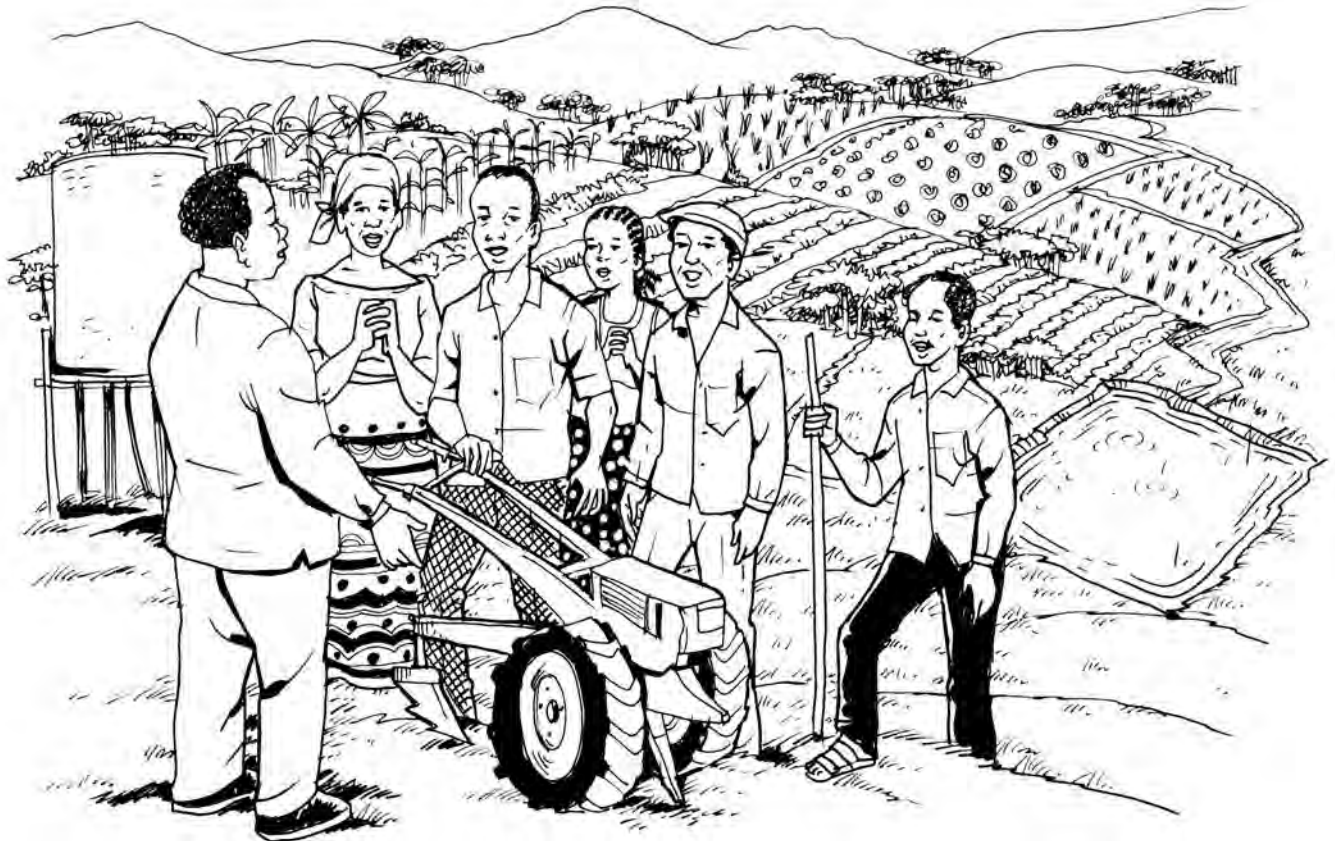


Conserving Soils

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Economic Incentives for Soil Conservation in East African Countries



The effort to reconcile the three objectives of increasing agricultural production, reducing poverty, and ensuring sustainable use of natural resources has been a continuing battle in many developing countries. Many developing countries are confronted with problems of increasing population pressure on an already degrading land resource, worsening poverty, and declining per capita food production. With shrinking land frontier, increases in agricultural production need to come from improvements in land productivity (Eicher, 1994). However, significant increases in agricultural productivity cannot be attained if the land resource base is degrading.

Hence, the sustainable use of land resource constitutes the key constraint to agricultural growth in these countries. Land degradation, especially in the form of soil erosion, nutrient depletion, and soil moisture stress, is particularly severe in the highlands of the East African countries of Ethiopia, Kenya, Tanzania, and Uganda. These highlands have high agricultural potential but have been experiencing severe land degradation. Land degradation has been identified as the most severe environmental problem in these countries since the early 1970s (Jones, 2002; Mbagalawwe and Folmer, 2000; Gebremedhin, 1998; Stahl, 1993; Zake, 1992).

Use of economic incentives

Upon realizing the severity of land degradation in the early 1970s, the East African countries have embarked upon a series of initiatives for soil conservation (Stahl, 1993). Soil and water conservation and afforestation projects and programs have been widely used in Ethiopia, Kenya, Tanzania, and Uganda. Mostly supported by donor funding, these initiatives involved economic incentives to land users to conserve soil.

