of the existing non-agricultural schemes. It aims to lend at least N\$ 120 million over the next ten years (capitalised largely by Government and the Agricultural Bank with a small contribution from the EU) to farmers who can afford to make repayments. The Programme is subsidised to a large extent by slow phasing of interest rates to market rates and covering the unavoidably high unit administrative costs. This has been explicitly recognised and quantified: over 10 years, these subsidies will be around N\$ 40 million on lending of N\$ 120 million (one third of loan capital). Loans will be available for a wide range of activities.

2. Problem Statement

2.1 There appear to be a few contradictions — or at least tensions — within the NAP. In particular, the NAP states that Government resources are to be concentrated in supporting red meat and grain production, but it is not clear that Namibia has the comparative advantage to expand production without input subsidies, which the NAP says it is committed to removing. Continued subsidies to livestock production — largely in the communal areas — will promote overstocking and overgrazing, and distort the relative prices of other, perhaps more sustainable land use options.

2.2 Again, the NAP claims to be in favour of small-scale subsistence irrigation, but also states that irrigation can produce high value crops for export, which is only possible under larger-scale commercial production. While this is not necessarily a contradiction, it does indicate a lack of focus.

2.3 NDP1 calls for food self sufficiency — albeit as an ultimate, post-2000 objective — while the NAP pushes household food security. NDP1 itself is unclear as it specifies self sufficiency in *basic crops* (Foreword) while the objective is stated in broad terms in the Agriculture chapter. While food self-sufficiency might be a good *means* to achieve the goal of food security in certain poor crop-growing areas where alternative income generating activities are few, it will prove economically and ecologically ruinous if pursued nationally as an end in itself.

Livestock

2.4 This section assumes that some rangeland is degraded and that overgrazing is occurring in a number of areas. It does not try to explore the extent of overgrazing but identifies economic and policy factors that promote *increased* pressure on rangeland.

Subsidies

2.5 The majority of poor Namibians live in communal areas and livestock is seen as a key source of livelihoods for many such people. As a result, Government support for livestock production has been driven by social and political — rather than economic or environmental — objectives (as, indeed, was support for the commercial livestock sector prior to Independence, albeit for entirely different political reasons). This is a good example of policy failure: supporting livelihoods through subsidies to livestock production has led to a misallocation of natural resources and has promoted land degradation. A solution needs to be found which enhances the standard of living in communal areas without undermining the resource base.

2.6 Subsidies to livestock production encourage farmers to hold more livestock than they would if they had to pay the full cost of inputs. Therefore, with the limited land available, subsidies promote overgrazing and land degradation (where livestock numbers are greater than carrying capacity). In addition to legitimate "enabling environment" activities (extension, research, marketing), livestock husbandry in communal areas is subsidised through:

- veterinary services (not full-cost recovery).
- quarantine provision (fees are about to be introduced, but not full cost-recovery).
- some effective price support [Meatco policy of same price for grade — see ¶2.13].
- income tax waived.
- no land rental fee.
- free water provision.

2.7 There has been significant progress since Independence in reducing the subsidies to commercial farmers. The largest remaining subsidy (excluding drought relief) is through subsidised interest rates on Agribank loans (with those made before Independence enjoying by far the largest subsidies).

2.8 The long-term relationship between livestock *prices* — and hence the income derived from livestock — and *stocking rates* is not clear. Subsidies which encourage *sale* of livestock (price support, quarantine), and therefore higher *offtake* rates, could in fact encourage lower stocking rates. However, at the same time they increase incentives to invest in livestock because of increased profitability and therefore discourage switches to *alternative land-uses* (game, tourism) or to livestock production on *commercial* land. For a discussion of the relationship between price changes and natural resource use see Box 9 in Chapter 7.

Carrying capacity

2.9 The non-enforcement of the Soil Conservation Act and carrying capacities in commercial farms has probably contributed to overstocking and degradation. While the Act worked to some extent in the 1970s, it fell into abeyance in the 1980s after an initiative to redraft the Act to incorporate communal land failed.

Drought relief scheme

2.10 The 1995/96 Drought Aid Scheme provided fodder, transport and grazing subsidies to both commercial and communal farmers and cost N\$ 99 million (twice the N\$ 50 million or so spent on human food aid). The scheme did not require farmers to destock in order to receive assistance (the requirement for commercial farmers to destock to 60% of approved carrying capacity presented problems for very few farmers because they are 1972 rates, and few farms have been able to sustain these 1972 carrying capacities). Since subsidies were available throughout the drought period for up to 100 LSUs or 500 SSUs (for fodder), there was an incentive to keep up to this number of animals. Farmers were not entitled to receive subsidy if there was grazing available, and this has the perverse effect of discouraging good range management.

2.11 In addition to encouraging overstocking, the scheme dramatically reduced extension activities in drought areas because the administrative burden falls on extension officers. The scheme was much abused — perhaps anything up to one quarter of total funds disbursed have been used to pay fraudulent claims (pers. comm., MAWRD). Finally, the 1995/96 subsidy went disproportionately to commercial farmers — 32% of those eligible received some subsidy compared with 8% of eligible communal farmers — thereby undermining the equity argument for subsidies (pers. comm., MAWRD).

Marketing in communal areas

2.12 There has been significant progress since Independence in the marketing of livestock bred north of the veterinary cordon fence (the number of cattle marketed through formal channels from the Northern Communal Areas (NCAs) rose from 5,000 in 1991 to 18,600 in 1994)^[43]. However, many farmers in communal areas still do not have reasonable access to commercial markets. One of the major bottlenecks is the absence of adequate quarantine facilities. Meatco estimates that it could immediately process 50% more cattle from the NCAs if extra quarantine facilities were available (these are planned and being budgeted for).

2.13 Meatco's market dominance — especially in some communal areas — in purchasing and processing encourages inefficiency and means that farmers — who have to cover Meatco's costs — receive less than they might do in a more competitive regime. On the other hand, Meatco's commitment to purchase livestock at the same price-for-grade/quality as in commercial areas has meant that Meatco is, in effect, subsidising some communal producers because of low livestock weight (perhaps by 15%).

Livestock as store of savings and source of status

2.14 Livestock have many non-cash and non-consumption uses in a subsistence system which mean that farmers keep herds well above the level of so-called "economic" carrying capacity. These benefits include draught power, dung (for crops), and milk. There are limits to the number of cattle required to meet household needs. Beyond this number, cattle are of far less value because surplus dung, milk and traction cannot be easily marketed.

2.15 However, as a store of *savings*, there is no clear limit to the number of cattle desired. The absence of formal savings institutions therefore encourages higher stocking, and Government and private sector financial institutions need to promote alternatives. The same principle applies to cattle as a source of status. However, alternatives to this are even more difficult to promote.

Crops

2.16 Commercial maize and wheat producers are heavily protected — and hence subsidised — through price regulation. The Namibian Agronomic Board offers to buy all wheat and maize produced by farmers at a fixed price agreed annually in advance. To the extent that this is above world prices, the cost is passed on to processors — who are obliged to purchase Namibian cereals before being granted import licenses — who in turn pass on the cost to consumers. A recent study^[74] estimated effective rates of protection at around 35% for wheat and 75%-140% for maize. However, these rates are falling rapidly with reductions in the support price.

2.17 This price fixing reduces the consumer welfare of rural households who purchase cereals and are unable to benefit from the protected price because the crops cannot, on the whole, be grown in their areas (they do benefit to the extent that millet is produced and *sold* as a substitute, which is not very much¹⁶⁹). This in turn increases poverty which increases pressure on the land.

2.18 Reported declining productivity of arable land in communal areas has come about as a result of a number of factors: shortage of land reducing fallow periods and possibility for rotation, inaccessibility of cattle reducing available dung, and inadequate seasonal labour supply. At the policy level, this problem needs to be addressed by promoting incentives to use arable land more intensively and in a more sustainable manner.

2.19 Many subsidised inputs in communal areas (tractors, seeds, fertiliser) — and the associated costs of extension service time — disproportionately benefit wealthier farmers. These inputs could be more efficiently provided by the private sector and the resources saved could be used to support poorer farmers to buy improved inputs. In turn, this would increase their yields and reduce the pressure to open up marginal crop land¹⁸⁵. Cabinet has in principle approved such a shift, and implementation of the reform is moving at a cautious pace.

Credit

2.20 There is a danger that loans under the NACP will go disproportionately for the purchase of livestock in areas which are already degraded. A recent study of credit and savings in the north east shows that a very high proportion of loans under previous schemes went for livestock purchase: in Kavango, 70% of loans under the Small Farmers' Loans Scheme and over one-third of loans under the Special Agronomic Loans Scheme (which was essentially meant to be a scheme for crop producers)¹³².

2.21 Early experience of the NACP indicates that it is sensitive to the issue of grazing pressure. The ABN is awaiting technical inputs from MAWRD on carrying capacities by agro-ecological zone (AEZ) before granting loans for livestock in areas which it thinks might already be overstocked.

Irrigation

2.22 Currently, the large-scale irrigation projects (Hardap, Etunda) are subsidised to a great degree: the unit cost of water paid is 1.5 cents per m³ (probably no more than 5% of total cost — see Chapter 2). The Hardap operation has also been subsidised by price controls in the maize market.

2.23 In addition, the opportunity cost of water from the perennial rivers is likely to be greater than the financial cost in coming years. In the future, the value of water in these rivers will increase significantly as consumers in urban areas — especially Windhoek — and neighbouring countries demand more water. It is foolish to commit resources now to irrigation schemes where that water will find a much better alternative use in Namibia's cities in the medium-long term. The result will be increased pressure on groundwater and ephemeral river sources where the long-term damage of such extraction could include permanent loss of storage capacity and damage to water quality (and to vegetation, and therefore grazing) (see Chapter 2 — Water).

3. Possible Solutions

Livestock

3.1 Some expansion into underutilised communal areas will be possible — which could relieve pressure on existing areas — but it will be limited by the availability of water at a reasonable cost (see Chapter 1 — Land and Natural Resource Management). Ecologically marginal areas must be avoided.

Subsidies

3.2 Government is laudably concerned to raise living standards in communal areas. However, this must be done in other ways than subsidising livestock production because of the environmental costs and inefficiencies this creates. Nothing less than a comprehensive rural/regional development strategy is called for (see Chapter 5 — Poverty).

3.3 Subsidies to livestock need to be phased out in both communal and commercial areas. This will be unpopular in communal areas which almost certainly receive greater subsidies. However, it will help to level the playing field between commercial and communal farmers and hopefully encourage some large communal farmers to move to commercial areas, thereby reducing pressure on communal rangelands (see Chapter 1 — Land and Natural Resource Management).

3.4 While the initial response of commercial and (less so) communal farmers to falling unit returns to livestock production may be to increase stock, the alternative — continued subsidisation — is not sustainable and simply delays a shift to other land uses.

Carrying capacity

3.5 The issue of carrying capacity and enforcement of sustainable stocking rates needs to be reconsidered in light of reportedly increased degradation. The case for carrying capacities is much stronger in commercial areas where mobility is limited and enforcement relatively straightforward. However, if mobility in communal lands continues to be increasingly restricted, then the need to enforce sustainable stocking rates in these areas will increase. Any proposed scheme will have to take into account the:

- mobility of livestock — in extensive non-equilibrium systems, an optimal stocking rate would need to be set for a very large area embracing many communities, which could make it extremely difficult to enforce.
- different nature of subsistence and commercial livestock systems — carrying capacities should be set at what is conventionally defined as "economic carrying capacity" in commercial systems where value is derived from slaughter, and nearer "ecological carrying capacity" in subsistence ones where there are non-sale benefits.
- variability of carrying capacity over time due to rainfall fluctuation and land degradation.
- cost and possibility of enforcement.

3.6 Enforcement of carrying capacity in communal areas would require at least thorough branding of livestock. Exemptions to the Stock Brands Act (1995) may make this impossible.

Drought relief

3.7 Drought relief spending needs to be completely overhauled to address drought as a chronic, recurrent problem and not simply to alleviate short-term needs. An MAWRD-led Task Force representing GRN and other agricultural interests first met in March 1996 (after the termination of the current system in February) to draw up a long-term drought strategy which ensures sustainable resource management.

3.8 Resources would be better spent on:

- expediting land reform (N\$ 99 million spent in 1995/96 is equivalent to the N\$ 100 million allocated for land purchase during the whole five years of NDP1).
- supporting destocking and restocking measures which enable communal farmers to "track" their livestock to available range grazing.

3.9 Destocking/restocking measures could include:

- Returning to **destocking subsidies**, along the lines of those used in the 1992/93 drought (N\$ 120 for a breeding cow, N\$ 20 for a ewe). However, the 1992/93 experience suggests that this did not encourage offtake very much³¹¹. Also, a lot of the benefit was discounted by purchasers who effectively received the subsidy.
- Introducing an **income tax waiver** for commercial farmers on distress sales until such time as the income is utilised (income could be held with the ABN until it is withdrawn when tax would become liable; perhaps not taxed at all if used for restocking).
- Improving **marketing infrastructure** in communal areas to enable rapid destocking at the beginning of a drought.
- Better targeting of free (human) food distribution because it can discourage sale of livestock. Subsidised — rather than free — provision for all but the destitute would encourage people to sell livestock to purchase grain⁹⁶.
- Provision of subsidised livestock for **restocking** at the end of the drought (best linked to destocking at the beginning of the drought).

3.10 Research is needed into these and other options to assess their efficiency and likely environmental impact.

3.11 If the Drought Aid Scheme is continued, then there should be much lower limits on the number of livestock units for which subsidy can be claimed (perhaps down to 10 from 100). A greater share of the relief should be directed to crop producers and to transport and grazing rental rather than fodder.

Marketing in communal areas

3.12 If Government wishes to encourage more commercially-oriented production of livestock in these areas, it may be necessary to extend the quarantine network more comprehensively than is currently envisaged.

3.13 However, the extent to which commercially-oriented production can be expanded needs to be considered carefully. The non-sale values of livestock, low prices for poor quality animals and large transport/quarantine costs, all limit likely sales. The whole question of land reform raises its head here with regard to the appropriateness of substituting an intensive ranching model on extensive non-equilibrium systems (see Chapter 1 — Land and Natural Resource Management).

Livestock as store of savings and source of status

3.14 Government and private sector financial institutions need to make available formal savings opportunities to remote rural areas. The expansion of the NamPost network would help considerably with their very attractive tax-free interest on savings.

3.15 Erosion of livestock as a source of status will depend on other such sources becoming available and therefore depends generally on the pace of development.

Credit

3.16 The NACP needs to ensure that credit for livestock purchase is not given where there are already indications of land degradation, and provide incentives for processing and other land use through the provision of lower, preferential interest rates.

3.17 Government needs to get support to the poorest farmers as well, but this may never be possible through loans (expand extension, targeted input subsidies — see ¶3.19).

Crops

3.18 To benefit poor Namibian consumers, the maize and wheat markets are being rapidly deregulated so that these crops are available at world prices. The long-term benefits will almost certainly outweigh the short-term costs of increased vulnerability to world price increases in times of global shortages.

3.19 Policy changes which could try to reverse the decline in communal arable land productivity include allowing Agricultural Extension Officers more time for extension, and improving the availability and quality of inputs (fertilisers, seeds) provided by the private sector (perhaps with vouchers for the poorest as part of the Agri-Services Reform Programme).

Irrigation

3.20 Proposed solutions are discussed under Water.

3.21 If water is priced properly, it is extremely unlikely that Government will be able to meet its NDP1 target of an additional 5,000 ha of irrigated agriculture. Indeed, many *existing* areas under irrigation would either have to produce higher value-added products or change to non-irrigated use.

4. Recommendations

4.1 The Government should drop its objective of food self-sufficiency in favour of household food security.

4.2 Government should reject any special interest pleading by or on behalf of agricultural producers which distort factor allocations.

Livestock

- 4.3 Subsidies to livestock production in communal areas — and those remaining in commercial areas — should be phased out over a five year period, and in the meantime, be directed towards areas which are not degraded.
- 4.4 The Drought Aid Scheme (fodder/transport/grazing) should be overhauled to promote long-term drought coping strategies through increased expenditure on:
- land reform; *and/or*
 - destocking/restocking initiatives.
- 4.5 Government should reform tenure of rangeland (see Chapter 1 — Land and Natural Resource Management).
- 4.6 Government should promote savings alternatives to livestock.

Crops

- 4.7 Government should focus on improving the quality and use of inputs (provided by the private sector) to increase crop productivity and delay the opening up of marginal arable areas.

Irrigation (see Chapter 2 — Water)**Credit**

- 4.8 The National Agricultural Credit Programme must rigorously enforce its policy of not lending for livestock purchase in areas which are already heavily stocked, and provide incentives through lower, preferential interest rates to invest in processing of agricultural products and non-livestock land-use.
- 4.9 Government needs to introduce measures urgently to help increase the productivity of poor farmers unable to repay loans and therefore ineligible under the NACP.

Policy Research

- 4.10 Research the costs and benefits of different destocking/restocking mechanisms.

Chapter 4 — Forestry

1. Existing and Planned Policy

1.1 As with most other natural resources on communal land, trees and forest resources are still State property.

1.2 The 1992 National Forestry Policy marked a turning point away from the pre-Independence focus on regulation and enforcement and promotes:

- sustainable utilisation of forest resources.
- proper management of resources.
- control over trade in, and processing of, wood.
- participation of rural communities in forestry activities.

1.3 However, it also states that:

"The principle [sic] aims of the Namibian forest policy must be to ensure environmental stability and maintenance of ecological balance which are vital to the sustenance of all life forms ... *The derivation of direct economical benefit must be sub-ordinate ...*" [page 5; emphasis added].

"All uninhabited land covered with forests or vegetation should be administered by the Government through the Directorate of Forestry. Such land should either be declared forest reserves or management areas to secure the protection and conservation of our green heritage." [page 6, ¶6.1.3]

"The national goal should be to have a minimum of one tenth of the total land area of the country under forest or tree cover." [reserve areas or other type of Government administered land; page 6, ¶6.2]

1.4 The key pieces of legislation are Forest Act (1968) and Preservation of Trees and Forest Ordinance (1952). The Forest Act allows the Minister to:

- protect a forest or tree species (outlaw use).
- regulate offtake of forest products.
- prohibit grazing to prevent soil erosion or regenerate the forest.
- regulate trade in forest products.

1.5 The Forest Ordinance (1952) established "reserved" trees which it is unlawful to use without a permit. However, consumption for own domestic use is permitted in communal areas, although — in theory — only from the vicinity of the homestead where the household is resident.

1.6 NDP1 targets for the sector are shown in Box 8. Of particular interest are the targets to declare 5% of the country State forests by 2000 (*en route* to ultimate 10%) and self-sufficiency in selected wood products. These State forests are intended to include, by the year 2000, 3,000 km² in Caprivi, 20,000 km² in Okavango and 10,000 km² in former Ovambo.

Box 8 NDP1 Forestry Targets**Outcome**

- Achieve self-sufficiency in selected wood products by 2000
- To have planted 20 million plants by 2000

Physical

- Establish 2 regional forestry offices by 2000
- Establish several local forest management teams by 2000

Institutional & Policy

- Declare at least 5% of Namibia state forest parks by 2000
- Draft legislation on forestry by end 1995 [*now 1996*]
- Complete strategic planning in Directorate of Forestry by 1996
- Introduce Tree Planting Day by 2000

Financial

- Allocate N\$ 6 million for reforestation by 2000

2. Problem Statement

2.1 Deforestation both *represents* land degradation (a loss of output and habitat) in its own right where no alternative activity is undertaken and *causes* land degradation by promoting soil erosion and changes in micro-climate regulation.

