Drought and desertification are at the core of serious challenges and threats facing sustainable development in Africa. These problems have far reaching adverse impacts on human health, food security, economic activity, physical infrastructure, natural resources and the environment, and national and global security.

Although drought has several definitions, the central element in these definitions is water deficit. In general, drought is defined as an extended period – a season, a year, or several years – of deficient rainfall relative to the statistical multi-year average for a region. This deficiency results in a water shortage for some activity, group, or environmental sector. A more in-depth definition of drought includes four sub definitions including meteorological, hydrological, agricultural and socio-economic drought.

Desertification on the other hand is defined as a process of land degradation in arid, semi-arid and dry sub-humid areas, resulting from various factors, including climatic variations and human activities. Land degradation manifests itself through soil erosion, water scarcity, reduced agricultural productivity, loss of vegetation cover and biodiversity, drought and poverty.

### 2.1 Causes of drought and desertification

The underlying cause of most droughts can be related to changing weather patterns manifested through the excessive build up of heat on the earth’s surface, meteorological changes which result in a reduction of rainfall, and reduced cloud cover, all of which results in greater evaporation rates. The resultant effects of drought are exacerbated by human activities such as deforestation, overgrazing and poor cropping methods, which reduce water retention of the soil, and improper soil conservation techniques, which lead to soil degradation.

Desertification is caused by multiple direct and indirect factors. It occurs because drylands ecosystems are extremely vulnerable to over-exploitation and inappropriate land use that result in underdevelopment of economies and in entranced poverty among the affected population. Whereas over cultivation, inappropriate agricultural practices, overgrazing and deforestation have been previously identified as the major causes of land degradation and desertification, it is in fact a result of much deeper underlying forces of socio-economic nature, such as poverty and total dependency on natural resources

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2. The United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD),
for survival by the poor. It is also true to reiterate that desertification problems are best understood within the dictates of disparities of income and access to or ownership of resources.

15. Consequently, the causes of desertification are more complex to unravel. Desertification is driven by a group of core variables, most prominently climatic factors (Yang and Prince 2000; Hulme and Kelly 1993) that lead to reduced rainfall (Rowell et al. 1992) and human activities involving technological factors, institutional and policy factors, and economic factors (UNCCD 2004) in addition to population pressures, and land use patterns and practices. The technological factors include innovations such as the adoption of water pumps, boreholes, and dams. The institutional and policy factors include agricultural growth policies such as land distribution and redistribution (AIBS 2004). These variables drive proximate causes of desertification such as the expansion of cropland and overgrazing, the extension of infrastructure, increased aridity, and wood extraction.

16. Since most economies of African countries are mostly agro-based, a greater proportion of the desertification problems in rural areas are a result of poverty related agricultural practices and other land use systems. Inappropriate farming systems such as continuous cultivation without adding any supplements, overgrazing, poor land management practices, lack of soil and water conservation structures, and high incidence of indiscriminate bushfires lead to land degradation and aggravate the process of desertification. These factors prevail in many parts of the region. In Uganda, as a result of overgrazing in its drylands known as the “cattle corridor,” soil compaction, erosion and the emergence of low-value grass species and vegetation have subdued the land’s productive capacity, leading to desertification. In the Gambia, it is reported that fallow periods have been reduced to zero on most arable lands. Between 1950 and 2006, the Nigerian livestock population grew from 6 million to 66 million, a 11-fold increase. The forage needs of livestock exceed the carrying capacity of its grasslands. It is reported that overgrazing and over-cultivating are converting 351,000 hectares of land into desert each year. The rates of land degradation are particularly acute when such farming practices are extended into agriculture on marginal lands such as arid and semi rid lands, hilly and mountainous areas and wetlands.

