

Reducing Impact of Land Degradation in Tanzania: Do Incentive Market Based Mechanisms Work for Sustainable Land Management?

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Abstract

Governments have traditionally relied on public budgets, bilateral and multilateral cooperation to support sustainable land management (SLM) activities. However, it is becoming evident that such support will not be sufficient neither can be sustainable to reverse land degradation, particularly in dry and degrading lands. Innovative mechanisms to encourage investments in SLM practices and to promote and enable the adoption of good practices in all land use sectors as a means to combat land degradation and address this challenge are needed. The paper addresses the hypothesis that, in Tanzania, impacts of land degradation can be reduced through the application of incentive market based mechanisms that could be implemented by the land users to ensure dual benefits i.e. environmental sustainability and improved human welfare of the land users. Key informants interviews and the desk reviews were the main methodological fronts used in gathering information. In Tanzania the practiced incentive market based mechanisms can be grouped into public payment systems, Open Trading under Regulation, Self Organized Private Deals, and Eco-Labeling of Products and Services. Components of these mechanisms have been tested in various agro-ecological zones in Tanzania and proved to be useful in the process of enhancing sustainable land management at the micro level. Observations therefore suggest that, some incentive market based mechanisms can work to reducing impact of land degradation at the micro level especially when they are related to improved purchasing power of the land users. In order to reduce the dependence of the governments and reduce donor syndrome in enhancing sustainable land management in Tanzania and elsewhere, there is a need of encouraging the use of incentive market based mechanisms that will have contributions to the welfare of the land users as well as contribution to the reduced land degradation.

Keywords: crop certification, forest certification, PES, REDD+, wildlife management areas

1. Introduction

Tanzania is a country that is endowed with vast of natural resources. These include land, rivers, lakes, the ocean, and forests and woodlands. It is obviously acknowledged that in this country, land is used for crops cultivation, grazing (for livestock and wildlife) and mining of minerals; wood as an energy source and for building materials and rivers and lakes for irrigation and fishing. Apart from wealth in agriculture, forestry and wildlife land, Tanzania is also very rich in minerals such as gold, diamond, iron, coal, nickel, tanzanite, uranium and natural gas. Recently, natural offshore gas deposits have been discovered. The national landscapes have for a long period of time undergone significant changes influenced by natural causes and human interventions. The intensity and scale of change has increased drastically in recent decades. Degradation of the natural resources is one of the biggest environmental problems in Tanzania (Sauer & Abdalah, 2007; Yanda, 2010).

Land degradation in Tanzania affects the majority of the people and is a major problem in the dry land and refugee-impacted areas. Population increase puts pressure on the land resources to produce food and other needs of the people, often without improved technical inputs and proper land management. Various initiatives were launched in the 1970s and 1980s to combat land degradation, but the UNCCD (signed in 1997) provided Tanzania with a unique opportunity to join forces with the international community to fight land degradation and poverty. Ever since Tanzania ratified the UNCCD in 1997, several initiatives have been undertaken to implement it. Political will and commitment by the government has increased and policies and strategies for socio-economic transformation of the economy have mainstreamed environmental issues. The relevant policies and action programmes have been reviewed and updated to include environmental and land degradation issues, for example

in National Strategies for Growth and Poverty Reduction (NSGRP), the National Environmental Policies (URT, 1997a); The National Land Policy (URT, 1997b), National Forest Policy (URT, 1998) and National Water Policy (URT, 2002). Others include strategies such as REDD+ National strategy (URT, 2013a), Climate change National Strategy (URT, 2013b) which have been enacted geared to address issues related to climate change impact and land degradation in particular.

Considerable efforts are being made to tackle the issue of land degradation in Tanzania, including the development of the National Action Programme to Combat Desertification (2000). However, insufficient resources, lack of capacity to implement different SLM, dependency on donor funding, inadequate legal support and governance failure remain barriers to the implementation of policies and strategies related to land degradation. An integrated approach to addressing the challenges of land degradation is essential in order to reduce its impact on livelihoods.

