



Social perception of soil conservation benefits in Kondoa eroded area of Tanzania

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Abstract

A soil conservation project was implemented in Tanzania for over 30 years. This study applied a socio-economic approach to examine and analyse the benefits of soil conservation in the Kondoa eroded area of Tanzania by conducting a household survey of 240 households. The study findings show that 89% and 70% of respondents consider soil conservation activities have increased vegetation and soil fertility, respectively. Decreased soil erosion was perceived by 68% of respondents, increased firewood by 98%, increased fodder by 50%, high crop yields by 56%, and food sufficiency by 68%. These are the outcomes of conservation tillage, integrated farming and use of organic fertilizers, controlled stall feeding, agroforestry, construction of cut off drains, contour bunds and contour ridges cultivation, which are the main land use practices in the area. Access to extension services, household sizes, long term land ownership, crop incomes and awareness of soil conservation project were found to determine the level of participation in soil conservation. Major challenges are the lack of sustainability of those activities because of a recent policy decision to withdraw conservation investment. Despite the challenge, this study concluded that past government efforts on soil conservation activities initiated since the early 1970s through decentralization, institutional collaboration, socioeconomic support to farmers and continuous local community participation in restoring the degraded ecosystem of Kondoa have contributed to ensure environmental and socio-economic sustainability in the area.

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1. Introduction

Land degradation is a major development problem in most countries despite considerable investment in rehabilitation. It is estimated that 25% of global land is degraded and that affects 1.5 billion people worldwide (Von Braun, Gerber, Mirzabaev, & Nkonya, 2012). In Africa, land degradation affects 46% of the total land area (World Meteorological Organization, 2005). Over many decades, countries and international agencies have been striving to support better land use husbandry to halt land degradation and improve peoples' livelihoods. In Tanzania, more land is vulnerable to soil erosion

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because of unsustainable farming, wildfire, overgrazing and a high proportion of arid, semi-arid and dry sub-humid areas which occupy 61% of the country (United Republic of Tanzania, 1999). Among the areas which are highly affected by land degradation in Tanzania is the Kondoa eroded area (KEA) in the Kondoa District. Severe soil erosion in KEA, particularly in and around the Irangi hills, caused the Kondoa District to enact by-laws in 1968 which prohibited activities, like grazing, cultivation in some areas, cutting of trees and digging water channels without permission. In 1973 the large-scale Hifadhi Ardhi Dodoma (HADO translated as the Dodoma Region Soil Conservation) project was established in the area.

The Project established tree nurseries, planted trees and grasses, established demonstration woodlots, communal bee keeping and used agricultural machinery and human labour to construct cut-off drains, contour bunds and reclaimed land from gullies (Nshubemuki & Mugasha, 1985). It also enforced measures, such as complete expulsion and banning of livestock keeping during 1979–1989 with a view to ensure quick vegetation recovery (Mung'ong'o 1995). However, small scale zero-grazing had to be re-introduced in 1989 for socio-economic development purpose. Review of HADO showed that the project had a fumbled start under the initial top down approach with physical erosion control measures, tree planting and forced destocking strategies, which caused low adoption of soil conservation measures (Mung'ong'o, 1995; Dejene, Shishira, Yanda, & Johnsen, 1997; Catterson & Lindahl, 1999; Ogle, 2001). However, modification of strategies by employing a community participatory approach and increased project benefits to the local community resulted in more community support for soil conservation activities (Catterson & Lindahl, 1999; Ogle, 2001).

Increased community participation in soil conservation in KEA was achieved through decentralization of tree planting and socio-economic support, like free provision of cattle under stall feeding, materials and education support, and awareness raising (Catterson & Lindahl, 1999). Despite the limitations of HADO the Project succeeded in rehabilitation of the degraded ecosystem of the area and an improvement of livelihoods (Holtland, 2007). Some of the previously reported achievements in KEA included vegetation successions and improvement in child nutrition from increased milk availability and meat from cattle (Ogle, 2001), reduction of gullies, expansion of cropland into restored former degraded areas and increased agricultural productivity (Kangalawe, Christiansson, & Ostberg, 2008). Conflicts between HADO and local communities have also decreased due to increased forest products and firewood (Holtland, 2007). Similar type of achievements have been reported in numerous West African countries where land degradation controls involving multiple objectives of nature conservation with a wide range of social investments have also contributed to long-term environmental and socio-economic benefits, like soil erosion control, improvised soil fertility, pastures, natural forests, tree planting and fire prevention (Pagiola, 1999).

The operation of HADO activities has been dormant following donor withdrawal in 1996. Currently adoption of measures are the results of policy reforms, which ensures provision of social and economic policies support by extension services, favourable crop marketing and prices for crops, land tenure security, provision of subsidized cattle for stall feeding. Studies have also shown that in many countries, there have been government policy reforms intended to provide favourable crop prices and trade liberalization to ensure increased participation of farmers in controlling land degradation (Pagiola, 1999). Other factors for continuous adoption of measures in KEA include conservation technologies (Kangalawe et al., 2008) since the universal perception of farmers on existence of land degradation problems in KEA also increased adoption of soil conservation measures.

In Tanzania, studies which addressed adoption of soil conservation measures are scanty. There are also limited case studies and literature on the benefits of soil conservation in the Country. Previous findings showed that the education and local institutional developments are the determinants of participation in soil conservation (Tenge 2005 cited in De Graaff et al., 2008). Boyd et al. (2000) identified extension support, policy on decentralization of tree planting and trade liberalization as the determinants of adoption of soil conservation. Kangalawe et al. (2008) examined land use and adopted farming strategies by farmers to mitigate land degradation problems in KEA. Studies examining the extent of people's participation and benefits of soil conservation in the study area are very rare. Understanding whether soil conservation increased agricultural productivity, enhanced soil fertility, food security and farmers' income provides a powerful rationale for their promotion (Kassie, Holden, Köhlin, & Bluffstone, 2008). This study aimed to: i) examine social perceptions of farmers on participation in soil conservation activities and its benefits; and ii) identify the social and economic determinants of soil conservation.

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