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Towards Combating Desertification in the SADC: A Study of Swaziland

*H.M. Mushala**

Abstract

Desertification is seen as a process of land degradation caused by an interaction of human activities and climatic variability. It is viewed as an environmental threat to many developing countries, whose control lies in addressing ensuing socio-economic problems. It is argued that the management of fragile ecosystems, which is one way of combatting desertification, should be part of sustainable development. In this way environmental issues are addressed within the context of socio-economic development. Combatting desertification, therefore, has to address issues of poverty alleviation, promotion of alternative livelihoods along with efforts at soil conservation intensification, afforestation, improvement of early warning systems and technology development. The paper reviews these efforts in Swaziland, where environmental programmes are meant to be part of other development plans. Some of the constraints in implementation are identified and discussed in a global context.

Introduction

The concept of desertification as adopted by the United Nations Conference on Environment and Development (UNCED), 1992, is that:

> Desertification is land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities.

The institutionalisation of desertification and its establishment as a global environmental problem can be traced back to the United Nations Conference on Desertifcation (UNCOD) held in Nairobi in 1977. It was after 1977 that the United Nations Environment Programme (UNEP) was charged with the responsibility of implementing a plan of action to stem the expansion of the desert conditions. At this time, drought was seen as the catalyst that exposed the deleterious effects of long-term degradation of the environment by people.

* Professor, Department of Geography and Environmental Science University of Swaziland

The prime causes were identified as over-cultivation and salinization problems on irrigated cropland, overgrazing and deforestation. Desertification and its causes permeate various sectors of the economy and encroach on sustainable development. The debate on desertification, therefore, has gone beyond the realm of environmental issues per se to incorporate socioeconomic considerations so that environment and sustainable development are integrated.

This paper analyses the problem of desertification with reference to Swaziland by providing a brief background of the country; describing the state of desertification; and analysing attempts being made to combat desertification within a national and regional context in view of globalisation.

Background to Swaziland

Swaziland lies between latitudes 25° and 28° south and 30° and 35° east in Southern Africa and covers an area of 17364 km². It is bounded by South Africa in all direction except for a small portion in the east where it shares the boundary with Mozambique. It is divided into physiographic zones, which run almost parallel in a west to east direction as the Highveld, Middleveld, Lowveld and Lubombo respectively as shown in Table 1.

Table 1: Physiographic Zones of Swaziland

Physiographic Zone	Altitude (M)	Landform/ Topography	Geology	Vegetation
Highveld 33% (5 680 Sq.Km)	900-1400	Hills on steeply dissected escarpment with transitions to plateaux	Granite, gneiss, lava, quarzite	Short grassland with forest patches
Upper Middleveld 14% (2 420 Sq.Km.)	600-800	Hills with plateau remnants and basins	Granodiorite/ Granite, gneiss, shale	Tall grassland with scattered trees and shrubs
Lower Middleveld 14% (2 420 Sq.Km)	400-600	Rolling Plain with basins and isolated hills	Gneiss, granite/grano-diorite	Broad leaved savanna
Western Lowveld 20% (3 410 Sq.Km)	250-400	Undulating plain	Sandstone/claystone, dolerite intrusions, granite/ granodio-rite	Mixed savanna
Eastern Lowveld 11% (1 960 Sq.Km)	200-300	Gently undulating plain	Basalt	Acacia Savanna
Lubombo Range 8% (1 480 Sq.Km)	250-600	Undulating Plateau with steeply dissected escarpment	Ignimbrite	Hillside bush and plateau savanna

Theoretical Framework

Desertification is always conceptualised differently because its various definitions stem from divergent values, experiences, interests and objectives (Barraclough 19991). Land degradation, which is the major determinant of desertification, implies the lessened capacity of land to produce. Net degradation is the difference between degradation from both natural processes and human interventions, on one hand, and restorative natural and human processes, on the other (Blaikie and Brookfield 1987). As such desertification is a social concept which involves judgements about what constitutes production and productivity, value judgements which will vary from one social context to another. It is impossible to find a definition of desertification that permits a consensus to emerge on how it should be measured, compared and monitored across differing ecological and social systems.