17. Deforestation, especially to meet energy needs and expand agricultural land is another serious direct cause of desertification in the region. Globally, there is evidence demonstrating a heavy negative impact of the energy sector on forest and other vegetation cover and land productivity. More than 15 million hectares of tropical forests are depleted or burnt every year in order to provide for small-scale agriculture or cattle ranching, or for use as fuel wood for heating and cooking. Biomass constitutes 30 percent of the energy used in Africa and over 80 percent used in many sub-Saharan countries such as Burundi (91 percent), Rwanda and Central Africa Republic (90 percent), Mozambique (89 percent), Burkina Faso (87 percent), Benin (86 percent), Madagascar and Niger (85 percent). Production and consumption of fuel wood is said to have doubled in the last 30 years of the 20th century and is rising by 0.5 percent every year. This high dependence on biomass fuel has resulted into an alarming rate of tree felling and deforestation, which is exposing large tracts of land to desertification. In Ghana, where the population density has reached 77 persons per km², 70 percent of the firewood and charcoal needed

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4 Gambia country report, 2006
for domestic purposes comes from the savannah zones, as a result destroying 20,000 ha of woodland per annum.\textsuperscript{10} In Uganda where 90 percent of the population lives in rural areas and directly depends on land for cultivation and grazing, forestland shrank from 45 percent of the country’s surface area to 21 percent between 1890 and 2000\textsuperscript{11}. In Nigeria where more than 70 per cent of the nation’s population depends on fuel wood, it is feared that the country might be left with no forest by 2010 owing to the present level of deforestation activities.\textsuperscript{12} Already it is estimated that more than 13 million tonnes of soil are washed away into the sea annually.\textsuperscript{13} It is also feared that if the current rate of tropical forests deforestation is maintained, the tropical forests could be almost entirely harvested by the year 2050, thus devastatingly contributing to climate change, loss of biodiversity, land degradation and desertification.\textsuperscript{14}

18. The above direct causes of desertification are driven by a complex set of underlying factors including the high levels of poverty in the region, high population growth rates, poor natural resources tenure and access regimes, conflicts, and climate change.

19. Without alternatives poor people are forced to exploit land resources including fragile lands, for survival (food production, medicine, fuel, fodder, building materials and household items). Given that most drylands in Africa are poverty hotspots as well, the risk of desertification is high in many of these areas, as the poor inevitably become both the victims and willing agents of environmental damage and desertification. In Sub-Saharan Africa alone 270 million people live in absolute poverty.\textsuperscript{15} In Uganda, over 40 percent of the pastoralists who constitute the majority in the country’s drylands, live below the poverty line.\textsuperscript{16}

20. High population growth increases pressure on limited and fragile land resources. The rural population living in drylands in Africa is estimated to be 325 million.\textsuperscript{17} This breeds favourable conditions for deforestation and overexploitation of land that lead to land degradation as a large and growing rural population, struggling to survive in a limited natural resource base result in the over-utilization of the available natural resources. For instance the Nigeria’s human population which grew from 33 million in 1950 to 134 million in 2006, a fourfold expansion has forced farmers to plough marginal land under the pressure to meet food needs. As a result of this, the country is slowly turning into a desert.\textsuperscript{18} According to the New York Times, Niger’s population has doubled in the last 20 years. Each woman bears about seven children, giving the country one of the highest growth rates in the world. Given that 90 percent of Niger’s people live off agriculture, this population is exerting great pressure on the less than 12 percent of its land that can be cultivated.\textsuperscript{19}

\begin{thebibliography}{99}
\bibitem{11} ibid
\bibitem{12} The Tide on Line, 2007 citing a statement by the President, Nigerian Conservation Foundation (NCF), Chief Philip Asiodu. http://www.thetidenews.com/article.aspx?qrDate=01/30/2007&qrTitle=Nigeria\%20risks\%20extinction%20of%20forest%20by%202010%20%20%20%20%20\%20Asiodu&qrColumn=BUSINESS
\bibitem{13} Ibid
\bibitem{14} The United Nations Convention to Combat Desertification (UNCCD): a carrying pillar in the global combat against land degradation and food insecurity. Background paper for the San Rosso meeting ‘Climate change: a new global vision’ Pisa, Italy, 15 - 16 July 2004
\bibitem{15} Ibid.
\bibitem{16} Report of the National Capacity Self Assessment for implementation of the Multilateral Environment Agreements (CBD, UNFCCC, CCD AND International Water) in Uganda.
\bibitem{17} The United Nations Convention to Combat Desertification (UNCCD): a carrying pillar in the global combat against land degradation and food insecurity. Background paper for the San Rosso meeting ‘Climate change: a new global vision’ Pisa, Italy,15 - 16 July 2004
\end{thebibliography}
21. Insecure and unclear land and other natural resources tenure and access rights are some of the main reasons the natural resources end-users are unwilling to invest in long-term sustainable land management (SLM). For instance it is reported that in Uganda, insecurity of land tenure in parts of the cattle corridor under mailo and communal land ownership systems does not encourage farmers to invest in sustainable land management practices.20

