

# DROUGHT HAZARD AND DESERTIFICATION MANAGEMENT IN THE DRYLANDS OF SOUTHERN AFRICA

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**Abstract.** Droughts have been occurring persistently in southern African dryland regions for over a century. The impacts of droughts on people, their domesticated animals, wildlife, rangelands and cropped lands have been shown to be astronomical. If left alone the rangelands often recover after the calamity, however human occupation has led to irreversible damage. Even though some communities have evolved viable and sustainable coping mechanisms, recent times have seen weakened coping strategies leading to loss of life in most of the 10 countries in southern Africa. While land degradation has many inter-related causes and effects, drought-related effects have proven most difficult to manage and/or overcome. Drought-related land degradation or desertification poses a huge threat to sustainable land and resource management in the region. The paper examines appropriate drought mitigating initiatives, linking them to land tenure and land management practices. Numerous interventions targeted at reducing poverty and improvement in resource management have failed to achieve desired effects due to rigidity and imposition, and failure of the external interveners to recognise and incorporate indigenous peoples' preferences and coping strategies. Non-governmental organisations and authorities' willingness to institute drought and desertification combating measures are reviewed, highlighting the role that community action plays in reducing adverse effects in the region. Linkages to trade patterns that perpetuate poverty and unwise use of resources are discussed. Adopting 'people centred' mitigating measures is emphasised. Success rests with both the people in the 'south' and those in the 'north'. What is required is an informed global action.

**Keywords:** desertification, drought mitigation, management, southern Africa, sub-Saharan Africa, UNCCD

## 1. Introduction

Drought can be described as a prolonged period of time during which an area receives below average rainfall. It is a naturally occurring phenomenon lasting up to 2 years, during which rainfall is significantly lower than expected. Drought is more apparent when it occurs in the potentially high and medium rainfall areas (Juma, 1991). However, the most vulnerable regions are described as the arid and semi-arid lands of the world, with those in Africa included high on the list. The magnitude of drought and resultant land and resource degradation is said to be greater in those countries whose social and economic support systems cannot withstand the effects of drought. These include the fragile environments in the dry ecosystems where people have few options and limited coping strategies.

Desertification is defined as 'land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors including climatic variations and human



activities' (UNCED, 1992). Here, as in other definitions proposed by different authors, 'land' is taken to mean the terrestrial bioproductive system that comprises soils, vegetation, other biota and the ecological and hydrological processes that operate within a system (Darkoh, 1998). In the same article, degradation is defined as the diminution or destruction of the biological potential (resource potential) by one, or a combination of processes, acting on the land. It is further argued that the concept of land degradation is broader than soil degradation, as it affects the whole ecosystem in which soil is just one of the components.

The process of land degradation is said to include water and wind erosion, sedimentation by both water and wind, long-term destruction of vegetation and diminution of many plants and animal populations, or decrease of crop yields (where relevant) and salinisation or sodification of soils. On the other hand, human activities include over-cultivation, over-grazing, deforestation, poor irrigation practices and other inappropriate land-use practices (UNEP, 1992a,b,c). It is the combination of land misuse/mismanagement and naturally occurring drought, which leads to desertification. Land misuse/mismanagement results from excessive pressures on resource ecosystems, which are fuelled by local forces such as increase in human numbers and escalation of their needs, poverty, land shortages and landlessness, civil strife, wars and poorly conceived national policies. The situation can be exacerbated by external forces such as the state of the global economy, commodity prices, the debt burden, terms of trade, protectionism and import barriers in developed countries (which may increase rates of natural resource exploitation by preventing diversification) and brain drain, which may cripple viable planning and natural resource utilisation (Darkoh, 1998).