2.2 Forest resources are generally unpriced (with the main exception of harvesting for commercial use). Combined with the lack of secure tenure over forest resources this leads to excessive use with demand exceeding sustainable supply.

Management of forest resources

2.3 There is much evidence to suggest that forest resources are being utilised at an unsustainable rate^[5,8]. However, there is little data on the stock of forest resources and rates of regrowth to help determine the level of sustainable yield. A full inventory of forest resources is about to be undertaken following a vegetation mapping exercise over the past three years which established broad vegetation zones. The inventory will take four years to complete.

2.4 Forest resources provide staple materials to the large number of subsistence households in communal areas in the form of fuelwood, fencing, building materials, fruit and other foods. It is probably neither possible nor desirable to try to establish markets for these products, since most communal residents would not be able to afford them. For example, the pricing policy on commercial wood — N\$ 300 per m³ — puts it out of the reach of many woodcarvers and encourages illegal cutting (especially in Okavango). What is needed is a management system which promotes sustainable use.

2.5 Local people bear the *costs* of deforestation in their area (soil erosion, lack of fuelwood and timber). However, without security of tenure over forestry resources there is little incentive to limit use or increase supply (plant new trees). Individuals and communities cannot be certain to reap the *benefits* of their wise management, since it is very difficult to exclude others from both within and outside the community. The dramatic increase in the number of fruit trees within homestead areas in the NCAs — where households do have secure tenure — demonstrates the potential for growth when the user has control.

2.6 The main problem is not one of ignorance of the fact or causes of deforestation, as is so often cited. Communities are aware that population growth and short-term over-use caused by poverty are major problems.

2.7 The Forestry Policy — perhaps albeit inadvertently — sidelines the role of communities in forestry management with its emphasis on State-run forests. However, thinking within the Department appears to have moved on somewhat since then, with a more positive statement of the role of communities in NDP1 (although the target for State Reserves remains).

2.8 The MET's recent conservancy legislation (see Chapter 1 — Land and Natural Resource Management) which principally addresses wildlife is broad enough to encompass forest resources, but has not yet been developed or promoted by the Directorate of Forestry to do so.

2.9 The current legislation is outdated (from 1950s and 1960s), inappropriate (1968 Forests Act was aimed at commercial forest use) and unenforceable (witness the deforestation in communal areas caused by both commercial and subsistence users). New legislation is currently being drafted.

Use of forest products

2.10 The goal of self-sufficiency in selected wood products is economically inefficient and risks misdirecting the efforts of the Department of Forestry towards afforestation and reforestation at the expense of extension activities to support community-based management of resources.

Communal

2.11 Collection of firewood around homesteads by rural residents is generally not a cause of deforestation because people harvest dead wood. The problem emanates from peri-urban and urban areas where the demand for fuelwood has encouraged commercial operators — who sometimes pay communities and sometimes do not — to fell whole trees thereby accelerating deforestation.

2.12 Collection of timber by local residents is, however, a clear cause of deforestation. The lack of alternative building materials is a major problem here.

2.13 The importance of non-timber forest products — which is increasing with population growth and widespread poverty — needs to be recognised in any management system designed principally to reduce the felling of trees. Ways must be found to secure access to non-timber forest products while protecting trees.

Commercial

2.14 The use of the permit system to prohibit export of fuelwood has the unfortunate effect of discouraging clearing of bush-encroached land. The argument that such resources are needed to meet a deficit in communal areas is not convincing in the absence of any policy to get the wood to those areas, where residents presumably cannot afford to buy it. Other arguments used to support this ban are also weak (tax evasion, mining of soil).

2.15 On the other hand, the use of the permit system to prevent the export of unprocessed products — in particular, mopane roots — is a good way to ensure that the country maximises revenue and employment from its natural resources (if it is not in breach of any free trade regulations). This argument could be applied to fuelwood.

3. Possible Solutions

Management of forest resources

3.1 The on-going drafting of the new forestry legislation provides an excellent opportunity to secure the place of subsistence users in managing forest resources. It is currently envisaged that there will be a number of different types of tenure — State (including Regional Council), community, and private — with different systems of access and use.

3.2 The principle of community management of forest resources should be incorporated — along with similar rights over land, water, and wildlife — into the Communal Land Reform Bill. Detailed (satellite) legislation protecting or regulating particular species/habitats can be separately introduced and operate within this broader framework.

3.3 In the meantime, the recent conservancy legislation could be extended to forest resources. Defined communities gain rights to manage, and profit from, forest resources, in return for a commitment to sustainable management, and within the overall limits on use agreed with the Directorate of Forestry.

3.4 State forest reserves should be introduced to protect critical species and habitats, and perhaps to acquire representative systems for research and extension use. There is no case for declaring State reserves simply to try to exclude community access or to achieve an unrealistic target of forest cover. Communities bordering State reserves should be allocated quotas for offtake of forest products — especially non-timber forest products — enforced by the Ministry (a sort-of "external" conservancy principle).

3.5 Scope for reforestation is limited, and should be closely coordinated with affected communities. There is a danger that multi-objective reforestation projects (social security job creation as well as environmental welfare) will fail their environmental objective and divert resources away from extension activities.

3.6 Agroforestry has potential, but is still essentially at the research stage.

3.7 Consideration should be given to merging forestry and agricultural extension, particularly for agroforestry work. The resources available for forestry extension are so constrained that their effectiveness if working in isolation will be extremely limited.

Use of forest products

Communal

3.8 Alternative sources (of energy and building materials) and incentives to sustainable management have to be found. However, options currently available are not very encouraging:

- **Rural electrification** is expensive and progress slow with the dispersed population.
- **Solar power** is high tech, high investment and high maintenance for rural households.
- **Charcoal** use may be desirable if it is imported from bush-encroached areas (see Chapter 1), but there may be resistance to changing from fuelwood.
- Problems with introducing **fuel-efficient stoves** in a culture of open fires.
- **Clay houses** are technically difficult to construct well and do not meet the expectations of rural households. Commercial timber, roofing and wire are too expensive for most rural households.

3.9 The depressing conclusion is that increasing scarcity may be the only mechanism to encourage wider take-up of these alternatives. However, progress will also be possible once communities have control over resources and can begin to charge outsiders for use. For example, in many areas the greatest pressure on fuelwood comes from urban dwellers. Once communities have the right to sell fuelwood (and enforce exclusive rights through the State), demand for wood will be moderated and communities will have an incentive to sustain supply for future income.

3.10 It may be possible for Government to reinforce this approach through taxes and subsidies as has been tried elsewhere (for example, Niger). Taxes on wood consumption could be used partly to cross-subsidise alternatives — such as gas — and partly to encourage wood-producing communities to use their resource sustainably (if agreed off-take was exceeded, they would lose their quota to sell into the regulated market). However, such a scheme would require great GRN administrative capacity and strong community control over resources to prevent illegal cutting.

3.11 A more feasible alternative to reduce pressure on rural resources from urban areas may be to try to smooth out some of the up-front capital costs facing urban consumers who would like to switch from fuelwood (and traditional building materials) to other technology but cannot afford the initial outlay. Such assistance would need to be carefully researched and targeted.

3.12 There is a need for research into the total subsistence value of (non-marketed) forest resources to compare alternative land uses and to develop forestry as a complementary land-use (see Chapter 1). This is particularly important in light of the fact that increasing numbers of people have no cropland and depend on the forest for fruit products and grazing.

Commercial

3.13 A consultancy on the pricing policy for wood (and wood products) is to be undertaken this year under the guidance of the Department of Forestry. Pricing and quota policies must work together to ensure that wood is harvested in a sustainable manner. Quotas should be set at levels where natural regeneration and/or reforestation maintain existing stocks (or increase stocks, if they are thought to be inadequate). Prices for commercial timber should then be set at levels which allow Namibian operators to compete with imported substitutes, but which mean that the State captures any excess profits ("rent"). Pricing for artisanal users (woodcarvers) may be subsidised for equity reasons, but linked to quotas to prevent deforestation.

3.14 In the absence of information on stocks and rates of regrowth, the quotas should be set conservatively.

3.15 Consideration should be given to requiring concession holders to reforest if adequate measures are not taken to ensure natural regrowth.

4. Recommendations

Management of forest resources

4.1 Government should formally abandon its objective of declaring one tenth of Namibia state forest and the related goal of self-sufficiency in wood products.

4.2 Communities should be given secure tenure over forestry resources as part of a holistic natural resource management settlement (see Chapter 1 — Land and Natural Resource Management).

4.3 In the meantime, communities with significant forestry resources should be given rights to sustainable use of these resources through the conservancy legislation.

4.4 The forthcoming Forestry Bill should develop strict criteria to justify declaration of protected forestry areas/reserves for specific conservation objectives and ensure access for sustainable use by neighbouring communities.

4.5 Government should promote agro-forestry initiatives more vigorously and combine agriculture and forestry extension.

Use of forest products

4.6 In face of uncertainty over whether current off-take is sustainable (stocks and rates of regrowth unknown), Government should be cautious in determining quotas for commercial users and ensure that prices *at least* reflect replacement cost (and take into account the value of any reduced community access to forestry products).

4.7 Government should reconsider its ban on fuelwood exports (but also explore the viability of sale as charcoal in urban communal areas — see Chapter 1).

Policy Research

4.8 There is a need for research into the subsistence value of forest resources to compare alternative land uses and to develop forestry as a complementary land-use.

4.9 Government should increase research on alternative energy resources and building materials, in particular the potential to subsidise access to kerosene/gas, possibly through a tax on fuelwood consumption.

**PART II —
UNDERLYING POLICY FACTORS**

Chapter 5 — Poverty

1. Existing and Planned Policy

1.1 There is much debate about the nature of poverty—environment (land degradation) linkages, but the general consensus is that poverty increases pressure on natural resources because it forces subsistence users to employ natural resources too intensively.

1.2 A distinction needs to be made between poverty reduction and poverty alleviation (although, of course, poverty alleviation is the first step to poverty reduction):

- poverty *reduction* is the long-term decline in the incidence of poverty as a result of an increase in the ability of poor households to help themselves, through increasing subsistence output or gaining employment.
- poverty *alleviation* is the short-term *relief from* the symptoms of poverty, often by the State through transfer payments but also — and especially in developing countries — through NGOs, donors and community self-help mechanisms.

1.3 There is also an important distinction between *relative* and *absolute* poverty. Absolute poverty exists where a household is unable to acquire the basic necessities for continued survival, whereas relative poverty — or income inequality — exists where there are wide variations in the distribution of income.

1.4 Absolute poverty is defined in NDP1 on the basis of the proportion of household consumption which is devoted to food consumption (the definition used in the 1993/94 *National Household Income and Expenditure Survey* (NHIES)). Households where more than 60% of consumption is food consumption are classified as poor; when this proportion rises to 80%, the household is classified as severely poor. In NDP1, the targets for the goal of (absolute) poverty reduction are to:

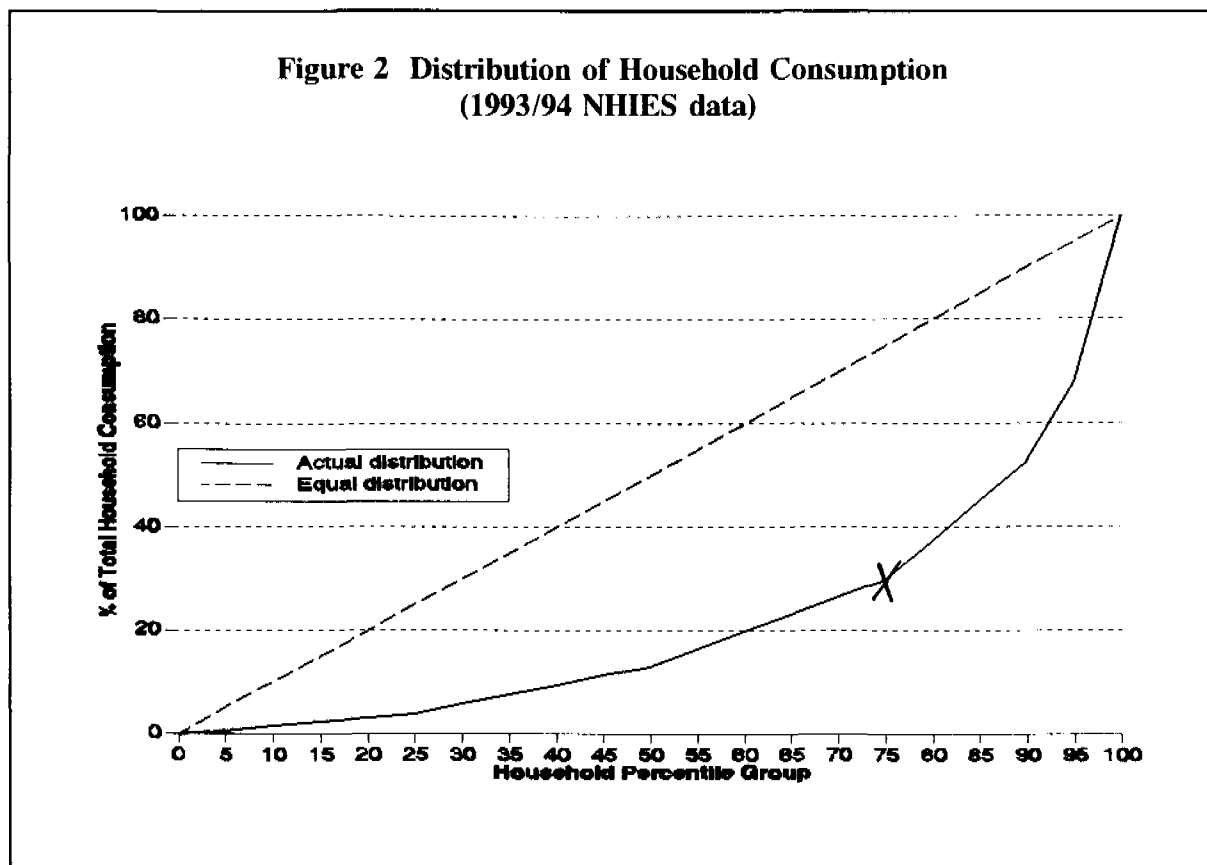
- Reduce the proportion of poor households from 47% in 1994 to 40% by 2000.
- Reduce the proportion of severely poor households from 13% in 1994 to 7% by year 2000.

1.5 Relative poverty is not so clearly defined in NDP1, but reducing inequalities in income distribution is one of the four national development goals with the target to:

- Reduce the proportion of households with below half average income from 60% in 1994 to 50% by 2000.

1.6 This is extremely ambitious as it means that the mean and median household income will have to be the same and implies a significant flattening of the distribution.

1.7 The extent of relative poverty — as measured by the distribution of household consumption — is shown in Figure 2. The quarter richest households consume over 70% of total consumption (point X on the Figure).



1.8 More inclusive measures of poverty look at social as well as economic indicators. The most widely used — and internationally comparable — is the UNDP's Human Development Index (HDI) which ranks countries on the basis of three variables: per capita GDP, life expectancy at birth, and adult literacy. According to the 1995 *Human Development Report*, Namibia ranked 77th of 174 countries looking solely at income per capita — firmly in the top half of nations — but only 108th on the composite HDI — well down in the second half — showing that overall welfare is considerably lower than might be expected for a country with Namibia's per capita GDP. This gap reflects — in large part — the extreme inequalities in income distribution in Namibia.

1.9 There is no formal anti-poverty strategy in Namibia — and no chapter on poverty in NDP1 — but there are a number of measures aimed at both alleviating and reducing poverty.

Poverty alleviation measures

1.10 The following key poverty alleviation measures are in place:

- **State pension** scheme — now equalised across ethnic groups at N\$ 135 per month, an estimated 83% of those eligible are covered.
- **Drought relief** — both food aid and livestock (and crop) subsidies
- **Subsidies** to poor Namibians for essential services (housing, water and electricity in some urban areas).

Poverty reduction measures

1.11 A very wide range of Government interventions are designed to reduce poverty. The following are key elements of poverty reduction:

- Development of an **enabling environment** for private sector development and employment creation — infrastructure, rule of law, legal framework, EPZs, investment incentives, credit, and so on.
- **Human resources development** — education, training and health expenditure, particularly at the primary level.
- Provision of **land** for resettlement (although this programme is in danger of becoming mere poverty alleviation).
- Reorientation of **agricultural policy** towards assisting communal farmers through improved and appropriate research, extension, marketing and credit.
- **Food security** and nutrition strategy.

2. Problem Statement

2.1 Government lacks a comprehensive poverty strategy. The targets for poverty reduction in NDP1 are extremely ambitious and have not been tested for consistency against forecast growth in each sector (which are themselves probably unrealistically high).

2.2 The rural poor — who overutilise natural resources out of necessity — pose the greatest poverty-related problems. However, Government and trade unions have a tendency to focus on poverty in the formal, urban sector — witness the recent introduction of compulsory social security and the debate on labour conditions in Export Processing Zones. This is partly because of the enormity (and dispersion) of the problem in rural areas and the lack of State institutional capacity to do much about it (beyond social sector provision). Government remains too centralised and urban-biased, and the lack of rural and regional development strategies inhibits development.

2.3 Some poverty *alleviation* measures contribute to land degradation because they subsidise natural resource use. The drought aid scheme for livestock, and free water provision, are two good examples of such policy failure.

2.4 Some poverty *reduction* measures may also inadvertently cause degradation. For example, Government supports communal livestock production because it is seen as an essential economic activity for the poor in communal areas, but this encourages degradation. Ensuring access to productive assets — including grazing land — would certainly be a better strategy from a poverty perspective, since:

- many poor households (particularly in former Ovambo) no longer have cattle.
- losses suffered by small farmers as a result of private fencing of the best rangeland almost certainly outweigh the benefit of subsidies provided to livestock by Government.
- subsidies benefit larger herd owners more than smaller ones.

2.5 Redistributing access to land — rather than subsidising livestock production — will also have positive environmental effects because it does not distort relative prices and encourage over-use of grazing. The failure to get to grips with land reform in communal areas has had a major poverty impact with a small minority enjoying the use of resources from which an increasingly marginalised majority are excluded. The remaining "open access" land inevitably comes under great pressure.

2.6 An important consideration here is the extent to which poor subsistence farmers damage the environment relative to the activities of wealthier communal farmers. Given the increasingly unequal distribution of livestock ownership, it may be that poverty is not the problem in rangelands so much as concentration of livestock ownership on enclosed land (this is analogous to the claim by countries in the South that countries in the North cause the population problem through *per capita* consumption levels which are unreasonable). While semi-commercial farmers with fenced land may stock at lower levels to increase offtake for cash sale — and thereby have range in better condition — this is *directly* at the expense of the quality of the land in the diminished open access area. Increased private commercialisation will only enhance this polarisation.

2.7 The only redistribution currently taking place is small-scale resettlement. The resettlement programme risks undermining both poverty and environmental objectives through:

- providing an unsustainably high level of infrastructure and services to those resettled, creating dependency and high unit costs, both of which reduce the number of people who can be resettled; the result is social welfare for a few not poverty reduction.
- poor management of grazing areas through over-stocking and collapse of rotational grazing.

2.8 Rising expectations require a reduction in relative poverty and more of the poor living like the better-off. However, it is simply not possible for everyone to consume natural resources like water and grazing land at levels currently enjoyed by the better-off. Any reduction in relative poverty will thus be less harmful to the environment if it is through redistribution, rather than consumption of the poor rising faster than consumption of the rich.

3. Possible Solutions

3.1 It is important not to ascribe all degradation problems to poverty. Other factors — such as concentration of cattle ownership — may play as important a role and any anti-desertification strategy should reflect this.