2.2 Status and trends of drought and desertification

22. Two thirds of Africa is classified as deserts or drylands. These are concentrated in the Sahelian region, the Horn of Africa and the Kalahari in the south. Africa is especially susceptible to land degradation and bears the greatest impact of drought and desertification. It is estimated that two-thirds of African land is already degraded to some degree and land degradation affects at least 485 million people or sixty-five percent of the entire African population.21 Desertification especially around the Sahara has been pointed out as one the potent symbols in Africa of the global environment crisis.22 Climate change is set to increase the area susceptible to drought, land degradation and desertification in the region. Under a range of climate scenarios, it is projected that there will be an increase of 5-8% of arid and semi Arid lands in Africa.23

23. Estimates from individual countries report increasing areas affected by or prone to desertification. It is estimated that 35 percent of the land area (about 83,489 km² or 49 out of the 138 districts) of Ghana is prone to desertification, with the Upper East Region and the eastern part of the Northern Region facing the greatest hazards. Indeed a recent assessment indicates that the land area prone to desertification in the country has almost doubled during recent times.24 Desertification is said to be creeping at an estimated 20,000 hectares per year, with the attendant destruction of farmlands and livelihoods in the country.25 Seventy percent of Ethiopia is reported to be prone to desertification,26 while in Kenya, around 80 percent of the land surface is threatened by desertification.27 Estimates of the extent of land degradation within Swaziland suggest that between 49 and 78 % of the land is at risk, depending on the assessment methodology used (Government of Swaziland, 2000). Nigeria is reported to be losing 1,355 square miles (1mile =1.6km) of rangeland and cropland to desertification each year. This affects each of the 10 northern states of Nigeria.28 It is estimated that more than 30% of the land area of Burundi, Rwanda, Burkina Faso, Lesotho and South Africa is severely or very severely degraded.29 These rates and extent of land degradation/desertification undermine and pose serious threats to livelihoods of millions of people struggling to edge out of poverty. They also cripple provision of land resources - based ecosystem services that are vital for a number of development sectors.

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20 Report of the National Capacity Self Assessment for implementation of the Multilateral Environment Agreements (CBD, UNFCCC, CCD AND International Water) in Uganda.
24 Ghana country report, 2006
26 Ethiopia Country Report, 2006
24. With regard to drought, the continent has witnessed a high frequency of occurrence and severity of drought as shown in Figure 1 below. Drought is one of the most important climate-related disasters in Africa. Climate change is set to exacerbate occurrence of climate related disasters including drought. A study from Bristol University projects that areas of western Africa were at most risk from dwindling freshwater supplies and droughts as a result of rising temperatures. Current climate scenarios predict that the driest regions of the world will become even drier, signalling a risk of persistence of drought in many parts of Africa (arid, semi-arid and dry sub humid areas) which will therefore bear greater and sustained negative impacts.

Figure 1. Drought events per country from 1970 to 2004 within Sub-Saharan Africa

Source: Adapted from Noojin, Leah 2006. Factors that influence famine in Sub-Saharan African Countries

2.3 Impact of drought and desertification

25. It is common knowledge that land degradation and desertification constitutes major causes of forced human migration and environmental refugees, deadly conflicts over the use of dwindling natural resources, food insecurity and starvation, destruction of critical habitats and loss of biological diversity, socio-economic instability and poverty and climatic variability through reduced carbon sequestration potential. The impacts of drought and desertification are among the most costly events and processes

31 UNESCO 2006 A world of science. Vol. 4, No.4. October to December 2006
in Africa. The widespread poverty, the fact that a large share of Africa’s economies depend on climate-sensitive sectors mainly rain-fed agriculture, poor infrastructure, heavy disease burdens, high dependence on and unsustainable exploitation of natural resources, and conflicts render the continent especially vulnerable to impacts of drought and desertification. The consequences are mostly borne by the poorest people and the Small Island Developing States (SIDS). In the region, women and children in particular, bear the greatest burden when land resources are degraded and when drought sets in. As result of the frequent droughts and desertification, Africa has continued to witness food insecurity including devastating famines, water scarcity, poor health, economic hardship and social and political unrest. The gravity of drought and desertification impacts in the region is demonstrated by the following examples.

