

# THE PLANNING AND MANAGEMENT OF LAND RESOURCES IN AFRICA

**Stephen B. Kendie**

*Centre for development Studies, University of Cape Coast, Ghana*

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## Summary

African countries depend to a very large extent on the land both for the food and fibre needs of the population as well as export items for state revenue. This dependence is however not accompanied by policies to reduce or halt environmental degradation. The evidence of environmental degradation is everywhere. Farming methods such as slash-and-burn also destroy much needed vegetation and the habitats of many animal species. Declining soil fertilities have affected food security in many countries to the extent that Africa is a net importer of food grains. Because of the desire to export more and earn foreign exchange, governments are unable to control the environmental degradation activities of large companies in agriculture, mining and logging. This paper

reviews the state of land and land resources in Africa, noting the extent of degradation. It further considers the elements of an integrated approach to land use planning that are conscious of the need for land by all stakeholders.

## **1. Introduction**

The African land has mystical quality. This statement captures the crux of the intricate relationships that govern land issues in the context of African societies. In the traditional African conception, land is held by the present generations in trust for those yet to be born. Further, the land is bequeathed to the present generations by the ancestors and this bestows quasi-human and supernatural attributes on the land and its resources. The planning and management of land and associated resources was thus circumscribed by customs, taboos and rules that ensured that each adult member had land on which to farm. Customary land holdings vary across the continent. However, their fundamental attributes would appear to support the principles of sustainable development and ecological preservation. Among the attributes of customary land holding are the following:

- Socio-economic and religious beliefs are closely associated with land holding;
- Land is supposed to be used judiciously, ensuring that the present and future well-being of communities are promoted, and
- Land holding distinguishes between individual, family and communal property rights.

Population growth and the increasing economic and technological push to exploit the land and land-based resources have accelerated the breakdown of traditional value systems. In most African countries, over 70% of the population derive their livelihood from the land. This extreme dependence on nature in subsistence farming, fuel wood extraction, hunting, etc. is also associated with growing poverty and is one reason for the reported high rates of land degradation in the African continent. The other reason is the ever-present urge by national governments to export more in the search for foreign exchange to redeem growing national debts.

There are far more pressures on the land in Africa than anywhere else in the world because employment alternatives are limited and sources for the generation of foreign exchange are few. As land degradation increases, so too does poverty at both the household and national levels. A complex of factors mediates this linear relationship so that planning and managing land in Africa throws up very complex issues. Among these factors are population pressure, land tenure arrangements which affect land distribution, appropriation of land by the state and companies for agriculture, mining, logging and pasture, as well as government policies that favour or do not actively discourage over-exploitation of land resources. The latter is particularly important because for Africa owing to the poverty associated with rural living, there is a very important role for government in providing the enabling environment within which resource management decisions can be made. An integrated approach to planning the use and management of land resources therefore entails the involvement of all stakeholders (national and sub-national governments, traditional authorities, non-governmental organisations, multi-lateral agencies and the international development institutions). Each of these have

important roles to play in deciding the uses to which land can be put, the capacity of nation states to reduce dependence on agriculture and the effective management of land resources. It requires careful attention to the identification of the uses to which every land unit can be put and such uses must be technically appropriate, economically, viable, socially acceptable and environmentally non-degrading.

The purpose of this chapter is twofold: first is to assess the nature and extent of the land and the constraints facing land resources in Africa. This is important in any attempt to manage land resources (as broadly defined below) for the use of present and future generations. However, land resources planning has traditionally focused on the physical attributes of the particular spatial entity. This leads to the neglect of the concerns of stakeholders. Invariably, failure to realise land use planning goals occurs because little or no effort is made to achieve broad social and political consensus regarding the goals of the use of the land. The second objective is therefore to outline the elements of an integrated approach to land use planning and management. For Africa, high population growth and pressure on rural lands is a reality. Also, the basic needs of the majority of the population are yet unmet. Here, it is important to recognise that land resources will continue to be exploited, leading to further land degradation. The goal of any land use plan should focus on achieving sustainability in the satisfaction of the food, fodder and fibre needs of the population.