While recurrent droughts are a common feature throughout most of the drylands in Africa, three distinct areas have been identified as most at risk: Mediterranean Africa, the Sudano-Sahelian region and the Kalahari-Namib region in southern Africa. One-third of Africa is affected by desertification and 73% of the agriculturally used lands are degraded (UNEP, 1992a). In most of the southern African drylands, the failure of any seasonal rains in a year results in social and economic difficulties due to the fact that most of the population is rural, dependent on subsistence farming and/or direct exploitation of vegetative resources. Such a year is classified as a drought year. Should there be two or three successive drought years, then severe environmental stress is experienced often culminating in serious food shortages, famine and loss of both animal and human life (Msangi, 1992, 1993, 1994, 1995, 1996). Severe droughts have been recorded in all or some of the southern African countries in 1896, 1899, 1902, 1909–1911, 1917–1918, 1921–1922, 1925, 1929, 1933–1934, 1939–1940, 1953, 1969, 1972–1973, 1976, 1980–1982 and 1984–1985 (WMO, 1986). In more recent years, droughts were recorded in Namibia, Zambia, Zimbabwe, Tanzania, and some parts of South Africa. With each drought cycle, the desertification threat increases.

During 1990–1992, 1994–95, 1996, and 1998, some parts of the region were recorded to have received below average rainfall or received rainfall outside the

expected period. Currently (2002), some three countries in the region (Malawi, Zimbabwe and Zambia) are experiencing drought conditions and human life has been lost due to starvation resulting from food shortages. Not only below average rainfall, but unreliability and variability in time of occurrence further aggravate the already precarious situation. Fighting to survive and meet debt requirements, the peoples of this region go on to over-exploit the natural resources, hence accelerating resource depletion and land degradation.

Drought is accepted as one of the major causes of environmental stress, which may culminate into irreparable degradation (desertification) to both cultivated lands and grazing lands. Sometimes drought may act as a trigger to already bad situations where delicate water balances exist. Droughts are stressful to the environment not just because of moisture deficiency but also because of the pressure exerted on the resources as dictated by the existing production systems. Left alone, environments do recover sufficiently soon after stressful drought periods. However, population pressure and human activities such as:

- over-cultivation which exhausts the soil,
- over-grazing which removes the vegetation cover that protects soil from erosion,
- deforestation which removes trees and vegetation which bind the soil to the land,
- poorly designed irrigation that turns cropland saline

comprise the other major causes of land degradation leading to desertification (Lean, 1995).

In his published report, Lean (1995), like many other authors, stresses the fact that it is in the drylands with their precarious water balances that drought effects are felt most intensely. The soils of these lands, being thin and highly permeable and/or porous, do not hold surplus moisture to offset deficiencies during a drought year. Most rivers are intermittent so that they too dry soon after the rains. Lifestyles and traditional survival techniques that work during favourable years have proven incapable of withstanding drought stresses. During such times, without external assistance and collaborative efforts, environmental conservation and management is given little attention by local people, as their struggle becomes one of survival. As such, drought itself may not be to blame for land degradation and ultimate desertification. It is argued that droughts, if well managed, should not harm the environment. Land resources degrade as a result of man's pressures and demands on the environment to overcome the stressful situation during droughts.

Drought-triggered stresses and degradation affect other environments that serve as destinations for those who migrate away from degraded environments, thus endangering prosperity and sustainability everywhere. The new arrivals contribute to the degradation of the fragile ecosystems through inappropriate land-use practices, fuel wood cutting leading to deforestation and over-grazing destroying the

vegetative cover over large areas. Those who migrate to urban areas from degraded arid lands, increase demands for food and basic resources that lead to more extensive exploitation of vegetative and cultivable adjacent lands to meet the demands (such as fuel wood and charcoal) of swelling urban populations. All combine to make more land vulnerable to drought and soil erosion, laying large tracts of land bare and subjecting them to desertification.