3.2 The goal must be to develop a poverty reduction strategy for the rural poor which reduces rather than increases pressure on the environment. Redistributing access to land is a critical need and will lead to less degradation than the current combination of livestock subsidies and drought relief. Enabling rural communities to earn income from wildlife, forestry, and other resources will also reduce poverty while encouraging sustainable resource use.

3.3 Poverty alleviation measures which are "environmentally neutral" — such as pensions — are also to be encouraged. Those which are not, need to be changed. This is particularly important with regard to the drought aid scheme (see Chapter 3 — Agriculture).

3.4 The anti-poverty focus needs to be switched away from the urban and formal sector towards rural areas. This requires that urgent consideration be given to the decentralisation of major Government functions (this is stated as an aim in NDP1 but there is little evidence of Government commitment) and the design of comprehensive regional and rural development strategies. Given the limited means available to Government, it will be necessary to concentrate resources on a few centres with viable populations. One recent report for the World Bank has suggested concentrating resources in the NCAs as part of a strategy to complement growth in the modern sector which will be unable to absorb much surplus labour¹⁰¹. While it may not be politically possible or desirable to choose one area, resources should not be diluted to the extent that they are used ineffectively.

3.5 Reducing dependence of the rural poor on primary production would both reduce poverty *and* pressure on natural resources and it is therefore important to develop "off-farm" income (see *Growth* in Economic Policies).

3.6 Overall, interventions to enhance the poverty reduction strategy consistent with sound environmental stewardship include:

- land reform, including tenure over natural resources, which gives incentives to enhance the sustainable management of natural resources and opportunities for earning income (see Chapter 1 — Land and Natural Resource Management).
- promotion of alternative income generating activities.
- promotion of labour-intensive development projects (especially infrastructure).
- provision of infrastructure and marketing opportunities in rural/peri-urban areas.
- continued reorientation of health and education spending towards primary sectors, and of agriculture spending towards communal areas (services not subsidies).

3.7 Government needs to consider how to ensure that an adequate anti-poverty strategy is developed and made consistent with environmental considerations. One suggestion which has been made (by SSD) is to establish a Poverty Commission in the NPC with broad representation from within and without Government. However, the remit of such an institution should be very carefully considered before it is established. Indeed, poverty considerations ought simply to be part of the daily concerns of NPC and other GRN planning institutions.

3.8 Rapid growth, as well as absolute poverty, can damage the environment through pressure to consume additional natural resources, usually in growing cities (see *Growth* in Economic Policies). Groundwater is probably the resource most at risk here. It is impossible for everyone to consume water at current urban levels. Expectations must remain reasonable. For this reason, Government should target the reduction of absolute rather than relative poverty.

4. Recommendations

4.1 Poverty reduction in communal areas consistent with sound environmental management requires first and foremost that Government redistributes access to productive land and tenure over natural resources (includes removal of private fences) (see Chapter 1).

4.2 Government should extend poverty alleviation measures which do not harm the environment (pension coverage to all those eligible), and adapt those which do (drought aid scheme — see Chapter 3).

- 4.3 Government should reduce the dependency of the rural poor on primary production through the promotion of labour-intensive employment (especially public works) and off-farm processing.
- 4.4 Rural and regional development strategies — and related decentralisation of some Government functions — are urgently required as components of the anti-poverty strategy. Because of limited resources, regional growth centres should be identified for development.
- 4.5 Government should prioritise the reduction of absolute — rather than relative — poverty.

Chapter 6 — Population

1. Existing and Planned Policy

1.1 Rapid population growth can be a major cause of land degradation in areas where heavy demands are made on natural resources and there are limited opportunities for migration and off-farm employment.

1.2 The actual and projected size of the Namibian population (excluding Walvis Bay) between 1970 and 2021 is shown in Figure 3. As can be seen:

- Namibia's population almost doubled between 1970 and 1991.
- It will double again in a very similar period, even on the low growth variant.
- The growth rate is increasing:

— 1970-81:	3.11%	[actual]
— 1981-91:	3.16%	[actual]
— 1991-01:	3.33%	[medium variant]

1.3 The projections are indicative. They all assume zero net international migration and that the downward trend in mortality will continue (any impact of AIDS appears not to have been considered). The variants differ in the extent to which population policy — largely family planning — is assumed to have reduced total fertility rate (TFR) by 2021 (from 5.4 in 1992):

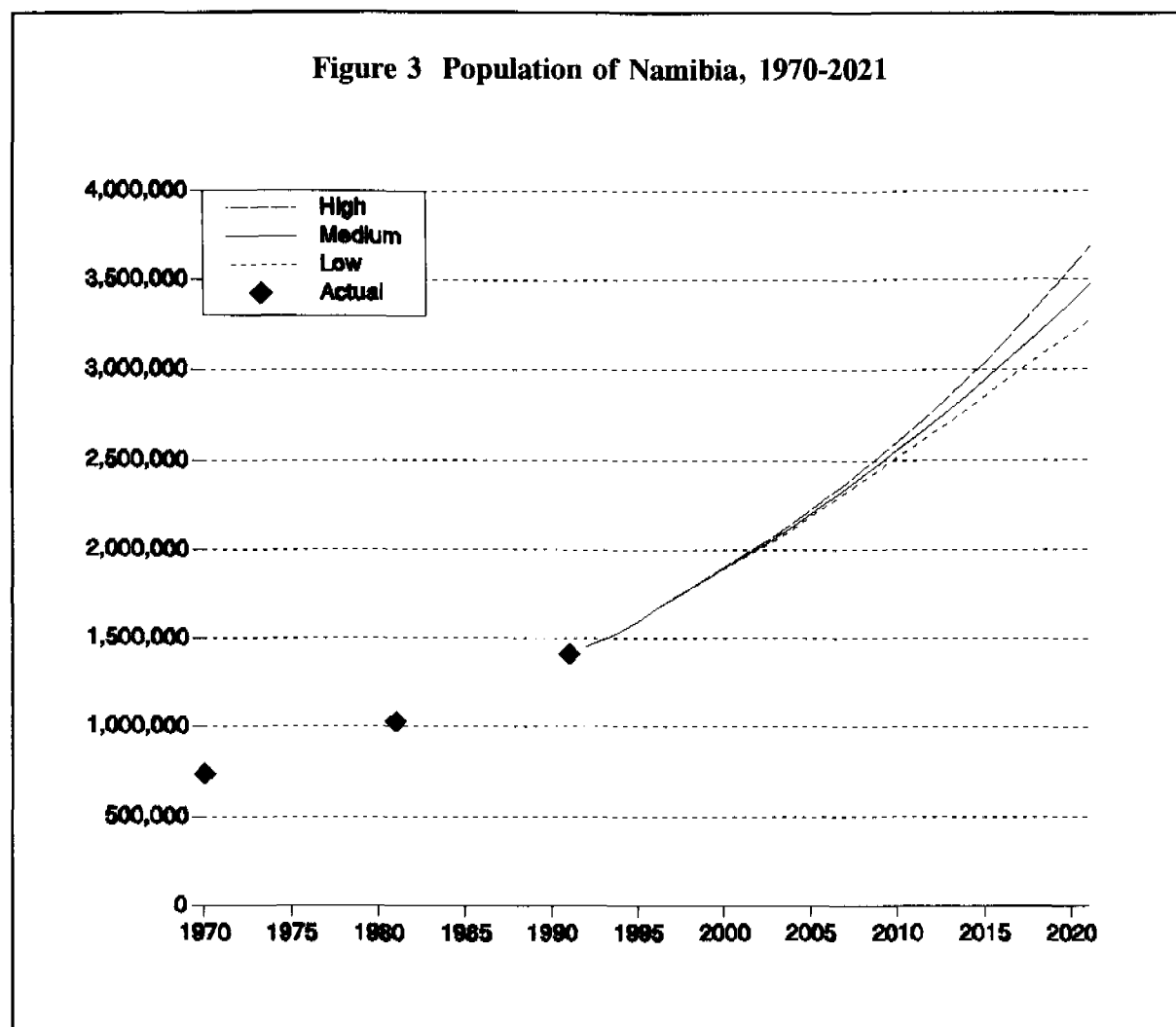
- high variant — to 5.0.
- medium variant — to 4.0.
- low variant — to 3.0.

1.4 The growth rate (on all variants) is expected to peak around 1996 and begin to fall slowly. The medium variant in Figure 3 projects the growth rate to be at 2.7% by 2021 and the population at 3.5 million.

1.5 The Government is in the process of developing a population policy in a participatory manner. A draft policy is expected to be discussed by Parliament in 1996 and operationalised from 1997. The December 1995 Draft Population Policy sets the following key targets:

- To reduce the population growth rate to 3.0% by 2000 and 2.0% by 2025.
[currently 3.1%-3.3%]
- To reduce the total fertility rate to 5.0 per woman by 2000 and 3.5 by 2015.
[currently 5.4 (NDHS)]

1.6 These targets are more onerous than those set in NDP1 which were initially intended to coincide with the Plan period — that is, to be achieved by 2000 — but changed to 2010 by the National Planning Commissioners (to reduce the population growth rate to 3.0% by 2010 and to reduce the total fertility rate to 4.5 per woman by 2010).



1.7 Table 6 shows fertility by residence, region and level of education. Women in urban areas and with secondary or higher education have one-third fewer children than those in rural areas and those without any education.

2. Problem Statement

2.1 It seems clear that the Namibian economy — and particularly the rural, subsistence economy based on natural resources — will be unable to support the population implied by existing growth rates at current standards of living in the long term, unless there are significant improvements in the management and productivity of natural resources^[5,8]. Population policy is not only about giving families (especially women) the ability to choose how many children to have and when to have them, but also about how the next generation is to be sustained.

2.2 Although there is some potential to increase land productivity through improved agricultural practices, alternative land uses and value-added processing, such potential is limited and unlikely to keep up with population growth in the long term. No "green revolution" is expected to transform crop or livestock output.

Table 6 Fertility by Residence, Region & Education

Background Characteristics	Total Fertility Rate ¹
Residence	
Urban	4.0
Rural	6.3
Region	
Northwest	6.7
Northeast	6.0
Central/South	4.1
Education	
No Education	6.6
Some Primary	6.1
Completed Primary	5.2
Secondary/Higher	4.1
Total	5.4

Note: ¹ number of live births per woman aged 15-49 years during the three years prior to survey in 1992

Source: *Namibia Demographic and Health Survey 1992*, Ministry of Health and Social Services (1993), table 3.2

2.3 Land management practices which were possible in the past, when the population was lower, are now under pressure: the possibility for rotating crop production is much reduced, options for moving livestock to seasonal pasture in the dry season have been restricted by settlement and fencing. Adaptations are needed in the way natural resources are managed to keep pace with population growth.

2.4 The constraint on sustainable population growth is not the ability of the *land* to support a given population, but the ability of a flexible, dynamic economy and workforce to generate an increasing number of jobs through improved productivity and successful trade. However, the pace at which Namibia is achieving such progress is slow. The extent of desertification demonstrates that the *rate* of population growth should fall significantly in order to ensure the sustainability of the country's natural resources.

2.5 While current policy sets ambitious targets for slowing the population growth rate, this sense of urgency is not reflected in the draft Population Policy as a whole, nor in the allocation of priorities and resources to achieve this end. It is not clear how such impressive reductions are going to be brought about.

2.6 The immediate impact on natural resources of current levels of population growth are neither adequately addressed nor prioritised. This is reflected in the vague phrasing of the overarching policy goal:

"The major goal of the population policy is to contribute to the improvement of the standard of living and quality of life of the people of Namibia. This will be achieved through the harmonisation of the dynamics of Namibia's population ... with the country's resource potentials".

2.7 The demographic profile of the population — essentially its youthfulness: 42% of the population is under 15 — will significantly constrain the impact of any population policy in the short term (as shown in Figure 3 by the *low* growth variant which assumes that the TFR falls to 3.0 per woman by 2021, itself premised on the heroic assumption that 80% of all fertile women use contraceptives — the prevalence is currently 23%).

2.8 The fact, then, that the population will almost inevitably double over the next 20-25 years demands changes in the way natural resources are managed and consumed (especially water). However, this is not recognised in the Population Policy as it stands, which focuses almost exclusively on how to reduce the population growth rate at the expense of considering how to live with its consequences to prevent an environmental catastrophe.

2.9 One inadvertently positive aspect of the high rate of population growth is that Namibia may be forming population centres with internal markets large enough to support the formation of certain industries; however, Namibia's population remains disbursed and the highest fertility rates are in rural areas.

3. Possible Solutions

3.1 It is important for environmentalists and policy makers to realise that reducing population growth can only be one component of a broader anti-desertification strategy (particularly since there are few *direct* interventions in any population policy). Research has shown that while population growth is a proximate cause of land degradation, it is mediated through a number of other factors including poverty, market failure, inadequate access to credit, weak land management institutions and poor macroeconomic management⁶²¹. What is needed is a strategy to address all the causes of land degradation.

3.2 Population growth makes it all the more imperative to improve the management and productivity of renewable natural resources so that falling living standards and degradation are avoided. In some cases — famously Machakos in Kenya¹¹⁰¹ — rapid population growth has been consistent with maintaining land productivity (albeit under very distinctive conditions) through improved management of resources. Therefore, the population debate needs to be harnessed to focus attention on these sustainability issues and to provide extra impetus for changes advocated in this and other reports. For example, population policy should encourage the development of, and migration of people to, areas with relatively secure water supplies.

3.3 International experience shows that a significant role can be played by population policy in reducing the growth rate and thereby (among other things) reducing pressure on natural resources. Countries which have pursued a vigorous population policy have reduced their growth rate below that of similar countries without a policy. There is a virtuous cycle in slowing population growth: as population growth declines, *per capita* income and Government social spending (especially on — female — education) can increase, in turn encouraging families to have fewer children. There is an converse vicious circle of failing to moderate population growth: *per capita* incomes and Government social spending fall, pushing people into poverty and a perceived need for large families.

3.4 Quantitative research into the linkages between population and degradation in Namibia at the national level would be conceptually and empirically difficult and, in any case, would be unlikely to yield results which would radically alter policy prescriptions. However, research into population factors at the local level may be useful, as part of an analysis of the changing demands for specific resources and the need to adapt management practices.

4. Recommendations

- 4.1 Government must allocate considerable resources to prioritised activities if it is to achieve its ambitious targeted reduction in the population growth rate.
- 4.2 As well as seeking to reduce the growth rate, Government must ensure that the forthcoming Population Policy adequately addresses the environmental consequences of population growth and the consequent need to improve the planning and management of natural resources.

Chapter 7 — Economic Policies

1. Outlook/Existing and Planned Policy

1.1 Links between the economy and the environment are complex, run in both directions and are difficult to generalise across countries. This section sets the scene for the later analysis by describing the outlook for the economy and existing and planned changes to policy. Government's policy intentions are outlined in a number of documents, but particularly in the National Development Plan 1 (NDP1) which covers the period 1995-2000.

1.2 Appendix 4 contains more detailed economic data covering:

- GDP growth
- industrial structure
- employment
- Government expenditure/revenue
- balance of payments

Growth

1.3 The latest official growth forecast/target in NDP1 shows GDP rising by about 5% per year in 1996 and beyond after a small 1% increase in 1995 (due to the drought and red tide affecting agricultural and fishing output respectively). With population rising by 3.1%-3.3% per year (see Chapter 6 — Population), this means increases in *per capita* GDP of around 2% per year, impressive in historical terms but still not very dramatic.

1.4 The overall forecast growth level of 5% from 1996 onwards is probably over-optimistic, and was influenced by political considerations (it is more a target than a forecast; earlier technical-level estimates put the forecast at 3%).

1.5 *Variability* in the rate of growth — as opposed to its absolute level — is inevitable but probably harmful in the context of desertification because it makes it hard for people to manage their resources. Drought relief for food consumption, pensions and urban-rural transfers are especially important in this context (see Chapter 5 — Poverty).

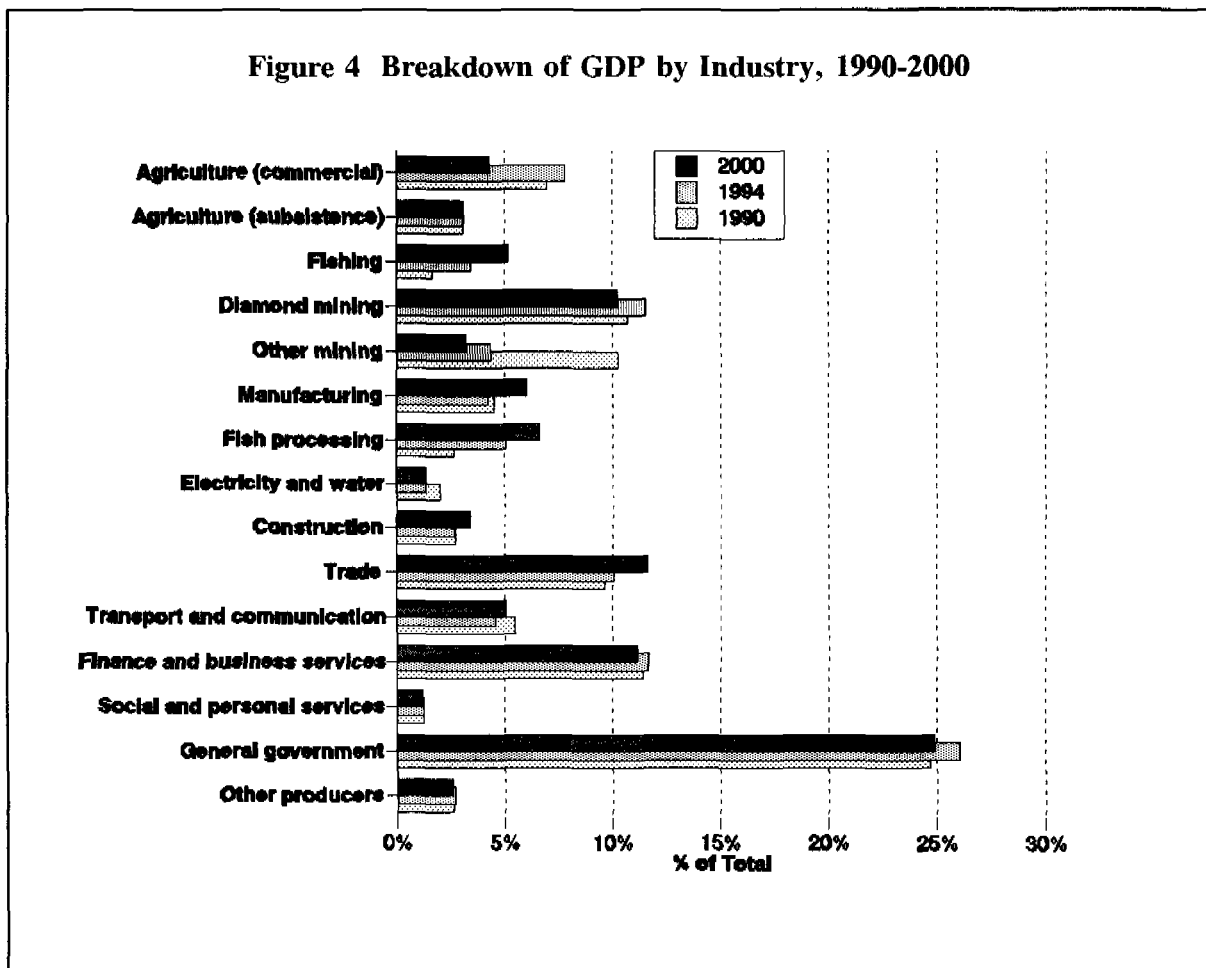
Industrial structure

1.6 Growth in the economy remains dependent on Government and the volatile mining sector. Mineral resources are finite and Namibia risks a dramatic economic slump if measures are not taken now to diversify the economy. This is sometimes not evident to policy makers because no attempt is made in the national accounts to adjust for depletion of natural resource stocks (as there is for other physical capital — *Gross Domestic Product* less depreciation of physical capital equals *Net Domestic Product*).