Innovative financing may include untapped private investments in natural resource management, including from private land users, conservation foundations and civil society organizations. Environmental and climate change funds, microfinance and insurance schemes are other innovative mechanisms and sources that are being explored and considered.

Innovative financing may also include identifying the right incentives for land users to invest in protection of natural resources, including land and biodiversity. The challenge that needs to be addressed to reduce the dependence on the government and donor funding that are being based on the project and programme basis and develop a sustainable way of enhancing sustainable land management at both micro and macro level in the country. This study was therefore conducted to produce an evidence that, impacts of land degradation can be reduced through the application of incentive market based mechanisms that could be implemented by the land users to ensure that there is a dual benefits that is experienced in the country namely the improved well being of the land users while taking care of the ecology at the micro level.

2. Methodology

A mixed-method approach that combined expert interviews (government officials, researchers and environment based NGO representatives), as well as the interviews with the representatives of the implementing agencies of various incentive market based mechanisms was adopted. This was a dual approach where firstly, the key informants' interviews whereby various representatives from organizations that are implementing incentive market based mechanisms were consulted. This was then followed by the stakeholders' workshop where the study report was presented to the public for verification.

2.1 Key Informants Interviews

Key informants interviews were the main type of methodology that was employed in the generation of the information as reported in this article. Key informants interviewed were those from organizations that by the time were implementing or else involved in the management of some of the incentive market based mechanisms in the country. The interviewed key informants were representatives from CARE International in Tanzania; WWF Tanzania Country Office; Mpingo Conservation and Development Initiative (MCDI); Environmental Protection and Management Services (EPMS); Tanzania Organic Agriculture Movements (TOAM) and the Wildlife Conservation Society of Tanzania (WCST). In the interviews, a checklist was used to gather some information regarding the suitability of the existing IMBMs that are being implemented in the country. The essence was to get their feelings on how the implemented mechanisms can be useful in ensuring sustainable land management is attained.

2.2 Stakeholders Workshop

After the key informant's interviews, a technical document was produced and used as a working document to discuss with the stakeholders in the stakeholders national workshop. A two day stakeholder's workshop was organized in Dar es Salaam at the Division of Environment (VPO-DoE), in the Vice Presidents Office. The workshop brought together different stakeholders to discuss the technical document that was produced after the key informants' interviews. The aim was to validate the applicability of the identified mechanisms as practices that could enhance sustainable land management in Tanzania, and to discuss the applicability of these market incentive mechanisms in the Tanzanian context. A total of 16 workshop participants attended the two day validation workshop. The representation of the participant were: Four (4) from the sector ministries (agriculture, natural resources and tourism, vice presidents office), two (2) from the government departments mainly National Environment Management Council (NEMC), Four (4) from research institutions, four (4) from NGOs and two (2) members from the media specifically from the Journalists Environmental Association of Tanzania.

3. Results and Discussions

3.1 Incentive Market Based Mechanisms in Tanzania

In Tanzania, there are several incentive market based mechanisms being implemented by various organizations in various areas and agro-ecological zones of the country. These include public payment systems, Open Trading under Regulation, Self Organized Private Deals, and Eco-Labeling of Products and Services. These mechanisms have been tested in various agro-ecological zones and have proved to be useful in the process of enhancing sustainable land management in the country.

Public payment systems

These are market incentive mechanisms categorized in three major categories, namely permanent conservation easement, subsidies, and co-financed investments in Tanzania.

Under the Permanent conservation easement in Tanzania, the main type of this market based mechanism being implemented in the country is the Wildlife Management Areas (WMAs). Under the WMAs communities are not compensated directly for giving up the right to use the land for farming or logging, the compensation is coming from the tourist hunting. The hunters pay for being able to hunt and 40% of the revenues collected remains in the respective community as compensation.

