P: manuscript

↑
new project file

FIVE YEARS OF POST-APARTHEID DEVELOPMENT IN NAMIBIA

ENVIRONMENT

Mary Seely, Desert Research Foundation of Namibia

Before independence

A major characteristic of Namibia in the decades prior to independence was the implementation of a development trajectory which ignored most of the environmental realities. Namibia is the driest country south of the Sahel. Historically, settlements were established where water was available. A majority of Namibia's sedentary population lived along the perennial rivers in the north-east or in the areas with higher rainfall where dryland crop farming is possible in at least some years and groundwater or seasonal surface flow could be tapped. In the remainder of Namibia, small settlements developed where groundwater was easily accessible, usually from riverine aquifers or natural springs, and people and their livestock moved to areas where rainfall provided grazing and surface water.

During the colonial period, technical ability to obtain groundwater from deeper sources and to dam the ephemeral rivers was put to use (Stern and Lau 1990). Towns such as Windhoek were encouraged to grow, first by developing the local groundwater and then, when this proved insufficient, by way of dams and pipes from distant ephermeral rivers. The State subsidised the cost of water supply for urban consumers and for rural consumers in the communal areas

Ephemeral river catchments are a good example of the lack of a holistic approach to the environment in the past, and still today. While providing water as demanded by the growing population of Windhoek, two large dams were constructed in the Swakop River, the von Bach Dam near Okahandja and the Swakoppoort Dam lower down. As a result downstream, agriculture that was practised in the river bed at Otjimbingwe was no longer possible (Lau and Reiner 1993) and many of the ana trees died which had previously helped to support the wildlife populations of the Namib-Naukluft Park with their nutritious pods. Most of the western ephemeral rivers have their headwaters in privately owned farmlands, flow through communal farming areas and end in conservation areas such as the Skeleton Coast Park along Namibia's northern coast and the Namib-Naukluft Park along the central Namib Desert coast. Planning and development of these rivers has taken place without consideration of the total catchment and how upstream users affect those situated further down stream.

In the past, development of communal areas, where the majority of all Namibia's live, especially ignored environmental constraints. The communal areas of the north and north-east of Namibia (former Owambo, Kavango and Caprivi) occupy areas where populations are naturally relatively dense. These areas have the best rainfall in the country and several perennial rivers provide water for a large proportion of the people. In the south and western communal areas (e.g. former

Namaland and Damaraland), however, the aridity of the environment hindered development of a sedentary life style.

Under colonial rule, and reinforced by the Odendaal Plan, this natural population distribution pattern was disrupted. In the south, people were expected to live sedentary lives confined within circumscribed areas where previously they and their livestock had followed the rains over great distances. In all the communal areas of Namibia, the growing population was forced to make a living from a static or declining resource base within a limited area. To support people and their livestock, boreholes, ground dams and piped water supplies were established. This encouraged a sedentary life style for people and livestock with which the limited and variable grazing, woody vegetation and other resources were not in balance. The result in many areas has been a loss of productivity of the natural resource base and impoverishment of the people dependent thereon.

Prior to independence, environmental legislation in Namibia was fragmented and that which was in place was not enforced. Laws such as the Water Act, the Soil Conservation Act, the Mountain Catchment Areas Act and the Nature Conservation Ordinance were promulgated between the 1950s and 1970s mainly for application in South Africa and applied to Namibia with little alteration. In general the legal system in Namibia has never given high priority to environmental protection.

Immediately prior to Independence, interest began to be generated in the process of Environmental Impact Assessment (EIA). However, it was generally considered in most sectors to be a luxury and an impediment to needed development. Shortly before independence, the Engineering Professionals Association of Namibia arranged with the Environmental Evaluation Unit of the University of Cape Town to hold a short course in Namibia which was open to interested participants. Before independence, one large scale EIA was carried out in house by the Department of Water Affairs on their aquifer enhanced-recharge project near Henties Bay in the lower Omaruru River, known as the Omdel Dam.

Prior to independence, networks of Game Parks and Reserves were the mainstay of the Department of Nature Conservation and Tourism. Almost all of the Department's resources and manpower were directed toward developing, protecting, controlling and studying these parks and even tourism was considered by many staff to be a necessary evil. People surrounding the parks, or from whom the land in the parks was taken, were not considered in the park's development or the benefits to be directly derived. Within the park system itself, Namibia's only national park, the Etosha National Park, was considered the most important as it harboured the large and dangerous animals that attract tourists and were most interesting to study.

On commercial farms, legislation enacted in the late 1960s enabled the farmers to harvest game and use it for trophy hunting as well as photographic and other non-consumptive uses. This development led to a network of hunting and game farming enterprises on commercial farms that supports the tourism industry today. Farmers could also group together and form conservancies to take shared advantage of species that range over wide areas such as kudu. The result of this

legislation was an increase in the populations of non-threatening game species on commercial farms so that today the majority of all game in Namibia is located there.

In the communal farming areas, people were expected to live with all types of wildlife while gaining no direct benefit. In many communal areas the consumable game has been eliminated and with it the dangerous species as well. In other areas less well populated, hunting concessions were established to encourage foreign hunters seeking trophy animals. Throughout, the intended focus was on conserving the wildlife in its natural habitat.

Developments after independence:

With respect to the environment, much of the overall planning and development continued in the same trajectory although some new initiatives were pursued. For example, no plans were developed, nor are they being considered today, to match the availability of natural resources, particularly water and manpower, with centres of growth. Still today there is little awareness of the limitations placed on human development by the environment and the expectation remains that technology will overcome these limitations. Of particular concern is the continuing focus on a land reform process that implicitly but not explicitly takes into the consideration the natural resources such as water and grazing potential that give the land its value to people. On the other hand, plans to dam the Ugab River to provide water to Khorixas have started to take into consideration the communal livestock farmers dependent on the continued water flow down stream, although farm dams in the upstream commercial farms already influence the downstream flow. At all levels, awareness, participation and involvement is slowly increasing.

- Basis for change

A number of developments helped to change people's perception of the environment after Namibia's Independence. The prime impetus has been the Constitution of the Republic of Namibia. Article 95 states: 'The State shall actively promote and maintain the welfare of the people by adopting ... policies aimed at ... maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for he benefit of all Namibians both present and future'. This article is frequently referred to and guides a number of initiatives in different sectors, from environment to education to development. The Constitution, in line with many other subsequent developments, focused Namibia and its decision makers on the concept of 'sustainable development'.