More often than not, droughts cut across political boundaries as do migrants, particularly those fleeing from degraded environments and seeking drought relief after food shortages and famine have driven them from their own lands. Furthermore, there are those who migrate as a class of their own; those deprived indigenous people, driven from their ancestral lands by imposed new land tenure systems aimed at increasing productivity (including enclosing land for national parks and game reserves to promote tourism). Often such people are restricted to small areas that do not allow the use of coping mechanisms during stressful periods that they formerly employed. They also over-exploit the land resources in a bid to survive, and in the process expose the land to degradation and desertification during critical periods such as droughts.

Desertification reduces land productivity, depriving people of biological resources that are essential for human sustenance. This in turn lowers the incomes of hundreds of already poor people occupying the drylands. Droughts diminish rangeland productivity, cause changes in the composition and size of herds and lower prices as herdsmen flood the market with sickly cattle, seeking to sell them before they die. Desertification further translates into a spiral of declining production, increasing poverty and diminished potential productivity. It exacerbates poverty, which, in turn, exacerbates desertification, because as the pressure increases, people are forced to exploit their land resources to survive. In doing so they further diminish its productivity, and the circle continues (Darkoh 1998; Wood *et al.*, 2000). Prolonged periods of low rainfall and moisture levels during drought lead to hunger, malnutrition and starvation, high infant mortality and accelerated urban migration. Loss of biodiversity in cultivated plants and domesticated animals and in wild foods that are important when agriculture fails at times of drought is a direct threat to food security (IPED, 1994). With continuing degradation and increasing scarcity of natural resources, the struggle and competition for the remaining resources are likely to become a potent source of conflict among communities in the African drylands (Ghai, 1992).

In southern Africa, the effects of droughts and land degradation are threatening the livelihoods of many rural and peri-urban populations. Here, as in the rest of Africa, the effects of drought ought to be viewed as a regional or global hazard that requires regional and/or international attention. The management of degraded land resources in one locality will ensure the conservation of the resources of another locality not directly affected by drought but serving as a buffer and refuge for man and his animals. Wildlife migrates freely to seek unaffected areas, causing over-stocking and degradation to wider environments. Failure to do this due to

man-imposed boundaries such as electric fences and trenches sees starvation and/or massive deaths of wildlife and/or livestock.

## **2. Management of Drought and Desertification**

During the last 30 years or so, there have been concerted efforts to manage drought and its impacts such as desertification in Africa. Under the auspices of the Organisation of African Unity (OAU), African governments in 1968 adopted the African Convention on the Conservation of Nature and Natural Resources. The Convention aimed at ensuring the conservation and sustainable utilisation of natural resources in accordance with scientific principles. Sixteen years later, the Lomé III Convention dealt exhaustively with the safeguarding of natural resources, particularly desertification control. In 1974, Resolution 3202 (VI) of the United Nations General Assembly addressed the desertification problem where it was recommended that the international community undertake concrete and speedy measures to arrest desertification and assist the economic development of affected areas. Similarly, the United Nations Economic and Social Council passed its resolution 1978 (LVII) which requested all concerned organisations of the UN system to pursue a broad attack on the drought problem.

However, the first serious international effort to address drought impacts and stress on people and their environment was triggered by the 1968–1973 drought which affected most of the Sahelian, eastern and southern African countries, though in varying degrees of severity. For the first time ecological degradation received full attention concentrating on predicting conditions before and after the drought. Long-term strategies were made part of the mandates of various organisations created to address the drought issue. Other existing organisations reviewed their missions to include the drought issue, emphasising the African and other developing countries' situations. Various organisations within the United Nations system set up offices and programs to assist these countries with national and regional strategies to combat drought.

Other organisations including the United States Agency for International Development (USAID), the European Economic Community (EEC), Norwegian Agency for Development (NORAD), the Germany Agency for Technical Cooperation (GTZ), the Danish Corporation for Environment and Development (DANCED) and many others, offered assistance to countries in the sub-region and elsewhere which were afflicted by drought. Consequently, projects and programs costing millions of dollars have been formulated and implemented in the region by these agencies.

