UNTAPPED RESOURCE FOR PROMOTING SUSTAINABLE LAND MANAGEMENT PRACTICES IN THE HIGHLANDS OF ETHIOPIA

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Abstract: *Improved land management practices that ensure better resource use as well as promote long-term sustainability are basic to future food production and to the economic welfare of rural communities. Improved land management inturn needs looking for an approach that emphasizes on finding feasible, acceptable, viable and ecologically sound solutions at local level. This paper argues that this can be achieved by applying and/or following an IK based land management approach; i.e,. integrating or linking indigenous with local land management practices with the introduced ones.*

BACKGROUND

Agriculture is the prime mover of Ethiopia's economy. The current development strategy in the country, known as Agricultural Development Led Industrialization (ADLI), is largely based on expanding agricultural production. Expanding agricultural production, mainly crop production, entails either bringing more land into production or increasing the productivity of the already cultivated land. In addition, peasant households representing the largest segment of the population in the country are directly dependent on the use of land resources for their survival. In the country, smallholder farmers cultivating microplots (in which the national average holding is 1.02 ha per household (EEA/EEPRI, 2002)) with traditional technologies produce most of the agricultural output. This sector provides some 90 and 98 percent of the crop and livestock outputs, respectively (Shiferaw and Holden 1999).

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Land resources continue to be of prime importance in the highlands of the country. However, the land resources are currently affected by land degradation problems. Mining of soil nutrients and high rates of soil erosion contribute to low and declining agricultural productivity. Good land management is, therefore, critical for the welfare of the citizens and success of the national economy. This makes sustainable land management to be imperative in the highlands of Ethiopia.

APPROACHES TO SUSTAINABLE LAND MANAGEMENT

Sustainable Land Management is an approach that emphasizes on finding feasible, acceptable, viable and ecologically sound solutions at local level. In the approach, due emphasis is given to the use of 'appropriate' technologies, i.e., technologies that are ecologically protective, socially acceptable, economically viable, economically productive, and reduce risk as well as better respond to the 'respective' land use systems because any technology may not be applicable everywhere. As Hurni (2000) asserted, Sustainable Land Management (SLM) approach can promote 'participatory land management solutions'. These solutions are again important in order to attain long lasting solutions for the problem in developing countries.

Over the past several decades, different approaches have been used to tackle the problem of agricultural land degradation and achieve sustainable land management in developing countries. But all of them are reported to be unsuccessful to mitigate and /or at least minimize the problem.

A top-down approach and/or transfer of technologies characterized the early approaches of land management. Technologies developed in areas with totally different biophysical conditions were imposed on local people. "In some cases these technologies failed, in other cases they met with a lot of resistance to the extent that more effort was put in convincing the local people to adopt them" (Mwale 1997). The added weakness of past land management approaches was that they were not participatory. They did not encourage land users to participate in project design, implementation, operation, maintenance and monitoring. Though participation is considered as essential to reach the target group and respond appropriately to their

needs, the early approaches of land management did not succeed much as envisaged. Moreover, they were not helpful to understand the local biophysical conditions despite the fact that comprehensive land management requires knowledge and awareness of ecological interactions and interdependencies.

Disregard of resource users is the other weakness of the early land management approaches. In the past, resource users were not considered as important actors in the process of sustainable management of resources. They were seen as part of the problem despite the fact that those people survived with their approaches for centuries. Their practical activities were usually seen as contributing factors to the degradation of the resources. As a consequence, measures designed for sustainable management of resources only address the issues discerned by scientists or interventionists (Lawas 1997).

Therefore, the main question is how the land can be managed sustainably and how participation of land users can be promoted and appropriate technology can be developed?

AN INDIGENOUS KNOWLEDGE (IK) BASED SUSTAINABLE LAND MANAGEMENT APPROACH

Many specialists and policy makers now appreciate and acknowledge that the 'conventional' approaches to land management have failed with small-scale farmers in the developing tropical world. Land degradation continues unabated and land productivity continues to decline. Recognizing the previous failed land management approaches, a new approach has been developed. The approach is known as an Indigenous Knowledge (IK) based Sustainable Land Management approach. This approach is "based on the technical understanding of the land and the knowledge developed by the local people through years of continued and continuous land use". It is an approach based on the ecological and socio-economic understanding of the environment and the local people and their relationship. Fundamental to the new approach is the prerequisite for active participation and collaboration between the local land users and the 'interventionists'. This is achieved

through the increased recognition of the importance of the Indigenous Knowledge of the farmer (Mwale 1997).