The United Nations Conference on Environment and Development took place in Rio only two years after Namibia's Independence. In preparation for this event, Namibia made the conscious decision, guided by the Directorate of Environmental Affairs who were responsible for preparations for Rio, not to follow the footsteps of many other countries and establish a static National Environmental Action Plan but, instead, to follow the example of Canada amongst others and develop a dynamic document that is known as Namibia's Green Plan (MET, DEA 1993). Thirty

organisations, from Ministries to NGOs, contributed to the twenty eight chapters of this document which the President of the Republic of Namibia presented in Rio. This document continues to set the direction for many of Namibia's current environmental initiatives.

A parallel development which evolved soon after independence was the explicit acknowledgement that the majority of Namibia's tourism is based on the environment. This was supported by the Minister of the then Ministry of Wildlife, Conservation and Tourism, who convened two national workshops to discuss conservation and tourism. At the same time it was recognised that although an arid environment can not support vast numbers of tourists, still tourism was expected to be the largest income generating sector of the country, after mining, fisheries and agriculture with great potential for growth. Extensive planning and reorganisation of the tourism sector (MET, DTR 1994) is expected to bear fruit in the not too distant future as many of the nations assets are developed under the guidance of Government, but by the private sector. Another major development has been the encouragement of community based tourism initiatives all of which are based in the attraction of Namibia's environment and natural resources (MET, DEA 1995a).

Many of the sectors dealing with environment, for example water, agriculture, fisheries and transport have all come to acknowledge the importance of environmental concerns in relation to sustainable development. Nevertheless, inter-sectoral co-ordination and integration is, with a few exceptions, still lacking

Major environmental issues in Namibia

- Aridity and drought

The major single factor characterising Namibia's natural environment is its prevailing aridity as it is the most arid country in southern Africa. Approximately 23% of the country, in the south and west, is characterised as arid and 3% in the north east as sub-humid. The remainder is considered to be semi-arid. As a direct consequence of this prevailing aridity, the rainfall is very variable, from year to year and from place to place, and drought is a regular and normal occurrence. Placing Namibia's aridity in a southern African perspective, the `high' rainfall areas of Caprivi and Kavango Regions in Namibia that are considered to be the `bread-basket of the nation` would be categorised in the driest and least productive natural area of neighbouring Zimbabwe and grazing would be the main agricultural activity. In terms of land use, the low rainfall of Namibia means that the majority of the land is best suited to grazing and not even every year in every region. Dryland crops can only be produced in the north and north-east and then successfully only in some years. This variation in the degree of aridity calls for planning that explicitly considers the environmental potential of the different regions of Namibia

Also as a direct consequence of Namibia's aridity, available surface water and groundwater are limited. Perennial rivers only flow on the borders of the country and all have their origins in a neighbouring country with which the water must be shared. The Kunene and Okavango Rivers originate in Angola, the Zambesi in Zambia and the Orange River in Lesotho. A number of

ephemeral rivers that flow in years of good rain originate in the central highlands of Namibia. Most of these ephemeral rivers flow westwards into the Atlantic and those centrally located have been developed to support urban development, e.g. the Kuiseb, Swakop and Omaruru Rivers. The ephemeral Fish River flowing southward is captured in the Hardap Dam and used for irrigation and the town of Mariental. Namibia is apparently one of the few countries in the world that bases extensive urban development on water from ephemeral rivers. Groundwater is also present in short supply, particularly in the arid west, or is salty as in the Cuvelai basin of former Owambo.

- Perceptions of aridity and drought

Although Namibia is naturally arid, people living in Namibia tend to have the perception that better rain can be expected. As a consequence, each year of drought comes as a surprise for which appropriate planning and preparation have not been done and government 'drought relief' to the rural people is expected to solve the problem for another year. These perceptions probably have their origins in several factors. Before Independence all the school text books in use had their origins in other countries, often even in Europe, as do the magazines and other materials to which people were exposed. Then too, many Namibian's have spent their formative years studying in countries with higher rainfall. On the other hand, the population in the rural areas is increasing and it is more difficult for people to move around with their livestock or find unused reservoirs of natural resources. Drought, which is a readily identified problem related to natural variation in rainfall, combines with increased population to provide fewer resources for each person dependent on natural resources and the land for their livelihood. Early in 1996, the Minister of Agriculture, Water and Rural Development announced that drought subsidies would be reconsidered and alternative measures taken to help people plan and safeguard themselves against low productivity associated with low rainfall years.

- Population growth and poverty

The population of Namibia is growing at a rate estimated at 3.2% per annum which will result in a doubling of the population in little more than 20 years. As aridity limits the available natural resources in Namibia, this population growth means that twice as many people will have to share the same or a declining amount of natural resources in the near future. As more people expect and attempt to make a living from the limited and variable resource base in Namibia, overuse and degradation of these resources is inevitable. A lack of alternative livelihoods for the rural people of Namibia exacerbates the situation.

- Constitutional rights to live anywhere in Namibia

A basic tenant of Namibia's new Constitution is that guaranteeing people the right to live almost anywhere in Namibia. With the weakening of the traditional authorities in many regions of the country and the lack of regional structures to replace the traditional authorities, people see it as their right to move with their livestock to better grazing or to take the opportunity to fence off some of the limited available grazing for their own exclusive use. Although the option to settle anywhere has not been widely taken up, it, together with the rapid, illegal fencing off of large parts of communal

grazing, is seen as a reason for rural people dependant on communally accessible natural resources not to use them in a more sustainable basis and not to invest in long-term development or conservation of natural resource such as water and grazing. This is a good example of a policy with certain laudable objectives having an unforeseen effect on Namibia's arid environment.

- Donor involvement and interest in environment

Namibia's independence coincided with increasing interest in environment on a global scale. This has meant that most of the donor funded projects relate at least peripherally to sustainable use of the environment and many of them focus on the environment in their project design. In assessing donor projects, the National Planning Commission includes a question forcing consideration of the potential environmental impacts that might result. Several donor funded projects relate specifically to the environment, e.g. the Sustainable Animal and Range Development Project of the Ministry of Agriculture, Water and Rural Development, and a review of environmental legislation and the funding of environmental profiles within the Ministry of Environment and Tourism.

