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Perspectives on Soil erosion in Africa:
Whose Problem?

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This Gatekeeper Series is produced by the International Institute for Environment and Development to highlight key topics in the field of sustainable agriculture. Each paper reviews a selected issue of contemporary importance and draws preliminary conclusions of relevance to development activities. References are provided to important sources and background material.

The Swedish International Development Authority (SIDA) funds the series, which is aimed especially at the field staff, researchers and decision makers of such agencies.

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PERSPECTIVES ON SOIL EROSION IN AFRICA: WHOSE PROBLEM?

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There is considerable disagreement in the scientific community due to the lack of quantitative data regarding both the extent and rate of soil erosion. There are also no formal models which can use what little quantitative data does exist to establish a relationship between erosion and productivity decline.

There are also differences in interpreting the data available. Some argue that the land resource is being degraded at a rate that threatens future agricultural production, while others argue that land use has become increasingly intensified for thousands of years and that changing technology can compensate for the negative effects of soil erosion. (For more detail see Blaikie, 1985 and Bojo, 1988).

Even if we are unable to quantify the seriousness of the soil erosion problem in Sub-Saharan Africa, common sense tells us that animal and crop production must be more difficult if the land resource is degraded. The debate on the ability of technology to compensate for erosion should, however, remind us that land quality is but one factor in the agricultural productivity equation. It must be emphasized that the natural base is a necessary but not sufficient condition for agricultural growth.

Africa is beset by a variety of problems in addition to soil erosion, and they are more or less serious depending on the perspective and values of the observer. It is the aim of this paper to examine soil erosion as it fits into the problem hierarchy of the farmer, the government and the donor and to try and understand why these different actors place different priorities on land husbandry activities, including sustainable agriculture programmes.

All too often the problems of Sub-Saharan Africa have been identified by outside agencies, and soil erosion is no exception. This bias has distorted our understanding of the problem so significantly that farmers find many donor remedies irrelevant.

Farmer Perspectives

While peasant farmers, who dominate African agriculture both in terms of number of producers and proportion of output, are not irrational, they place more emphasis on short-term planning than do governments and donors. From the point of view of the farmer, the strategy is one of minimising risk, guaranteeing subsistence and generating cash income simultaneously. This can be summarized as 'reliable multi-purpose production'.

This means that farmers are motivated to participate in soil conservation work when they perceive erosion to be an immediate threat to their livelihood. Investments in land husbandry measures, including the labour input, must be profitable in the short run and not represent a total break with traditional farming practices. This reduces risk for the farmers and enables them to satisfy immediate subsistence needs (Wenner, 1989).

Government Perspectives

It has been argued that African governments have pursued 'cheap food policies' and preferred to invest in the industrial rather than in the agricultural sector. Their political base is rarely in the rural areas, and natural resource degradation does not pose a short-term threat to their survival.

Given the short-term perspectives of governments and the largely urban power bases from which they draw their strength, it is not surprising that conservation for conservation's sake is not on their list of priorities. However, when declining agricultural productivity becomes a problem, either in terms of lack of food or a balance of payments deficit, the agricultural sector becomes politically interesting. Even at that stage land quality will be only one of several major factors (inputs, infrastructure, technology, prices, etc.) which need to be addressed in efforts to improve agricultural growth rates.

From the government point of view, raising yields on land with good agricultural potential offers the best opportunity for increasing output rapidly, rather than bringing poorer lands into cultivation at even higher costs. If better soils were used up to their yield potential, then pressure on marginal lands would subside (Repetto, 1986).

Distinguishing high and medium potential agricultural areas from marginal areas is important in determining the cost-effectiveness of soil conservation efforts. Without a measure of cost-effectiveness, these efforts will be neither self-sustaining nor interesting to governments.

The investment perspective of private companies, while narrower and less political than that of governments, is similar in nature to the government perspective. The role of private companies (other than farms) is not dealt with specifically in this paper as it is less important in the agricultural sector than, say, in the forestry sector. The relative role played by large enterprises in soil degradation, compared with small farmers, is discussed in Blaikie (1985).

Consideration of off-site costs such as water pollution and flooding can draw government attention to the problems of soil erosion. In the US, water pollution is considered to be a more serious cost of cropland erosion than crop production losses (McConnell, 1983). This may also be the case in Africa (Crosson, 1986). The initiation of soil conservation efforts in the Machakos district in Kenya came about in part because of downstream siltation from the area which discoloured sea water and beaches in an important tourist area. Loss of income from coastal tourism was serious enough to warrant soil conservation investments where cost was not always in relation to the on-site reclamation effects (Wenner, 1989).

Donor Perspectives

The donor does not have either subsistence or political survival to worry about, and can look at the long term. This enables the donor to define the problem as one of achieving 'sustainable growth'.

The donor perspective was originally highly coloured by the colonial experience. Land degradation was perceived as a physical problem caused by the "backward and ignorant" practices of local farmers. The immediate solution was to create soil retaining structures, such as terraces and contours, often ignoring the lack of cooperation, or even outright opposition of local farmers. In the long term farmers could be "enlightened" as to the proper way to cultivate and protect their land from erosion.