The use of incentives for soil conservation has perhaps been most widespread in Ethiopia, a country where land degradation is also most severe among the East African countries. The Ethiopian policymakers had largely ignored the problem of land degradation until the 1970s, after which national efforts for soil conservation expanded rapidly. Compensation for labor, especially in the form of food-for-work (FFW) and, in some cases, cash-for-work (CFW), has been the main direct economic incentive used for soil conservation in Ethiopia. Apparently, the 1974 drought provided the initial motivation for the mobilization of the rural labor force for conservation in the country using FFW programs. In addition to FFW and CFW programs, tree seedling distribution at minimal prices for private use and free of charge for use in community lands has been another direct economic incentive.

In spite of the rich indigenous knowledge of soil conservation throughout Ethiopia, the FFW-based soil conservation programs were aimed at promoting “new” or “improved” soil conservation practices, which were based on little prior research and scientific base. The programs were fundamentally top-down, with little involvement of local beneficiaries. Moreover, the programs focused on promoting conservation practices on community land, with minimal consideration given to individual farms. The lack of prior research and scientific base of the soil conservation programs was also manifested in the little consideration given to conservation needs at the watershed level. As a result, most farmers considered the FFW projects as sources of employment with little connection to the objective of soil conservation in the long run.

The difficulties encountered by the Ethiopian programs during their initial stage of implementation

led to the realization of the need for beneficiary participation in the planning and implementation of conservation programs and projects, including the adaptation of conservation technologies to local conditions. As a result, several participatory approaches were used for soil conservation. However, the extent of farmer participation and the impact of these approaches on adoption of conservation practices were limited, as real involvement and participation of farmers could not be realized.

Alongside the effort by the government organizations, NGOs have also been very active in the area of soil and water conservation in Ethiopia. The approach used by the NGOs has largely been based on compensation for labor and technical assistance, which is basically the same approach used by the government programs. As in most government programs of soil conservation, beneficiary involvement and participation in the planning and implementation of the programs and projects run by NGOs have also been limited.

The use of indirect incentives for soil conservation in Ethiopia has been very low. Although the government extension service included sustainable natural resource management as one of its activities, in practice, the focus largely remained on improved crop and livestock production. The major bottleneck for soil and water conservation in Ethiopia has, perhaps, been the lack of land tenure security of farmers. Agricultural land in Ethiopia belongs to the state and farmers have only usufruct rights. Several researchers have documented that insecure land tenure is an important factor inhibiting farmer investment in soil conservation practices (Gebremedhin and Swinton, 2003; Gebremedhin et al., 2003; Alemu, 1998). However, no significant efforts have been made to improve land tenure insecurity in Ethiopia until recently.

Another indirect incentive that has been used since about 1996, especially in the northern highlands, is the distribution of communal degraded land for private tree plantation. This policy assumes that farmers would have better incentives to conserve the soil, and plant and care for tree seedlings, if the plantation is for private (rather than communal) use. The experience to date indicates that such policy can in fact produce encouraging results, perhaps reinforcing the argument of many researchers for the need to improve land tenure security of farmers as an incentive for farmers to invest in soil conservation.

As in Ethiopia, land degradation was identified as the most severe environmental problem in Kenya by the early 1970s. The Kenyan government soon set up a soil and water conservation branch in its Ministry of Agriculture, assisted by funding from the Swedish government. Kenya established a National Environmental Secretariat and a Permanent Presidential Commission on Soil Conservation and Afforestation in the mid-1980s. In 1989, the government established a Ministry for Reclamation and Development of Arid, Semi-arid and Wastelands (Stahl, 1993).

Alongside the focus on institutional development for soil conservation, Kenya started a soil and water conservation project with technical and financial assistance from Sweden in 1974. The project later expanded into a full-fledged National Soil Conservation Program covering the whole country (Mbegera *et al.*, 1992). The direct incentives used in the Kenyan soil conservation efforts included FFW, provision of hand tools, and materials for on-farm gully control. Unlike Ethiopia, the Kenyan approach to soil conservation emphasized indirect incentives such as training, technical assistance, and extension services, and it focused on private farms. By 1993, more than 18,000 agricultural officers were trained in soil and water conservation and it is reported that more than 1 million farmers had adopted conservation practices by then (Stahl, 1993). However, about two-thirds of Kenya's small farms that needed conservation were yet to be reached. The focus on individual farmers was later replaced by the catchment approach, since it was felt that the on-farm approach was slow and scattered. Earlier evaluation of the adoption of soil conservation practices at the farm level showed that the areas where adoption of soil conservation was higher were those where farmers had secure land tenure rights.

Several factors have contributed to the limited success of soil conservation in Kenya (Bryan and Sutherland, 1992). Despite the emphasis given to indirect incentives, these were deemed inadequate. Owing to the limited research on land management and soil conservation, the conservation practices suffered from lack of sound scientific and technical basis. Perhaps more important has been the lack of involvement of beneficiaries in the planning and implementation of conservation projects and programs.