Under the co-financed investments in Tanzania, the initiative that has been reported by the key informants that is being practiced by communities in Tanzania is the sugarcane out grower systems. The main initiatives are the Mtibwa Sugarcane out grower scheme, and two other sugarcane schemes in Kilombero. These schemes are governed under the Mtibwa Outgrowers Association (MOA) guided by a constitution which binds together the out growers of sugarcane (UNCTAD, 2006).

Under subsidies in Tanzania, local communities play a significant role in effective management of natural resources. Strategies of involving communities and other stakeholders in forest management have been developed in Tanzania. Under this approach, communities, with the help of the government, are implementing Participatory Forest Management (PFM). Under such initiatives communities rehabilitate and manage the forest resources on a sustainable basis. The sense of ownership and control over the use and future of the resource by the communities has contributed to the sustainable management of the woodlands. This is a type of subsidies that the government is supporting the community under the type of forest management initiative that was introduced into law guided by the Forest Act of 2002. The PFM provides a clear legal basis for communities, groups or individuals across mainland Tanzania to own manage or co-manage forests under a wide range of conditions. Under the PFM initiatives, Tanzania is applying two types of such forest management and these are (i) Community Based Forest Management” (CBFM) whereby the ownership enables local communities to declare – and ultimately gazette – Village, Group or Private Forest Reserves. And (ii) Joint Forest Management” (JFM) through which the ownership allows communities to sign joint forest management agreements with government and other forest owners. Under these approaches, about 40% of the total financing of the projects are subsidies from the Government. Implementation of Joint forest Management has resulted into the improvement of the forest stock in the micro catchment where these approaches have been used. Blomley et al, (2008) report positive changes in forest condition in the 13 forests sampled where JFM was implemented in Tanzania and that there were increases in basal area and volume in sites managed under both joint and community-based forest management, and declines in both of these variables in forests under government or open access management. Blomley et al, (2008) further argue that forests that are under joint and community based management have shown a good recovery rate compared to those that are just managed by the government or under the open access regime. This observation provides the justification of the implementation of the incentive market based mechanisms at the micro catchment level where the impact can easily be measured.

3.2 Open Trading Under Regulation

Open trading under regulation is a second group of the incentive mechanisms that are being implemented in Tanzania. Examples of trading of emission identified include trading of emission or removal. Mechanisms that have been tested in Tanzania include the trading of emission or removal.

In this study, projects that have been piloted in various agro-ecological zones in Tanzania on Reduced Emission from Deforestation and Forest Degradation (REDD) have been grouped under the trading of emissions or removals (or other environmental benefits).

Since 2008, sizeable proportion of REDD+ activities were undertaken through bilateral funding from the Norwegian government and UN-REDD program. REDD is an effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest

in low-carbon paths to sustainable development. As main open trading under regulation tested in Tanzania, REDD+ goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. Other co-benefits of the REDD+ programme in Tanzania, in addition to climate change mitigation, is enhanced conservation of soils, water catchments and other watershed areas leading to generation of electricity through hydropower and enhancing irrigation. Gaining knowledge on ecosystems services and their values is another expected benefit coming out of the REDD+ programme. Although as stated in Messer (2007), some of the incentive market based mechanisms attempted in the United States of America did not protect land, the preliminary experience from testing such market based mechanisms have shown positive influence at the micro level in Tanzania. Assessments made in Kigoma, Tanzania where REDD+ Readiness project was piloted, have shown positive land management and biodiversity conservation improvement in the areas where the project has been implemented (Shemdoe & Mwanyoka, 2013). Community members in Ugala Masito, Tanzania where the REDD+ project was piloted reported gradual restoration of biodiversity; steady flow of streams; reduced soil erosion; reduced incidences of bush fires; significant decline in illegal harvesting of forestry products in the Masito-Ugalla ecosystem. Indicators mentioned by the community for land protection include, availability of plenty of water, reduced number of charcoal burning kilns observed in the forest, dwindling charcoal business in the villages and the return of wild animals in the forest (Shemdoe & Mwanyoka, 2013). This therefore provides some examples that at the micro climate level, incentive market based mechanisms can work for enhancing sustainable land management.