The colonial approach failed largely because of its limited focus on the physical damage caused by inappropriate land use (i.e. erosion). Efforts were then directed at eradicating a symptom instead of analysing the underlying socio-economic reasons behind destructive land use and trying to change the framework for individual behaviour. Nor was the problem of erosion often analyzed from the perspective of the farmer, which meant that solutions proposed were unappealing or unacceptable.

While colonial strategies tended to ignore farmer perspectives, they also have tended to obscure the fact that the "authorities" responsible for implementing soil conservation in post-independence Africa now belong to two distinct categories. Perhaps as a result of the colonial experience, there is little understanding in the literature for the significantly different perspectives of governments and donors. While what could be called 'political constraints' on the donor are fewer, the options for action are limited. A recent review of soil conservation projects in Lesotho concluded that there were two ways for outsiders to intervene in rural resource development: either to assist community and grass-roots efforts to deal step-by-step with their environmental problems or to subsidize the creation of a physical environment that arrests further degradation (Swedforest, 1988).

Working with communities in participatory planning exercises over long periods of time is something that most bilateral aid agencies do not have the administrative resources to carry out, except on a pilot basis. Large scale participatory efforts would require considerable adjustments in the working routines of any such agencies. These have not been attempted thus far and are probably unlikely to be realistic in the near future.

Creating oases of 'protected' lands which would then be managed intensively by a donor until such time as governments and farmers can afford to be less short-sighted in their priorities is not an appealing alternative for practical reasons. This also assumes that all of the long-term wisdom in planning rests in the hands of donors.

These choices highlight the basic dilemma of aid donor initiated land husbandry; methods which are likely to encourage the local community to manage natural resources wisely are difficult to administer and time consuming. Methods which arrest the physical degradation process at the speed preferable from the point of view of the donor are not likely to be either self-perpetuating or cost effective in the long run.

Summary of Perspectives

It is important to keep in mind that farmers, governments and donors might have different reasons for engaging in land husbandry. Farmers want a return on their investment and prefer to avoid risk. They plan and operate in the short term.

Governments are interested in the health of the national economy and staying in power, often by creating patronage bonds with powerful groups. They also must be very aware of the short-term.

Aid donors do not suffer the same serious economic or political consequences as farmers and governments in the event of failure. They are able to be more concerned with the long-term planning horizon than the other two, and have not been overly cost conscious in conservation efforts thus far.

Too little thought has been given to legitimate short-term needs of farmers and governments by donors designing sustainable agriculture and other environmental protection programmes.

Farmers usually do not perceive soil erosion to be their major problem and they are seldom in a position to directly benefit from investments in sustainable agriculture programmes. The government rightly sees more efficient ways to achieve the quick increases in agricultural production necessary in the current climate of political and economic crisis.

The task of making investments in sustainable agriculture profitable in the short run for both farmers and governments is not any easy one. This is all the more true in light of how little we know about the costs of soil erosion, either at the farm level or the national level.

In the light of all this what can be done?

Less Emphasis on Top Down Approaches

The failures of the colonial period onwards are sufficient evidence that farmer priorities should be known and respected.

Planning and Implementation Should be Based on Better Information

More research is needed in the following areas:

- soil loss/soil productivity relationship

Virtually nothing can be said about the cost effectiveness of soil conservation efforts until such research has been carried out.

- macroeconomics of erosion/degradation

There is virtually nothing written about the national costs of soil erosion. It will continue to be difficult for policy-makers to rank erosion with the other 'crises' facing African governments as long as it is not capable of being discussed in economic terms. Efforts to quantify the economic magnitude of the erosion problem may be a first step in generating the necessary political will to invest in its solution.

- microeconomics of erosion/degradation

Experience has shown that farmer motivation is an important factor in successful soil conservation. There are very few studies of the farm level economics of soil conservation but many examples where 'back of the envelope' calculations made in situations where farmers are reluctant to adopt soil conservation practices have revealed that the benefits to the farmer are not sufficient to reimburse labour costs.

- off-site effects

In addition to establishing the economic value of production losses from land degradation, which would appear to be research priority number one in Africa, more light should be shed on the value of off-farm losses. Besides being substantial, these are the type of costs which are likely to be borne either directly by the government or by more politically influential groups than peasant farmers.

- indigenous conservation techniques

Successful soil conservation projects have taken into account the tendency of the small farmer to avoid risk. The easiest way to encourage farmer participation (and to insure that a method is sound!) is to modify practices which are already well known to the farmer. There is a great need to make an inventory of existing conservation practices and see to it that those involved with soil conservation from government agencies and donors are aware of the knowledge which farmers already possess. The lack of communication is a serious flaw in the planning stage of many soil conservation projects.

Different Actors Should Have Different Roles

There should be clear division of conservation responsibility between the state and the individual. This is because soil erosion is is a process with long term costs to society whose eradication is a cost all too often borne by individuals in the short term.

Where soil conservation measures are not profitable in the short term and/or farmers are not interested, then the state will have to assume financial and maintenance responsibility.

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Sustainable Agriculture and Rural Livelihoods Programme

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The Sustainable Agriculture and Rural Livelihoods Programme of IIED promotes and supports the development of socially and environmentally aware agriculture through policy research, training and capacity strengthening, networking and information dissemination, and advisory services.

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