During the 1992 Earth Summit, the World's leaders agreed to call on the UN General Assembly to set up an Inter-government Negotiating Committee to prepare a legally binding instrument by June 1994. Thus the Convention to Combat Desertification in Countries experiencing Serious Drought and/or Desertification particularly those in Africa was formulated and adopted in 1994. By mid-1995 over

a 100 countries had signed the Convention. This Convention symbolises agreement between developed and developing countries on the need for a global coalition to address the loss of land productivity occasioned by climatic phenomena and made worse by man's activities. The Convention requires concrete national commitments for practical action, emphasising the local level, where stress and environmental degradation must be fought. The Convention places great emphasis on the machinery needed to implement it and monitor its progress.

In Appendix A of the Convention, it is categorically stated that the Convention is the first legally binding international instrument clearly stressing partnerships, rather than aid. The Convention endeavours to rectify the past mistake of one-sided approaches and underlines the importance and necessity of international co-operation and partnership. It states that national plans must be carried out in a spirit of partnership, between the donor community, governments at all levels, local populations and community groups. The concept of participation is emphasised.

Another area emphasised in the Convention is that of enabling women to participate, since they are the most adversely affected by drought and resultant stress on the environment. Women in developing countries, particularly those in Africa, depend largely on land; they do much work on the land and are therefore better placed to take care of the environment. It is documented that in the past, external help, advice and communication that came to the community was directed at the men. The Convention repeatedly emphasises a bottom-up approach placing much emphasis on participation. It dwells on the important role played by women and NGOs in ensuring program implementation. It is emphasised that competition among donors and NGOs must be avoided at all costs and all parties are rather encouraged to work as partners in combating environmental issues, especially those associated with drought.

The Convention states that all parties agree to co-operate with each other and through competent inter-governmental organisations as well as with non-governmental organisations in undertaking and supporting public awareness and educational programs so that the local people's ability to program and manage their resources is strengthened. This is necessary to create an enabling environment, which has been described as a situation where good governance and stability, legal and administrative reform, economic incentives and improved infrastructure have been put in place. The Convention decries the previously existing bias in the economies of many developing countries, which favoured industry, towns and cities at the expense of agriculture and the countryside. The Convention encourages the promotion of more diversified economies and alternative livelihoods such as village forestry schemes, wildlife and scenery-based tourism. It is further stated that secure and equitable land access is one other important aspect of an enabling environment. Secure land rights will enable local people to see the importance of taking care of their land with no fear of losing access to its resources.

Furthermore, the Convention stresses the significance of capacity building and promoting public awareness for the success of action programs. It is stated that the

effects of drought cannot be overcome unless institutions and people's abilities are enhanced so that they can cope with the demands and requirements of programs and plans.

Research, collection and analysis of data on early warnings of drought, and information dissemination are the other goals among those advocated by the Convention. Integration and co-ordination in data collection and analysis, it is stated, would encourage information exchange through the global network of institutions and facilities. This would ensure systematic observation of land degradation, which among other things would help accomplish early warning and advance planning for periods of adverse climatic variation.

On the issue of funding, developing countries (especially those in Africa) are encouraged to mobilise substantial financial resources, including grants and concessional loans in support of the programs. These countries are required to mobilise adequate financial resources, including new and additional funding from the Global Environment Facility (GEF), jointly implemented by the UNDP, UNEP and the World Bank, which provides grant and concessional funds to developing countries for projects and activities that aim to protect the global environment. Developing countries and regional organisations are urged to further enhance and assist national, sub-regional and regional action programs. It is envisaged that these will lead to partnership agreements that will set out the roles to be played in funding National Action Programs by governments, donors and NGOs.

The Convention requires affected African countries to draw up National Action Programs as a central and integral part of formulating sustainable development policies involving local people's participation. The countries are required to reduce pressure on the land through population and migration policies and to improve food security by promoting the use of drought-resistant crops and integrated dry land farming systems. The Convention urges all parties to collaborate in promoting research and studies to improve national capabilities and to monitor and assess the effects of drought.