**Impact on economic growth and poverty reduction**

26. The majority of the populations in most African countries live on marginal lands in rural areas practicing rain-fed agriculture. Desertification threatens agricultural production on these marginal lands (Conserve Africa, 2006; UNCCD, 2004), exacerbating poverty and undermining economic development. Growing levels of entrenched poverty, environmental degradation, desertification, and underdevelopment of rural areas characterize most rural areas of the African countries. The impact of drought and climatic variability in both economic and mortality terms is generally larger for relatively simple and predominantly agricultural economies. These types of economies dominate Africa. In 2004, the UNCCD estimated that some six million hectares of productive land was being lost every year since 1990, due to land degradation. This in turn had caused income losses worldwide of US$ 42 billion per year. With two-thirds of arable land expected to be lost in Africa by 2025, land degradation currently leads to the loss of an average of more than 3 percent annually of agriculture GDP in the Sub-Saharan Africa region. In Ethiopia, GDP loss from reduced agricultural productivity is estimated at $130 million per year. In Uganda land degradation in the dry lands threatens to wreck havoc on the country’s economy and escalate poverty. This is because these drylands constitute the Uganda cattle corridor, which accounts for over 90 percent of the national cattle herd and livestock production contributes 7.5 percent to the GDP and 17 percent to the agricultural GDP.

27. Drought and floods account for 80 percent of loss of life and 70 percent of economic losses linked to natural hazards in Sub-Saharan Africa. The drought of 1990/1991 in Zimbabwe resulted in a 45 percent drop in agricultural production but also a 62 percent decline in the value of the stock market, a 9 percent drop in manufacturing output and a GDP drop of 11 percent. Similarly, in Kenya, the drought of 1999-2001 cost the economy some 2.5 billion dollars. As a proportion of the national economy this is a very significant loss and can best be thought of as 2.5 billion dollars of foregone development, for example, hospitals and schools not built.

28. Desertification in Africa is a major cause and consequence of poverty and resource depletion, which threaten economic growth. In many African countries poverty and desertification are expected

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32 The United Nations Convention to Combat Desertification (UNCCD): a carrying pillar in the global combat against land degradation and food insecurity. Background paper for the San Rossore meeting ‘Climate change: a new global vision’ Pisa, Italy,15 - 16 July 2004
33 UNCCD Secretariat http://www.unccd.int/publicinfo/pressrel/showpressrel.php?pr=press01_06_04
35 Report of the National Capacity Self Assessment for implementation of the Multilateral Environment Agreements (CBD, UNFCCC, CCD AND International Water) in Uganda.
to rise during the twenty first century (Conserve Africa, 2006) given that most governments are unable to increase expenditure on economic and agricultural production to drive rural and urban economic development and reduce the dependence of the poor on the natural environment, a process that exacerbates desertification and poverty. Increased agriculture and rural economic development expenditure each year contribute to improved food security and to a steady decline in the incidence of rural poverty (Fan et al., 1999) and the process of desertification.

Impact on food security

29. The loss of natural resources, environmental degradation (Van Crowder et al., 1998) and desertification (UNCCD, 2004) affects food security. The poor households that are affected by drought and desertification do not have adequate resources to deal with food shortages leading to food insecurity and hunger that affects millions of people. If land degradation continues at the current pace, it is projected that more than a half of cultivated agricultural area in Africa could be unusable by the year 2050 and the region may be able to feed just 25 percent of its population by 2025. Agriculture being one of the main economic activities in Africa (which represents around 40 percent of the region's GDP and employs about 60 percent of the active labour force), this would lead to a catastrophe with unprecedented repercussions. In the two northern regions of Ghana severely hit by soil degradation, it is estimated that malnutrition among children increased from 50 percent in 1986 to 70 percent in 1990.