1.7 Figure 4 shows the proportion of output provided by each sector at Independence, in 1994 and as expected by 2000.

1.8 In summary:

- the sectors expected to show the strongest growth are **fishing and fish processing, tourism** (largely reflected in "hotels and restaurants" but not shown separately) and **manufacturing**.
- growth outside mining and general government (private non-mining growth) is expected to be particularly strong, averaging 7% after 1996.
- because the strong growth sectors — especially manufacturing — are starting from such a low base, their growth performance will not dramatically alter the composition of the economy, as shown in Figure 4; however, a good start towards diversification will have been made.
- overall, the *share* of agriculture in the economy is expected to fall despite increases in the level of physical output — this is because of an expected decline in the unit prices of agricultural outputs, especially beef (Figure 4 shows the relative contribution of each sector to the economy using prices prevailing at the time in 1990, 1994 and 2000).



Employment/Unemployment

1.9 Formal sector employment (including commercial farm worker) is projected to grow by some 70,000 during NDP1. The largest growth sectors — in absolute terms — are expected to be trade (which incorporates the tourism-related sector, "hotels and restaurants"), construction and manufacturing. To any extent that the growth projections prove to be over-optimistic, so too will the employment projections.

1.10 While subsistence agriculture employment is expected to grow relatively slowly — at 3% per year — it remains a key source of employment and is expected to provide some 30,000 additional jobs during NDP1.

1.11 Informal sector employment and unemployment is projected as the residual of overall growth in the labour force less formal and agricultural employment. This partly explains why it is expected to grow by only 17,000 during the Plan period.

1.12 The unemployment rate — those *wholly* unemployed as opposed to underemployed — was estimated to be 19% at the time of the 1991 Census, since when it has almost certainly risen. NDP1 does not forecast unemployment, but the employment projections imply a significant *fall* in the unemployment rate. Even assuming that the number of those in the informal sector does not grow *at all* compared with 1991, the unemployment rate would fall to 12% by 2000 — 78,000 of a projected workforce of 661,000. *This gives an indication of the optimism of the NDP1 forecast growth level.*

GRN revenue/spending

1.13 In August 1995, Cabinet approved a White Paper, *Towards a Sustainable Fiscal Policy*, which is broadly in line with pronouncements in NDP1. Fiscal policy relates largely to Government taxation and expenditure measures. Two new taxes relevant to desertification are discussed:

- **Agricultural land tax** — "Government will give serious consideration to a minimum agricultural land tax creditable against normal income tax" (pp13-14), after a detailed study (see Chapter 1 — Land and Natural Resource Management).
- **Environment protection levy** — "To protect the environment from degradations, Government will introduce on the production of certain goods some form of levy. In designing the levy due consideration will be given to its impact on the price competitiveness of the goods and services that would carry the burden."

1.14 The Ministry of Environment and Tourism is also proposing an environmental levy to contribute to an Environmental Investment Fund. The levy will serve a similar function to a tax on resource use — on tourism in the first instance, but other resources are to be considered — but it is different from a GRN tax in that funds will be spent directly on conservation activities through a Trust outside Government, and will complement funds raised from international donors.

1.15 One of the central concerns of the White Paper — and NDP1 and last year's Public Expenditure Review (PER) — is for the Government to reduce the budget deficit from 4% of GDP in 1995 to 3% of GDP by 2000. Although revenue and expenditure will increase in absolute terms, both (particularly expenditure) will fall as a percentage of GDP.

1.16 The two key poverty-related sectors — education and health/social services — will continue to dominate the budget, representing 42% of spending over the NDP1 period.

Monetary policy

1.17 Namibia's monetary policy — interest and exchange rates, money supply — is almost completely constrained by the tying of the Namibia dollar to the South African rand. There is no room for exchange rate variation — it is the rate of the rand with the rest of the world — and consequently very little room to manipulate interest rates to influence economic growth, since any significant variation would undermine the exchange rate parity.

International trade

1.18 Namibia is a member of the Southern African Customs Union (SACU) — whose other members are South Africa, Botswana, Lesotho and Swaziland — and this is the core of Namibia's regional trade relations. SACU is a full customs union, with free trade between members, a common external tariff, and a revenue-sharing formula by which the commonly-collected revenue is distributed among members (SACU revenue currently accounts for about a third of the country's total tax revenues). Namibia is also a member of the Southern African Development Community (SADC), the Preferential Trade Area (PTA) and the World Trade Organisation (formerly GATT). Some Namibian products — largely agricultural — enjoy preferential treatment under the Lomé IV Convention of the European Union. Namibia also enjoys preferential access through the General System of Preferences.

1.19 As well as reducing anti-export bias, the reductions in SACU tariffs and trade liberalisation in general will open up Namibian markets to increased competition from non-SACU imports. However, the impact on Namibian producers is likely to be slight. Unlike South Africa — which developed highly-protected import-substituting industries behind the SACU tariff wall — Namibia failed to develop such industries and will not need to restructure its economy so radically. The most likely effect of the reduction in tariffs will be the replacement of South African imports with cheaper imports from other countries which will benefit consumers, with a likely net reduction in poverty.

1.20 Namibia is heavily reliant on the export of primary commodities, reflecting its overall economic structure. If Namibia is to become less vulnerable to fluctuations in commodity prices, it must diversify its exports.

1.21 Reductions in tariffs in South Africa and the EU will lower beef prices received by Namibian exporters, thereby eroding the value of Namibia's preferential access to these markets. Increased access as a result of the Uruguay round to markets in the rest of the world, will, to a large extent, offset this loss in the beef sector (increased fish exports, reduced bill for cereal imports)¹⁶⁰.

2. Problem Statement

Growth

2.1 There are two conflicting effects of economic growth/poverty reduction on natural resource use:

- growth *reduces* rural poverty and therefore degradation through reducing dependence on the land (primary production).
- growth *increases* the demand for natural resources from industries and urban households.

2.2 The net effect of these two forces on the demand for natural resources and degradation is an extremely complicated matter. Various ways in which growth can increase or decrease pressure on natural resources are summarised in Table 7. The net effect will depend, among other things, on:

- which **resource** is considered — land, water, forestry.
- which **sector** is growing — different activities make different demands on natural resources.
- the extent to which there are **mechanisms** — such as prices or regulations — which restrict demand to remain in line with sustainable supply.
- **producer behaviour** in response to market changes (see Box 9).

2.3 For example:

- The likely reduction in the export price of beef to Europe and beef, sheep and goats to South Africa, may well lead commercial farmers to increase stocking rates to compensate for lost income, thereby aggravating land degradation. But in the long term, it may lead to a move out of cattle, sheep and goat farming (see Box 9).
- Manufacturing industry is generally regarded as the most likely to be labour intensive, therefore having positive environmental effects through the relief of poverty and reduced dependence on primary production (land). But at the same time, manufacturing's use of natural resource inputs (particularly water and energy) is probably also relatively high.
- Devaluation can increase employment growth and reduce poverty by boosting export-led growth. But negative effects depend on the extent to which higher import prices erode the poverty effect, whether export-industries require relatively high or low inputs of natural resources, and the extent to which natural-resource exporting industries increase harvesting rates to unsustainable levels given more favourable (N\$) prices.

2.4 Nevertheless, in spite of so many uncertainties, two working assumptions enable identification of two major problems from an environmental perspective.

2.5 A working assumption can be made that the *net, long term, effects of growth on the environment are positive* because without it, pressure on the land and primary production will increase infinitely. Therefore, one major problem is:

- the **slow pace of growth**, expansion of employment, and reduction of poverty.

2.6 For example, mining is stagnant, extraction of renewable natural resources for production inputs or exports is limited, and manufacturing is constrained by competition with South Africa and relatively high wages.

2.7 A stronger assumption can be made that *the positive and negative impacts of any given rate of growth can vary substantially under different conditions*. Therefore, the second main problem is:

- **the lack of measures to adapt the composition of growth** to environmental constraints.

2.8 For example, water supply is simply increased to meet demand rather than encouraging low water-using industries; energy-efficiency measures are minimal, industrial incentives are biased against tourism, economic planning is not based on estimates of resource availability.

3. Possible Solutions

3.1 While NAPCOD has little scope to influence many economic constraints and policies, it is essential to understand environment-economy linkages and encourage other policy-makers to take them into account. This section considers changes in economic policies which could have a positive impact on land degradation by increasing the pace of growth or changing its composition.

Pace of growth

3.2 Assuming that the net effect of growth on natural resource utilisation is positive (see ¶2.1), then Government can consider a range of options to increase growth and employment.

Diversification

3.3 In the short run, the expansion of fishing, fish processing and tourism offer good opportunities to diversify the Namibian economy and consolidate growth. However, growth in these renewable natural resource based sectors is finite. In the longer term, Namibia will have to significantly expand other sectors, particularly manufacturing and services.

3.4 However, Namibia's manufacturing industry will always be constrained by the competitive advantages of South Africa, particularly while the Namibia dollar remains pegged to the rand at N\$1=R1. Therefore some analysts believe faster growth can be achieved by focusing on the service-sector (tourism) and on trade-related (packaging, warehousing, international retail and wholesale) industries which use Namibia as an entry point to the region. Development of regional transport links will assist trade-related industries. Creation of Export Processing Zones should assist both manufacturing and trade-related industries, so will promote diversification.

3.5 Although, at present, devaluation of the Namibia dollar is not an option (the exchange rate is determined by South Africa), Government is likely to consider the advantages and disadvantages of acquiring an independent monetary policy, and the related possibility of devaluing the Namibia dollar. Advocates of devaluation in Namibia¹⁹⁹¹ argue that devaluation would boost growth by increasing demand for exports. It could also force labour costs down in line with productivity levels (boosting employment) and reduce dependency on mineral exports through diversification.

Box 9 How do Price Changes Affect Harvesting of Natural Resources?

If prices rise, do producers increase or decrease exploitation of resources?

If the price of a product rises, the change in supply — the response of producers — depends on two opposing forces:

- *income effect*: with the same output, the producer earns more. So instead s/he might choose to sell *less*, and keep income constant.
- *substitution effect*: the profitability of each unit of output is higher, so the producer has an incentive to increase output even further — substitute resources and effort from other activities into production.

The same effects are encountered if *price falls*. For example, if the beef price falls:

- some farmers increase livestock production to try to maintain their original level of income (income effect).
- others switch out of cattle because it has become even less profitable, and seek other income opportunities or work less (substitution effect).

Which effect will dominate? It varies from situation to situation:

- Often the substitution effect only occurs in the *long term*, as it takes time to reallocate productive resources. In the case of switching out of cattle due to a fall in the beef price, the substitution effect depends on farmers having *alternative income-generating options*, or being willing to accept more leisure and *less work*.
- The income effect is likely to be stronger when prices fall rather than rise — it's more important to stop income falling than rising — and will be particularly strong when producers are near their critical *minimum* income.

A "worst of both worlds" is therefore possible for livestock production: when prices fall, commercial farmers increase herds to maintain minimum incomes; when prices rise, farmers invest more in livestock because it is more profitable! However, in the case of communal livestock farming, there can be a reverse effect (if market price has any affect at all): increased harvesting of the livestock in response to price can be achieved through *increasing the off-take rate* rather than the herd size, and therefore *decreases pressure* on rangelands.

Similarly countervailing forces are at work when opportunities for processing natural resources and "*adding value*" open up:

- Producer can earn as much, or even more, than before by harvesting less of the resource, spending time on processing, and selling it at a higher price per unit (income effect, pressure on resource goes down).
- Profitability of processing increases demand for, and price of, the raw product, so producers have an incentive to harvest more.

The income effect can be strengthened by a "*sustainability effect*" in the case of renewable natural resources: as the selling price goes up, current income goes up but so does the loss of future income from unsustainable harvesting. As producer income and security goes up, willingness to stabilise current income for the sake of future income also increases. The sustainability effect depends on being certain that the higher price will *continue* in the future. For example, if elephant products were downlisted and legally traded for only a temporary period, there would be every incentive to maximise harvesting now, whereas a permanent market would provide incentives for long-term sustainable off-take.

Table 7 Summary of Key Links between Economic Development and Pressure on Renewable Natural Resources¹

Economic change	Change in pressure on:			
	Water	Rangeland	Forest	Arable land
Rural poverty / development				
Increase in extreme poverty, so unable to meet daily needs	— (already low)	↓ if sell/lose livestock (↑ if overgraze from necessity)	↑ : increased dependence on trees for fuel, material, food	↑ : dependent on own cultivation
Rising living standards in rural areas	↑ if correlates with increased access to water (pipes, boreholes)	↑ if income is saved/invested in more livestock ↓ if increase in non-livestock	↑ if more vehicles/carts increase access to wood; ↓ if switch to alternative fuels and building materials	↓ : increased inputs to boost crop productivity & switch to commercial food
Increased processing of natural resource products e.g. leather, crafts	↑ : depending on water-intensity of industry	↓ if farmers switch from harvesting raw resources to adding value through processing; ↑ if increased demand/price for raw resources increases level of harvesting; ² (but in case of livestock products: increased harvesting may increase off-take rate therefore decrease stocking rate).		
Increased demand for & price of RNR exports: ³ e.g. beef e.g. game	depends on change in production and water-use in production	↑ if higher price is incentive to expand LS herds; ↓ if incentive to increase off-take with no change in herd. ↑ if game added to LS ↓ if game replace LS	—	—
Urban and industrial growth				
Rising employment, population & living standards in urban areas	↑ : higher consumption per person	↑ : savings/remittances invested in more livestock. ↓ if reduces rural population & dependence on the land.	↑ : development of trade in fuelwood/timber; ↓ if urban HH switch to alternative fuels/materials	↑ if urban food is supplied locally; ↓ if supply is imported
Expansion of manufacturing industry & service sector ⁴	↑ (depends on water-intensity of industries)	↓ if decreases dependence on agriculture.	↑ only if dependent on wood inputs	—

NOTES

1. Italics indicates cases in which development and decreased pressure on natural resources go hand-in-hand. It is interesting to note that often the positive effect (eg. reduced reliance on agriculture, urban dwellers switch to alternative fuels) is more long term.
2. See discussion of countervailing "income" and "substitution" effects in Box 9.
3. Devaluation = increase in demand/NS price of exports where world price set in US\$; world trade liberalisation = decrease in price (likely for beef). LS = livestock.
4. Also has impact through expansion of urban jobs and incomes, as in row above.

3.6 However, there is a counter-argument that the currency is not overvalued, other constraints would limit any boost in export demand, and devaluation risks setting off an inflationary spiral by raising import prices.

Lower real wages and labour-intensive growth

3.7 Government currently has some job-creation schemes (public works), but not a strategy for promoting employment and labour-intensive growth. Such a strategy could include vocational training, incentives to substitute labour for capital, and giving priority to labour-intensive industries.

3.8 In addition, downward pressure on real wages (through EPZ exemptions, or devaluation) could increase employment. Wages of unskilled workers are regarded as high relative to productivity, thereby discouraging labour-intensive growth (the shadow wage for unskilled labour has been variously estimated at between 35%–50% of the actual paid). Unskilled wages are probably distorted by a few large employers — mining companies and Government — being prepared to pay wages a great deal above market clearing levels and setting wages throughout the formal sector. Another factor is strong labour unions representing the interests of the employed rather than the unemployed. However, the effect of a real wage drop on poverty (and hence resource pressure) would need to be considered, as would other constraints to the development of labour-intensive manufacturing (such as distance from markets and competition with South Africa).

Redistribution to the poor

3.9 Economic changes that would benefit the poor, at the expense of the better off, include:

- more progressive taxation to fund redistributive spending in rural areas.
- liberalisation of the cereal market: the fall in cereal prices would benefit those who are net purchasers of cereal, but harm surplus cereal producers.

3.10 For other measures affecting faster poverty alleviation/reduction see Chapter 5 — Poverty.

Mineral stabilisation fund

3.11 As well as boosting the rate of growth, it is important to stabilise its annual fluctuations. A mineral stabilisation fund (MSF) might help to even out fluctuations in the economic cycle caused by commodity price changes. The fund could be used to ensure a stable level of Government expenditure and prevent desertification-related problems caused by variable Government spending and reductions in rural incomes arising from reduced employment and remittances.

Sustainability indicators

3.12 In the long term, any economic growth based on natural resources must follow the principle of *sustainability*, otherwise both the resource base and the growth rate will decline. Natural resource accounts could be used to develop sustainability indicators to allow decision makers to know whether or not current levels of offtake can continue. However, meaningful indicators may be difficult to calculate in Namibia because of the variability in rainfall which affects what counts as sustainable offtake of water and agriculture from year-to-year.

Composition of growth

3.13 From an environmental perspective, it is more important to focus on measures which can change the *composition* of growth in line with sustainability constraints than on the rate of growth (as positive environmental impact is more assured, and there is no distinctive "environmental perspective" on increasing the rate of growth *per se*).

Service sector incentives

3.14 While current investment incentives are not especially biased towards capital away from labour, they are unduly favourable towards manufacturing. Manufacturing, export and EPZ incentives should be extended to service sector industries, especially since these industries may well be less demanding of Namibian natural resource inputs. Tourism is a particularly important example: the industry makes relatively low demands on natural resources, is labour intensive, can benefit the informal as well as formal sector and spreads benefits around the country, especially to areas with little alternative growth potential. An initiative to streamline incentives (manufacturing, export, EPZ and other) is about to begin under the auspices of the MTI.

Rural development

3.15 The net effect of growth is likely to be more environmentally friendly if it reduces the dependency of poor rural households on primary production. Growth which is targeted at the informal sector throughout the country should have this impact — for example, through tourism, off-farm processing, and decentralised regional development (see Chapter 5 — Poverty).

Value-adding

3.16 Growth which is based on value-added processing rather than commodity export, or based on processing and re-export of non-Namibian natural resource inputs, will have less effect on natural resource overuse (however, resource-processing opportunities can also increase pressure on resources — see Box 9).

Environmental protection levy

3.17 The introduction of an environmental protection levy — "to protect the environment from degradations" (see ¶1.13) — could help significantly to reduce pressure on natural resources by limiting resource use/pollution to economically-efficient levels. Presumably the rationale for the levy would be to internalise costs of natural resource use which are not borne by producers. It is not clear what resources the Government has in mind: it may be that the levy is aimed principally at air/water polluters in which case it will be of limited impact on land degradation. However, in theory the levy could be extended to a whole range of activities; for example, cattle production or excessive water use, if such production was thought to be causing land degradation.

3.18 The levy would more effectively promote sustainable development if it was reinvested back into the natural resource base — as levies raised for the Environmental Investment Fund will be. Draft legislation to establish the EIF leaves scope for a Ministry of Finance environmental protection levy to be paid into the EIF.

Environmental impact assessment

3.19 Just as a Government policy can be adapted to achieve its ultimate aim without unintended adverse effects on the environment, so an infrastructural development or economic activity can be adapted — so long as environmental impacts are considered and ameliorated at the planning stage. Government's Environmental Impact Assessment procedure (agreed but not yet fully implemented) can ensure that negative environmental effects of any economic activity are reduced, often at little cost.

3.20 Government *policy* — as well as private and public project-level development — should be subject to environmental appraisal. In addition to developing implementation procedures, awareness-raising and enforcement powers are needed.

Wildlife products

3.21 Trade in wildlife products which is currently prohibited by CITES should be liberalised where such trade can be shown to contribute to sustainable use by providing incentives to conserve wildlife. However, long-term markets and not a short-term window are needed: if legal trade is seen as only a temporary opportunity, the rational response of producers will be massive short term over-exploitation.