- Limited manpower

A drawback in the development of the environmental sector is the distinct lack of trained manpower. Few Namibians studied for environmental degrees before Independence and only a few are currently doing so at the post-graduate level. Geography and biology are increasingly popular subjects in the Arts and Science faculties, respectively, at the University of Namibia and it is expected that the current situation will improve in the future. A hopeful sign is the growth of the Environmental Society at the University of Namibia as students come to recognise that environment refers not only to birds and other wildlife but incorporates people and their sustainable development.

Major new directions

- Environmental Profiles

On one hand, the plants and animals of Namibia were fairly well known prior to Independence. This knowledge focused on the identification and distribution of species and the behaviour and ecology of selected groups of organisms - valuable knowledge in itself and in support of tourism but only a part of the overall picture. Integration of people and their activities into the environmental landscape was, however, largely neglected.

One of the first integrated overviews of people in their environment was the book produced by the Desert Research Foundation of Namibia entitled 'Oshanas: sustaining people, environment and development in central Owambo, Namibia' (Marsh and Seely 1992, abridged and translated by Pallett (1994)), which grew out of the Environmental Assessment of the planned upgrade of the Ogongo-Oshakati Canal. The Ogongo-Oshakati Canal supplies water from the Kunene River to the populous Oshakati- Ongwediva - Ondangwa nexus and much of Oshana, Ohangwena and Oshikoto Regions. This canal, and the highway which runs parallel, cross over and partially block the flow of water in numerous shallow, ephemeral water courses which have their headwaters in the Angolan highlands and terminate in the Etosha Pan.

At about the same time, the Namibian Institute for Socio-Economic Research (now the Social Science Division of the University of Namibia) brought out several books examining how rural Namibians living in communal areas make a living from the environment and cope with its variable productivity (Devereux *et al.* 1993, Naeraa *et al.* 1993) . More recently profiles of the western catchments (Jacobson *et al.* 1995) and the Sperrgebiet of south-western Namibia (Pallett 1995) have been published. These books have been used extensively by developers and donors in shaping their various programmes and have been incorporated by University lecturers and school-level educators into the curriculum.

Currently the Directorate of Environmental Affairs is working on an environmental profile of the Caprivi area which is meant to be an interactive data base in support of all development and conservation in that region. This is planned to be the first in a series of profiles which will encompass all of Namibia in due course.

- Economics of the Environment

Globally people are recognising the importance of valuing the environment in economic and financial terms. It is usually when people can judge the importance of sustainable development through its affect on their pocket books that they give serious attention to appropriate use of natural resources. In 1994, an assessment was made of the impact of desertification in Namibia (Quan *et al.* 1994) which showed that the equivalent of about N$ 100 million is lost annually to the communal farmers in northern Namibia from land degradation and a similar amount to the commercial farmers from bush encroachment. The Directorate of Environmental Affairs is fostering this attempt to value the environment by hiring advisors and Namibian graduates to do further analyses of this type (e.g. Barnes and de Jager 1995).

Water is the single most important factor with the potential to limit development in Namibia, yet Namibians in all walks of life waste water all the time. This is at least partly thought to be related to the fact that water has always been considered a free commodity that originates from rain and is available to all as a natural right. The Department of Water Affairs (DWA) and the Municipality of Windhoek are addressing this problem in the capital city by instituting a policy of demand management. Previously the DWA sought to supply as much water was as was needed by the various sectors in Namibia at a cost less than the cost of provision. Today, through a process of raising awareness, coupled with increased tariffs, the DWA and the Municipality are attempting to reduce water use and bring the price of water to the consumer in line with the cost of its provision.

Similarly, in the rural communal areas, water has been supplied free of charge. This has included provision of hand, wind or diesel pumps and, in most instances, the diesel to run the pumps. All repairs were provided free of charge. Today the Directorate of Rural Water Supply is developing a procedure for instituting cost recovery over a number of years. This is coupled with transfer of the responsibility for water supply onto the consumers themselves. Cross subsidisation will take place on

a region basis, with people themselves deciding the level of service they want and can afford. It is expected that this approach will contribute to more sustainable use of this limited resource.

Other renewable natural resources have yet to be fully valued on a financial and economic basis. Information on wildlife and tourism is bringing awareness of their contribution to the fore. A similar approach should be adopted for all natural resources to ensure their sustainable use.

- Environmental Assessments

During the time since Independence, the Directorate of Environmental Affairs within the Ministry of Environment and Tourism compiled an Environmental Assessment Policy (MET, DEA 1995b) that has been approved by Cabinet. Although not legally binding, this policy serves as a guideline for Environmental Assessments in Namibia. The policy deliberately left the word 'Impact' out of its title to emphasise the role of environmental assessments as a tool to guide sustainable development rather than a means to thwart needed development in Namibia.

Almost all of the Environmental Assessments in Namibia since Independence have been donor driven. This development, which continues today, is mainly backed by the politics in the country of origin of the project being assessed. Early post-Independence assessments addressed, *inter alia*, the Roads Master Plan in former Owambo, the Ogongo-Oshakati Canal in former Owambo, the Trans-Kalahari and Trans-Caprivi Highways and the Central Area Water Master Plan. These assessments have far ranging implications. The major question addressed in the assessment of the two major projects in former Owambo was how to contribute to development in this neglected area while not having serious negative impact on the ecological services provided by the ephemeral wetland systems of the oshanas. While the highway plan was straight forward, the efficacy of using a pipeline or a canal to provide water in the region is still being discussed several years after construction of the canal has started. The Trans-Kalahari Highway is non-controversial in Namibia, however, the Trans-Caprivi Highway runs through a proclaimed game reserve. In recognition of this situation, the donors funding the highway have also provided funding for planning development in the several game parks in the area and the Ministry of Environment and Tourism will shift boundaries of several reserves to accommodate ongoing developments. The Central Area Water Master Plan addressed provision of water to central Namibia including the coast. Most environmentally controversial is the plan to take water from the Okavango River to supply Windhoek. This assessment has been extended to investigate the implications of sea water desalinisation to supply the major growth points of Swakopmund and Walvis Bay.

Only the large multi-national mining companies have initiated independent environmental assessments, a development stimulated by awareness and regulation within the international mining community. Although several private environmental consulting companies have sprung up in Namibia to provide the necessary expertise for Environmental Assessments, the services of foreign based companies are still needed to fulfil demand.