However, because droughts and their effects do not respect national boundaries, it is reiterated that all parties involved draw up joint programs at regional and sub-regional levels. The sub-regional programs are to focus on nine areas of co-operation. These are:

1. programs for the sustainable management of natural resources that cross frontiers
2. programs to develop alternative energy sources
3. management and control of agricultural pests and diseases
4. capacity-building, education and public awareness
5. scientific and technical co-operation
6. early warning systems and joint planning to mitigate the effects of drought, strengthening the capacity of sub-regional organisations
7. developing policies in such fields as trade and marketing
8. exploring ways of sharing experiences, particularly over local participation

9. creating an enabling environment for improved management of the land and for the use of appropriate technology.

Further, more initiatives emanated from the United Nations Conference on Desertification (UNCOD) of 1977. A Plan of Action to Combat Desertification (PACD) was drawn up under the auspices of UNEP. PACD's aims include the containment of the desertification advance into unaffected areas and the reclamation of desertified land with the ultimate goal of putting it into productive use. PACD also aims to promote the productivity of arid, semi-arid and dry sub-humid areas within existing ecological and climatic constraints (United Nations, 1978). Additionally, sub-regional organisations were established within Africa during the same time. The International Fund for Agricultural Development (IFAD) of the UN established its special program for sub-Saharan African countries affected by drought and desertification in 1985 after the 1985 drought. After 10 years, numerous projects had been supported by the funds mobilised by IFAD amounting to \$750 million (Lean, 1995). In 1987, The African Desert and Arid Lands Committee (ADALCO) was established to combat desertification in the Kalahari-Namib region.

However, only partial success has been recorded because in many instances these efforts were not co-ordinated, there was no continuity and there were many cases of incomplete projects, abandoned when funds ran out. New donors different from the departing ones often instituted new plans so that today the region is littered with partially implemented projects. Even where plans were fully implemented, follow-ups became difficult because of either limited or lack of political will, non-involvement of local people in setting up the projects and/or the national governments did not have the ability to continue with the projects or activities in the plans (Msangi, 1995; Lean, 1995; Wood *et al.*, 2000).

Other factors contributing to the limited success include:

- Destructive land tenure policies, including the extension of a humid lands type of cultivation agriculture into arid and semi-arid lands without any modifications.
- Large areas of land being fenced off to pave the way for game parks and national parks. By fencing off such large tracts of land, large numbers of people are either displaced or are constrained in a smaller area, where coping mechanisms are jeopardised.
- War, which produces large numbers of refugees who are again restricted to small areas surrounding their camps where they plunder vegetative and other resources creating islands of devegetated and degraded lands.
- Misdirected research policies and failure of African governments to make desertification a priority (Darkoh, 1993).
- Rigidity on the part of developed countries and investors, which has limited the developing countries' room to manoeuvre, in turn leading to the accumulation of large debts, the repayment of which drains savings from their national coffers. Due to such tremendous debt burdens, some countries in Africa and some in the



sub-region find it difficult to finance the expenses of environmental programs designed to protect natural resources.

- Additionally, unfavourable terms of world trade force these countries to over-exploit their natural resources, which accelerates the rate of desertification particularly during drought periods.

Over the years, it has become apparent that the magnitude of drought and desertification-related problems facing the drylands of Africa and those in southern Africa is so high that national governments alone cannot exclusively manage them. It is now accepted that the indigenous people, whose survival is at stake, have to be involved at all levels, an aspect very clearly stated in the 1994 International Convention to Combat Desertification. In recent years, regional bodies such as the Southern African Development Community (SADC), its Environmental and Land Management Sector (ELMS) and numerous NGOs have been instituted to combat drought and desertification in southern Africa. NGOs such as the Desert Research Foundation of Namibia aim to study and coordinate mitigating and combating initiatives of the affected countries, among other activities. The bodies strive to formulate viable drought programs that include rehabilitation measures in the damaged lands. Some of these have incorporated the local communities in mitigation and desertification control training, while raising the awareness of such communities. Many of the organisations have recognised the importance and relevance of indigenous knowledge in the mitigation and combating of the effects of drought and coping strategies. Research into these and many other issues have been instituted in the majority of the SADC countries, acknowledging the role that local communities play in weather and drought forecasting, as well as in land resource management.