The legacy of forceful implementation of conservation requirements in Tanzania during the British colonial

rule resulted in the unpopularity of conservation efforts soon after independence in 1961 (Mbaga-Semgalawe and Folmer, 2000). Areas formerly prohibited from cultivation started to be cultivated, and agricultural development and research programs opted not to emphasize soil conservation. However, not after too long, the continued acceleration of soil erosion forced the Tanzanian authorities to refocus on soil conservation (Misana, 1992; Mndeme, 1992; Rugumamu, 1992). Hence, as in the other East African countries, soil conservation programs have expanded rapidly in Tanzania since the 1970s.

In 1979–80, the Tanzanian government, in collaboration with the Regional Integrated Development Program supported by the technical aid program of Germany (GTZ), initiated an integrated Soil Erosion Control and Agroforestry Program to promote soil conservation in the west Usambara mountains. In 1989, the Dutch government initiated an irrigation development program, which included soil and water conservation as a major objective. In 1992, GTZ initiated the Tanzanian Forest Action Plan in the Pare mountains, with soil conservation as its major component.

To encourage the adoption of soil and water conservation practices in Tanzania, these programs provided various types of incentives to farmers. The direct incentives used by the programs included the provision of implements and farm inputs such as improved seeds at subsidized prices. The indirect incentives used included revitalization of the traditional labor-sharing groups to reduce the problem of labor shortage; the establishment of village-level land use planning committees responsible for planning and implementation of soil and water conservation activities; the establishment of village tree nurseries for afforestation purposes; the provision of technical assistance for soil and water conservation; and field tours, training, and the provision of information. An assessment of the factors associated with the adoption of soil conservation technologies promoted by these programs indicated that awareness of soil erosion problem, participation in promotional activities of soil and water conservation, and participation in labor-sharing groups enhanced adoption (Mbaga-Semgalawe and Folmer, 2000).

As in Tanzania, efforts to conserve soil in Uganda started during the colonial period (Tukahirwa, 1992). The British Protectorate realized the need for soil conservation in 1940. Soil conservation

bylaws were instituted at the district level in 1956, and chiefs were responsible for enforcing the by-laws (Zake, 1992). However, the extension services for soil conservation during this period were based on implementing compulsory, legally enforced requirements, which was highly resisted by farmers and led to the rejection of soil and water conservation practices soon after independence (Tukahirwa, 1992).

After independence, a number of soil conservation projects, mostly funded by donors, were implemented in Uganda. In 1986, Uganda established its Ministry of Environmental Protection with the mandate for soil conservation. While the establishment of this public body provided for a unified authority responsible for soil conservation, the lack of coordination among the activities of the different ministries related to soil conservation activities is said to be one reason for the lack of effective soil conservation in the country (Zake, 1992). Other national issues related to the ineffectiveness of soil conservation include ineffective extension service, lack of appropriate mix of soil conservation technologies (e.g., physical versus biological), and the difficulty to implement government policy on land across the diverse land tenure systems (customary, freehold, "Mailo," and leasehold systems) (Zake, 1992).

Conclusions

In the East African countries, direct incentives for soil conservation have been mainly aimed at mitigating the effect of the proximate causes of land degradation. The FFW and CFW projects and programs were targeted at constructing soil conservation structures or establishing biological means of soil conservation, in a direct attempt to curb soil erosion. Such an approach failed to realize the role of the more important causes of land degradation—the underlying factors. Hence, the mixed success of most incentives for soil conservation in the East African countries appears to arise from the use of inadequate and inappropriate use of incentives.

Perhaps the most important factor inhibiting farmer investment in soil conservation in the East African countries has been land tenure insecurity, since farmers cannot be expected to invest in long-term soil conservation structures such as stone terraces that have long-term pay-off, unless they are secure

of their tenure for a long-enough period. However, improving land tenure security of farmers as an indirect incentive for soil conservation has not received due attention in these countries.

The low profitability of conservation practices and the absence of adequate short-term benefits from soil conservation have been important factors that detracted from the sustainable use of soil conservation practices. To encourage soil conservation at the farm level, several factors, which either raise the discount rate of farmers or reduce the profitability of conservation practices, need to be considered in designing incentives. Market infrastructure development or price support schemes could improve profitability. In this regard, cross-compliance measures that link price support with conservation would increase the profitability as well as the desirability of soil conservation. Economic incentives for soil conservation could be more effective if they are designed as part of the overall agricultural development strategy. The design of future incentives for soil conservation needs to depend on using the appropriate mix of direct and indirect incentives. While direct incentives could be useful for demonstration and technical support purposes, the sustainable use of soil conservation practices is likely to depend more on the appropriate use of indirect incentives.

Source

Conserving Soil and Water for Society: Sharing Solutions, by B. Gebremedhin. International Livestock Research Institute (ILRI), Addis Ababa, Ethiopia. ISCO 2004 - 13th International Soil Conservation Organisation Conference - Brisbane, July 2004.

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