Currently (1996) the most prominent Environmental Assessment being carried out in Namibia parallels the feasibility study of the Epupa Hydropower Scheme on the Kunene River. Swedish consultants lead the team which has a number of Namibian participants and is guided by a Joint Technical Committee with membership from Namibia and Angola. A representative from the International Union for the Conservation of Nature and Natural Resources (IUCN) is overseeing the entire process. There is a certain amount of doubt concerning the validity of the feasibility study and concomitant assessment, however, as high government officials already have gone on record as saying that the project will go ahead, apparently for political if not economic or environmental reasons.

Although environmental assessments are carried out on a number of projects in Namibia, the overall response of Government is tepid. Some, but not all, Government departments, or persons therein, consider these assessments a necessary evil, the recommendations of which can be ignored or deliberately misinterpreted. All these assessments are, at a minimum however, contributing to the transparency of the development process in Namibia and continue to highlight the necessity of inter-sectoral planning and co-ordination for sustainability.

- Land Use Planning

Since Independence, Namibia has recognised the importance of developing an overall land use planning capacity. The Directorate of Lands in the newly established Ministry of Lands, Resettlement and Rehabilitation (MLRR) has carried out a six month training programme in Land Use Planning for suitable candidates in this and other Ministries. Currently, land use planning is mainly limited to planning use of resettlement farms within the commercial farming area. Appropriate implementation of planning on a broader scale awaits the guidelines to be provided by the Land Policy and the Communal Land Bill. An encouraging development has been the approval by Cabinet of the Land Use and Environment Board. Placed within the National Planning Commission, this Board has the potential to co-ordinate rural and urban planning. Currently many of the other sectors are holding back to see how well it will operate - thus ensuring its ineffectiveness at least in the immediate future.

- Community Based Natural Resource Management

Community based natural resource management is a major focus of attention for the Directorate of Environmental Affairs of the Ministry of Environment and Tourism. This programme has its basis in the community game guard programmes of two NGOs working in Kunene Region, Integrated Rural Development and Nature Conservation and the Save the Rhino Trust, which were established prior to Independence and in the campsite established in Damaraland near Twyfelfontein by a creative entrepreneur of the local community. The CBNRM programme is established upon the premise that people will only use available natural resources wisely and in a sustainable fashion if they have a long-term stake in the benefits to be derived form these resources. Both before and after Independence, the natural resources from which people derive their livelihoods in communal areas

belong to the state. Nevertheless, the Directorate of Environmental Affairs has pioneered ways in which local communities in communal areas can derive benefits from the use of wildlife and the tourism potential of these areas. A major thrust of their efforts has been to investigate the economic benefits that could be derived by communities (Barnes 1995) and the structures that communities would need to put in place to realise these benefits.

Patterned on the CAMPFIRE programme in Zimbabwe, the DEA has investigated the use of conservancies in communal areas that would confer benefits from wildlife and the landscape on the people living with the animals on a day to day basis. The policy has been approved by Cabinet and legislation has been passed by Parliament (MET. DEA 1995a).

While exclusive benefits from wildlife and tourism can be realised by communities forming conservancies, there is no power of exclusion against people wishing to use the natural resources upon which the wildlife and tourism depends in the conservancy area - the grazing, woody vegetation, water or the land itself - for other purposes including agriculture. Apparently the Ministry of Lands, Resettlement and Rehabilitation is considering incorporating an all inclusive conservancy approach in its Lands Policy which would address this discrepancy.

- Environmental Policy and Legislation

The Namibian Environmental Legislative Review Programme is a three year, donor-funded programme addressing the serious need for a coherent and comprehensive environmental legal framework. Being carried out by the Ministry and Environment and Tourism and the Office of the Attorney General, it will guide the process of law reform with respect to renewable and non-renewable natural resources. The current legislation is mainly of South African origin although several new acts, *inter alia*, the Minerals (Prospecting and Mining) Act (No. 33 of 1992), Petroleum (Exploration and Production (Act) (No 3 of 1991), Foreign Investment Act (No 96 of 1990), Sea Fisheries Act (No 29 of 1992), and the Agriculture (Commercial) Land Reform Act (No 6 of 1995) have environmental implications and components. Depending on their interpretation, these acts could contribute to sustainable development use of the environment.

Namibia's legal system, however, gives low priority to environmental protection and sustainable use of natural resources. Enforcement agencies are given inadequate support to carry out their responsibilities with respect to the environment and are often not aware of the legislation pertaining to these responsibilities. At the same time, fines relating to the environment are often minimal and do not result in rectifying any damage done.

The Legal Assistance Centre is addressing the need for increased environmentally relevant legal knowledge and is involved raising awareness in this respect through its Legal Education Programme and the Legal and Environmental Awareness Project. Again, inter-sectoral co-ordination and planning is essential for development of an appropriate legal framework and its enforcement on behalf of sustainable development of Namibia for all Namibians present and future.

- Environmental Education

Environmental education in Namibia has been given a relatively high profile and is supported the Ministry of Basic Education and Culture (MBE) as well as the Ministry of Environment and Tourism and several donors. With the adoption of the GCSE system by secondary schools in Namibia, Natural Economy was introduced to senior secondary schools. This subject supports an integrated approach to the environment; the Namibia Nature Foundation is implementing the development of a basic text and its introduction into the curriculum (Storm *et al.* 1995). The Life Science Project of the MBEC also supports environmental education through its focus on upgrading in-service teachers of Life Science in secondary schools.

Also in the formal education sector on the secondary level, but more broadly applicable, is the Enviroteach project of the Desert Research Foundation of Namibia. This project involves the development of a series of resource books for secondary school teachers based upon existing environmental research and information (du Toit and Sguazzin 1995). Major resources address Energy, Water, and Population and the Namibian environment supported by several books on how to incorporate a cross-curricular, activity-based and learner-centred approach in the schools. These materials, and several supporting smaller resources, were tested in 25 pilot schools in Namibia's six educational regions. The programme is now being established in the four Colleges of Education in Katima Mulilo, Ongwediva, Rundu and Windhoek.

In non-formal education, the Ministry of Environment and Tourism has established two environmental education centres, at Namutoni in the Etosha National Park and in the Waterberg Plateau Park. Both centres encourage visits by groups, especially from the nearby communal areas of Oshana, Omasati, Ohangwena and Oshikoto in the north and Otjozondjupa and Omaheke in the east, respectively.