Countless efforts are being made to reduce the vulnerability of the affected populations by securing their environments, increasing food security and creating new opportunities for alternative livelihoods. Earlier coping strategies that were weakened through inappropriate interventions and policies are now being researched with the view to incorporating them into plans and programs for drought and desertification management.

Programs already formulated and in operation, range from soil erosion control, fast maturing crops, drought resistant crop varieties, seed banks, sand dune stabilisation, water conservation measures, and early warning networks. Others include integrated resource development in arid and semi-arid lands, energy saving stoves, alternative sources of energy, and investigating political and social effects of drought and co-operation at both technical and economic co-operation levels. In some instances, the mandates include fostering closer co-operation and involving the private sector in economic as well as environmental management activities. Advocated in the 1994 Convention, this is envisaged as necessary to attract funding and hence strengthen management capacity. It is hoped that the success of these undertakings will help alleviate related problems of migration, environmental refugees, loss of biodiversity and need for emergency aid to populations in crisis.

SADC, which was formed to promote the development efforts of its member countries Tanzania, Zambia, Zimbabwe, Namibia, Angola, Botswana, Lesotho, Swaziland, Malawi, Mozambique, South Africa, Madagascar, Mauritius and Democratic Republic of the Congo (formerly Zaire), has been very instrumental in various developmental issues affecting the welfare of the people in the region. It addresses resource-related issues, including those on soil and water conservation, and those touching on drought and environmental degradation. Frequent meetings and workshops/conferences are held and through them, strategies are formulated to attract developmental funding. Through co-operation, the countries offer assistance to each other, particularly during stressful events such as experienced during drought periods. These countries aim to avoid duplication of ventures to promote trade and to strengthen each other's endeavours through fair trade and complementarity. Their ultimate goal is to attain strength to better face developmental challenges as a region. This is the way to face and attain control over environmental degradation and desertification threats as drought effects indiscriminately spill over political boundaries to affect more than one of these countries at any one time. SADC has embarked on formulating and working out mechanisms of implementing a Regional Action Program to combat desertification. It has also taken up the challenge of assisting individual countries to come up with National Action Programs in collaboration with the relevant organs in the countries within the region. These action programs have been serving as instruments for the implementation of the 1994 Convention to Combat Desertification in countries experiencing serious drought and/or desertification, particularly those in Africa.

### **3. Conclusion**

This short paper has reviewed the trend of occurrence and the effects of drought in the southern African region for the last 100 years or so. Both droughts and related environmental degradation have taken an untold toll on the populations of the region over this period. It has been shown that land degradation resulting from droughts has been accelerated by anthropogenic factors. External and internal institutions and individuals, governments and commercial interests, have and continue to extend their influence and power, ownership and exploitation, of the dry and fragile environments through competition for resources such as forests, grazing and ranch lands. This has resulted in reduced freedom of the indigenous people to move and engage in earlier coping strategies during the drought periods, thus generating conditions for local pressure on the environment and the resources therein.

After the catastrophic Sahelian drought of 1968–1973, drought and its effects have received both international and regional attention to the extent of rendering it a global preoccupation. The fact that droughts know no boundaries has been fully appreciated and accepted by both local and international communities. Since then,

plans and programs have increasingly covered larger areas, the regional approach superseding and coalescing national boundaries in so far as mitigating drought and combating measures are concerned. Since the Sahelian drought, countries in southern Africa where droughts have been recurring for over a century have kept abreast of this new trend of adopting the regional approach.