## **2. Land and Land Resources**

Definitions of land have tended towards a more holistic, integrative view which considers the physical, biological and socio-economic resources of the spatial entity. The land has thus been defined as:

*A delineable area of the earth's terrestrial surface, encompassing all attributes of the biosphere immediately above or below the surface, including those of the near surface climate, the soil and terrain forms, the surface hydrology (including shallow lakes, rivers, marshes and swamps), the near surface sedimentary layers and associated ground water reserves, the plant and animal populations, the human settlement pattern and physical results of past and present human activity (terracing, water storage or drainage structures, roads, buildings, etc.).*

In this respect, land plays a vital role in the economic development process in Africa. For Africa particularly, land is the basis of many life support systems through the production of biomass that provides food, fodder, fibre, fuel, timber and other biotic materials for human use. This production function of land is vital because many African countries rely on primary products for export. For countries like Ghana, Mali, Zimbabwe, Kenya, Tanzania and the Ivory Coast, primary products such as cocoa, coffee, tea and tobacco are major foreign exchange earners. The sustained performance of this function is vital to African development and this provides a compelling reason for conservation, sustainable use, planning and management of land resources. There are other indirect uses of land such as game/nature and forest reserves, which yield substantial economic returns to African nations. Tourism is an important foreign exchange earner for countries in the North, East and Southern Africa regions and the role of forest reserves in the preservation of watersheds cannot be overemphasised. However, human induced land degradation has

been accelerating in Africa and this is associated with the extreme dependence on nature for both domestic food production and primary production for export. The inadequacy of financial resources and legal incentives to manage the land is very pronounced in Africa. The consequence is a serious lack of attention to finding suitable alternatives for land use practices such as slash-and-burn agriculture in the face of increasing population pressures.

### **3. The Land in Africa—an Overview**

The continent covers a total land area of 2 963 468 000 hectares of which 36% is classified as domesticated land. Cropland area in 1984 was estimated at 179,281,000 ha and this increased to 190 022 000 ha in 1994. However, the per capita cropland reduced from 0.34 ha in 1984 to 0.27 ha in 1994. The declining per capita land area reflects in the individual countries. In Ghana, for instance, between 1970 and 1984 there was a four-fold increase in the number of farm holdings under 0.8 ha and a 70% decline in the number of holdings above 2.4 ha. This rapid parcelling of land into smaller units reflects the increasing population pressure and this occurs throughout the continent. Indeed in some countries, the total land under cultivation is declining. In Mali, there is currently a steady shift in the cultivable area further to the south following drought and soil fertility decline in the north. While the issue of whether climatic or human-induced factors are to be blamed for these shifts persists in the debate, there is no doubt that land degradation and water deficits are causing major population movements in the Sahel and Sudanic regions.

The above notwithstanding, the per capita cropland in Africa exceeded the world average (0.25 ha in 1984 and 0.22 ha in 1994) between 1984 and 1994 but this was not reflected in the extent of food security attained. Africa remained the highest net receiver of cereals. In 1983-85 the continent registered net-imports of 6 940 000 metric tonnes (Mt) of cereals, and 3 192 000 Mt were imported in the 1993-95 period—the highest of any developing region. Comparable figures for Central America were 976 000 Mt in 1983-85 and 525 000 Mt in 1993-95. Cereal imports in Africa are expected to triple between 1990 and 2020—imports for which sub-Saharan Africa in particular will not be able to pay for. Agriculture productivity is very low in the continent. The value added in agriculture per head of the economically active population in U.S. dollars for 1990 show the low productivity in African agriculture. The highest productivity occurred in North Africa (Morocco \$1424, and Egypt \$1002) and the lowest in sub-Saharan Africa (SSA) (Nigeria \$485, Kenya \$295, Tanzania \$146, and Ethiopia \$157). These figures are to be compared with the \$3127 for Brazil, \$10 143 for Argentina, \$18 102 for the United Kingdom, \$23 028 for France and \$29 369 for USA.

The continuing position of Africa, especially SSA, as a food deficit continent derives in part from the issue of inadequate management of land resources to improve productivity. Generally, in Africa, where crop production increases occur, this often results from expansions in land area rather than from the intensive use of land. For example, in the Cameroon, the increase in land area dedicated to permanent cultivation is about 8000 ha per year but between 75 000 and 95 000 ha are cleared each year for slash and burn agriculture. At the same time, Africa's average fertiliser usage as well as irrigated land area and agricultural mechanisation are the world's lowest. While the global average for fertiliser use per hectare of cropland was 107 kg/ha in 1984 and 113 kg/ha in 1994, for

Africa, the comparable figures were 19 kg/ha and 18 kg/ha, respectively. This is far lower than the developing world averages of 63 kg/ha and 89 kg/ha during the same period.