30. The most severe consequence of drought is famine. Food aid to the subcontinent accounts for approximately 50 percent of the yearly budget of the World Food Aid Programme. The consecutive droughts that have occurred in southern Africa since 2001 have led to serious food shortages. The drought of 2002–03 resulted in a food deficit of 3.3 million tonnes, with an estimated 14.4 million people in need of assistance. At the height of the Horn of Africa's drought in 2000, 3.2 million Kenyans were dependent on food aid, and malnutrition reached 40 percent of the population, more than 3 times the normal level. In 2005, Concern, in partnership with the Diocese of Malindi, Kenya, provided seed and technical support to 2,129 farm households who were severely affected by drought. During the same year 2005 many other African countries faced food shortages because of the combined effects of severe droughts (Nhambura, 2006; Radford and Vidal, 2005) and desertification that could become semi-permanent under climate change. The worst affected countries included Ethiopia, Zimbabwe, Malawi, Eritrea and Zambia, a group of countries where at least 15 million people would go hungry without aid (FAO, 2005). The situation in Niger, Djibouti and Sudan also deteriorated rapidly. Many of these countries had their worst harvests in more than 10 years and were experiencing their third or fourth consecutive severe drought.

31. The Sahelian drought and famine of 1968 to 1974 is a horrific reminder of the combined effects and impacts of desertification and drought. In the span of six years, hundreds of thousands of people died and millions of animals perished. Images of starving children, dead livestock and desolate land quickly grabbed the world’s attention and catapulted desertification centre stage (McHarry et al., 2002). In Africa as a whole, food consumption exceeded domestic production by 50% in the 1980s and by

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more than 30% in the 1990s (WWI, 1998). Although agriculture will remain for many years a major contributor to the economies of most developing countries (Van Crowder et al., 1998), in some countries, however, its share of GDP will progressively decline as drought and desertification take their toll with food shortages increasing at the same time.

Impact on water

32. Both drought and desertification influence water availability, which is projected to be one of the greatest constraints to economic growth in the future. In Africa, climate change is expected to intensify the continent’s increasingly critical water situation. Reduced annual average rainfall and its run-off would worsen desertification in southern Africa. This subregion being one of many water-stressed regions could thus see a further decrease in streams flow and the ability of groundwater to ‘recharge’. Furthermore, it is projected that by 2025 Southern Africa will also join most countries in North Africa that can already be classified as having absolute water scarcity today. This means that countries in these regions will not have sufficient water resources to maintain their current level of per capita food production from irrigated agriculture - even at high levels of irrigation efficiency - and also to meet reasonable water needs for domestic, industrial, and environmental purposes. To sustain their needs, water will have to be transferred out of agriculture into other sectors, making these countries or regions increasingly dependent on imported food. By the year 2025, it is thus estimated that nearly 230 million Africans will be facing water scarcity, and 460 million will live in water-stressed countries. Already, 14 African countries are subject to water stress or water scarcity, increasing to 25 countries by 2025, (UNCCD, 2004) a situation that will further exacerbate desertification, perilous food security and economic underdevelopment.

33. In the Nile region, most scenarios estimate a decrease in river flow of up to more than 75 per cent by the year 2100. This would have significant impacts on agriculture, as a reduction in the annual flow of the Nile above 20 per cent will interrupt normal irrigation. Such a situation could cause conflict because the current allocation of water, negotiated during periods of higher flow, would become untenable.

34. The situation of women and children who are responsible for fetching water for the households is therefore worsened by drought and desertification. These can add hours of labour to an already fully charged workday.