These initiatives, and a number of smaller activities, are co-ordinated through the Namibian Environmental Education Network known as NEEN. With headquarters in and supported by the Roessing Foundation, NEEN takes an active role in promoting environmental education in Namibia and networking in the SADC region.

- International Conventions and Namibia's response

Having participated in the Rio conference on environment and development, Namibia has actively responded to and is a signatory of two of the three conventions elaborated or initiated there: the Desertification Convention and the Biodiversity Convention. It is generally felt that, while Namibia as an arid country will be seriously affected by Global Climate Change, it is contributing little to this process.

Namibia's response to the Biodiversity Convention has been to initiate a Country Study documenting the know biodiversity and identifying research needed to fill in the gaps as well as to monitor change. The DEA is taking the lead in this endeavour with a full time consultant co-

ordinating the inputs. The State Museum of the Ministry of Education and Culture is making a major contribution to this study.

The Desertification Convention is being addressed by a partnership of the Ministry of Agriculture, Water and Rural Development, the Ministry of Environment and Tourism and the Desert Research Foundation of Namibia, a non-governmental organisation. After a country-wide awareness raising campaign, a national workshop was held in 1994 that brought together rural farmers from communal and commercial farming areas, government officials of all levels and NGOs and the private sector. At that workshop a national programme was designed that addressed a variety of national needs: awareness, education and training, research, planning, policy and empowerment of natural resource users on all levels (Wolters 1994). Currently, together with Mali, Namibia is considered to have a dynamic programme that is contributing to the Urgent Action for Africa demanded by the African countries in Rio in 1992. Ratification of both the Biodiversity and the Desertification Conventions by Namibia's Parliament is expected during the course of 1996.

- Tourism

Tourism has been a major growth industry in Namibia since Independence. Most of the development has been based on wildlife and landscape although several gambling establishments have opened under the control of the Ministry of Environment and Tourism. A number of locally based and foreign operators have developed and refined tourist packages of various sorts ranging from bus tours to fly-in photo safaris to exclusive hunting safaris. The major towns all have information bureaux and several booking agencies service speciality products such as guest farms and lodges. Numerous rental agencies for 4x4 and camping vehicles have been established, most located in the main entry point of Windhoek.

Although most tourism in Namibia is dependent on wildlife and landscape, few of the tourist establishments promote conservation of natural resources such as water or energy. Even hotels constructed within the past several years encourage rather than discourage profligate water consumption. Some of the smaller guest farms and wilderness camps have addressed environmentally sustainable natural resource consumption (Muensterer and Otto 1994), although often as much for economic as for environmental reasons.

Well established in Namibia is the small scale guest accommodation established on private livestock or game farms in the commercial farming area. These represent an additional and stabilising source of income to the private farmer attempting to make a living in Namibia's variable environment. In a somewhat parallel development, several individuals in the communal areas have established camp sites. Often termed community based, in many instances they represent the efforts of a single local entrepreneur who then hires community members to run the campsite thus spreading the income. Also in communal areas, are commercial developments on a small scale that are based on Permission to Occupy (granted by the Ministry of Lands, Resettlement and Rehabilitation) and Concessions (granted by the Ministry of Environment and Tourism). When granting a Concession,

the MET negotiates with the developer on behalf of the surrounding community for benefits to be shared. All these different types of developments are seen as approaches helping to conserve the wildlife and landscape base upon which tourism in Namibia is mainly based.

Current constraints and future perspectives

The concepts of 'environment' and 'sustainable use of natural resources' are not clearly understood in Namibia. Many still believe that environment is synonymous with preserving wildlife. While local environmentalists are focusing on sustainable use of natural resources for the benefit of all Namibians present and future, international environmentalists are applying their attitudes and approaches to the Namibian situation. A case in point is the harvesting of seals on the Namibian coast. This process was recommended by Namibian marine scientists whereas international animal rights activists protested the move. The result has been various Namibian ministers condemning 'pesky environmentalists' across the board and dismissing recommendations for sustainable use of other renewable natural resources. This controversy is intermingled with conflicts between Namibia as a developing country wishing to use its resources and international environmentalists from developed countries wishing to protect the resources from development. The controversy is also intermingled with lingering distrust between black and white citizens of Namibia and of international environmentalists.

In a similar vein, the environment is considered as a luxury by some decision makers who do not recognise the potential income to be derived from sustainable use of natural resources including tourism. Because of the poverty or desire to improve their livelihoods experienced by many Namibians, any restraint in the exploitation of natural resources is considered to be a luxury inaccessible to the ordinary rural farmer and even salaried week-end farmers. This perception is exacerbated by the lack of understanding of Namibia as an arid country with limited, variable rainfall.

During a recent survey of a number of secondary school teachers in Namibia, it was discovered that litter and tree planting to combat deforestation are considered the two most pressing environmental issues in the country today. Sustainable use of natural resources or maintaining the integrity of the natural environment and the ecological services upon which people depend were not high on the list. If environment is considered in the schools, it is usually either relegated to the biology class or equated with a litter clean-up of the schools grounds. Increased awareness of the meaning of environment and developing the skills needed for sustainable use of the environment are essential aspects of formal and non-formal education for Namibia.

Sustainable use of natural resources means using resources in a manner that assures their availability to future generations. Many rural Namibians in particular feel that they have suffered long years under colonial rule and have the right to use water, grazing and other natural resources to their individual best advantage. Thus on many fronts, recommendations for the sustainable use of natural resources are considered to be simply an extension of the pre-Independence control by government to the detriment of rural farmers in particular.

On the other hand, all sectors of Government and the private sector recognise the need for education, training and capacity building in support of sustainable use of Namibia's natural resources. More Namibians are studying environmental management and other essential professions. General awareness of the environmental basis of Namibia's economy is increasing slowly but continually. Major advances are occurring such as the drive for cost recovery in the provision of water, the attention being given to a population policy and the need for land use planning, and the focus on development of appropriate policy in support of sustainable use of natural resources. Namibians across a broad front - journalists, ecologists, land use planners, lawyers, decision makers - are applying themselves to environmental concerns. It is expected that the next five years after Independence should register substantial gains in Namibia's drive toward sustainable development.

Selected references

Barnes, J 1995. The value of non-agricultural land use in some Namibian communal areas: a data base for planning. DEA Research Discussion Paper No 6, Windhoek.

