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Issues in Environmental Sustainability in Africa

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Abstract

This paper examines the relationships between agricultural development, population movement, technology, and the human factor on one hand and the environment on the other. The paper argues that, until recently, many states in Africa were not able to appreciate the critical nature of the dialectical relationship between environment and development. Conceptualization of priorities was in terms of economic development which was thought to be synonymous with economic welfare and ultimately social development. Economic growth was perceived as the supreme objective that would bring about progressive reduction and eventual elimination of mass poverty, malnutrition, illiteracy, disease and squalor. The paper shows how uncontrolled developmental activities adversely affect the environment and how in turn devastation of the environment inadvertently affects development. Economic growth is viewed in terms of uncontrolled exploitation of the environment, resulting in deforestation, soil erosion, pollution of water and the atmosphere.

Introduction

The debate on environment and sustainable development in Africa has increasingly attracted the attention of not only governments but citizens as well as non-governmental organizations (NGOs). Until recently, most African states did not realize the impact of environmental degradation on prospects for economic and social development. There was little attention and thought directed towards the devastation of forests, soil erosion, pollution of water and the atmosphere. Also not attended to was resource depletion involving wild life and raw materials among others. There was little realization that such destruction places limits on future development and consequent survival of human beings. Additionally, neither could the states in Africa easily realize that population pressures resulting from rural-urban migration and natural increases can lead to more intensive and uncontrolled use of land and resources making growth and development difficult to achieve.

Perhaps, more importantly, there has been lack of recognition of the basic dialectical relationship between environment and development. For the states in Africa, the concern has been economic growth. Probably this can be appreciated given the pressures which they are faced with in terms of mass poverty, hunger, disease, illiteracy, etc. They have therefore tended to conceptualize their priorities in terms of economic development. This economic development was seen in terms of uncontrolled exploitation of the environment and its natural resources. What was important was economic growth such that the standard of living of citizens improved. Apparently, this development perception was short term and unsustainable. For African countries, this view of development started changing with the economic crisis. The crisis consisted of growing balance of payment deficits throughout Africa. According to the World Bank (Berg Report 1981), foreign exchange reserves fell dangerously low such that by 1980 they were insufficient to cover two months import. Also external debt rose

significantly. Thus, the debt service ratio for African countries importing oil soared from 6% in 1970 to 12.4% in 1979. The major cause of this was the rising oil prices due to OPEC's action and the declining terms of trade for most commodities produced by African countries. These economic difficulties further deteriorated throughout the 1980s. The African Development Bank (1989) indicates that:

"Real per capita income has declined in virtually each year since 1980 and social conditions have worsened, export earnings have fallen precipitously; external debt servicing obligations (in some instances more than 40 per cent of export earnings) continue to limit the prospects for renewed economic growth. During 1980, Africa's population continued to grow at an annual rate of 3 per cent, faster than that of any other region, and with it, drought, desertification and other environmental hazards have become a much too common feature of the African landscape."

The International Monetary Fund (IMF) (1991:7-8) confirms this continuing economic deterioration and the resultant social hardships being endured by the people of the continent. The IMF attributes this gloomy situation, inter alia, to the effects of a drop in the prices of primary commodities such as tea and coffee which fell to the lowest level since 1980, the rise in oil prices during the Gulf War, the rise in inflation, social and political instability and the inability of authorities to implement needed structural adjustment programmes. This crisis has necessitated the intensification of external aid for African countries. This aid, in the final analysis, has since then been linked to environmental concerns. Scandinavian countries, especially, have insisted that African countries should preserve the environment in their developmental efforts. On the whole, the argument that once the ecology is degraded or depleted there can be no economic

development and that not only does the environment affect poverty but that poverty also affects the environment, has come to be appreciated.

In this paper, we explore some of the issues that have emerged in the on-going debate on environmental sustainability in Africa. We focus on the following issues: Agricultural development and the environment; population movements; technology; and the human factor in sustainable development.