The identification and measurement of land degradation is partly an ideological and political issue (Barraclough 1991). If however, one takes the view by Grainger (1990) that:

> Desertification has four direct causes, overcultivation, overgrazing, deforestation and mismanagement of irrigated cropland. These do not occur by accident, but are greatly influenced by the effects of growing populations, economic development and conscious policy decisions by government and aid agencies.

It is logical to conclude that all efforts at desertification control should address issues of economic development that impact on the environment. Various social groups are vulnerable to desertification and need to cope with adverse environmental situations or to establish new livelihoods, aspects which have a political connotation. It is on these premises that for example SADC countries, as a regional grouping, have adopted a policy, which, inter alia, *protects and improves the health, environment and livelihoods of the people in Southern Africa with priority to the poor majority*. Swaziland is one of the countries who are using the banner of desertification to come to grips with some environmental issues and their impact on sustainable development.

State of Desertification in Swaziland

Aspects of desertification in Swaziland manifest themselves in land degradation and drought risk. It has been established that land degradation in the country is a result of overgrazing, deforestation and the loss of soil productivity, perhaps due to overcultivation (Mushala et al. 1997; ESC 1999). Processes such as over-cultivation, overgrazing and deforestation are the result of excessive pressures on resource ecosystems which are fuelled by "local forces" such as increase in human numbers and the escalation of their needs, poverty, land shortages and landlessness and poorly conceived national policies (Darkoh 1998). In Swaziland the areas affected by soil erosion as the dominant

form of land degradation correspond closely with areas where livestock grazing is the predominant land use (Downing and Zuke 1996). Similar observations (Jensen *et al.* 1994) indicate that degradation occurs mainly in extensive communal grazing areas due to lack of good grazing management and the absence of soil and water conservation measures; serious degradation is concentrated in areas around dip tanks and watering points; and that the most affected areas are the Upper Middleved with its deep red soils, and in the Lower Middleveld where soil sodicity is the main contributing factor.

Desertification may also be aggravated by prolonged drought and desiccation. The concept of desiccation refers to longer-term deficits in rainfall which seriously disrupt ecological and social patterns (Darkoh 1998). In Swaziland agro-climatic characterization has provided climatic information for crop production. The agro-climatic conditions are described by means of moisture zones and thermal zones. The moisture zones are classified on the basis of annual rainfall and the length of the growing period (LGP). The LGP is a simple water balance based on rainfall, evapotranspiration and soil moisture storage capacity and provides useful indication of the amount of water available to crops.

According to the Swaziland Environmental Action Plan (1997), the country is divided into six moisture zones i.e. one Humid, two subhumid, two moist arid and one dry semi-arid zone. The Humid zone (H) has an LGP of 270-290 days; a dependable annual rainfall of 1000-1200 mm; a mean annual rainfall of 1250-1450 mm. This zone occupies only 3% of the country and is confined to the highest parts of northern Highveld. The moist subhumid zone (SH2) is characterised by an LGP of 225-289 days; a dependable annual rainfall of 850-1000 mm; a mean annual rainfall of 1000-1250 mm; and covers 15% of the country comprising mainly the larger part of the Highveld. The drier subhumid zone (SH1) is characterised by an LGP of 180-224 days; a dependable annual rainfall of 700-850 mm; and a mean annual rainfall of 850-1000 mm. This covers 27% of the country comprising the larger part of the Upper Middleveld, and parts of the Lubombo and Highveld. The wet moist semiarid zone (MSA2) is characterised by an LGP of 150-179 days; dependable annual rainfall of 550-700 mm; and a mean annual rainfall of 725-850 mm. This zone covers 21% of the country and is typical of the lower Middleveld, but includes drier parts of the Lubombo and Upper Middleveld. The dry moist semiarid zone is characterised by an LGP of 120-149 days; a mean annual rainfall of 625-725 mm; and a dependable annual rainfall of 450-550 mm. It covers 23% of the country comprising mainly the northern and western parts of the Lowveld. The dry semiarid zone (DSA) is characterised by an LGP of 100-119 days; a dependable annual rainfall of 450-450 mm; and a mean rainfall of 550-625 mm. It covers 11% of the country comprising mainly the south eastern Lowveld which is the driest part of Swaziland.