Impact on biodiversity

35. Biodiversity existing in dry lands and other habitats underpin ecosystem services that vital for livelihoods of millions of people in Africa. It is the foundation for sustainable development in the region and globally. The dry areas of the world are the origin of a large number of globally important cereals and food legumes, such as barley, wheat, faba beans and lentils. Four hundred million people, two thirds of sub-Saharan African population, rely on forest goods and services for their livelihood. Drought, land degradation and desertification have had serious impact on the richness and diversity of Africa Diversity. These factors remain some of the most serious threats to the management, sustainable use and equitable sharing of benefits of biodiversity. The projected devastating impacts of climate change in the region including exacerbating these factors will escalate biodiversity degradation and loss associated with...
drought, land degradation and desertification. These factors affect biodiversity directly and indirectly. Onsite impacts include habitat and species degradation and loss, leading to overall loss of economic and biological productivity. For instance on rangelands, overgrazing not only reduces the overall protective soil cover and increases soil erosion, but also leads to a long-term change in the composition of the vegetation. Plant biodiversity will change over time, unpalatable species will dominate, and total biomass production will be reduced. These in turn trigger and contribute to indirect or offsite impacts. Soil erosion will contribute to denudation and pollution of wetlands and water bodies. As biological and economic productivity deteriorates, communities are forced migrate to other areas or engage in other coping activities that too contribute biodiversity degradation.

36. According to the Africa Environment Outlook II, approximately half of Africa’s terrestrial eco-regions have lost more than 50 per cent of their area to cultivation, degradation or urbanization. It also states that some ecoregions such as the Mandara Plateau mosaic, Cross-Niger transition forests, Jos Plateau forest-grassland mosaic, and Nigerian lowland forests have gone more than more than a 95 percent transformation. Nine other eco-regions have lost more than 80 per cent of their habitat, including the species-rich lowland Fynbos and Renosterveld and the forests and grasslands of the Ethiopian Highlands; the Mediterranean woodlands and forests have lost more than 75 per cent of their original habitat, and the few remaining blocks of habitat are highly fragmented.

37. In the sand dune areas of countries such as Mauritania, Mali, Niger, Nigeria and Senegal major river basins siltation processes accumulate debris and materials that engulf natural vegetation, such as the *Acacia nilotica* riparian forests. Soil erosion contributes to moving the seed capital of the ground, uprooting grassy as well as woody species, and in accumulation areas it smothers valuable species.

38. In West Africa the movement of people south towards subhumid to humid tropical areas has resulted into loss of primary forests and woodlands, repeated logging of the secondary vegetation, and depletion of a number of species (UNEP 2006). More diffuse degradation of land resources also occurs in the arid and sub-humid parts. These include the extraction of tree resources outside forests for charcoal making (about 150 million tonnes/year from the savannah and woodland areas), and the use of high-value woods. Most affected are the *Meliaceae family* (*Khaya species*), *Pterocarpus erinaceus*, and *Dalbergia melanoxylon*.

39. There is mounting evidence to show that drought and desertification as exacerbated by climate change will have devastating impacts on habitats and species in the region. For example shifts in rainfall patterns could affect the fynbos and karoo in southern Africa by altering the fire regime critical for their regeneration. Decreasing run off could impact wetland ecosystems such as the Okavango Delta and the Sudd area.  

**Impact on Energy**

40. The impacts of drought and desertification on the energy sector are felt primarily through losses in hydropower potential for electricity generation and the effects of increased runoff (and consequent siltation) on hydropower generation as demonstrated in Table 1. The gravity of impacts of electricity generation is further demonstrated by the case of Ghana, where for the first half of 2007 (and it was projected to continue for the year), the water level at the Akosombo dam had fallen below the minimum level of 240 feet. This led to reduction in hydro–electricity generation and hence load shedding of electricity. 

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in the whole country.\textsuperscript{47} Energy impacts are also experienced through changes in the growth rates of trees on which a vast majority of the people in the region rely for fuel wood.\\

41. Due to the limited alternatives available to them and low priority accorded to meet their needs in times of scarcity, the rural areas and the urban poor bear the greatest cost of decrease in energy resources. This undermines efforts to pull these categories of people out of the poverty trap.