The catchphrase in economic growth associated with the environment is sustainable development. Although there are many usages of sustainable development as a concept, it seems to have two core ideas. The first is that it must refer to economic growth which is environmentally friendly. This implies that the economic process, while yielding the necessary benefits, should be able to leave the environment with a capacity for self-generation. According to the World Commission for Environment and Development (1987) the important idea in sustainable development is that today's needs and aspirations are met without compromising humanity's abilities to meet those of the future. The second core idea is that sustainable development must imply unstoppable change and growth in a country's economy (Lee, 1991). Thus, for instance, this implies that a certain growth rate of the economy, (at least above population growth levels), must be maintained.

Any conception of sustainable development has to do with alleviation of poverty. Some observers have conceptualized the source of rural poverty in terms of what happens to the environment. Berstein (1979) argues that in the process of survival, through the indigenous modes of production, labour gets exhausted and hence new modes of production become necessary. However, this, production process, through the use of fertilizers, insecticides, high yielding seeds, tools, etc, become a burden with the returns not commensurate with input investment. Thus, increased commodity production becomes necessary for survival and in the

process undermines the system of production and promotes ecological disaster (see Redclift, 1984).

The other conceptualization is in terms of socio-economic factors which are structurally induced. For example, initially, traditional land tenure systems were adequate and environmentally conducive (Allan, 1965). However, with more economic and population pressures parcelling out of land has restricted peasants and small scale farmers to working the same pieces of land to exhaustion, leading to land degradation in some areas, for example, of Botswana, Zimbabwe and Zambia (along the old line of rail).

Agricultural Development and the Environment

Farming and environmental degradation are said to be dialectically and inextricably linked through a complex of forces (Stocking 1983). The debate is made even more intractable when one considers the fact that the greater part of Africa's raw material wealth is derived from Agriculture (Thomas and Whittington, 1969). However, it is beyond doubt that agriculture in Africa supports majority of its inhabitants. Basically, the many forms of agriculture in Africa include; shifting cultivation, slash and burn, rotational bush fallow, flood land cultivation, mixed farming, subsistence and commercial farming. These methods have inherent limitations. Omara-Ojugu (1992:71) points out that besides the low and poor crop yield these methods lead to deforestation, introduction of harmful chemicals to the soil and water and above all soil erosion and gradual environmental degradation as the fields are made bare of vegetation. High value commercial crops such as cotton, sugar, vegetables and tobacco attract intensive use of insecticide per hectare of crop land. Apparently, different farming systems produce different adverse effects on the forests, soil, water and other aspects of natural resources.

In particular, land tenure is another issue that concerns agriculture development. According to Thiesenhusen (1991), one kind of environmental degradation occurs when people move into both protected and unprotected land areas including natural plains in order to cultivate, graze livestock, harvest or mine products. This may happen, according to Thiesenhusen (1991), when government policies neglect agriculture in situ, actually providing incentive for frontier settlement or failing to enforce access prohibitions to wilderness areas; when capital and appropriate technology are unavailable to intensify existing agricultural areas; when jobs outside of farming are insufficient due to slow industrial development or economic growth that does not reflect true labour abundance; and when harvesting and selling products from frontier regions offer possibilities of economic gain often to large enterprises or speculators. The system of land tenure is crucial in this respect because it is the mechanism through which a population is accommodated outside frontiers, and it is crucial for pushing a population to frontiers in the course of economic and structural change.

Population Movements and the Environment

Over population due to government policy and natural increase may lead to land degradation. Blaikie and Brookfield (1987) point to numerous examples of this during the colonial period in Southern Africa, a phenomenon which still continues to happen today. They point, especially, to the phenomenon of land alienation from indigenous cultivators and pastoralists to settlers, ranchers, planters and the state. For example, in Zimbabwe 6 million hectares, a sixth of the whole country, passed to settlers after 1890. In South Africa, Africans were confined, by the Acts of 1877, 1913 and 1936, to about 12% of that country's land surface. Of this 12%, 44% was in semiarid region. In Swaziland, 63% of the land was similarly alienated. Blaikie and Brookfield (1987) contend that this land alienation led to instant over population in relation to resources. In some parts of Zambia, such a situation reduced fallowing periods and degradation set

in. When the issues of over population is combined with commercialization, the effects become even more pronounced as in East Africa, Botswana and Swaziland (Blaikie and Brookfield, 1987).