Natural Resource Accounts

3.22 Because of the way growth is measured, no account is taken of the depletion of (renewable and non-renewable) natural resources. The creation of Natural Resource Accounts, and their use by policy makers, could encourage more sustainable exploitation of these resources — in the case of renewable resources — and rationed use/managed phasing out of non-renewable resources to maximise their long-term yield and prevent a sudden economic collapse.

Research into resource demands

3.23 More research is required into the relationship between economic growth and natural resource use, in particular, the different demands placed on resources by different industries. A model being developed by the MET/NEPRU Natural Resource Accounting (NRA) Project will enable policy makers to test the different natural resource requirements of alternative growth strategies.

International experience

3.24 Much existing research on the nature of environment-economy linkages in developing countries is a product of evaluating structural adjustment programmes or is non-generalisable. Nonetheless, it is partly relevant to Namibia. A recent World Bank study^{182]} of the connection between economy-wide policy and the environment came to the following broad conclusions:

- Removal of **price distortions**, promotion of **market incentives** and relaxation of other **constraints** to efficient natural resource allocation (such as land tenure) generally promote both economic and environmental gains (for example, improved water pricing and efficiency).
- Environmental problems arise when economic reforms successfully boost economic growth while **policy, market** or **institutional** imperfections that distort natural resource use remain (for example, export-led growth based on processing of a resource which is underpriced).
- **Macroeconomic stability** generally yields *environmental benefits* because *instability* undermines sustainable resource use.
- Economy-wide changes have longer-term effects on the environment through **employment** and **income distribution** changes which in turn lead to different pressures on natural resources; such pressure can be reduced through proper pricing, reduced waste and increasing efficiency.

3.25 The second conclusion is particularly important. Probably the most important strategy in affecting the composition of economic growth is to ensure that natural resource inputs are properly priced and managed, as outlined in other sections of this Report, to provide the correct incentives and framework within which growth occurs. Otherwise, rapid economic growth is unlikely to have the desired positive environmental impacts.

4. Recommendations

- 4.1 Government should ensure that the composition of growth is consistent with natural resource availability and therefore:
- extend investment incentives to services (especially tourism).
 - promote growth in rural areas.
 - promote growth in high value-adding activities.
 - develop an environmental protection levy (as part of the Environmental Investment Fund).
 - liberalise trade in wildlife products (if sustainable in long term).
- 4.2 Government should integrate Natural Resource Accounts into economy-wide decision making.
- 4.3 Government economic (and other relevant) policies should be subjected to environmental assessment as a matter of routine.

Policy Research

- 4.4 Research into the natural resource demands of different industries would enable policy makers to plan economic growth within natural resource constraints.
- 4.5 Government should conduct an environmental impact assessment of the policies, programmes and growth strategy presented in NDP1.

**PART III —
ACTION PLAN & NEXT STEPS**

Chapter 8 — Action Plan

1. Conclusion: Improving the Policy Context

1.1 As the analysis in Parts I and II has indicated, there is a very wide range of policy factors which affect how natural resources are used and managed.

1.2 In some key natural resource sectors — such as water and wildlife — previous policies have not ensured sustainable use, but action is now beginning to be taken to change the principles of management (in these cases, pricing and conservancies respectively). However, in other sectors — notably land and agriculture — environmental considerations have been subordinate to social, political and economic considerations. Awareness of how policy decisions affect the long-run sustainability of these resources is low but growing.

1.3 There are several examples of "policy failure" where land degradation is caused inadvertently. In these cases, the policy needs to be redesigned to meet its objectives without undermining the sustainable use of natural resources. The most glaring example from the analysis is the drought aid scheme.

1.4 Often the underlying problem is a lack of adequate cross-sectoral planning. Policies are set in one sector without considering their impact throughout the economy and on natural resource use. The policy of providing subsidised irrigation water was determined according to agricultural priorities rather than in the context of optimal and sustainable use of water *throughout* the nation. There is an imperative need to improve the cross-sectoral planning of such resources.

1.5 There are many cases of overuse of natural resources because they are free, "public goods", the consumption of which nobody can be (easily) denied. Such goods are not priced and there is no exclusive tenure to enable rationing either by the market or local-level institutions (communities) and individuals. Forestry resources, wildlife and surface water are all good examples. These resources require a combination of pricing and/or tenure allocation to ensure their sustainable use.

1.6 Looking at more underlying factors, natural resources are overused because of inevitable increases in demand through population and economic growth, and rising expectations. Apart from limiting such increases where possible (changing the composition of growth, moderating unsustainable aspirations, reducing the population growth rate), it is also essential to develop strategies to try to increase supply and — just as importantly — to manage existing natural resource stocks sustainably and prevent them being rapidly diminished to meet short-term needs. Water, for example, requires both increases in supply and better management of existing stocks through proper pricing and conservation.

1.7 The pace and direction of growth affects the environment in many ways; some are positive and some are negative. In the long run, of all the factors discussed, economic growth (and the related phenomenon of population growth) probably has the greatest impact on natural resource use and land degradation. The pace and direction of growth determines the extent of reliance on land and primary production, the demand for water and energy, changes in expectations and consumption levels. However, these linkages are difficult to disentangle and also very hard for environmentalists to influence. It is therefore probably better to focus on changing the planning process as a whole so that natural resource considerations are taken into account in planning economic growth — literally, through Natural Resource Accounts. It will also be worthwhile pursuing a few *critical* policies (for example, ensuring environmental impact assessments — especially for infrastructure developments — to moderate the effects of growth, extending investment incentives to service-sector industries, and so on).

2. Prioritising

2.1 In order to prioritise what policies should be changed, it is necessary to consider which of them have the greatest impact on desertification. The recommendations contained in each section have been prioritised in terms of their estimated importance in contributing to a reduction in land degradation in the following two tables. Those from Part I are shown in Table 8 and those from Part II in Table 9. Within each section, the recommendations are ranked according to their estimated relative importance.

2.2 The recommendations have also been assessed for:

- the likely possibility that the policies involved can be changed.
- the existence of a "window of opportunity" within the near future for NAPCOD to exploit and introduce the proposed changes.

2.3 Those recommendations which are rated particularly strong or weak against these criteria are marked "Y" and "N" respectively; where there is a strong doubt, "?".

2.4 NAPCOD may decide it wants to focus on a few issues rather than pursue everything which has been identified as important. The most promising options from an overall perspective (importance, changeability, window of opportunity) are, in rough order of significance:

- Land management and resettlement reform, including tenure.
- Water pricing.
- Redesigning drought aid livestock subsidy.
- Natural Resource Accounts integrated into economic planning.
- Amending Population Policy.
- Investment incentives for services.

2.5 Research priorities are shown in Box 10.

Table 8 Prioritising Recommendations — Specific Resources

Sector/Recommendation	Possible to change	Window of Opportunity
Land & Natural Resource Management		
4.1 & 4.9		Y
4.3	?	
4.2 & 4.4		Y
4.6	?	Y
4.8		Y
Water		
4.1 & 4.8		Y
4.10	N	Y
4.16	?	
4.6		Y
4.16 & 4.18	N	
4.13		
Agriculture		
4.1	N	
4.3	?	
4.4	Y	Y
4.8		
Forestry		
4.2 & 4.3		Y
4.1		
4.9		

Notes: Y = strongly positive N = strongly negative ? = serious doubt
numbers cross-reference back to recommendations in each section

Table 9 Prioritising Recommendations — Development Strategies

Sector/Recommendation	Possible to change	Window of Opportunity
Poverty		
4.2	Anti-poverty measures should be "environmentally neutral", therefore avoid subsidies to use of natural resources (livestock, water, drought relief) intended as poverty alleviation/reduction measures, instead increase access to/tenure of natural resource assets (land, wildlife, forestry) so that the poor can earn income through sustainable management	
4.3 & 4.4	Long-term anti-poverty measures should reduce the dependency of the poor on primary production — labour-intensive public works, regional growth centres, processing	
Population		
4.1	Ensure Population Policy allocates adequate resources to prioritised objectives in order to achieve its optimistic reductions in the growth rate	Y
4.2	Amend draft Population Policy to ensure that implications of current growth for changes needed in natural resource management are addressed	Y
Economic Policy		
4.1	Change the composition of growth towards "environmentally-friendly" sectors through: Investment incentives for services (especially tourism) Growth in rural areas and high-value adding activities Environmental protection levy Trade in wildlife products	? ?
4.2	Integration of Natural Resource Accounts into economic planning	

Notes: Y = strongly positive N = strongly negative ? = serious doubt
numbers cross-reference back to recommendations in each section

3. Strategy

Windows of opportunity

3.1 Having decided which policy changes to pursue, NAPCOD can begin to plan activities around expected "windows of opportunity". Such windows may include:

- National Land Policy process about to start.
- Forthcoming legislation in 1996:
 - Council of Traditional Leaders Bill
 - Agricultural (Communal) Land Reform Bill
 - Bulk Water Supply Bill
 - Water Bill
 - Forestry Bill
- Task Force on Drought Relief Subsidies — first met 18/3/96.
- Round Table GRN/Donor negotiations — Phase 2, sectoral meetings between donors and GRN officials in Windhoek. Expected May-August 1996.

Box 10 Research Priorities**Land & Natural Resource Management**

- To guide land reform, policy-oriented research is required to compare the costs and benefits — including environmental ones — of communal (subsistence) and commercial (cash) systems, different tenure arrangements, and different land-use options.
- Comprehensive research is urgently needed into the extent and nature of fencing of communal land to decide how Government should approach the problem of reduced mobility.
- Research should be conducted into the reasons different groups of people have for using land to inform a strategy to reduce pressure on communal land.
- Research is needed to support the design and introduction of a natural resource user fee and appropriate local institutions to manage common property resources.
- Research is required into the economic viability of subsidised clearance of bush encroached land (to provide charcoal to people in deforested areas or as part of a resettlement programme).
- Further research into the economic returns and environmental impact of game/wildlife relative to livestock is needed.

Water

- Research into the responsiveness of water demand to price and income (price/income elasticity of water demand) to guide future supply policy.
- Research into the value of alternative water use options to assess the opportunity cost of water use (including which industries and locations are more appropriate).
- Quantify the cost of externalities such as damage to ephemeral rivers to inform decisions on pricing and allocation.

Agriculture

- Research the costs and benefits of different destocking/restocking mechanisms.

Forestry

- There is a need for research into the subsistence value of forest resources to compare alternative land uses and to develop forestry as a complementary land-use.
- Government should increase research on alternative energy resources and building materials, in particular the potential to subsidise access to kerosene/gas, possibly through a tax on fuelwood consumption.

Economic Policy

- Research into the natural resource demands of different industries would enable policy makers to plan economic growth within natural resource constraints.
- Government should conduct an environmental impact assessment of the policies, programmes and growth strategy presented in NDP1.

Approaches

3.2 A number of broad approaches should be taken to work towards improving the policy framework.

3.3 Given the current pace of critical desertification-related developments, and the relatively limited resources available within NAPCOD for policy work, additional resources should be allocated to this function. The activities of Working Group members and DRFN personnel should be facilitated and coordinated by a policy worker.

3.4 It is important to clearly define the role of such a policy worker. Given the position of NAPCOD inside and outside Government, it is probably better for the policy worker to focus on providing technical inputs to detailed policy design *which is already being undertaken within Government* rather than to try to lobby openly for reform. Some advocacy work should be undertaken, but by DRFN rather than NAPCOD.

3.5 The policy worker should aim to improve communication between sectors within Government and between environmentalists and decision makers through dissemination of the proposals contained in this Report.

3.6 Further research on specific policy-environment linkages should be undertaken (see Box 10). This should not be theoretical work but practical action-oriented research designed to identify feasible alternatives to existing policy.

3.7 A *Desertification White Paper* to supplement the Policy to Combat Desertification could be a high profile initiative. However, there is considerable fatigue in Government with broad, cross-sectoral initiatives which have few specific action-oriented recommendations. Resources would probably be better employed pursuing the individual policy changes recommended by this Report.

Chapter 9 — Next Steps

Some possible immediate next steps for NAPCOD include the following:

1. Within NAPCOD

- 1.1 Inform the research agenda (see Chapter 8 — Action Plan), NAPCOD objective number four.
- 1.2 Brief the Media Unit to disseminate the key conclusions to the media.
- 1.3 Brief the Education & Information Unit to develop appropriate formats/materials for disseminating ideas in the Report to policy makers and others.
- 1.4 Recruit a policy/planning worker to coordinate and facilitate further work.

2. Outside NAPCOD

- 2.1 Workshop for NGOs and other sympathetic groups to consolidate initiatives aimed at policy reform.
- 2.2 Workshop for Parliament and GRN policy makers (permanent secretaries, directors, deputy directors).
- 2.3 Develop summary materials for these workshops.
- 2.4 Prepare a briefing paper for Cabinet.
- 2.5 Provide briefing materials/workshops for Regional Councils.

Chapter 10 — Monitoring & Evaluation

1. Monitoring

1.1 There are two entirely different areas for monitoring. The first is monitoring of changes in the policy environment which have an impact on desertification issues. This is an on-going responsibility which should become the function of a policy/planning worker.

1.2 The second area is monitoring of the implementation of an agreed Action Plan. This Action Plan should contain indicators to measure the extent to which recommendations have been implemented. In most cases, these will be fairly straightforward as they will be the recommended policy changes. This should also be the responsibility of the policy/planning worker.

2. Evaluation

2.1 Evaluation of the impact of policy changes on reducing desertification will be extremely difficult, and almost certainly qualitative rather than quantitative. There are many variables at work and it will be hard to isolate any single policy change as having reduced land degradation. For example, how do you measure the effect of increased water prices on reduced pressure on groundwater/ephemeral rivers? The problem is made more difficult by the long-term nature of many of the changes and the fact that many of the policy interventions which are recommended do not have improved environmental management as a *primary* objective.

2.2 However, some evaluations should be possible. For example, an evaluation of conservancies could serve as a proxy measure for the benefits of land/NRM reform more generally in terms of environmental impacts (but even this is still a long way off).

2.3 There may also be some scope for harnessing regional resources to evaluate the impact of policy reform on the environment, particularly in the area of the relationship between (macro-) economic change and land degradation, where there is considerable international interest. NAPCOD should be careful interpreting data from other countries because much of this is simply not generalisable, and Namibia has an economy quite different from most others developing countries.

2.4 However, NAPCOD should avoid spending scarce resources trying to confirm the positive impacts of policy interventions where these are very difficult to measure.

APPENDICES

Appendix 1 — Regional & Local Field Visits

Background

Two visits of one week each were made during February 1996 to regional and local sites:

- North: Okongo in the Ohangwena region and the Oshakati-Ongwediva-Ondangwa corridor.
- East: Okakarara and Otjiwarongo in the Otjozundjupa region.

Meetings at the local level were held principally with farmers (usually in groups), and at the regional level principally with staff of GRN natural resource line Ministries. A list of people consulted is appended.

The objectives of the regional and local field visits were:

- To see how/whether existing national policies are implemented at the regional/local level.
- To ascertain what desertification-related policy decisions are made at the regional/local level.
- To determine what policies those at regional/local level would like changed to reduce desertification.
- To discuss desire/capacity for some proposed changes.

The visits were hosted and facilitated by the SARDEP programme (for whose professional assistance the consultant is extremely grateful) and most of the farmers met were members of SARDEP committees (Farmers' Committee in Okongo, Community Management Committee and Test Area Management Committee in Okakarara; included women farmers). The rationale for selecting the specific local sites was based on:

- differences in farming systems between the two areas — one crop and livestock with some forestry potential (Okongo), the other livestock only (Okakarara) but commercial as well as communal production in neighbouring area.
- variation in pressure on natural resources and the extent of rangeland enclosure.
- the existence of recent research on natural resource issues in these areas^[38] given the limited time available.

Questions asked of local farmers are shown in Box 11. These were not used as a rigid questionnaire but to facilitate wider discussion. The intention was not to collect statistically-significant data from which to draw broad conclusions, but to get a general impression of the constraints, problems and possible policy solutions to land degradation in two specific communities. Interviews with natural resource line Ministry staff were individually structured but sought to ascertain similar information.

Although the main text of the Report does not explicitly refer to these visits, they constituted an essential input into the analysis and recommendations which it contains. It was, however, felt inappropriate to introduce local and regional detail into discussion of a largely national nature.

Box 11 Farmer Interviews — Background Questions

1. Background Questions on Resources

Ask the following for each of i) grazing land ii) crop (garden) land iii) water iv) trees (timber/firewood/fruit, medicine, crafts):

- 1.1 How do people get access to the resource? Is there any fee for it?
- 1.2 Is there always enough for everyone?
- 1.3 What happens when someone takes too much/without permission? [internal disputes]
- 1.4 Are there disputes with other communities over the resource?
- 1.5 Would you be prepared to pay an annual fee for the resource if used for community development?
 - if the funds are managed by the headman?
 - if the funds are managed by the community?
 - if the funds are managed by the Regional Council?
- 1.6 Would you like to change the way the resource is allocated? How?

2. Land Degradation

- 2.1 Has the overall, *community* output of any of these resources fallen in recent years? Over what time period?
- 2.2 Has *your* output of any of these resources fallen in recent years? Over what time period? Why?
- 2.3 Do you think the situation will get worse? Why?
- 2.4 What could be done to reverse the decline [/maintain sustainable offtake]?

3. Land/NRM

- 3.1 Should there be a limit on the amount of land any one person can use in your area?
- 3.2 What do you think should be done about fencing (of range lands)?
 - nothing
 - charge users
 - remove fences
- 3.3 Who do you think should allocate land?
 - headman/traditional authority
 - community
 - Region

4. Agriculture

- 4.1 What does the Agricultural Extension Officer do for you?
 - 4.2 Have you received assistance in the last year from MAWRD for fodder/transport/grazing? [Okakarara only]
 - 4.3 Do you ever sell livestock? Why/when?
 - 4.4 Would you sell livestock at the beginning of a drought if government helped you to restock afterwards?
 - 4.5 If the price of livestock fell, would you reduce your stock? If the price rose, increase your stock? Why/why not?
 - 4.6 Would you like to sell more but have nobody to sell to? [marketing]
- repeat 4.3, 4.5 & 4.6 for crops [Okongo only]*
- 4.7 Have you ever thought of forming a cooperative to sell produce/buy inputs?
 - 4.8 Is there anything else you would like to farm here? Why don't you? [diversification to non-traditional products]
 - 4.9 Are any areas set aside by the headman/community for grazing at certain times of the year? [rangeland planning]
 - 4.10 Would you like to take out a loan to improve your farm? Do you have security? [NACP]
 - 4.11 What additional help would you like from government to improve farming?

5. Water

- 5.1 Where do you get your water? [borehole/pipe/well/dam]
- 5.2 Do you have a Water Point Management Committee? What does it do? Does it function well or badly?
- 5.3 Policy is that rural communities should pay for operation and maintenance costs of water points. Do you agree?

6. Forestry

- 6.1 Are you aware of any limits on the amount/type of wood you can use?
- 6.2 Do you use any non-wood fuel? Why not?
- 6.3 Do you process any wood products?

7. Other

- 7.1 Is there enough off-farm employment in your community?
- 7.2 Is there anything else Government can do for you?

North: Okongo & Region

Land/Natural Resource Management

Availability

Land is becoming increasingly scarce in Okongo (although still thought to be relatively abundant). Rangeland — as well as crop land — is allocated by the senior headman in return for payment (except in the case of clearing land for cropping where only permission is required). Population pressure has reduced the land available around the village (because it is used for cropping) and cattle have to be grazed further afield. Previously seasonal cattle posts have been settled by farmers coming from the west, outside the constituency. While they initially came for grazing they have now established homesteads.