According to UNSO (1997), 28% of the total land area of Swaziland is under semi-arid conditions while 50% of the area can be considered dry sub-humid. In addition 22% of the population lives in the semi-arid region while 53% of the population lives in the dry sub-humid area. However, the area of productive land vulnerable to desertification is 78% in which 74% of the population lives. As the Swaziland situation shows desertification may be linked to climatic variation but is mainly an outcome of resource management failure. When human mismanagement weakens the natural system, drought and desiccation often lead to desertification (Darkoh 1998).

Policy Issues

The Government of Swaziland signed the United Nations Convention to Combat Desertification in 1996 and ratified it in 1997. A number of policy frameworks which bear components of combatting desertification have been formulated and strategies for their implementation devised. The main ones outlined below are based on the UNCCD National Steering Committee Report (1999). Previous programmes included the Rural Development Area Programme (RDAP); the fattening and Sisa ranches programme; the grazing management demonstration areas and the establishment of the Central Rural Development Board (CRDB).

The RDAP was initiated in 1972 with the aim of improving income and the general standard of living in the rural areas. The programme was intended to gradually convert subsistence farming to a commercially oriented agriculture by strengthening the extension service; promoting commercial livestock farming; setting up proper settlements and promoting land development and conservation; provision of infrastructure; and providing technical assistance and capacity building.

The fattening and Sisa ranches Programme was initiated in response to overgrazing on Swazi Nation Land areas, which was causing range deterioration and soil erosion. The government established these ranches partly to relieve grazing pressure on Swazi Nation Lands, but also to enable the Swazi farmer obtain good economic returns from better managed cattle. In the fattening ranches the cattle were fattened and then sold on behalf of the farmers. In Sisa ranches farmers were able to multiply their cattle numbers under improved management.

The grazing management demonstration areas were established to educate the Swazi farmer adopt a business attitude towards cattle farming. Instead of sending female cattle to government sisa ranches, communities usually set aside areas to be used as breeding ranches. Members of the community

managed the ranches themselves under the close supervision of the government extension officers.

The fattening, *sisa* and grazing demonstration areas programmes are not popular with the cattle farmers because they are not in response to the underlying reasons that make farmers keep cattle. For example many farmers keep cattle for the provision milk to the family, for use as draught animals or for the provision of meat. These benefits are not accrued by the farmers under these conditions.

The CRDB was established in the 1950s to commission and monitor resettlement programmes on Swazi Nation Land; to establish and monitor soil conservation programmes; to oversee the operations of the soil conservation; and to promote the participation of chiefs in soil conservation and rural development programmes.

Current plans and strategies include the National Development Strategy (NDS), the Swaziland Environment Action Plan (SEAP), the National Environment Policy (NEP), the Swaziland Environment Management Bill, the Economic and Social Reform Agenda (ESRA), the National Disaster Management Policy Framework, the Sustainable Livelihood Programme, Poverty Alleviation Programme, and the National Early Warning Unit (NEWU). In this paper the discussion is confined to NDS, ESRA, SEAP and partly the NEP for which documentation could be obtained.

The NDS was promulgated in August 1999 and its critical focus is on the quality of life in the country with special emphasis on poverty eradication, employment creation, gender equity, social integration and environmental protection. In terms of environmental protection and conservation it is proposed, inter alia, that environmental management be fully integrated with development planning; that an integrated national environmental policy be developed; that the public be involved in environmental management; ensure a gender dimension in environmental management; curb and prevent the erosion of the soil and implement the Swaziland Environmental Action Plan.

In terms of strategies for achieving sustainable use of land, among other things, the following are recommended under rational land use and tenure: to bring about land use changes for highly eroded land and land with arable potential currently under grazing or forest; intensify efforts to modify the land tenure system such that it is consistent with increased production and employment; prioritise land use giving considerations to economic, environmental, demographic and social concerns; provide solutions for a more rational use of the land in the rural sector; and develop a clear land use policy for crop and livestock production.

It is also clear that population growth is one of the major problems affecting national development. The NDS proposes, among other things, to involve the communities at grassroots level in the articulation and implementation of a sustainable population policy; to incorporate population issues fully into national development planning; strengthen family planning programmes that involve male partners; and introduce legislation that fosters and promotes full parental responsibility for children.