Migration of able bodied individuals may also adversely affect the ecology. A case in point concerns the Lozi of Zambia's Western Province. The Lozi live in a swampy area which occasionally gets flooded. Their response was the development of intensive system of swamp cultivation which relied on drains to keep the desired water levels. After 1940, about 12% of the Lozi labour power was being lost to South African mines, farms and towns. Consequently, most of the drains were neglected, large areas fell into disuse and constant food shortage set in. Migration from rural to urban areas is still continuing. This migration is selective of people who are able bodied, young, wealthier, relatively well educated and more ambitious. These are the ones with the capacity for utilizing environmentally friendly agricultural practices and adopting soil conservation measures.

Population growth in the context of the requirements of human survival leads to much of the deterioration of the environment. For example soil erosion has many causes stemming from the pressure to make the land sustain human life. International Development Research Centre (IDRC) 1992:43 indicates:

Soil erosion has many causes: we cultivate steep, marginal lands without adequate terracing; practice inexpert irrigation; allow live stock to over graze grasslands. We also overwork the soil and eliminate tree cover, whether forests or shelterbelts.

Population and the Environment

In some part of the world notably Sub-Saharan Africa, population growth rates remain high while food production per capita is falling (Degregori, 1985). In this situation people are moving with marginal lands because of inadequate food and/or employment opportunities. In this region a static technology, coupled with a growing population is destructive of the environment, sometimes irreversibly. To this end Repetto (1983) has argued that in Sub-Saharan Africa, especially in the Sahel a growing population together with the intensification of commercial cattle production and groundnuts were important factors leading to the economic and ecological collapse during 1973-75 drought.

Technology and the Environment

One important variable between humans and the environment is technology. It is through technology that humans eke a living from the environment. Through this process they also impact on nature. The effects of societal interaction with nature through technology in turn affects human welfare. According to Redclift (1984) a definition of technology should include the ideas, values, philosophy and the social organizing associated with the hardware. Technology may be defined as a learned means by which human beings utilize their environment to satisfy their wants and cultural desires (Degregori, 1985).

Imported technology has also contributed to underdevelopment and rural poverty which in turn has detrimental impact on the environment. Steward (1977) points to four factors which demonstrate this. First, technology has to be transferred as a whole package which must be accepted or rejected. Piece meal transfer and acceptance renders it meaningless and counter productive. Second, the trend towards imported technology is facilitated by a selection process biased towards this type of technology and also favours entrepreneurs who use it, and therefore

get control of resources associated with it. In this sense, an environment is created which favours further development and maintenance of the imported technology. In this case, other more productive or effective technologies are neglected or rejected. Third, many African countries are adopting imported technologies without the associated organizational framework. Where conditions exist for the adoption of the organizational framework, this leads to technological dependence irrespective of how ill adapted the imported technology is. Fourth, imported technology tends to consume large amounts of resources to the neglect of other sectors and thus reinforcing inequalities.

Successful applications of technology has brought large land area into cultivation, increased crop and land yields and developed high yielding varieties. At the same time increasing use of irrigation, fertilizers, mechanization etc. has contributed to the loss of traditional bio-diversity with respect, especially, to food stuff varieties. For example only 10% of traditional varieties of rice, barley, and sorghum and 1% of cowpeas are estimated to still exist. It is argued that as modern crop varieties and monocultures take root and replace traditional farming methods, forests are cleared and destroyed, more and more people migrate into the cities and environmental degradation sets in both in rural and urban areas. The future of agricultural lands and food production seems bleak given the global climatic changes and associated droughts.