Degradation

Members of the Farmers' Committee thought land degradation was occurring. One woman who had moved to the area in 1956 described how land productivity appeared to have declined over the past forty years: there are no longer any wild animals, crop land is less productive, the quality of grazing has declined and bush encroachment is a problem, tree cover has been reduced.

However, when asked whether the total number of livestock in the area had increased or decreased, the response was that it has *increased*. While there may be a threshold or a time lag before degradation of grazing cuts cattle numbers, this appears to be inconsistent with the claim that degradation has taken place (although there are, of course, a number of other factors which make this a difficult empirical question: falling quality of cattle, opening up of new areas for grazing, permanent use of once seasonal areas, and so on).

In the former Ovambo region as a whole, there appears to have been a decline in cattle numbers between 1970 and 1990 with an increase in the mid-1990s. There are significant data quality problems which make meaningful comparisons difficult [Source — Veterinary Services]:

1970	567,000
1980	400,000
1990	350,000
1996	411,000

Fencing

Estimates of the extent of fencing of rangelands vary, but many people interviewed agreed that the pace is such that most areas within the former Ovambo region will be fenced within a couple of years.

There was a strong sentiment amongst the Farmers' Committee representatives against fencing of rangelands (shared also by the Regional Councillor and the Regional Governor). The strength of this feeling was surprising given that eastern Ohangwena is frequently described as an area with relatively great resources^[38] (and may be partly explained by the fact that the Farmers' Committee has no traditional authority members). Most thought that existing fences should be brought down and land made available to all farmers (with the possibility of compensation where infrastructure has been built).

No action was currently taken because it required Government assistance to evict people. One community had recently taken the initiative and approached a farmer to request he remove a fence. The farmer had responded that they would have to compensate him for his loss. The headman — who had been paid for the land — supported the farmer against the community. It seems clear that headmen in general are allocating land for short-term personal gain because they fear that the State will shortly remove their right to manage the land (and earn an income from it).

Removing fences was preferred to creating leasehold and/or introducing a progressive natural resource user fee because even if the fees collected were managed at the local level, it was perceived that they would be inadequate to secure alternative livelihoods for displaced farmers.

Management/User fees

The need to involve *all* parties — farmers, traditional leaders, Regional Councillors — in land management was stressed by almost everyone (farmers, Regional Councillor, Governor, GRN staff). There were few concrete suggestions made as to how this might be done. The Okongo Regional Councillor (and the Senior Control Officer at MLRR in Ondangwa) suggested that Regional Councils/Land Boards pay senior headmen to manage the land on their behalf as a way to stop land sales. The general consensus was that traditional leaders will have to be integrated into any land management system and be co-managers with civil (State) authorities.

The proposal for natural resource user fees met a lukewarm response from farmers: they would only be acceptable if poor farmers were exempt, if the money was spent in the community and not managed by the headman alone. Concern was expressed at the local and regional level that user fees might legitimise the status quo and prevent fences being removed so that the situation for poor farmers would not improve. Variability in production — especially of crops — would make payment of fees difficult in poor years. Members of the Farmers' Committee thought that the distribution of crop land — not just grazing land — was very unequal, and that, in principle, those with more and better land should pay such a fee.

People were uncertain about how to deal with outsiders from the west who come to the area for seasonal pasture (and do not pay any fees for this use). While it reduced the amount of grazing available to residents, the situation was complicated by group links (Kwanyama). Perhaps the fact that this does not create more tension also partly reflects the relative abundance of grazing land. Transhumance in the other direction (east-west) does not appear to be a regular phenomenon.

Agriculture

Livestock

In relation to marketing, farmers in Okongo complained that prices offered by Meatco had been no better than local market prices, but accepted that this was at least partly due to the quality of animals offered for sale and the problems of disease (but the impression that Meatco only buys when cattle are in poor shape in winter is widespread in the region). To combat this, farmers are keen that a quarantine camp be established in the area, as is being considered by MAWRD.

The absence of buyers was suggested as a reason why farmers did not destock more during drought. Price did not appear to be a key determinant of the number of livestock sold (not surprising in a subsistence system). However, farmers claimed that they would be induced to sell in a drought if a destocking incentive were offered.

Limiting the number of livestock that any one individual could have on the range was not considered to be a feasible option. Concern was expressed that the ABN's Affirmative Action Loans Scheme — to encourage large communal farmers to move to commercial farmland — was effectively inapplicable in the North.

Extension

The Extension Officer articulated the new participatory, farmer-oriented extension strategy very well. However, resources are limited and the new strategy is focused on just three of the one hundred or so communities in the constituency (Omupebe, Oidiva, Enyana), the remotest of which is just 24 km from Okongo.

Non-extension services are still delivered and the Extension Officer felt that it would be very difficult to remove some of these services — tractors in particular — in a remote area like eastern Oshana because private sector substitutes are not readily available.

Forestry

Fuelwood and timber in Okongo is still available within what farmers called a "reasonable distance". However, stocks are falling. Permission — and sometimes a fee — is required to cut on privately enclosed land but there is no such requirement in open areas. Occasionally outsiders come to cut illegally for commercial use, but this was not perceived as a great problem.

Members of the Okongo community are keen to develop their forest resources: one person interviewed spontaneously mentioned adopting the conservancy principle for wildlife to forest use. There was uncertainty about whether it would be better to have a modern, capital intensive factory (where the fear that jobs would go to outsiders) or to promote more local, craft-based employment. NDC is due to visit the area to assess its commercial potential.

There is potential for conflict here between local and State use. An area (of some 750 km²) around Okongo is one of four in the former Ovambo regions to have been proposed as a State Forest under existing legislation. Negotiations appear to be under way with traditional leaders and the Regional Council, but there was little awareness of this amongst community members. Care will need to be taken if the area is developed as a State Forest that this does not exclude local communities as beneficiaries, since they would then have no incentive to use the resource sustainably.

The District Forestry Office at Ongwediva expressed his support for CBNRM with regard to forestry and the need to decentralise enforcement to community leaders. However, progress has been slow with the scanty resources available. Lack of resources has also meant that an estimated 90% of people breaking forestry laws are never apprehended, and that forestry extension activities are very limited.

The current afforestation programme is extremely modest with only a total of 120 ha of community woodlots in the four Ovambo regions as a whole. Funding problems and capacity constraints are hampering an ambitious programme to add 200 ha of community woodlots in each of the four regions.

Water

According to the community at Okongo, water supply levels in local boreholes and wells are stable. Many people mentioned the need to open up areas to the east by sinking boreholes where there was grazing but no water.

Okongo has a Water Point Committee to manage the central reservoir tank which has a pump. Money is collected to pay for the cost of transporting fuel (which is provided free from the Government), but not for other maintenance expenditure. Each household is expected to contribute, but there are many "free riders" and collection does not appear to be based on level of use. Beyond the collection of this fee, the Committee seems rather inactive. Water was said to be frequently wasted by people failing to turn off the tap once the trough filled by the reservoir was full.

From a discussion at the northern regional office of the DoWA, it appears that Okongo's Water Point Committee is fairly typical. A large number of Committees have been established in a very short period of time limiting the possibilities for capacity building and back-up. Collection of funds by WPCs to pay for future operation and maintenance costs is very low (with the exception of a couple of new schemes — Ogongo-Okalongo and Oshakati-Omakango).

Over-extraction does not appear to be a problem in the region as a whole. The proximity of water points — especially boreholes — is, however, encouraging degradation. Land has also been degraded along the Oshakati-Omapale drought-relief pipeline. While attempts have been made to promote human-only and seasonal boreholes, these are very difficult to enforce. Where there is little range management, it is probably sensible to have water points further apart.

There is a proposal to replace WPCs with a cross-sectoral Village Development Committee responsible for all aspects of development within a village (discussed at the recent second Swakopmund workshop on rural water supply with MRLGH).

Other

Diversification

Off-farm employment opportunities were considered inadequate in Okongo.

In the Oshakati-Ongwediva-Ondangwa corridor, there has been much development since Independence, largely in trade (formal and informal) and Government rather than manufacturing. Expectations of high wages for low skills was mentioned as a constraint. Milling and manufacture of agricultural equipment are two areas with high potential if wages are realistic.

The Northern Namibia Rural Development Project (GRN/France) has refused to consider market gardening schemes based on the use of purified water because it is heavily subsidised. As an alternative, NNRDP has developed an innovative, labour-intensive small-scale market gardening project at Olushandja dam on the Caleque canal based on individual holdings and the sharing of joint costs. However, the viability — and hence replicability — of such projects will depend critically on their being able to meet the full cost of water.

The slow pace of proclaiming towns was mentioned as a major constraint on investment.

Cross-sectoral coordination

Poor cross-sectoral coordination — and the absence of a forum for regional planning — contributes to land degradation. The failure to jointly consider water point provision and livestock development was often mentioned.

North: People Consulted

- Ms Helen Amoomo, SARDEP-North Local Facilitator, Okongo
- Mr David Angula, Regional Secretary, Northern Namibia Regional Chamber of Commerce and Industry, Ongwediva
- Mr Michael Arbirk, Livestock Specialist, EES/MAWRD, Ongwediva
- Mr Gotpen Hamwenye, SARDEP-North Regional Coordinator, Ongwediva
- Ms Mag-Naemi Hamyela, cuca shop worker, Okongo
- Mr Didier Helmstetter, Agronomist, Northern Namibia Rural Development Project, MAWRD, Ongwediva
- Mr Tom Kroll, SARDEP-North Adviser, Ongwediva
- Mr Paulus Mwahanyekange, Regional Councillor, Okongo Constituency
- Mr Jericho Mulofwa, District Forestry Officer, Ongwediva
- Mr Mwaningange, Governor of Ohangwena Region, Eenhana
- Mr Negumbo, Deputy Director, EES/MAWRD, Ongwediva
- Mr Abraham Nehemia, Project Coordinator, GTZ Communal Area Water Supply (CAWS) Project, DRWS, Oshakati
- Mr Nathaniel Nicodemus, Agricultural Extension Officer, Okongo
- Ms Patricia Petrus, Livestock Specialist, EES/MAWRD, Ongwediva
- Mr Jacob Shatipamba, Deputy Chairperson, Okongo Farmers' Committee (SARDEP)
- Mr Sheya, Directorate of Lands, MLRR, Ondangwa
- Ms Helvi Shinana, Okongo Farmers' Committee (SARDEP)
- Mr Emmanuel Shiwaya, Okongo Farmers' Committee (SARDEP)

East: Okakarara & Region

Land/Natural Resource Management

Availability

Okakarara is a long-established livestock farming area. Grazing rights are typically inherited or conferred upon a newcomer with the agreement of traditional leaders but at no charge. It was stated that traditional leaders often decline requests to settle in the area — or to use seasonal grazing — and that these decisions are respected.

Degradation

As in Okongo, land degradation was perceived to be a significant problem amongst all people interviewed. In communal areas, people cited denudation of grass cover, bush encroachment and cattle resorting to eating leaves, cardboard and even plastic waste. Too many livestock and unequal access to grazing were most frequently stated as (human-related) reasons for the degradation.

On commercial farmland around Otjiwarongo, bush encroachment is very severe. The two farmers interviewed agreed that no obviously viable financial solution was currently available, confirming recent research^[91].

Fencing

In contrast to Okongo, fencing around Okakarara is almost complete and has been for some time. One estimate put the proportion of range land fenced at 80%. This history of fencing means that attitudes are complicated and not as polarised as in other areas between poor subsistence farmers and better off aspiring commercial farmers. Both groups see fencing as a potential means to secure exclusive access (for the community on one hand and private individuals on the other).

Management/User fees

It is worth noting that neither group appears to view sustainable resource management as a *primary* objective. Subsistence users are essentially concerned to restore access while more commercially-oriented users want to be in a position to secure a large cash income by excluding others. Which group would ultimately manage the range better is not clear (little consideration appeared to have been given on how user rights should be allocated *within* a community if resources are threatened by increasing numbers of people and livestock). However, the increased competition for resources which would be caused if land were to be allocated to larger farmers would certainly accelerate the damage which is already occurring in remaining open areas.

Commercially-oriented livestock farmers are well represented in Farmers' Associations in the Okakarara area. The so-called "Odendaal farms" at Okamatapati — legally fenced 5,000 ha farms — were frequently cited by this group as a role model for how the whole of the communal area ought to be developed.

The most typical position on tenure articulated by commercially-oriented farmers was for leasehold rather than freehold units with exclusive or shared tenure with a small number of farmers; in contrast, those smaller, subsistence farmers questioned tended to want Government to speed up land reform and resettle larger herds (often of absentee city owners) on commercial farmland. Views of commercially-oriented farmers varied on what should constitute maximum farm size/livestock numbers on leasehold land in communal areas. A figure of around 150 was often given (the number needed to qualify for the Affirmative Action Loans Scheme), but numbers up to 300 were also mentioned.

The SARDEP Test Area at Otumborombonga is a good example of how range management techniques might develop within community units. The community grazes over an area of about 14,000 ha with a seasonal cattle post. Residents recognise that there are advantages and disadvantages to fencing: a fence that keeps others out can keep you in during drought, and fences will not be respected unless agreed with neighbouring communities. With the support of SARDEP, the community is negotiating agreed borders with its neighbours. However, the integrity of one border — which was agreed and "demarcated" (but not fenced) — is being undermined by members of the neighbouring community settling on the border and allowing their livestock to wander onto Otumborombonga's land. A situation like this might eventually call for selective, partial fencing, but probably only after borders have been agreed but then subsequently violated.

Another key element of range management in Otumborombonga is the enforcement of seasonal grazing at the cattle post by moving the borehole pump back to the village at the end of the dry season. This is a relatively simple procedure which ought to have widespread applicability (at least in areas without excessive population pressure and existing settlement of cattle posts).

Attitudes towards user fees for grazing were more positive in Okakarara than in Okongo, partly because it is a familiar system which operated under Second Tier Authorities and was perceived to have brought benefits to the community in terms of infrastructure provision (roads, pumps). As in Okongo, local management and spending was preferred.

From a land degradation perspective, it was not felt that user fees would significantly reduce the number of animals on the range. This clearly depends on the level at which any grazing fees might be set and how progressive the fees are (in the past, a low, flat-rate fee). Designing, implementing and enforcing a progressive system would, however, put very great demands on community institutions with limited capacity. It was generally felt that flat-rate fees per stock unit would be the only workable system (according to the CAEO at Otjiwarongo, progressive fees had been tried in the past but were circumvented by sharing cattle around the family).

Commercial farmland

Commercial farmers are still concerned about certain provisions of the Commercial Land Reform Act, especially the land tax which some think could destabilise the industry by putting farmers out of business. The financial viability of commercial ranching appears to be decreasing with rising costs and falling returns (the long-term outlook for cattle prices is poor).

Elements of the tax system were also criticised, including the move away from the five-year system for income tax (designed to spread income over the farming cycle — but for technical reasons also meant farmers paid less tax) which, combined with the timing of the tax year, was said to discourage sales in January/February and promoted overgrazing at a critical time.

The two farmers interviewed were pessimistic about the possibilities of switching to tourism or game use (market saturated, long-term investment before any returns, not necessarily more friendly to the environment). Moving to conservancy-scale operations for cattle production was thought to be too difficult because of the transaction costs and only appropriate for game.

The so-called Savory holistic range management system of intensive rotational grazing had dramatically failed some farmers this year, and the belief is becoming more widespread that this part of Namibia is simply too dry for it to work.

Agriculture

Livestock/Drought Relief Scheme

The drought relief scheme has been operating in Okakarara since February 1995 (with a short break in November to try to detect fraudulent claims). The vast majority of support provided in the Okakarara constituency is for fodder, rather than transport/grazing rental (800 farmers and 15-20 farmers respectively). Farmers agree that the subsidy means that fewer animals are taken off the range than is necessary to prevent further degradation.

The Extension Officer described the scheme as administratively complex (it requires all farmers to complete a new form each month). He did not think that fraud was a particularly large problem in the Okakarara area but recognised that it was nationally with both farmers and especially suppliers cheating the system. It was described as common for a household head to notionally "hand over" cattle to other members of the family. By applying for separate brand marks a cattle owner could then maximise the subsidy received (which is highest for up to 10 cattle — full subsidy of N\$ 150 per month). The Extension Officer thought the scheme could be improved by making payments by cheque (rather than through voucher) and spending more on the rental of grazing in areas with surplus.

Farmers were not especially keen on alternatives to the existing scheme (which is hardly surprising given its generosity). There was a prevalent feeling that the destocking subsidy offered in the 1992/93 drought (for heifers and ewes) had been discounted by speculative purchasers and was therefore not passed on to the farmer. One farmer warned that extending the scheme to non-breeding animals could encourage farmers to sell older, poorer cattle and to replace them with heifers *during* the drought.

The most radical suggestion came from a member of the SARDEP Community Management Committee who recommended that the money should be redirected away from short-term drought relief towards the purchase of additional commercial land for resettlement.

One of the commercial farmers interviewed had destocked by over 50% already and expected to reduce numbers even more. The N\$ 1,500 limit on fodder subsidies for commercial farmers was described as so low that it had no bearing on the number of cattle sold (this farmer had spent N\$ 14,000 on lucerne for 1-2 months supply). However, the CAEO for the region felt that the current scheme encouraged overstocking in commercial as well as communal areas.

Official carrying capacity figures on commercial farmland have become meaningless both because of the increase in bush encroachment since they were calculated (1972) and because the Soil Conservation Act was not enforced from the 1980s. Commercial farmers are still required to destock to 60% of approved carrying capacity to qualify for drought relief subsidies, but this presents problems for very few farmers because they are old rates (for example, one of the farmers interviewed stocks at 1 LSU per 25 ha, a third of his supposed carrying capacity of 1 LSU per 8 ha).

The Soil Conservation Act was never vigorously enforced. However, according to some people interviewed, it seems to have worked well in the Otjiwarongo area during the 1970s by encouraging farmers to stock sensibly in return for subsidies for anti-soil erosion infrastructure (boreholes, pipelines, and so on).

Crops

Crop and vegetable production is relatively unusual because of inadequate rainfall. The potential for expansion — and hence for poverty reduction to reduce pressure on range land — was thought to be limited because of the (sensible) policy of the DoWA to discourage gardens by according it the lowest priority for development.

Extension

Extension resources at Okakarara are currently devoted almost entirely to the drought relief programme. The Extension Officer agreed that this has an adverse long-term impact on range management.

Forestry

Fuelwood availability is only a localised problem in Okakarara with people typically travelling 4-8 km by donkey cart to collect wood. Bush encroachment has involved the spread of acacias which make good fuelwood. There is very little timber available in the area.

The central area District Forestry Officer saw some potential for exporting fuelwood from bush-encroached commercial farmland as a means of financing bush clearance. However, export permits for fuelwood have been stopped as a matter of policy. The rationale for this appears to be that there is, or will be, a fuelwood "deficit" in the communal areas (but the issue of whether communal farmers can afford to pay the price has not been addressed).

Enforcement is difficult because of very limited resources. According to the DFO, reforestation and agro-forestry initiatives still require research before implementation.

Water

Okakarara and many neighbouring communities are served by a pipeline (that is currently fed by water from Kombat mine). Because payment is only required for private and not community connections, there is very little incentive to control water use and waste is a major problem. The failure of some communities to turn off their supply — even when storage facilities are full — means that other communities at the end of the reticulation system often get no water because of inadequate water pressure.

There is a problem in the relationship between Bulk Water Supply (BWS), Rural Water Supply (RWS) and consumers. BWS charges RWS for water used but RWS has no incentive to recollect fees from communities as this is paid as an intra-GRN transfer.