Barnes, J and M de Jager 1995. Economic and financial incentives for wildlife use on private land in Namibia and the implications for policy. DEA Research Discussion Paper No. 8, Windhoek.

Devereux, S, M Rimmer, D LeBeau and W Pendleton 1993. The 1992/3 Dourght in Namibia. An evaluation of its socio-economic impact on affected households. SSD Research Report No 7, Windhoek.

du Toit, D and T Sguazzin 1995. Sink or Swim - Water and the Namibian Environment. Desert Research Foundation of Namibia, Windhoek, and other books in the Enviroteach series.

Jacobson, P J, K M Jacobson and M K Seely 1995. Ephemeral Rivers and Their Catchments: Sustaining People and Development in Western Namibia. Desert Research Foundation of Namibia, Windhoek.

Lau, B and Reiner, P 1993. 100 Years of Agricultural Development in Colonial Namibia; a historical overview of visions and experiments. The National Archives of Namibia, Windhoek.

Marsh, A. and M Seely 1992. Oshanas: Sustaining People, Environment and Development in central Owambo, Namibia. Desert Research Foundation of Namibia, Windhoek.

Ministry of Environment and Tourism, Directorate of Environmental Affairs (MET, DEA) 1993. Namibia's Green Plan, Windhoek.

Ministry of Environment and Tourism, Directorate of Environmental Affairs (MET, DEA) 1995a. Policy on Community Based Tourism (draft), Windhoek.

Ministry of Environment and Tourism, Directorate of Environmental Affairs (MET, DEA) 1995b. Namibia's Environmental Assessment Policy, Windhoek.

Ministry of Environment and Tourism, Directorate Tourism and Resorts (MET, DTR) 1994. White Paper on Tourism, Windhoek.

Muensterer, M and S Otto 1994. Recommendations for a sustainable tourism concept in the area of the Namib Naukluft Park. Unpublished report, Desert Research Foundation of Namibia.

Naeraa, T, S Devereux, B Frayne and P Harnett. 1993. Coping with drought in Namibia: Informal social security systems in Caprivi and Erongo. Research Report No 12, NISER, Windhoek.

Pallett, J 1994. Understanding the Oshana Environment/Euvoko Lyoshana Nomudhingoloko. Gamsberg Macmillan Publishers, Windhoek.

Pallett, J (ed) 1995. The Sperrgebiet. Namibia's least known wilderness. DRFN and NAMDEB, Windhoek.

Quan, J, D Barton and C Conroy 1994. A preliminary assessment of the economic impact of desertification in Namibia. DEA Research Discussion Paper No 3, Windhoek.

Stern, C and Lau, B 1990. Namibian Water Resources and Their Management. A Preliminary History. National Archives of Namibia, Windhoek.

Storm, J, P Tyldsley and N Weaver 1995. Natural Economy. Namibia Nature Foundation, Windhoek (revised final draft September 1996)

Wolters, S (ed) 1994 Proceedings of Namibia's National Workshop to Combat Desertification. Desert Research Foundation of Namibia, Windhoek.

legislation was an increase in the populations of non-threatening game species on commercial farms so that today the majority of all game in Namibia is located there.

In the communal farming areas, people were expected to live with all types of wildlife while gaining no direct benefit. In many communal areas the consumable game has been eliminated and with it the dangerous species as well. In other areas less well populated, hunting concessions were established to encourage foreign hunters seeking trophy animals. Throughout, the intended focus was on conserving the wildlife in its natural habitat.

Developments after independence:

With respect to the environment, much of the overall planning and development continued in the same trajectory although some new initiatives were pursued. For example, no plans were developed, nor are they being considered today, to match the availability of natural resources, particularly water and manpower, with centres of growth. Still today there is little awareness of the limitations placed on human development by the environment and the expectation remains that technology will overcome these limitations. Of particular concern is the continuing focus on a land reform process that implicitly but not explicitly takes into the consideration the natural resources such as water and grazing potential that give the land its value to people. On the other hand, plans to dam the Ugab River to provide water to Khorixas have started to take into consideration the communal livestock farmers dependent on the continued water flow down stream, although farm dams in the upstream commercial farms already influence the downstream flow. At all levels, awareness, participation and involvement is slowly increasing.

Of particular concern is the uncontrolled and unplanned development taking place in the communal areas where poorer people are being disadvantaged by those with greater means at their disposal. Fencing off of large tracts of land is a serious problem, particularly in the north and east. Drilling of boreholes in previously inaccessible parts of former Hereroland and the Mangetti Block of former Owambo is a second development with extensive environmental implications. These types of environmentally unsustainable developments should be resolved by the Land Policy and Communal Land Bill currently in preparation.

- Basis for change

A number of developments helped to change people's perception of the environment after Namibia's Independence. The prime impetus has been the Constitution of the Republic of Namibia. Article 95 states: 'The State shall actively promote and maintain the welfare of the people by adopting ... policies aimed at ... maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for he benefit of all Namibians both present and future'. This article is frequently referred to and guides a number of initiatives in different sectors, from environment to education to development. The Constitution, in

FIVE YEARS OF POST-APARTHEID DEVELOPMENT IN NAMIBIA

ENVIRONMENT

Mary Seely, Desert Research Foundation of Namibia

Before independence

A major characteristic of Namibia in the decades prior to independence was the implementation of a development trajectory which ignored most of the environmental realities. Namibia is the driest country south of the Sahel. Historically, settlements were established where water was available. A majority of Namibia's sedentary population lived along the perennial rivers in the north-east or in the areas with higher rainfall where dryland crop farming is possible in at least some years and groundwater or seasonal surface flow could be tapped. In the remainder of Namibia, small settlements developed where groundwater was easily accessible, usually from riverine aquifers or natural springs, and people and their livestock moved to areas where rainfall provided grazing and surface water.