The Human Factor in Sustainable Development

Human factors in sustainable development mainly pertain to government policy. Policy failures or lack of them may have dire consequences for the environment. Bojo (1991) claims that:

There are a number of instances that government policy fails to encourage improved land management or actively

encourages land degradation. Policy failure has traditionally been given less attention than market failure (p.77).

However, this perception is changing. Thus, for instance, the perception of government has shifted during the past decade; where government was once seen as a catalyst for development, many now think it an obstacle International Bank for Reconstruction and Development (IBRD) , 1989, p. 1.

For example, one glaring failure of policy is with regards to energy. In most African countries the rural poor's principal source of energy is fuel wood. Available indications point to rapid depletion of forests. The evidence for this is that people are spending larger amounts of time looking for fuel wood and making it available for consumption. Thus, Food and Agricultural Organization (FAO) (1978) argues that fuel wood is so scarce in the Gambia that gathering it takes 260 woman days a year per family. Similarly, the labour time devoted to fuel wood collection in the African Sahel seriously disrupts household production (Redclift, 1984, p. 27). Yet African governments have not taken any serious measures to regulate the use and availability of fuel wood.

It is clear that there are serious ecological consequences associated with this deforestation. Nutrients are held in the biomass rather than in the soils which are quite poor.

Thus the removal of the biomass, and the changes in the soil threaten the very environment which made the tropical forests highly productive. As a result, agricultural yields, which are often rather low, particularly in Africa, quickly fall and deforestation proceeds faster still (Redclift, 1984 p. 26).

This environmental damage also affects slopes, hilly areas and watersheds. This environmental degradation, in terms of fuel wood, is linked to the process of production and consumption. The production of charcoal and hence deforestation is intensified where urban consumption is present and demands are high. As Gamser (1990) puts it, urban energy supply is at the expense of rural resource requirements.

Another example of government policy concerns ranching. For example in Botswana in 1987 the government launched the Livestock Development Project (LDPI) and implemented it over a five year period. It was intended that commercial ranchers would provide a demonstration effect as to the benefits of fencing and the use of modern methods. This LDPI was subsumed by the Tribal Grazing Land Policy in 1975 which also encouraged ranching (White, 1992).

White (1992) has pointed to the lack of relationship between livestock production and changes in grassland species composition. Whereas he denies that overgrazing is leading to severe degradation of rangeland in Botswana, others see a clear link between the two processes. Thus, Abel et al., (1985) and Blaikie and Brookfield (1987) have claimed that the introduction of ranching has brought in an element of commercialization which has led to harmful effects on the environment. Particularly, increasing commercialization encouraged by European Economic Council (EEC) subsidy has replaced communal livestock management with individualistic competitive behaviour. Many farmers want to maximize their stocks. In the Ngwaketse District, Abel et al. (1985) found that increased cattle population reduced grass cover and encouraged soil erosion which in turn reduced the productivity of the grass and cattle. Similar situations have been reported in Swaziland and East Africa (Blaikie and Brookfield, 1987, p. 108).

Conclusion

From the discussion we discern four areas linking environment to development. With regards to farming systems, there is need for appropriate measures to ensure sustainability of each farming system. Each farming system has the capacity to degrade the environment under certain conditions. Thus, there is the need to explore the conditions under which each type of farming system can be undertaken with less harm to the environment; and encourage farming under those conditions. In the short term there is need to balance out the requirement of the three farming systems in order to soften the impact of uncontrolled environmental degradation.

Sustainability is also affected by the consequences of population concentration in terms of carrying capacity of the land. There is the need for government policy to balance land resources and populations i.e. not too many people as to put undue pressure on land resources, or too low a population as to impede conservation measures. Societies must recognize and appreciate the fact that technology can, and often produces negative effects on the environment in ways which are unsuspected. The concept of sustainability should be part and parcel of every government's developmental effort.

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