**Table 1: Electricity related impacts of drought in selected countries in Africa**

<table>
<thead>
<tr>
<th>Country</th>
<th>Period</th>
<th>Consequences of drought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>2004/2005</td>
<td>Reduction in water levels at Lake Victoria resulting in reduction in hydro-power generation by 50MW</td>
</tr>
<tr>
<td>Kenya</td>
<td>1992</td>
<td>Failure of rains led to power rationing in April–May 1992</td>
</tr>
<tr>
<td>Kenya</td>
<td>1998 to 2001</td>
<td>Massive drought decreased hydro generation (25 percent in 2000), which had to be replaced by more expensive fuel-based generation. Power rationing in 1999–2001</td>
</tr>
<tr>
<td>Lesotho</td>
<td>1992</td>
<td>Hydro operation limited to 6 months, leading to 20 percent reduction compared to 1991</td>
</tr>
<tr>
<td>Malawi</td>
<td>1997 to 1998</td>
<td>Engineering operations affected by drought. Amount of hydro energy generated was 6 percent less than in years of normal rainfall.</td>
</tr>
<tr>
<td>Mauritius</td>
<td>1999</td>
<td>Massive drought led to 70 percent drop in normal annual production of electricity.</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1997</td>
<td>The Mtera dam reached its lowest ever level resulting in a 17 percent drop in hydro generation, use of thermal generation to meet the shortfall, and power rationing.</td>
</tr>
<tr>
<td>Zambia</td>
<td>1992</td>
<td>Poor rainfall resulted in a 35 percent reduction in hydro generation in relation to the previous year.</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>1993</td>
<td>Drought led to a drop of over 9 percent in energy production compared to 1992</td>
</tr>
</tbody>
</table>


**Impact on Migration**

42. The effects of desertification extend beyond the affected dryland areas. As the level of vulnerability due to the combined impacts of desertification and socio-economic susceptibility increase, the greater the probability of human migration (Acosta-Michlik, \textit{et al.}, 2005). Desertification is displacing big population of people and forcing them to leave their homes and lands in search of better livelihoods. Desertification and drought related migration takes many forms the majority occurring as internal migrations (Nanyunja, 2004), that is, displacements of populations within national boundaries (Mora and Taylor, 2006; Lein, 2000; Zaman, 1991). At greatest risk are those at the low end of the socio-economic spectrum, both in developed and developing regions. In developing regions, the poorest inhabitants are often forced to live on marginal land outside urban areas or coastal zones (Chan, 1995), potentially prone to desertification. Migration is often a coping mechanism, with little faith in finding permanent residence (Haque and Zaman, 1989; Mutton and Haque, 2004; Zaman, 1991). Availability of natural resources for example prompts pastoralists along the borders of Ethiopia, Kenya and Uganda to migrate away from areas of dwindling resources; thus raising competition over finite resources with incidence of conflict increasing when these individuals move into areas of crop growing communities (Meier and Bond, 2005). It is estimated that 135 million people - the combined populations of France and Germany - are at risk of being displaced by desertification. The problem appears to be most severe in sub-Saharan Africa, the Sahel and the Horn of Africa. Some 60 million are estimated to eventually move from the desertified areas of sub-Saharan Africa towards Northern Africa and Europe by the year 2020.\textsuperscript{49}

\textsuperscript{47} Kwadwo Tutu, personal communication
\textsuperscript{49} UNCCD Secretariat 2004 http://www.unccd.int/publicinfo/pressrel/showpressrel.php?pr=press01_06_04
43. Already, it is reported that in the past 20 years, nearly half of the total male population in Mali has migrated at least once to neighbouring African countries (96 percent) or to Europe (2.7 percent). In Burkina Faso, desertification can be identified as the cause of 60 percent of the swelling of main urban centres. In Kenya one of the consequences of desertification is a constant flow of rural poor to Nairobi. The population of Nairobi has grown by 800 percent from 350,000 in 1963 to 2,818,000 in 2005. Migration will exert stress on the poor and limited public infrastructure in urban areas and may exacerbate conflicts already witnessed in the region as result of scarcity of grazing land and water.

44. Against this background of the devastating impact of drought and desertification, which permeates and undermines the very foundations for securing sustainable livelihoods and economic growth, poverty eradication in Africa is inextricably linked to success in combating desertification and mitigating the impacts of drought. For millions on the continent, hopes of getting out of poverty therefore hinge on efforts at national, regional and global levels to prioritise the provision of support and the implementation measures for desertification control and coping with drought.

50 Ibid