What is Indigenous Knowledge (IK)?

Indigenous Knowledge (IK) is defined as the local knowledge unique to a given culture. It contrasts with the international knowledge system generated by Universities, Research Institutes and Private Firms. It is considered as the basis for local-level decision making in agriculture, health care, food preparation, natural resource management, and a host of other activities in rural communities (Warren 1991; cited in World Bank 1998). It relates to "the ways members of a given community define and classify phenomenon in physical, social and ideational environment" (Kajembe and Routatora 1999). It is the information base of a society, which facilitates communication and decision-making.

Indigenous Knowledge (IK) is also considered as "dynamic and continually influenced by internal creativity and experimentation as well as by contact with the external system" (Lugeye 1999). It is also referred to as "the body of knowledge, science and techniques used by rural people" (Swift 1979). It is characterized as "dynamic and continuously adapted to changing circumstances and environmental conditions as well as passed from one generation to the next" (Krüger et al 1996). 'Conventional' measures on the other hand refer to the "body of knowledge, science and techniques introduced to the local people" (Swift 1979). As the survival of the local people has depended on their ecological awareness and adaptation, much of the Indigenous Knowledge (IK) is based on accurate, detailed and thoughtful observations collected and passed over many generations (Howes and Chambers 1979).

Why an IK based land management?

Nowadays, it is increasingly recognized that the land users themselves do have valuable environmental knowledge contained in their Indigenous Knowledge (IK). This knowledge of local people is recognized as a basis for sustainable land management. Indigenous land management systems evolve within a given community's need to be stable and durable. Consequently,

the local community develops land management measures that are suitable to the biophysical properties and fit the socio-economic conditions. It is thus very important to give due attention to the Indigenous Knowledge (IK) of a given locality as they form the basis on which sound land management measures can be developed (Mwale 1997). It provides the starting points for the development of sustainable land management practices.

In the past, farmers were not often considered as important actors in the sustainable management of land resources. Their practical activities were usually seen as contributory factors to the land degradation problem. As a consequence, measures designed to sustainably manage the land resources only address the issues discerned by scientists and interventionists (Mwale 1997). Previous experiences, however, have shown that without the participation of farmers, it is more likely that any effort to conserve and manage the land resources in a sustainable way would fail. The question is how to involve the resource users [farmers] in the land management activities. One way is to start understanding their unique knowledge or ways of using and managing their land. This may include comprehending their perception, actions or behavior towards land as well as recognizing their knowledge as an important input in land resource management activities (Richards, 1979). Therefore, understanding of the users' [farmers'] land management system is indispensable to implement sustainable land management practices.

It is widely argued that the indigenous technologies will ensure a more affordable and sustainable solution if they are linked with the 'conventional' measures. Understanding the indigenous land management systems may, therefore, reveal important clues for the development of alternative sound and sustainable land management systems. The argument is based on: 1) the need to create more appropriate and environmentally friendly technologies; 2) empowering people like farmers to have greater control over their own destinies; and 3) creating technologies that will have more just socio-economic implications (Reij et al 1996; De Walt 1994).

Literatures on the issue indicate that land resource management recommendations derived from international knowledge systems seldom

fully fit local needs and often prescribe practices that are costly to maintain. Modern technologies usually come in bits and pieces, and in order to fit them effectively into and build upon the local systems, we need to have a thorough understanding of indigenous knowledge (Kajembe and Routatora 1999). Emphasis should be given to the knowledge possessed by the rural people and to their capabilities for assimilating, adapting, communicating and creating knowledge. As Howes and Chambers (1979) rightly put it "the richness and relevance of the stock of Indigenous Knowledge (IK) often goes unrecognized...rural people, free of disciplinary blinkers, usually not only know more about local conditions and needs but also take a more holistic view than specialists from outside. Their Indigenous Knowledge can complement organized science".