Similarly, the global proportion of cropland under irrigation in the 1982-84 period was 17%, which increased to 19% in 1992-94. For the developing world as a whole, the proportions were 21% and 23%, respectively. For Africa, this remained constant at 6% for the period. This is very low when compared with the 26% in India and 44% for China. During the 1992-94 period, out of 48 countries surveyed in Africa, 11 countries had no significant irrigation facilities to report and these include Uganda, Ghana, Togo, Botswana, Cameroon, Chad and the Central African Republic. The others are Congo DR, Benin, Rwanda and Equatorial Guinea. Of the remaining, 21 countries had less than 5% of the cropland under irrigation. SSA particularly stands out as the least irrigated—irrigation covers only 4% of the cultivated area.

The number of tractors in the developing world as a whole increased by 44% between 1994 and 1997, producing a total of 5 730 613 in 1997. The increase in Africa was only 15%, with a total of 539 098 tractors in 1997.

The environmental implications of excessive fertiliser usage, as well as extensive irrigation systems and mechanisation under fragile soil conditions, reveal negative long-term effects on soil productivity. One basic problem is that of the management of the use of these inputs, which for many parts of Africa, and indeed the developing world, has been inadequate. These are all issues relating to how to effectively plan the use of land resources and control that use so as to achieve sustained yield in terms of output and land conservation. Africa's rural environment is at risk because too many farmers are trying to produce more simply by extending traditional low input practices such as shifting cultivation into forest lands, or into drier and more fragile lands, or by shortening fallow times.

There is substantial variation in cropland availability and its quality across the continent and the variation also tends to be well correlated with the annual amount of rainfall. A 1995 FAO study estimates that about 44% of the 1800 million ha of land in developing countries (excluding China) with rainfed crop potential, but which has yet to be used for that purpose, is in Africa. But much of this land is concentrated in a few countries such as Congo DR. Even here a good part of the land is in forest reserves and protected areas and not readily available for agricultural production. There is therefore a serious problem regarding land—its availability, quality and productivity in much of Africa—so that land resources management must assume central place in national resources planning. The rest of this section considers the state of land resources in Africa. This is important because for effective planning and management, one must be very clear of the nature and extent of available resources.

### **3.1. Water Resources**

Water resources planning and management did not assume any significant role in economic thinking until recently, since water was regarded as a free good associated with the land resource. This thinking still permeates much national planning even when quantity and quality issues are emerging in many countries. Water is necessary for

agriculture and without sufficient soil moisture plants cannot survive. It is this added value that the availability of water gives to the land which makes it an essential component of land resources. The issue of inadequate levels of irrigation in Africa contributing to low productivity in rural agriculture particularly in SSA has been mentioned. Africa depends to an unusually high degree on rainfall for agriculture and domestic water requirements so that the vagaries of rainfall have substantial effects on agricultural production and productivity.

Africa is the driest of all the continents and contains about 18 million sq. km of dryland, covering about 55% of the total land surface. Rainfall is generally of the torrential type, particularly in the tropical areas. Africa's rainstorms do not necessarily imply plentiful water supply for agriculture and other uses. Over large areas of the continent, potential evaporation exceeds rainfall. Indeed, only two areas show a net surplus of water—the Guinea zone of West Africa and the Congo-Zaire basin, which receives about 50% of the total water supplied to the entire continent. Much of the rainfall moves by surface and groundwater flow (about 4200 billion cubic metres) back to the sea each year, resulting in a water deficit of more than 1100 mm a year.

For North Africa—one of the driest regions—annual per capita availability of water is expected to decline dramatically by the year 2025. For Egypt, which depends on irrigation water for her entire agricultural production, per capita availability will decline from 1070 cubic meters to 620 cubic meters between 1990 and 2025. The estimated declines for other North African countries are:

- Libya: 160 to 60 cubic meters;
- Tunisia: 530 to 330 cubic meters,
- Algeria: 750 to 380 cubic meters and
- Morocco: 1200 to 680 cubic meters.

Increasing population growth is expected to put these and other countries below the minimum per capita requirement of 1000 cubic meters/year. In North Africa as well as the other dry regions of the Sahel and the savannahs, there is urgent need for prudent management of land resources, especially programmes for water resources management.

The wetter regions of the continent such as equatorial Africa do not face similar water deficit problems for agriculture. The issues to contend with are excessive runoff, given the torrential nature of the tropical rain and the associated soil erosion. In the semi-humid regions of the savannahs, water problems for agriculture and land development relate to the seasonality of rainfall and periodic drought. In the West African savannahs, rainfall is concentrated into just a few months—from one to six months depending on the latitude.