During the colonial period, technical ability to obtain groundwater from deeper sources and to dam the ephemeral rivers was put to use (Stern and Lau 1990). Towns such as Windhoek were encouraged to grow, first by developing the local groundwater and then, when this proved insufficient, by way of dams and pipes from distant ephermeral rivers. The State subsidised the cost of water supply for urban consumers and for rural consumers in the communal areas

Ephemeral river catchments are a good example of the lack of a holistic approach to the environment in the past, and still today. While providing water as demanded by the growing population of Windhoek, two large dams were constructed in the Swakop River, the von Bach Dam near Okahandja and the Swakoppoort Dam lower down. As a result downstream, agriculture that was practised in the river bed at Otjimbingwe was no longer possible (Lau and Reiner 1993) and many of the ana trees died which had previously helped to support the wildlife populations of the Namib-Naukluft Park with their nutritious pods. Most of the western ephemeral rivers have their headwaters in privately owned farmlands, flow through communal farming areas and end in conservation areas such as the Skeleton Coast Park along Namibia's northern coast and the Namib-Naukluft Park along the central Namib Desert coast. Planning and development of these rivers has taken place without consideration of the total catchment and how upstream users affect those situated further down stream.

In the past, development of communal areas, where the majority of all Namibia's live, especially ignored environmental constraints. The communal areas of the north and north-east of Namibia (former Owambo, Kavango and Caprivi) occupy areas where populations are naturally relatively dense. These areas have the best rainfall in the country and several perennial rivers provide water for a large proportion of the people. In the south and western communal areas (e.g. former

Namaland and Damaraland), however, the aridity of the environment hindered development of a sedentary life style.

Under colonial rule, and reinforced by the Odendaal Plan, this natural population distribution pattern was disrupted. In the south, people were expected to live sedentary lives confined within circumscribed areas where previously they and their livestock had followed the rains over great distances. In all the communal areas of Namibia, the growing population was forced to make a living from a static or declining resource base within a limited area. To support people and their livestock, boreholes, ground dams and piped water supplies were established. This encouraged a sedentary life style for people and livestock with which the limited and variable grazing, woody vegetation and other resources were not in balance. The result in many areas has been a loss of productivity of the natural resource base and impoverishment of the people dependent thereon.

Prior to independence, environmental legislation in Namibia was fragmented and that which was in place was not enforced. Laws such as the Water Act, the Soil Conservation Act, the Mountain Catchment Areas Act and the Nature Conservation Ordinance were promulgated between the 1950s and 1970s mainly for application in South Africa and applied to Namibia with little alteration. In general the legal system in Namibia has never given high priority to environmental protection.

Immediately prior to Independence, interest began to be generated in the process of Environmental Impact Assessment (EIA). However, it was generally considered in most sectors to be a luxury and an impediment to needed development. Shortly before independence, the Engineering Professionals Association of Namibia arranged with the Environmental Evaluation Unit of the University of Cape Town to hold a short course in Namibia which was open to interested participants. Before independence, one large scale EIA was carried out in house by the Department of Water Affairs on their aquifer enhanced-recharge project near Henties Bay in the lower Omaruru River, known as the Omdel Dam.

Prior to independence, networks of Game Parks and Reserves were the mainstay of the Department of Nature Conservation and Tourism. Almost all of the Department's resources and manpower were directed toward developing, protecting, controlling and studying these parks and even tourism was considered by many staff to be a necessary evil. People surrounding the parks, or from whom the land in the parks was taken, were not considered in the park's development or the benefits to be directly derived. Within the park system itself, Namibia's only national park, the Etosha National Park, was considered the most important as it harboured the large and dangerous animals that attract tourists and were most interesting to study.

On commercial farms, legislation enacted in the late 1960s enabled the farmers to harvest game and use it for trophy hunting as well as photographic and other non-consumptive uses. This development led to a network of hunting and game farming enterprises on commercial farms that supports the tourism industry today. Farmers could also group together and form conservancies to take shared advantage of species that range over wide areas such as kudu. The result of this

legislation was an increase in the populations of non-threatening game species on commercial farms so that today the majority of all game in Namibia is located there.

In the communal farming areas, people were expected to live with all types of wildlife while gaining no direct benefit. In many communal areas the consumable game has been eliminated and with it the dangerous species as well. In other areas less well populated, hunting concessions were established to encourage foreign hunters seeking trophy animals. Throughout, the intended focus was on conserving the wildlife in its natural habitat.

Developments after independence:

With respect to the environment, much of the overall planning and development continued in the same trajectory although some new initiatives were pursued. For example, no plans were developed, nor are they being considered today, to match the availability of natural resources, particularly water and manpower, with centres of growth. Still today there is little awareness of the limitations placed on human development by the environment and the expectation remains that technology will overcome these limitations. Of particular concern is the continuing focus on a land reform process that implicitly but not explicitly takes into the consideration the natural resources such as water and grazing potential that give the land its value to people. On the other hand, plans to dam the Ugab River to provide water to Khorixas have started to take into consideration the communal livestock farmers dependent on the continued water flow down stream, although farm dams in the upstream commercial farms already influence the downstream flow. At all levels, awareness, participation and involvement is slowly increasing.

Of particular concern is the uncontrolled and unplanned development taking place in the communal areas where poorer people are being disadvantaged by those with greater means at their disposal. Fencing off of large tracts of land is a serious problem, particularly in the north and east. Drilling of boreholes in previously inaccessible parts of former Hereroland and the Mangetti Block of former Owambo is a second development with extensive environmental implications. These types of environmentally unsustainable developments should be resolved by the Land Policy and Communal Land Bill currently in preparation.

- Basis for change

A number of developments helped to change people's perception of the environment after Namibia's Independence. The prime impetus has been the Constitution of the Republic of Namibia. Article 95 states: `The State shall actively promote and maintain the welfare of the people by adopting ... policies aimed at ... maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for he benefit of all Namibians both present and future'. This article is frequently referred to and guides a number of initiatives in different sectors, from environment to education to development. The Constitution, in

line with many other subsequent developments, focused Namibia and its decision makers on the concept of `sustainable development'.

The United Nations Conference on Environment and Development took place in Rio only two years after Namibia's Independence. In preparation for this event, Namibia made the conscious decision, guided by the Directorate of Environmental Affairs who were responsible for preparations for Rio, not to follow the footsteps of many other countries and establish a static National Environmental Action Plan but, instead, to follow the example of Canada amongst others and develop a dynamic document that is known as Namibia's Green Plan (MET, DEA 1993). Thirty organisations, from Ministries to NGOs, contributed to the twenty eight chapters of this document which the President of the Republic of Namibia presented in Rio. This document continues to set the direction for many of Namibia's current environmental initiatives.