As in Okongo, WPCs exist but were not thought to be very effective. Money is generally collected only to buy fuel for borehole pumps. However, delays in maintenance work have encouraged some communities to provide for themselves rather than wait for DRWS.

Increasing population pressure has led to the sinking of boreholes rather close to one another. There used to be a policy of keeping 7 km between boreholes but this has now fallen to 5 km — because it is GRN policy that nobody should be more than 2.5 km from water — and in actual fact the distance is often much less (more like 3 km). With increasing proximity of boreholes livestock pressure and sedentarisation has increased (even where boreholes were intended only for human consumption).

The difficulty of excluding neighbouring communities from using water points — especially on the pipeline — was also cited as a problem by farmers with regard to range management.

The acting head of DRWS in Otjozundjupa expressed concern that the water table was being drawn down in some areas because of overuse by excessive livestock concentrations (and not simply drought).

As in Okongo, many people mentioned the need to extend the usable supply of grazing by sinking boreholes — or extending the pipeline — eastwards of Okamatapati where there was grazing but no water. It may be sensible to develop such land as emergency grazing rather than for settlement.

Water supply to Otjiwarongo is a good example of DoWA's policy of draining local resources before looking to more secure supplies. The town is not attached to the Eastern National Water Carrier and is fed almost exclusively from boreholes located up to 45 km from the town. If water consumption continues to increase, the situation will begin to show increasing signs of strain (some boreholes are already pumping 24 hours per day). There is not yet a stepped water tariff in Otjiwarongo and the unit price of N\$ 1.10 per m³ is well below cost price.

Commercial farmland

The farmers interviewed stated that it was in their long-term interest to use water resources wisely (although this could also be said of land which is suffering encroachment). It appears that farmers are generally very concerned about the effects of increasing extraction for urban use and what that implies for the sustainability of their supplies and land use.

Other

Diversification

There was thought to be some scope for diversification into non-traditional products (pigs, poultry, ostriches) and agricultural processing (hides, leather goods, charcoal) but these would be constrained by lack of credit, experience and water.

A mixed agricultural/non-agricultural cooperative (Morukutu Cooperative Union) has recently been formed to share labour inputs.

Cross-sectoral coordination

As in the North, the failure to jointly consider water point provision and livestock development was mentioned as a cross-sectoral planning problem promoting land degradation.

East: People Consulted

Ms Mary Cashman, Peace Corps Volunteer, Okakarara Senior Secondary School
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Mr Uatumbonge Kamunguma, Okakarara Community Management Committee (SARDEP)
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Mr A B Munoko, Member, Okakarara Farmers' Association
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Mr F Smit, Department of Water Affairs, Otjiwarongo
Mr Phillipus Tjitere, Agricultural Extension Officer, Okakarara
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Mr Ben Vikuria, Okakarara Community Management Committee (SARDEP)
Mr Otto Zapke, Chief Agricultural Extension Officer, Otjiwarongo
Mr Alphons Zatzirua, Chairman: Otjozundjupa Farmers' Union, Okakarara

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58	Lawry, S	1990	<i>Tenure Policy Toward Common Property Natural Resources in Sub-Saharan Africa</i>	Natural Resources Journal Vol. 30	pp403-422
59	Leach, M		<i>Understanding Poverty-Environment Linkages: An Entitlements Approach</i>	Institute of Development Studies, University of Sussex	11pp
60	Low, A	1994 (Mar)	<i>GATT: Effects and Consequences for Namibia</i>	In NEPRU Working Paper No. 40	9pp
61	Lusigi, W & Nekby, B	1991 (Oct)	<i>Sub-Saharan Africa Dryland Management: The Search for Sustainable Development Options</i>	AFTEN	24pp

No.	Author	Date	Title	Institution/Publisher	Pages
62	MacKellar, F	1994 (Jun)	<i>Population and Development: Assessment Before the 1994 Conference</i>	ODI Development Policy Review Vol. 12 No. 2	pp165 -191
63	Maiga, S et al	1995 (Oct)	<i>Structural Adjustment and Sustainable Development in Mali</i>	ODI Working Paper No. 82	96pp
64	MAWRD	1994 (Jan)	<i>Deforestation and Soil Fertility Problems in the West of the Ohangwena Region</i>	NNRDP	22pp
65	MAWRD	1994 (Dec)	<i>Analysis and Proposals Concerning the Agricultural Extension Strategy in the Northern Central Region</i>	NNRDP	68pp
66	MAWRD	1995 (Jan)	<i>SARDEP Objectives & Policy</i>	SARDEP	28pp
67	MAWRD	1995 (Jan)	<i>An Internal Evaluation of the Orientation Phase of the Sustainable Animal range and Development Programme (SARDEP)</i>	Directorate of Planning	23pp
68	MAWRD	1995 (May)	<i>General Hydrological Conditions and Characteristics of Surface Water Schemes in Namibia</i>	DoWA	10pp
69	MAWRD	1995 (Jun)	<i>Rural Credit in Northern Namibia</i>	NNRDP	112pp
70	MAWRD	1995 (Aug)	<i>Amendment of Present Drought Aid Scheme and Measures to Assist Farmers in Namibia (press release)</i>	MAWRD	6pp
71	MAWRD	1995 (Oct)	<i>National Agricultural Policy</i>		43pp
72	MAWRD/MRLGH	1996 (Feb)	<i>Second National Workshop on Payment for Water: Summary Report and Follow-up Activities</i>		12pp
73	Maxwell Stamp Plc	1994 (Jun)	<i>Namibia Trade Policy Reform Study: Phase 1 Report (3 Vols)</i>	Prepared for Ministry of Trade & Industry	
74	Maxwell Stamp Plc	1995 (May)	<i>SACU: Agriculture</i>	Prepared for MAWRD	66pp
75	MET	1994	<i>White Paper on Tourism</i>		29pp
76	MET	1995	<i>Policy on Community Based Tourism (draft)</i>		
77	Ministry of Finance	1995 (Aug)	<i>White Paper: Towards a Sustainable Fiscal Policy</i>		25pp
78	MLRR	1993 (Jun)	<i>Land as a Factor in Poverty Alleviation in Namibia</i>	MLRR	203pp
79	Moorsom, R, Andima, J & Kahuika, S	1993 (Jul)	<i>Summary of the Socio-Economic Survey of the Southern Communal Areas</i>	NEPRU Working Paper No. 25	36pp
80	Moorsom et al (eds)	1995	<i>Coping with Aridity: Drought Impacts and Preparedness in Namibia</i>	Brandes & Apsel/NEPRU	250pp
81	Munasinghe, M	1993	<i>Environmental Economics and Sustainable Development</i>	World Bank Environment Paper No. 3	112pp
82	Munasinghe, M & Cruz, W	1995	<i>Economywide Policies and the Environment: Lessons from Experience</i>	World Bank Environment Paper No. 10	86pp
83	Munasinghe, M & Shearer, W (eds)	1995	<i>Defining and Measuring Sustainability</i>	United Nations University/World Bank	440pp
84	Naeraa et al	1993 (May)	<i>Coping With Drought in Namibia: Informal Social Security Systems in Caprivi and Erongo, 1992</i>	NISER Research Report 12	128pp

No.	Author	Date	Title	Institution/Publisher	Pages
85	NEPRU	1995 (May)	<i>Commercialisation of Agricultural Services in Communal Areas</i>	For MAWRD	
86	ODI/IDS	1994 (Mar)	<i>Drought in Southern Africa: Shocks and Research</i>	ODI Development Research Insights for Policy Makers	4pp
87	Orford, J	1995 (Nov)	<i>Namibia's Nominal and Real Multilateral Exchange Rate</i>	NEPRU Occasional Paper No. 5	19pp
88	Parliamentary Working Party	1995 (July)	<i>Agenda for Change: Consolidating Parliamentary Democracy in Namibia</i>	Parliament	37pp
89	Population Planning Unit	1994 (Mar)	<i>Namibia: Population & Development Planning</i>	NPC	128pp
90	Purcell, R	1994 (Jul)	<i>Economic Analysis of Land Reform Options in Namibia</i>	NEPRU Working Paper No. 41	44pp
91	Quan, J, Barton, D & Conroy, C	1994 (Nov)	<i>A Preliminary Assessment of the Economic Impact of Desertification in Namibia</i>	DEA Research Discussion Paper No.3	148pp
92	Richardson, J	1996 (Feb)	<i>Economics Chapter in forthcoming Namibia Biodiversity Country Study</i>		89pp
93	Rohde, R	1993	<i>Afternoons in Damaraland: Common Land and Common Sense in one of Namibia's Former "Homelands"</i>	Centre of African Studies, Edinburgh University, Occasional Paer No. 41	73pp
94	RSA	1956	<i>Water Act</i>	Statutes of the RSA - Water	
95	RSA	1969	<i>Soil Conservation Act</i>	Statutes of the RSA - Agriculture	pp963-989
96	Scoones, I (ed)	1995	<i>Living With Uncertainty: New Directions in Pastoral Development in Africa</i>	Intermediate Technology/IIED	210pp
97	Seely, M & Jacobson, K	1994	<i>Desertification in Namibia: a Perspective</i>	Journal of African Zoology, 108	pp21-36
98	Sherbourne, R	1994 (May)	<i>The Challenge of Economic Development in Namibia</i>	Paper for National Workshop on Population	26pp
99	Sherbourne, R & Orford, J	1995 (Nov)	<i>Should the Namibia Dollar be Devalued?</i>	NEPRU Occasional Paper No. 6	21pp
100	SSD	1995 (Feb)	<i>Namibia Poverty Profile (final draft)</i>	Multi-Disciplinary Research Centre, UNAM	91pp
101	Stocking, M	1992 (Jun)	<i>Land Degradation and Rehabilitation: Research in Africa 1980-1990: Retrospect and Prospect</i>	IIED Drylands Networks Programme, Paper No. 34	31pp
102	Swallow, B	1994	<i>The Role of Mobility Within the Risk Management Strategies of Pastoralists and Agro-Pastoralists</i>	IIED Gatekeeper Series No. 47	27pp
103	Tapscott, C	1990 (May)	<i>The Social Economy of Livestock Production in the Ovambo Region</i>	NISER Discussion Paper No. 4	23pp
104	Tapscott, C	1994 (Jan)	<i>Land Reform in Namibia: Why Not?</i>	Southern African report, Vol. 9, No. 3	3pp
105	Tapscott, C	1994 (Apr)	<i>Land Reform versus Agrarian Reform in Northern Namibia: a Case Study from the Gcickuru District of Okavango</i>	SSD Discussion Paper No. 7	8pp
106	Tapscott, C & Hangula, L	1994 (Nov)	<i>Fencing of Communal Range Land in Northern Namibia: Social and Ecological Implications</i>	SSD Discussion Paper No. 6	15pp
107	Tarr, P (ed)	1994 (Apr)	<i>Namibia's Environmental Assessment Policy</i>	DEA, MET	17pp

No.	Author	Date	Title	Institution/Publisher	Pages
108	Tchoungui, R et al	1995 (Aug)	<i>Structural Adjustment and Sustainable Development in Cameroon</i>	ODI Working Paper No. 83	130pp
109	Thebaud, B	1995 (Jul)	<i>Land Tenure, Environmental Degradation and Desertification in Africa</i>	IIED Drylands Networks Programme, Paper No. 57	42pp
110	Tiffen, M, Mortimore, M & Gichuki, F	1994	<i>Population Growth and Environmental Recovery: Policy Lessons from Kenya</i>	IIED Gatekeeper Series No. 45	26pp
111	Totemeyer, G	1992 (Mar)	<i>The Reconstruction of the Namibian National, Regional and Local State</i>	NISER Research Report No. 7	142pp
112	Toulmin, C	1993 (Jul)	<i>Combating Desertification: Setting the Agenda for a Global Convention</i>	IIED Drylands Networks Programme, Paper No. 42	36pp
113	Tvedten, I & Mupotola, M	1995 (Jul)	<i>Urbanisation and Urban Policies in Namibia</i>	SSD Discussion Paper No. 10	39pp
114	UNCED	1994 (Oct)	<i>United Nations Convention to Combat Desertification</i>		44pp
115	UNSO	1994	<i>Poverty Alleviation and Land Degradation in the Drylands: Issues and Action Areas for the International Convention on Desertification</i>		37pp
116	Van der Byl, P	1992 (Oct)	<i>Legal Position Relating to Land Occupied in Namibia on a Communal Basis</i>	For MLRR	73pp
117	Van der Linden, E	1992 (Apr)	<i>Namibia's Tax System</i>	NEPRU Research Report No. 6	87pp
118	Van Rooy et al	1994 (Feb)	<i>Household Subsistence Levels in Namibia: a Pilot Study in Three Selected Communities</i>	SSD Research Report No. 10	69pp
119	Vlachos, J	1995	<i>Communal Land Tenure and Land Degradation: A Minor Field Study of the Elim Constituency, Omusati Region, Namibia</i>	Department of Economics at the University of Lund	52pp
120	Warford, J & Partow, Z	1990 (Dec)	<i>Natural Resource Management in the Third World: A Policy & Research Agenda</i>	American Journal of Agricultural Economics	pp 1269- 1273
121	Widlok, T	1994 (Mar)	<i>Problems of Land Rights and land Use in Namibia: a Case Study from the Mangetti Area</i>	SSD Discussion Paper No. 5	15pp
122	World Bank	1990 (Mar)	<i>Burkina Faso: Economic Issues in Renewable Natural Resource Management</i>	Sahelian Department, Africa Region	56pp
123	World Bank	1994 (Sep)	<i>Namibia: Public Expenditure Review (draft)</i>	World Bank, Southern Africa Department	179pp
124	Yao, S & Hay, R	1990 (Dec)	<i>Agriculture in Namibia: Making the Most of Scarce Resources</i>	Food Studies Group for World Bank	43pp
125	Young, C & Bishop, J	1995 (Jul)	<i>Adjustment Policies and the Environment: a Critical Review of the Literature</i>	IIED/CREED Working Paper Series No. 1	31pp

Appendix 3 – People Consulted (Windhoek)

Name	Institution
Ashley, Caroline	Directorate of Environmental Affairs, MET
Auty, Richard	University of Lancaster
Baker, Linda	Directorate of Environmental Affairs, MET
Barnes, Jon	Directorate of Environmental Affairs, MET
Boermann, Ronnie	Agricultural Bank of Namibia
Brown, Chris	Head: Directorate of Environmental Affairs, MET
De Klerk, Nico	Director of Research & Training, DARD
De Wet, Stephan	Department of Water Affairs, MAWRD
Flower, Charlotte	Directorate of Forestry, MET
Fowler, Martin	Directorate of Planning, MAWRD
Galloway, Steve	Director of Investment Centre, MTI
Genis, Peter	Directorate of Planning, MAWRD
Glazewski, Jan	Directorate of Environmental Affairs, MET
Grobler, Manie	Meatco: Northern Areas Manager
Hansen, Kaj	Early Warning & Food Information Unit, MAWRD
Harris, Martin	Department of Water Affairs, MAWRD
Healy, Tim	Consultant
Heyns, Piet	Director of Investigations and Research, DoWA
Huesken, Jan	Consultant, MLRR
Hugo, Peter	Directorate of Research & Training, DARD
Klein, Arnold	Namibia Agricultural Union
Koch, Harold	Directorate of Rural Water Supply, DoWA
Kojwang, Harrison	Director of Forestry, MET
Kressirer, Robert	SARDEP
Kruger, Bertus	SARDEP
Lange, Glenn-Marie	Consultant, Natural Resource Accounts
Lawry, Stephen	Ford Foundation of Namibia
Mountfield, Edward	National Planning Commission
Namukongo, Sackey	Namibia National Farmers' Union
Nicholson, Kit	NEPRU
Tagg, Jo	Directorate of Environmental Affairs, MET
Tarr, Peter	Directorate of Environmental Affairs, MET
Tjipueja, Harry	Acting Director: Lands, MLRR
Turner, Stephen	SSD, UNAM
Venter, Roelie	Namibia Agricultural Union

Appendix 4 — Economic Outlook Data

Growth

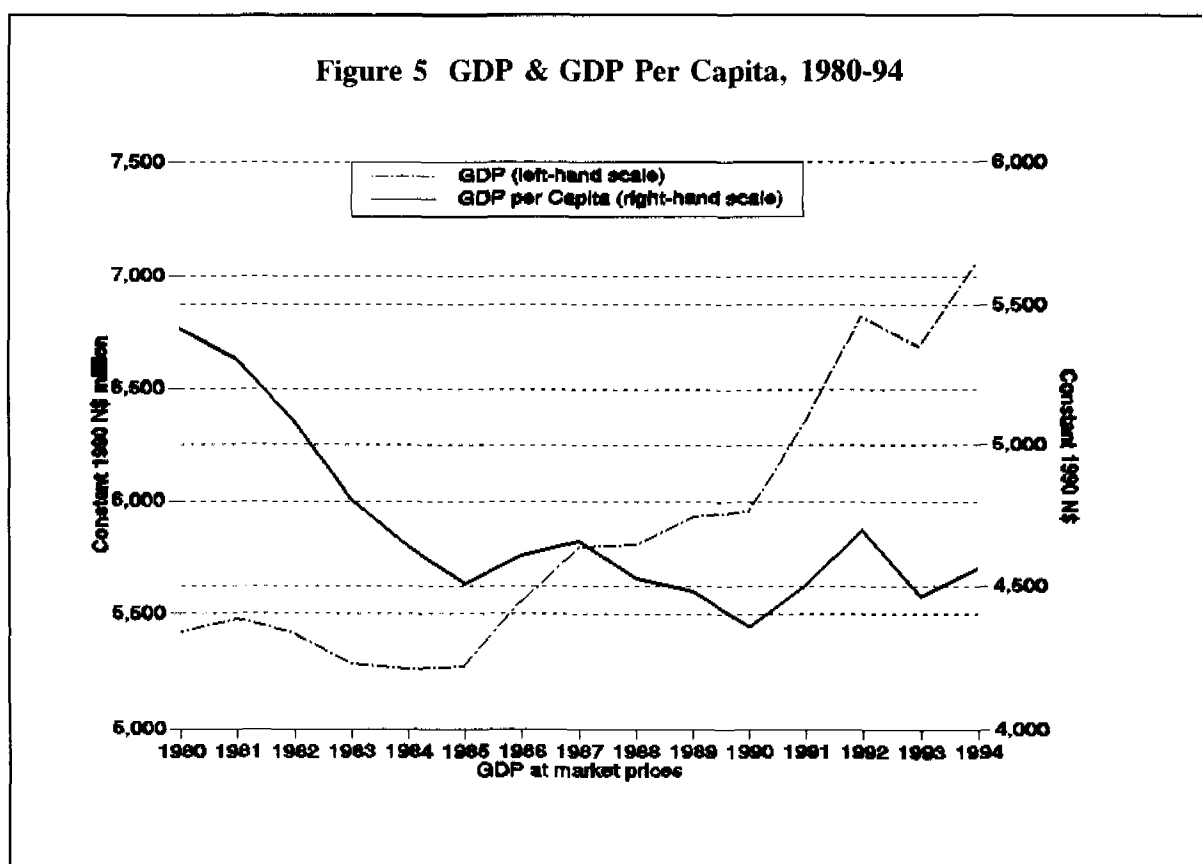
The rate of growth in real GDP and real GDP per capita since 1980 are shown in Table 10 and Figure 5. While GDP per capita has risen slightly since Independence, it is still significantly below the level of the early 1980s. Figure 5 also shows the variability in growth, with the economy vulnerable to both external and internal shocks (commodity price changes and drought respectively).