3.3 Self Organized Private Deals

Self organized private deals are one of the incentive market based mechanisms that are being implemented in Tanzania aiming at attaining sustainable land management. Payments for ecosystem services (PES) are the self organized private deal that has been piloted in the country. PES has been regarded to as one of the important approaches to deliver conservation benefits that is tied to the monetary linked with the ecological service to the custodian of the resource that provides the service (Ferraro & Kiss, 2002; Wunder, 2007, 2008; Pagiola, 2008; Wunder et al., 2008; Clements et al., 2010; Pattanayak et al., 2010, Lopa et al., 2012). PES schemes have been defined as a voluntary transaction in which a well-defined ecosystem service (or corresponding land use) is 'bought' by a minimum of one ecosystem service buyer from a minimum of one ecosystem service provider if, and only if, ecosystem service provision is secured (Lopa et al., 2012). As it is often hard to provide reliable measures for ecosystem services, proxies based on changes in land use or Management are often used. This is one of the promising self organized private deals in which Tanzania could invest and secure various benefits in terms of improved well being of the communities in the areas where the services originate and also to the whole of ecosystem integrity. One of the areas where PES has been implemented is in the Uluguru Mountains. Tested interventions in the area as reported in Lopa *et al.*, (2012) include agro-forestry, reforestation, grass strip, planting and terrace development. Implementation of the interventions recorded increasing in number of the smallholder farmers to invest in these private deal types of incentive market based mechanisms. More adoption is linked with the existing financial incentives that farmers are getting when practicing these conservation activities as the implementation of the improved agricultural practices has resulted in improved crop yield and hence increasing the purchasing power to the communities in the area.

3.4 Eco-Labeling of Products and Services

Eco-Labeling of Products and Services is another incentive market based mechanisms that has been practiced in Tanzania. Eco-friendly labeling is about designating environmentally friendly products and are all synonyms used to refer to goods and services considered to inflict minimal or no harm on the environment. To make consumers aware, environmentally friendly goods and services often are marked with eco-friendly labeling. In Tanzania, it has been reported during the key informants' interviews that there are three different kind of eco-labeling of the product and services that are being implemented. These are the forest certifications, crop certifications and eco-tourism.

3.4.1 Forest Certification

Under the forest certification, the key informants consulted indicated the existence of two projects in Tanzania that have secured forest certification under the Forest Stewardship Council (FSC) and the Voluntary Carbon Standards (VCS). The Forest Stewardship Council (FSC) certification implies that the products are sustainably produced from a well ecological conserved and sustainable managed ecosystem. The two projects are the Mpingo Conservation and Development Initiative and the Green Resources Limited. Although studies have indicated very little evidence on the impact of forest certification on environmental and socioeconomic and that it does not prevent large-scale deforestation (Ebeling & Yasue 2009; Nebel et al., 2005) in areas where such

schemes have been attempted, there is still an evidence of the small positive impact at the micro levels as concluded in de Lima et al. 2008) based on the experience from FSC certification in Brazil.

3.4.2 Crop Certification

Under crop certification as one of the eco labeling incentive market based mechanisms, it was reported that in the Tanzanian case, there are several organizations and projects which were certified for their efforts to produce organically produced crops, fruits and spices. The certifications were done by the two known international bodies Institute for Marketecology (which is one of the first and most renowned international agencies for inspection, certification and quality assurance of eco-friendly products. The other certification that has been reported to be applied in Tanzania are from the Environmental Standards (CERES) offers certification for organic farming and food processing, for Good Agricultural and Good Manufacturing Practices in the food industry, and for organic textiles and biofuels. A good example of crop certification is given in TOAM (2010), whereby, crops that have been certified to be produced organically in Tanzania to include Coffee (in Kagera, Kilimanjaro, and Mara), Cocoa (in Mbeya), Vanilla (in Kagera) and variety of fruits (in Kagera).