A parallel development which evolved soon after independence was the explicit acknowledgement that the majority of Namibia's tourism is based on the environment. This was supported by the Minister of the then Ministry of Wildlife, Conservation and Tourism, who convened two national workshops to discuss conservation and tourism. At the same time it was recognised that although an arid environment can not support vast numbers of tourists, still tourism was expected to be the largest income generating sector of the country, after mining, fisheries and agriculture with great potential for growth. Extensive planning and reorganisation of the tourism sector (MET, DTR 1994) is expected to bear fruit in the not too distant future as many of the nations assets are developed under the guidance of Government, but by the private sector. Another major development has been the encouragement of community based tourism initiatives all of which are based in the attraction of Namibia's environment and natural resources (MET, DEA 1995a).

Many of the sectors dealing with environment, for example water, agriculture, fisheries and transport have all come to acknowledge the importance of environmental concerns in relation to sustainable development. Nevertheless, inter-sectoral co-ordination and integration is, with a few exceptions, still lacking

Major environmental issues in Namibia

- Aridity and drought

The major single factor characterising Namibia's natural environment is its prevailing aridity as it is the most arid country in southern Africa. Approximately 23% of the country, in the south and west, is characterised as arid and 3% in the north east as sub-humid. The remainder is considered to be semi-arid. As a direct consequence of this prevailing aridity, the rainfall is very variable, from year to year and from place to place, and drought is a regular and normal occurrence. Placing Namibia's aridity in a southern African perspective, the `high' rainfall areas of Caprivi and Kavango Regions in Namibia that are considered to be the `bread-basket of the nation' would be categorised in the driest and least productive natural area of neighbouring Zimbabwe and grazing would be the main agricultural activity. In terms of land use, the low rainfall of Namibia means that the majority of the

land is best suited to grazing and not even every year in every region. Dryland crops can only be produced in the north and north-east and then successfully only in some years. This variation in the degree of aridity calls for planning that explicitly considers the environmental potential of the different regions of Namibia

Also as a direct consequence of Namibia's aridity, available surface water and groundwater are limited. Perennial rivers only flow on the borders of the country and all have their origins in a neighbouring country with which the water must be shared. The Kunene and Okavango Rivers originate in Angola, the Zambesi in Zambia and the Orange River in Lesotho. A number of ephemeral rivers that flow in years of good rain originate in the central highlands of Namibia. Most of these ephemeral rivers flow westwards into the Atlantic and those centrally located have been developed to support urban development, e.g. the Kuiseb, Swakop and Omaruru Rivers. The ephemeral Fish River flowing southward is captured in the Hardap Dam and used for irrigation and the town of Mariental. Namibia is apparently one of the few countries in the world that bases extensive urban development on water from ephemeral rivers. Groundwater is also present in short supply, particularly in the arid west, or is salty as in the Cuvelai basin of former Owambo.

- Perceptions of aridity and drought

Although Namibia is naturally arid, people living in Namibia tend to have the perception that better rain can be expected. As a consequence, each year of drought comes as a surprise for which appropriate planning and preparation have not been done and government `drought relief' to the rural people is expected to solve the problem for another year. These perceptions probably have their origins in several factors. Before Independence all the school text books in use had their origins in other countries, often even in Europe, as do the magazines and other materials to which people were exposed. Then too, many Namibian's have spent their formative years studying in countries with higher rainfall. On the other hand, the population in the rural areas is increasing and it is more difficult for people to move around with their livestock or find unused reservoirs of natural resources. Drought, which is a readily identified problem related to natural variation in rainfall, combines with increased population to provide fewer resources for each person dependent on natural resources and the land for their livelihood. Early in 1996, the Minister of Agriculture, Water and Rural Development announced that drought subsidies would be reconsidered and alternative measures taken to help people plan and safeguard themselves against low productivity associated with low rainfall years.

- Population growth and poverty

The population of Namibia is growing at a rate estimated at 3.2% per annum which will result in a doubling of the population in little more than 20 years. As aridity limits the available natural resources in Namibia, this population growth means that twice as many people will have to share the same or a declining amount of natural resources in the near future. As more people expect and attempt to make a living from the limited and variable resource base in Namibia, overuse and

degradation of these resources is inevitable. A lack of alternative livelihoods for the rural people of Namibia exacerbates the situation.

- Constitutional rights to live anywhere in Namibia

A basic tenant of Namibia's new Constitution is that guaranteeing people the right to live almost anywhere in Namibia. With the weakening of the traditional authorities in many regions of the country and the lack of regional structures to replace the traditional authorities, people see it as their right to move with their livestock to better grazing or to take the opportunity to fence off some of the limited available grazing for their own exclusive use. Although the option to settle anywhere has not been widely taken up, it, together with the rapid, illegal fencing off of large parts of communal grazing, is seen as a reason for rural people dependant on communally accessible natural resources not to use them in a more sustainable basis and not to invest in long-term development or conservation of natural resource such as water and grazing. This is a good example of a policy with certain laudable objectives having an unforeseen effect on Namibia's arid environment.

- Donor involvement and interest in environment

Namibia's independence coincided with increasing interest in environment on a global scale. This has meant that most of the donor funded projects relate at least peripherally to sustainable use of the environment and many of them focus on the environment in their project design. In assessing donor projects, the National Planning Commission includes a question forcing consideration of the potential environmental impacts that might result. Several donor funded projects relate specifically to the environment, e.g. the Sustainable Animal and Range Development Project of the Ministry of Agriculture, Water and Rural Development, and a review of environmental legislation and the funding of environmental profiles within the Ministry of Environment and Tourism.

- Limited manpower

A drawback in the development of the environmental sector is the distinct lack of trained manpower. Few Namibians studied for environmental degrees before Independence and only a few are currently doing so at the post-graduate level. Geography and biology are increasingly popular subjects in the Arts and Science faculties, respectively, at the University of Namibia and it is expected that the current situation will improve in the future. A hopeful sign is the growth of the Environmental Society at the University of Namibia as students come to recognise that environment refers not only to birds and other wildlife but incorporates people and their sustainable development.

Major new directions

- Environmental Profiles

On one hand, the plants and animals of Namibia were fairly well known prior to Independence. This knowledge focused on the identification and distribution of species and the behaviour and ecology of selected groups of organisms - valuable knowledge in itself and in support of tourism but only a part of the overall picture. Integration of people and their activities into the environmental landscape was, however, largely neglected.