Table 10 Annual Real GDP Growth Rates, 1990-94

	<i>Average 1981-1989</i>	1990	1991	1992	1993	1994	<i>Average 1990-94</i>
Real GDP growth	1.0%	0.3%	6.6%	7.5%	-1.9%	5.4%	3.5%
Per capita real GDP growth	-2.1%	-2.8%	3.3%	4.3%	-4.9%	2.2%	0.4%

Note: GDP at constant 1990 market prices

Source: CSO National Accounts (1995, unpublished)



Industrial structure

Table 11 breaks down forecast growth in each of the sectors in the National Accounts, while Box 12 describes the expected trends in each.

Table 11 Actual & Forecast Real Growth in GDP by Sector, 1990-2000

Sector	% change on previous year											'96-'00, average
	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	
Agriculture (commercial)	5	2	-3	-4	2	-3	6	4	3	3	3	4
Agriculture (subsistence)	3	13	-59	35	72	-15	27	5	5	5	5	9
Fishing	-22	13	89	44	6	4	15	13	11	10	9	12
Diamond mining	-16	54	23	-27	11	0	0	1	2	2	6	2
Other mining	0	-17	-10	-8	10	3	5	19	0	0	0	5
Manufacturing	3	2	2	3	4	5	10	15	15	15	15	14
Fish processing	44	-34	58	32	16	-38	29	23	19	17	15	21
Meat processing	3	3	3	3	3	5	5	5	5	5	5	5
Electricity and water	3	-9	39	-53	23	18	14	2	2	2	2	4
Construction	-11	-16	37	6	1	30	3	3	3	13	12	7
Trade	1	0	5	2	2	2	4	5	5	5	6	5
Hotels and restaurants	-22	9	9	-3	25	10	11	14	15	16	17	14
Transport and communication	4	6	4	2	5	2	4	4	5	5	6	5
Finance and business services	0	3	3	3	3	1	3	3	4	4	4	4
Social and personal services	1	2	1	0	2	1	3	3	4	4	4	4
General government	8	12	7	5	3	3	2	2	1	1	0	1
Other producers	2	2	2	3	3	1	3	3	4	4	4	4
Private non-mining growth	1	0	6	4	7	1	8	7	7	8	8	7
Mining growth	-9	20	11	-22	11	1	2	8	2	2	4	3
Total growth ¹	0	7	8	-2	7	1	5	5	4	5	5	5

Notes: ¹ GDP at basic prices

Source: NDP1 — Draft for Parliament, October 1995 (NAMAF FRAMNDP1)

Box 12 Sectoral Growth Prospects during NDP1

Commercial agriculture experiences low growth as declining real livestock and meat prices in South Africa and EU, unfavourable climatic conditions, and the continuing no subsidies policy outweigh diversification into non-traditional products such as ostriches, melons and grapes.

Subsistence agriculture output grows faster than the rate of population growth as a consequence of effective implementation of the new agriculture policy involving improved extension services, technology and access to credit.

Fishing grows with increases in Total Allowable Catches but growth tapers off as the maximum sustainable yields are reached.

Diamond mining experiences modest growth as quota cuts are lifted and offshore operations increase in response to the running down of onshore mines.

Other mining output remains roughly constant as increases in uranium output and industrial minerals are offset by the closure of Tsumeb mine.

Manufacturing value added increases as investors respond to new policies, a more liberalised trading environment, tax incentives, improved investment promotion, the establishment of Export Processing Zones and other positive changes in the manufacturing environment.

Fish processing grows as catches increase and long-term fishing rights encourage greater onshore processing of higher value hake.

Meat processing grows as a result of more favourably priced inputs and better access to markets.

Electricity and water remain limited by domestic electricity supply constraints and investment in new water supply infrastructure.

Construction grows as investment in the economy picks up and certain big capital projects are implemented.

Trade grows in response to growth in the rest of the economy and increased foreign tourism.

Hotels and restaurants growth comes about through tourism development and buoyant domestic demand.

Transport and communication grows as a consequence of the reintegration of Walvis Bay, greater regional economic integration and increased tourism.

Finance and business services increase as a consequence of growth in the rest of the economy and a small but significant trend towards providing financial and other services to the region.

Social and personal services grow in line with the rest of the economy.

General government growth is restrained as the number of civil servants is held constant and as NDP1 policies focus on private sector development, greater efficiency of public expenditure and a reduced deficit.

Other producers grow in line with the rest of the economy.

Source: NDP1 — Draft for Parliament, October 1995

Employment

Forecasts for employment by sector over the Plan period are shown in Table 12. In the absence of robust employment/output data, these are derived rather crudely from the growth projections, generally assuming an elasticity of one (that is, if output in a sector grows by 5%, so does employment). There is an important exception to this rule with subsistence agriculture where output is projected to rise by 5% per year but employment by only 3% (the residual 2% representing a labour productivity gain).

Table 12 Employment Projections 1994-2000

Sector	Thousands, 15 & over ²							Change, '94-'00
	1994	1995	1996	1997	1998	1999	2000	
Agriculture (commercial farmers)	4	4	4	4	4	4	4	0
Fishing	7	8	9	10	11	12	13	6
Diamond mining	5	5	5	5	4	4	3	-2
Other mining	7	7	7	9	9	9	9	2
Manufacturing (excl. fish)	13	14	15	17	19	21	24	11
Fish processing	5	3	4	5	6	7	8	3
Electricity and water	2	2	2	2	2	2	2	0
Construction	20	26	26	27	28	32	35	15
Trade	37	39	41	43	46	50	55	18
Transport and Communication	11	11	12	12	13	13	14	3
Finance and business services	10	10	10	10	11	11	12	2
Personal services	10	10	10	11	11	12	12	2
General government	72	73	75	75	76	76	76	4
Other producers	3	3	3	3	3	3	3	0
Total formal employment	205	213	222	233	242	256	270	65
Commercial farm workers	37	36	38	39	40	42	43	6
Subsistence agriculture	150	155	159	164	169	174	179	29
Informal sector & Unemployment	152	158	161	163	168	168	169	17
Labour force¹	544	562	580	599	619	640	661	117

Note: ¹ economically active — formal employment + commercial & subsistence agriculture workers + informal employment & Unemployment

² includes estimates for Walvis Bay

Source: NDP1 — Draft for Parliament, October 1995 (NAMA F FRAMNDP1)

Government Expenditure/Revenue

Current and expected Government revenues, spending, the budget deficit and some other useful summary macroeconomic indicators are shown in Table 13. The breakdown of Government expenditure — which is just as important as its overall level — is shown in Table 14.

Table 13 Key Macroeconomic Indicators

	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00
GDP ¹ growth (%)	0.3	6.6	7.5	-1.9	5.4	1.1	5.1	5.0	4.4	4.7	5.0
Consumption ² (% GDP)	86.9	93.2	88.9	91.6	83.2	84.2	83.4	81.2	80.8	80.6	80.2
<i>Private</i>	55.7	59.5	53.3	56.9	52.3	50.0	50.1	48.5	48.7	49.2	49.5
<i>Public</i>	31.2	33.7	35.6	34.7	30.9	34.2	33.3	32.7	32.1	31.4	30.6
Savings (% GDP)	26.1	23.2	25.5	21.3	27.1	27.4	27.3	28.3	29.0	29.5	30.2
<i>Private</i>	16.2	11.3	16.6	15.3	22.8	22.5	21.6	22.8	23.1	23.4	23.6
<i>Public</i>	9.9	11.9	8.9	6.0	4.3	4.9	5.8	5.5	5.8	6.1	6.6
Investment ² (% GDP)	20.3	14.8	19.5	19.5	17.7	18.0	18.1	17.9	18.1	18.4	18.6
<i>Private</i>	13.9	9.4	13.6	13.2	12.1	11.8	12.0	11.8	11.9	12.2	12.5
<i>Public</i>	6.4	5.4	5.9	6.3	5.6	6.2	6.1	6.2	6.2	6.2	6.2
BoP Current Account (% of GDP)											
<i>Goods & services deficit²</i>	12.1	10.5	10.7	6.0	3.9	2.2	1.6	-0.8	-1.1	-1.0	-1.2
<i>Overall balance surplus</i>	2.1	6.2	3.9	7.3	7.1	9.4	9.2	10.4	10.8	11.1	11.6
Reserves (months of import cover)	0.0	0.0	0.4	1.4	2.1	2.2	2.2	2.2	2.2	2.5	2.9
Government Account (% GDP in financial years)	90/1	91/2	92/3	93/4	94/5	95/6	96/7	97/8	98/9	99/0	
<i>Revenue</i>	34.8	40.8	37.8	35.4	33.2	33.7	33.9	33.0	33.3	33.2	
<i>Expenditure</i>	36.0	43.5	43.3	39.5	38.0	37.9	37.3	37.0	36.6	36.1	
<i>Deficit</i>	1.2	2.7	5.4	4.1	4.8	4.1	3.4	3.9	3.3	2.9	

Note: ¹ GDP at constant market prices

² consumption + investment + goods and services balance = 100%

Source: NDP1 — Draft for Parliament, October 1995 (NAMA F FRAMNDP1)

Table 14 Government Expenditure by Sector, 1995-2000

Vote/s	constant 1995/96 N\$ million		
	NDPI Total		Average annual growth
Education & Culture	6,092	25.7%	2.5%
Health & Social Services	3,881	16.4%	5.1%
Works & Transport	2,835	12.0%	2.4%
Police, Prisons & Defence	2,418	10.2%	2.2%
Agriculture, Water & Rural Development	2,295	9.7%	3.4%
Other	6,148	26.0%	2.9%
TOTAL	23,669	100.0%	3.1%

Source: NDP1 — Draft for Parliament, October 1995 (NDP1 Financial Framework)

Balance of Payments

Since Independence, Namibia has consistently had a surplus on its current account (see Table 15). Exports of *goods* have been greater than imports, but this has been offset by net imports of *services*. The deficit in goods and services has been reversed by receipts of aid and SACU payments, and net investment income, giving an overall current account surplus. This position is expected to strengthen over NDP1 with high growth (see Table 13).

The current account surplus has been mirrored by a capital account deficit, with very large outflows of Namibian savings through pension fund and life insurance companies. A recent statutory requirement for these institutions to invest 35% of their assets in Namibia may reduce this outflow.

Namibia's merchandise (goods) exports are dominated by mining and other primary commodity exports. Figure 6 shows the composition of exports over recent years and the expected composition to the year 2000. The growth in fish processing exports will mean that fish and fish product exports match diamonds by the year 2000.

The "terms of trade" are an index reflecting relative movements in the unit price of exports and imports, and they show the "purchasing power" of a country's exports. An increase in the terms of trade (export prices up, or import prices down) means that for a given volume of exports, more can be imported (as such, the terms of trade are an important consumer welfare measure not captured by changes in GDP at constant prices which is a measure of volume only). The trend in Namibia's terms of trade continues to be downwards — despite a large improvement in 1994 due to a rapid rise in export prices — and they are 14% below their 1989 level, largely reflecting the decline in world prices for Namibia's minerals exports.

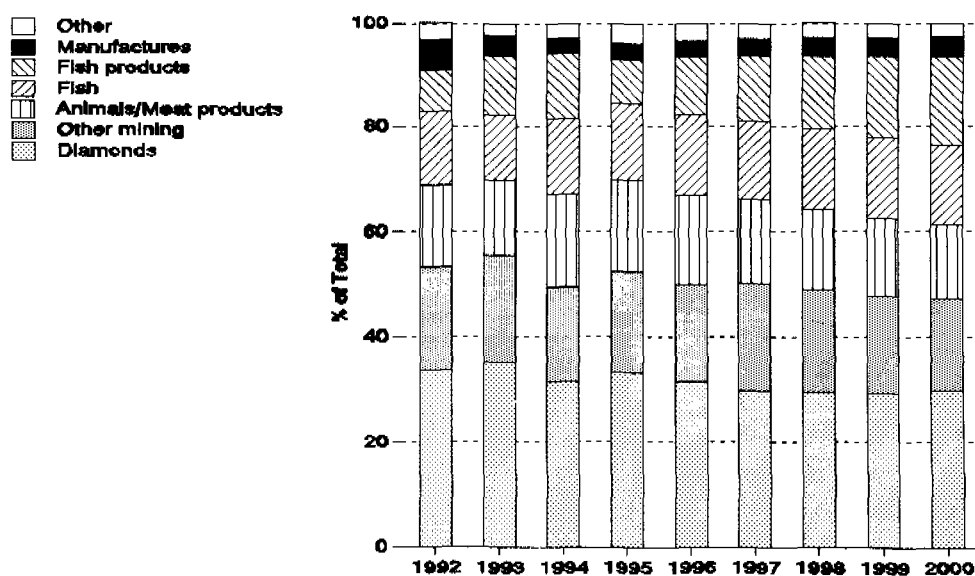
Table 15 Balance of Payments, 1990-94

	current N\$ million				
	1990	1991	1992	1993	1994 (prov)
Merchandise exports	2,809	3,351	3,826	4,214	4,692
Merchandise imports	(2,892)	(3,092)	(3,601)	(3,815)	(4,106)
Services (net)	(655)	(974)	(1,067)	(897)	(913)
Transfers (net)	756	837	1,060	883	920
Income (net)	105	266	78	197	155
[A] Current account	123	388	296	582	748
Direct investment (net)	73	315	230	78	88
Portfolio investment (net)	(488)	(872)	(721)	(453)	(750)
Other (net)	(117)	44	213	200	222
[B] Capital account	(532)	(513)	(278)	(175)	(440)
[C] Change in reserves	95	(34)	(19)	298	266
[D] Balancing item (errors)	504	91	(37)	(109)	(42)
<i>[A]+[B]-[C]+[D]</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

Note: negative numbers in parentheses

Source: Bank of Namibia 1994 Annual Report, tables 8 & 9

Figure 6 Composition of Merchandise Exports



Appendix 5 — Namibia's Policy to Combat Desertification

GRN, July 1994

Prepared by Ministry of Environment and Tourism, in consultation with:

Ministry of Agriculture, Water and Rural Development	Ministry of Lands, Resettlement and Rehabilitation
Ministry of Local and Regional Government and Housing	Ministry of Mines and Energy
Ministry of Works, Transport and Communications	Ministry of Education and Culture
National Planning Commission	Desert Ecological Research Foundation of Namibia
University of Namibia	Namibia National Farmers Union
Namibia Agricultural Union	Namibia Development Trust
Rossing Foundation	Wildlife Society of Namibia
Integrated Rural Development and Nature Conservation	Naye-Naye Development Foundation
Save the Rhino Trust	Life Science Project
Namibia Economic and Policy Research Unit	Namibia Nature Foundation
Small Industries Project	Arid Zone Ecology Forum
Kaoko/Opuwo Community Representatives	Omusati Community Representatives
Epukiro Community Representatives	Bergsig Community Representatives
Sesfontein Community Representatives	Khorixas Community Representatives
Naye Naye Community Representatives	Oshona Community Representatives
Southern Namibia Farmers Union Representatives	Spitzkoppe Community Representatives
Okamatapati Community Representatives	Rundu Community Representatives
Kamanjab Community Representatives	Otjiwarongo Community Representatives
Niko Community Representatives	InterConsult Associates, Namibia
Namibia Resource Consultants	Groundwater Investigations
Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ) GmbH	Natural Resources Institute (UK)
CSIRO (Australia)	National Botanical Institute (RSA)
University of Botswana	University of the Witwatersrand (RSA)
U.S. Peace Corp	International Medical Corp
Swedish International Development Authority	United Nations Development Programme
Secretariat of the INCD	

1. PREAMBLE

- 1.1 Namibia is the driest country in sub-Saharan Africa; 22% of the land surface is arid (<100 mm of rain per annum), 70% is semi-arid (100-500 mm) and 8% is dry subhumid (>500 mm). Rainfall is also highly variable and unpredictable. These factors characterise and contribute to the fragility of Namibia's environment.
- 1.2 Namibia's economy is largely reliant on renewable natural resources, including those in the sectors of agriculture, tourism, fisheries, wildlife, forestry and water. About 70% of the population are directly dependent for their livelihood and survival on the land and its resources.
- 1.3 Namibia has experienced significant to severe environmental degradation in many parts of the country, resulting in a loss of productivity and biotic diversity. Increasing human pressure on the fragile environment has been the main cause of degradation, exacerbated by the variable climate and periods of droughts. The processes leading to a loss of productivity in arid regions are known, collectively, as "desertification".
- 1.4 The manifestations of desertification in Namibia include deforestation, overgrazing, soil erosion, bush encroachment and salinization. Ultimate factors leading to desertification are often complex, and may originate in seemingly unrelated sectors. They might include issues of economic and fiscal policy, marketing, land rights and use, human population pressure, international trade, resource management practices, etc.
- 1.5 The quality of life of all Namibians, particularly the rural poor, and the development potential of the country, are threatened by desertification. Desertification leads to increased poverty, reduced food security, poor health and nutrition, and increased pressure on the environment and the national economy.

2. POLICY

In view of the above, it is the policy of the Government of the Republic of Namibia to combat the processes of desertification by establishing a national programme and by supporting other activities that:

- a) promote the sustainable and equitable use of land and renewable natural resources, in keeping with Namibia's variable climatic conditions;
- b) recognise that poverty and population growth are interlinked with the processes of desertification, and support and/or develop programmes to address these issues;
- c) aim to understand and positively influence the proximate and ultimate factors affecting the processes of desertification, including bio-physical, socio-economic, policy and legislative framework factors;
- d) encourage broad-based participation and strengthening of, and communications between, relevant organisations and individuals, at all levels;
- e) promote awareness, education and training at all levels through the preparation and distribution of appropriate materials, and through the active interaction of individuals and institutions.

3. GUIDING PRINCIPLES

Namibia's policy to combat desertification provides a framework for a national programme which is based entirely on Namibia's needs and conditions, while making use of regional and international experience as appropriate. This programme should be dynamic, responsive, participatory, based on sound information and, above all, implementable by government, NGOs the business sector and resource users. The following "guiding principles" are applicable:

- 3.1 Combatting desertification involves long-term integrated strategies aimed at arresting degradation and improving productivity of land, leading to improved living standards, particularly amongst rural communities.
- 3.2 Integrated strategies should address the physical, biological, social, economic and policy aspects of the processes of desertification.
- 3.3 Strategies for poverty alleviation, including alternative livelihoods for rural communities, should be included into efforts to combat desertification.
- 3.4 Strategies to combat desertification should interlink with those in related fields, e.g. biodiversity, water and wetland management, early warning and food security programmes, agricultural, forestry and wildlife programmes, planned urbanisation, etc.
- 3.5 Local, regional, national and international cooperation and communication should be strengthened to support the combatting of desertification.
- 3.6 Strategies to combat desertification should be dynamic and adaptive to cope with different local socio-economic and bio-physical conditions, and to respond to new research findings.
- 3.7 Informed decision-making should be facilitated at all levels by identifying information needs, and collecting, analysing and communicating appropriate information to relevant individuals and institutions.
- 3.8 Broad-based participation of the resource users, resource managers, extension staff and policy makers is essential for the success of a national programme to combat desertification.
- 3.9 People directly dependent on land and natural resources should be empowered to making decisions regarding their management. These rights over decision-making should be linked to obligations of wise and sustainable management and utilization.
- 3.10 Factors influencing resource management and issues such as desertification can originate in sectors seemingly far removed from those in which the problems manifest themselves. For this reason, decision-makers at all levels and in all relevant fields should be made aware of desertification processes, and all policies should pass through an environmental assessment procedure before being approved.
- 3.11 Provide an enabling environment for Namibians to effectively combat desertification over the long-term by supporting and, where necessary, strengthening relevant institutions, programmes and legislation and, where they do not exist, enacting new laws and establishing appropriate institutions, programmes and strategies, and promote education, awareness and training at all levels.