Although there are various studies (Fort & Ruben, 2008; Lyngbaek et al., 2001; Sáenz Segura & Zúñiga-Arias, 2008) that report observations indicating crop certification to have either minimal socioeconomic benefits or actually generates loss to the land users, positive evidence on the significant positive contribution on socioeconomic benefits (Arnould et al., 2009; Bolwig et al., 2009) and significant environmental impact (Blackman & Naranjo, 2010) are also reported. Evidence provided in Blackman and Naranjo, (2010) when comparing rates of adoption of four environmentally friendly farm management practices (soil conservation measures, shade trees, windbreaks, and organic fertilizer), concludes that organic certification improves coffee growers' environmental performance especially at the farm level.

3.4.3 Ecotourism

Ecotourism can play a key role in promoting SLM by raising travelers' awareness about environment-related issues in order to minimize the impact of their presence on the territory, and by creating additional job opportunities for local communities. Income from ecotourism can provide local communities with incentives to take up more SLM practices and shift their attention away from unsustainable practices. In Tanzania, sustainable forestry and hunting, wildlife, fishing, and bee-keeping, handicraft sales, and working as forest guides, are examples of activities promoted by increased tourism that provide alternative income and activities to unsustainable practices.

4. Conclusions

Land degradation is similar to other environmental problems in that its costs are borne by society in general. For instance, soil erosion can result in reservoir siltation, leading to higher electricity generation costs, and even in diminished food security, because it limits land productivity. Any reversal of the land degradation process should consider the benefits that society as a whole will receive in the form of improved food security and environmental health (e.g. carbon sequestration or water quality). The land user cannot therefore be expected to pay the total cost of implementing measures to prevent land degradation. Consumers must recognize that they too are part of the solution, and must be willing to contribute financially through the development of new markets.

The success, and even the feasibility, of the incentive market based mechanisms depend on several factors. A particular mechanism may be a good option in one context but not in another. A screening was undertaken by a group of experts to assess which incentive market based mechanism may be suitable in the Tanzanian context. The assessment was based on factors like institutional capacity, governance, regulatory framework, environmental awareness, and ecosystem types. A number of incentive market based mechanisms were identified to be potentially applicable to the Tanzanian context. Some of them exist already and lessons can be drawn from their application. The tested ones that have shown impacts in various areas at the micro level include the payment of ecosystem services, eco labeling, and some of the REDD+ initiatives. The challenges are that, most of these were in their piloting phases and more time is required to test them and ensure that the initial impact observed during the testing phase can be sustained if they are scaled up at the catchment level.

The applicability was assessed based on the nature of the agro-ecological zone as each of the existing agro-ecological zones in Tanzania is affected differently by different environmental problems. Experts highlighted various problems which exist in the respective agro-ecological zones as water shortage for the coastal zone, overgrazing for the arid land, soil erosion in the semi arid land, deforestation in the plateaus. Others include shifting cultivation in the Southern and western highlands, bush fires in the Northern highlands and

population pressure in the alluvial plains.

Based on the problems existing in the agro-ecological zones, a variety of incentive market based mechanisms are applicable in different parts of the country. Stakeholders in the consultative workshops indicated a number of possible mechanisms to be used in different agro-ecological zones of the country based on the specific problems existing in these zones.

Observations from the assessment suggest that the recommendations of which incentive market based mechanisms suitable and applicable in each of the agro-ecological zones are only indications as there are several challenges and shortcomings that need to be addressed and further analyzed before deciding on using one or a mix of mechanisms in a specific area or site. Some of the identified challenges include diversity of microclimates existing in each of the agro-ecological zones implying that the recommended mechanism can not necessarily be applicable in the whole agro-ecological zones.

In general, these mechanisms are often based on market principles that allow land users to benefit directly from reducing land degradation. Compensation may include direct monetary payments, technical assistance or preferential market access. This can be applied at the micro level but the amalgamated effect could yield catchment level sustainability.

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