In this paper, it has been demonstrated that the countries in southern Africa, whose economies largely depend on natural resources exploitation, have suffered greatly from droughts, drylands having suffered the most. Meanwhile, some tangible initiatives have been made in mitigating and managing drought and desertification in the arid and semi-arid areas of southern Africa. Attention has been directed towards better management and stabilisation of the economies of these countries with the sole aim of alleviating stress on the people and their environments, that is environments of drylands as well as those that serve as destinations for people emigrating from degraded environments. Soon after the 1984 drought, IFAD established a special program for sub-Saharan countries affected by drought. Through its Regular Program and this special one (for sub-Saharan countries), numerous projects aimed at eradicating poverty through combating drought and related stresses were funded. Other agencies like USAID, UNDP, EEC, NORAD, GTZ, DANCED and many others, offered much needed assistance in southern Africa to enable the countries to come to terms with this climatic hazard and its related stresses.

The strategies adopted earlier by these agencies did not fully achieve the desired goals, thus these areas remain among the most disadvantaged in the world. The limited success has been attributed to non-involvement of local inhabitants during program plan formulation as well as a failure to incorporate indigenous knowledge and resource management systems and their coping strategies into these programs (Titi and Singh, 1994). It is reported that the earlier interventions, instead of strengthening local adaptive strategies, livelihood and production systems, weakened them. It is further argued that interventions such as Structural Adjustment programs and subsequent policies of trade liberalisation to achieve equilibrium and economic growth in many African countries, have worsened the standard of living and undermined efforts at achieving food security (Titi and Singh, 1994; Khor, 1995; Darkoh, 1998). Other forces, such as the state of the global economy and shift toward market liberalisation, commodity prices, the debt burden, terms of trade and protectionism and import barriers in developed countries (which may increase rates of natural resource exploitation by preventing diversification) lead to large-scale changes in production and resource use patterns (Wood *et al.*, 2000). It is also true that international agreements such as the General Agreement on Tariffs and Trade (GATT) and the new World Trade Organisation (WTO), are silent on land resource conservation issues. It thus becomes apparent that there is a need to educate and raise the awareness of the people of developing countries, particularly those in the fragile drylands, so that they can better understand the implications of such agreements.

One other way of empowering the people and alleviating poverty, is fair distribution of the wealth created by trade and natural resources exploitation. Barriers to trade at national and international levels can create impediments for achieving sustainable resource management and development. Limited access to developed countries' markets, it is argued, is partly to blame for the inability by the governments in developing countries to invest substantially in environmental management (Darkoh, 1998; Wood *et al.*, 2000; Juma and Konde, 2002).

Management of desertification and land degradation in the drylands of southern Africa and those of the rest of the continent has global implications. It can contribute to the minimisation of global warming/climatic change and minimise the possible effects of devegetation, surface reflectivity and surface water transfers. It could also contribute significantly to the minimisation of dust particles in the atmosphere that affects rain-forming mechanisms. Therefore desertification control in Africa in general is in the interest of global well being.

Agenda 21 advocates collaboration, co-operation and partnerships in addressing drought and its associated stresses on people and the environment. The UN Convention to Combat Desertification (UNCCD) in countries experiencing serious droughts and/or desertification was formulated and adopted in 1994. The Convention, an outcome of the 1992 Earth Summit, aims to combat desertification and mitigate the effects of drought through effective action at all levels, supported by international co-operation in the frameworks of an integrated approach consistent with Agenda 21.

The Convention emphasises involvement and participation of local inhabitants, and women in particular, in order to achieve sustainability. The Convention, the first legally binding document, details the requirements and obligations of affected parties. The emphasised approach is that of co-operative and collaborative programs among affected countries, political boundaries notwithstanding.

Several regional bodies, which were put in place to address the drought issue, include SADC with its land resource management institutions, as well as a host of NGOs. These have established a certain degree of co-ordinated mitigation and combating initiatives in the region. The bodies strive to formulate and implement viable drought programs that promote co-operation and collaboration of all parties involved.

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