### **3.2. Vegetation**

The role of the vegetation in maintaining soil humus and in the control of erosion is common knowledge. However, the rate of vegetation loss through human activity is increasing the rate of deforestation on the continent. In 1992, Africa's rain forests covered only 7% of its land surface and this represented only 20% of the total global rainforest. Africa's total forests are estimated to disappear annually at the rate of 0.6% to 0.8% of the

total closed forest area, and the forests in West Africa are declining faster. For instance Ghana's woodlands covered 9.1 million ha in 1976 but this declined to 8.7 million ha in 1981. The rate of deforestation between 1981 and 1991 was 2% per annum. From 1987 to 1991, the forest and woodland area declined from 8 280 000 ha to 8 070 000 ha. In the Cameroon, mature forests are being lost at the rate of 10 000 ha per year. By 1940, over 90% of the total land area of the Ivory Coast (318 000sq km) was forested. Currently, the estimates are that just about 20 000sq km of closed canopy forest remain in that country. Rapid deforestation is occurring owing to excessive reliance on wood-based fuels, slash-and-burn agriculture and timber extraction, which occur at rates that exceed the rate of regeneration through both natural processes and re-planting. As forests get opened up and wooded regions reduced to grasslands through the above activities, soils become increasingly exposed to erosion. In the grassland zones, overgrazing contributes to over 50% of land degradation.

### **3.3. Biological diversity**

Deforestation, desertification and general land degradation are also creating immense problems for African flora and fauna and the maintenance of biodiversity. Biological diversity is nature's library of millions of different species and billions of genetically distinct populations on the earth. It is the complex of genetic information, species, and ecosystems, which supplies the raw material that may assist human communities to adapt to future and unforeseen environmental stresses. African countries derive substantial use values as well as non-use values from nature. Economic development policies are threatening this rich diversity through liberal policies in support of export growth as part of structural adjustment programmes now being implemented by many African countries. For instance, annual exports of timber products from Ghana rose from 578 cubic metres to 1.15 million cubic metres between 1984 and 1988. Export earnings increased from US\$13 million in 1982 to US\$133 million in 1991. Domestic consumption of fuelwood rose from 9.6 million cubic metres in 1980 to 12.9 million cubic metres in 1990 as a direct result of withdrawal of subsidies on electricity and natural gas—one requirement of the structural adjustment programme in Ghana. In the Cameroon, economic pressures increased the applications for licences to export parrots (*Psittacus erythracus*) and these applications doubled between 1995 and 1996. Also, trading goes on in reptiles, amphibians, and primates, as well as dried skins of snakes and lizards.

Vegetation clearance of the above magnitudes destroys habitats of various faunas and has implications for rural human populations who depend on forest resources for a living. The economic, scientific, educational, aesthetic and cultural values of nature's library are disappearing at rapid rates. In the sub-humid and dry areas, the fetish grove and other protected areas now provides the only evidence of the nature of the vegetation in the past years of low human interference. Statutorily protected areas are being created by nation states in an attempt to conserve nature, and in Africa, there are currently 746 such areas covering a total of 154 043 000 ha.

Protected areas have not been successful in biodiversity conservation. Poor farmers are known to set up farms in the middle of forest reserves to avoid detection and chainsaw operators illegally fell trees from these reserves. One issue in the conservation of

biological diversity and land degradation generally is to address the causes of poverty so as to reduce the pressure on forest reserves.

### 3.4. African mountains and slopes

Altitude also plays an important role in land management. It is estimated that about 45% of the continent's 30 113 million sq. km consist of slopes of at least 8%. Also about 55% of the continent is higher than 500 metres above sea level, more than 20% is over 1000 metres and about 1% is over 2000 metres high. These statistics show the variety of topography and the susceptibility of much of the continent to erosion, when the slopes are not well protected. Farming practices such as strip farming and ploughing across the contours accelerate erosion and this has been one cause of much land degradation in such areas.

Traditional beliefs that some mountain slopes are the abode of the gods helped to protect these slopes in the past. For instance, the Luguru and Zaramo people of Eastern Tanzania regarded the Uluguru Mountain as the abode of Kolelo (their hero) and thus worshipped and protected the slopes of the mountain. This also helped to protect the headwaters of various streams on which the people depended for irrigation of their vegetable fields. These beliefs may have to be revived with modern explanation of the need to protect slopes to reduce degradation of such fragile lands.

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### **Biographical Sketch**

**Dr Stephen B Kendie** is a Senior Research Fellow at the Centre for Development Studies, University of Cape Coast, Ghana. He holds a Bachelor of Arts (Honours) degree in Geography from the University of Ghana and a Master of Science degree in Regional Planning from the University of Science and Technology, Kumasi, Ghana. He has a doctoral degree in urban and environmental studies from the Rensselaer University, Troy, New York State, USA.