The policy issues in the NDS are compatible with the proposed National Environmental Policy more specifically Principle 4 on Sustainable Development. According to the proposal:

> Environmental protection and social economic development are interdependent and indivisible. Integrating environmental protection into the process of social and economic development is essential to achieve equity-led growth and sustainable development.

Since sustainable development is the primary goal of NDS it means that development initiatives have to address the needs of the poor. The NDS concedes that "poverty is a main cause of environmental degradation and a major consequence of it because it undermines the ability of the poor to make a living".

The link between poverty and environmental degradation is close and complicated. Poor people are quite dependent on the natural resource base for their day-to-day needs. It is only when they have exhausted their arsenal of coping strategies and mechanisms that they are left with no option but to tamper with their resource base (Pinstrup-Andersen and Pandya-Lorch 1994). Poverty as the inability to meet basic needs and the lack of capacity to exit this situation is caused by lack of opportunities, choices and access to productive assets. Population growth often exacerbates poverty-led environmental degradation especially in marginal areas. It diminishes farm sizes and ultimately pushes people off the land to search for more land and employment opportunities elsewhere.

In Swaziland population growth is estimated at 2.7% with the population under the age of 15 comprising 49% of the total population. Rapid population growth is a contributing factor to the incidence of poverty in rural homesteads. This often leads to rural-urban migration and the intensified use of existing land culminating in land degradation, which is a leading sign of desertification.

The Swaziland Environmental Action Plan provides an overall policy framework for dealing with environmental issues the country. Among its objectives are to suggest solutions to priority problems in the form of practical

activities and programmes and needed institutional and legal reforms; and to establish a clear indication of government's priority areas with respect to the environment so as to guide and give proper orientation to donor intervention. The process of developing an environmental strategy has provided a forum and context for debate on general sustainable development issues and the articulation of a collective vision for the future; and a mechanism for developing organisational capacities and other institutions required for sustainable development (SEA 1997: p. 3).

The National Environment Policy focuses on the general principles and approaches, which should be adopted by any part of government, traditional structure, organisation or individual in undertaking any activity, which may affect the environment. The objectives of the policy include a reduction in soil erosion and a reversal of the desertification process. It is assumed that the responsibility for controlling land degradation will be placed on private land users and communities; and that land use planning in non-urban areas will be based on agro-ecological zoning, which takes into account differences in habitat and vegetation. It also obliges government to involve local communities in decisions on land use and environmental commitments.

The Economic and Social Reform Agenda (ESRA) is a set of time-bound targets which government has to meet over the next three years. It is assumed that if the targets are substantially met, Swaziland will achieve good economic growth and improved social services. The priority areas in this case include developing small holder agriculture; promotion of the small and medium scale enterprises sector; infrastructural development; environmental protection, and public sector and parastatal reform. In any case the National Action Programme on Desertification is considered as the framework for addressing land degradation and promoting sustainable livelihoods in dryland areas. Within the framework the following issues are considered crucial: reclamation and rehabilitation of degraded lands; drought mitigation and poverty alleviation strategies; and the promotion of active participation of communities at grassroot level in land management programmes.

These efforts, albeit at policy level, indicate the political will for integrating environmental protection into national development. They are in line with the UNCED declaration in Brazil in 1992 which called for environmental protection to be integrated into the development process. As has been noted the integration of environmental consideration into Swaziland's national development policy began with the inclusion of some environmental objectives in the short term objectives of ESRA. These included: ensuring protection of the land resource; and improving water resources management.

Discussion

International conventions such as the UN Conversion to Combat Desertification (CCD) provide a global context of desertification, such as a global definition, but implementation of strategies remains local. International fora provide mechanisms of collective bargaining; and mobilisation of donor resources to member countries. Swaziland is a signatory to the CCD, which calls for urgent priority for Africa, and already has launched a National Action Programme (NAP), which is a framework for addressing land degradation and promoting sustainable livelihoods in dryland areas. The CCD is an umbrella body which provides a radical agenda for achieving more drylands development. It calls upon country governments to demonstrate the priority they place on tackling land degradation through policy and institutional changes, economic and financial measures and technical support. It is envisaged that these mechanisms would establish clearer rights and incentives to land users to manage and invest in their land; provide economic benefits and increased incomes from better management and investment, and; support farmers to develop methods for more sustainable practices, based where possible on traditional systems, skills and priorities (Toulmin 1998). Many developing countries have taken the opportunity during negotiations to discuss common issues and identified some ways of addressing them. The CCD has shown an alternative channel of obtaining donor funding of development projects.

