

ECONOMIC INCENTIVES FOR SOIL CONSERVATION IN THE EAST AFRICAN COUNTRIES

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Abstract

Land degradation, especially soil erosion, soil nutrient depletion and soil moisture stress, is a major problem confronting many East African countries. Several different types of direct economic incentives have been used to develop the ability and willingness of farmers to use soil conservation practices. The most widely used direct economic incentives have been compensation for labour and support with equipment. While the incentives have enabled the construction of massive soil conservation structures and the use of biological means for soil conservation, the continued use of the practices once interventions phased out had been low. In response, different countries attempted to combine incentives with participatory approaches to soil conservation. However, real participation of beneficiaries has not been realized in many of the East African countries. Perhaps as a result, the adoption of soil conservation practices remains low. Moreover, the use of indirect economic incentives such as credit supply, extension services, taxes, input and output price support and market development has been limited. These experiences indicate that there is a need to use both direct and indirect incentives combined with real participation of beneficiaries if effective and sustained soil conservation effort is to take place.

Additional Keywords: land degradation, soil conservation, direct economic incentives, indirect economic incentives, participatory approaches

Introduction

The effort to reconcile the three objectives of increasing agricultural production, reducing poverty and ensuring sustainable use of the 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 increase in agricultural productivity can not be attained if the land resource base is degrading.

Hence, the sustainable use of the land resource constitutes the key constraint in 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; Mbagala-Semgalawe and Folmer, 2000; Gebremedhin, 1998; Stahl, 1993; Zake, 1992).

The causes of land degradation in the East African countries can be grouped in to proximate and underlying factors. The proximate causes of land degradation include cultivation of steep slopes and erodible soils, low vegetation cover of the soil, burning of dung and crop residues, declining fallow periods, and limited application of organic or inorganic fertilizers. The underlying causes of land degradation include such factors as population pressure; poverty; high costs or limited access of farmers to fertilizers, fuel and animal feed; insecure land tenure; limited farmer knowledge of improved integrated soil and water management measures; and limited or lack of access to credit. The proximate causes of land degradation are the symptoms of inappropriate land management practices as conditioned by the underlying factors. Hence, efforts for soil conservation need to address the underlying causes primarily, as focusing on the proximate causes would mean addressing the symptoms of the problem rather than the real causes.

Farmers' land management decisions are ultimately the result of the balance between incentives and disincentives. The purpose of policy instruments for soil conservation is, therefore, to expand the set of sustainable land management options and improve the returns to farmers from using such practices, while mitigating the impact of constraints or providing disincentives to unsustainable land management practices. Economic incentives have been widely used policy instruments for soil conservation in the East African countries. This paper discusses the types economic incentives used in the East African countries in order to assess their success in the continued use of soil conservation practices at the farm level. The paper concludes with suggestions for improved performance of the incentives.

Use of Economic Incentives in the East African countries

Upon the realization of the severity of land degradation by the early 1970s, the East African countries have embarked upon 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 policy makers 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 incentives used for soil conservation in Ethiopia. Apparently, the 1974 drought provided the initial motivation for the mobilization of rural labour force for conservation in the country using FFW programmes. In addition to FFW and CFW programs, tree seedlings distribution at minimal prices for private use, and free of charge for use in community lands, has been another direct economic incentive used for soil conservation in the country.

Despite the rich indigenous knowledge of soil conservation throughout Ethiopia, the FFW-based soil conservation programmes were aimed at promoting “new” or “improved” soil conservation practices, which were based on little prior research and scientific base. The programmes were fundamentally top-down, with little involvement of local beneficiaries. Moreover, the programs focused on promoting conservation practices on community lands, with minimal consideration given to individual farms. The lack of prior research and scientific base of the soil conservation programs was also manifested by 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 programmes during their initial stage of implementation led to the realization of the need for beneficiary participation in the planning and implementation of conservation programmes 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. About 42-58% of all NGOs operating in Ethiopia has been involved in soil and water conservation. However, the approach used by the NGOs has largely been based on compensation for labour and technical assistance, which is basically the same approach used by the government programmes. 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 has 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 lands 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 (Stahl, 1993). In 1989, the government established a Ministry for Reclamation and Development of Arid, Semi-arid and Wastelands (ditto).

Along side the focus on institutional development for soil conservation, Kenyan 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 effort included FFW, provision of hand tools, and materials for on-farm gully control. Unlike Ethiopia, the Kenyan approach to soil conservation emphasised indirect incentives such as training, technical assistance and extension services, and 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 one million farmers had adopted conservation practices by then (Stahl 1993). However, about two-thirds of Kenyan small farms who 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, the incentives were deemed inadequate. Owing to the limited research on land management and soil conservation, the conservation practices suffered from the 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 emphasis 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 (SECAP) to promote soil conservation in the west Usambara mountains. In 1989, the Dutch government initiated an irrigation development program, which included SWC as a major objective. In 1992, GTZ initiated the Tanzanian Forest Action Plan (TFAP) in the Pare mountains, with soil conservation as its major component.

In order to encourage the adoption of SWC practices in Tanzania, these programs provided various types of incentives to farmers. The direct incentives used by the programs included the provision of implements for SWC and farm inputs such as improved seeds at subsidized prices. The indirect incentives used included revitalization of the traditional labour sharing groups to reduce the problem of labour shortage; the establishment of village-level land use planning committees responsible for planning and implementation of SWC activities; the establishment of village tree nurseries for afforestation purposes; the provision of technical assistance for SWC; 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 SWC and participation in labour sharing groups enhanced adoption (Mbaga-Semgalawe and Folmer, 2000).

As in Tanzania, effort 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 by-laws were instituted at 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 SWC 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 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 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 level issues related to the ineffectiveness of soil conservation include ineffective extension service, lack of appropriate mix of soil conservation technologies (eg. 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 can not 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 has been another important factor that detracted from the sustainable use of soil conservation practices. In order to encourage soil conservation at the farm level, several factors that 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 demonstrational and technical support purposes, the sustainable use of soil conservation practices is likely to depend more on the appropriate use of indirect incentives.

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