In the convention, community participation in the design and implementation of programmes is emphasized and for many governments it provides a basis for mobilising grassroots resources for development, which has otherwise been difficult.

Lessons from other countries

Swaziland is a small country which shows a lot of prospects in combatting desertification and can learn from successful examples and possibly mistakes from other countries experiencing similar problems. The most relevant examples which the author is familiar with are from East Africa especially from Tanzania. One of the often quoted successful Land Rehabilitation Projects in Tanzania is the HADO (Hifadhi ya Ardhi Dodoma). The project was initiated in 1973 in the Kondoa Eroded Area of Dodoma Region in Central Tanzania, which was affected by severe land degradation. The project was implemented in two phases. The aims of the first phase were to: promote self-sufficiency in wood requirements; encourage communal wood growing schemes; promote communal beekeeping; establish shelter belts, windbreaks, shades, avenues and fruit trees; conserve soil and water; and reclaim degraded land. Phase two was planned to focus on soil conservation techniques and popular participation (Kikula 1999). Similar conservation programmes in Tanzania include HASHI

(Hifadhi ya Ardhi Shinyanga i.e. Soil Conservation in Shinyanga), Soil Erosion, Control and Agroforestry Programme (SECAP), HIMA (Hifadhi Mazingira Iringa i.e. Environmental Conservation in Iringa Region), and Land Management Programme for Environmental Conservation (LAMP) in Babati District. Similar projects under the National Environment Secretariat, could be cited for Kenya, where Soil Conservation has always received priority in Government's programmes.

The HADO project is considered as one of the success stories (Mushala 1986; Annersten 1989, Mbegu 1996, Kikula 1999) and some of the lessons to be learnt are that:

- Solving environmental problems requires appropriate legislation, enforcement and regular monitoring;
- Although land degradation may be considered a technical problem requiring technical solutions, it requires people's participation and capacity building has to be given some prominence at various levels;
- the success of a land rehabilitation programme requires the use of appropriate technology which is cost-effective;
- creation of awareness and the promotion of people's participation should be enhanced early in the project's duration;
- destocking is an essential component of rehabilitating degraded rangelands because it allows quick recovery of vegetation, but needs to be undertaken with the full support of affected communities. It may causes resentment to the people as it denies them of their basic supplies of milk, manure, meat and draught animals;
- an integrated approach to land management is essential;
- alternative sources of livelihoods have to be explored before changes in land use are introduced so as to generate income for the affected communities; and that
- land rehabilitation and recovery can be a source of land disputes once former wastelands are put back into use. Also as noted by Annersten (1989) political will and determination has to be strong.

Desertification, therefore, has created a focus in which development programmes are supposedly based on fundamental economic and political reforms. The centre of development are the poor majority, who can only be assisted to develop themselves if they are empowered through popular participation, skills and technology development and economically to achieve sustainable livelihoods. In this way environmental sustainability can also be achieved.

Conclusions

The problem of desertification in Swaziland may not be as severe as compared to some other countries. However, given the size of the country, the threat it poses is quite alarming and urgent measures are needed for its control. As globally understood the basic causes of desertification have climatic inclinations but are essentially an outcome of resource management failure. So far the initiatives suggested for combatting desertification in the country are ideal as they integrate sustainable development with environmental protection. The NDS is just one mechanism through which popular support for the country's economic development process can be mobilised, and effective use of resources ensured. For strategies of combatting desertification to succeed other policies which need immediate formulation and implementation include those dealing with population, land tenure and use, forestry, energy and livestock development as stipulated in the NDS. Lessons cited from other countries can be of great benefit provided there is a strong political will and determination. Establishing policy on its own is not adequate unless accompanied by proper implementation and monitoring strategies. This calls for capacity building at all levels of national development.

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