Indigenous Knowledge (IK) of rural people has largely been neglected and disregarded by policy-makers, researchers, etc. and relied on the top-down strategy of technology transfer. "Only rarely is indigenous knowledge of peasants treated as knowledge in the mainstream of agricultural development. The culture-based knowledge of peasants is rejected as backward and counter-productive" (Dejene 2000). However, it is believed that "to neglect the stock of indigenous knowledge, and the processes whereby rural people can assimilate, adapt, communicate and create knowledge, is both inefficient and wrong"(Brokensha et al 1980). Currently, it has been realized that "farmers are constantly engaged in the process of active innovation and invention, and are constantly reworking and updating their knowledge in the light of new challenges, and encounters with new forms of knowledge" (Mattee and Lassalle 1999).

The growing awareness of the limitations and hazards of 'conventional' methods has encouraged experts to look to Indigenous Knowledge as a major untapped resource for promoting sustainable land management practices and then developing sustainable agriculture (Mattee and Lassalle 1999). One of the solutions that have been proposed to redress this weakness is to work more closely with farmers. This is based on the acknowledgment of the central role of the farmer in the whole process of technology generation, dissemination and adoption (Reij et al 1996). This makes the farmers to be recognized as the only ones who are able to

combine 'indigenous' with 'conventional', and can bring permanent change in the society. Therefore, any development effort must start from and recognize the local capacities of the local people, rather than exclusively relaying on modern scientific knowledge. Much emphasis should be put on the developmental relevance of Indigenous Knowledge. Tested and passed on to many generations, and well adapted to ecological conditions, indigenous practices and technologies are assumed to offer a sound base for any development (Brokensha et al 1980), including land management.

PAST ATTEMPTS OF LAND MANAGEMENT IN THE HIGHLANDS OF ETHIOPIA

So far different attempts have been made to manage the land in the highland parts of Ethiopia through different land rehabilitation attempts such as afforestation, terracing, and water harvesting and area closure. The largest work was that carried out between 1976 and 1993, in which peasants were mobilized to participate either via food for work payments or just by force (Shiferaw and Holden 1999). Belay Tegene (1998) reported that "the Ethiopian Highlands saw the most extensive soil conservation activities in Africa in the 1970s and 1980s". Though they failed to win acceptance by the land users because of their multifaceted limitations and constraints, the *fanya juu* and normal bunds were the newly introduced and widely applied conservation measures in the Highland parts of the country.

Generally, the reasons for the failure of past efforts of land management are the following.

(i) The top-down approach in technology transfer: New land management technologies developed by researchers were and still are introduced to farmers though their acceptance by the land users was and still is very limited. The new technologies were disseminated to farmers, but failed to be accepted, and hence adapted by the land users (Belay, 1998).

In the past, land management strategies and practices were dominated by 'state environmentalism' (Desalegn 2001). The main assumption in this type of environmentalism is that environmental protection [land management] is the responsibility of the government. The state was considered as

responsible to "introduce the appropriate conservation technology and transfer of such technology to the population concerned". These assumptions could only lead to a 'unilateral course of action, and an undemocratic approach'. The previous land management programs were always imposed from above, and rural land users – the people directly affected by environmental change - were rarely consulted. This clearly indicates that there has been the issue of 'dispossession and disempowerment' of the people who are closest to the environment by people who are furthest removed from it.

(ii) Lack of appreciation of indigenous land management practices. The Ethiopian highlands are home of many millions of small-scale farmers. These farmers do have their own "diverse and indigenous ways of land management practices" (Krüger et al 1996). However, there seems to be lack of appreciation of indigenous land management practices by experts and policy-makers in the country.

Ethiopian farmers have long been aware of the problems associated with land degradation, and have traditionally been conservation minded at farm level. Despite this fact the knowledge, skills, survival strategies and risks faced by farmers operating with low external input have been ignored frequently by outsiders and experts promoting 'modern' conservation techniques. The result is that many 'conventional' measures have proved to be ill adapted to the existing systems (Lakew 2000). They were simply applied before they were adapted to the environment and farming systems and farmers were rarely consulted on the choice of methods or planning their placement (Belay 1998).

INDIGENOUS LAND MANAGEMENT PRACTICES

Ethiopian peasants have a wide variety of indigenous land management techniques that they have been employing for generations though some of them are in danger of being lost. These measures are broadly grouped as physical, vegetative, and agronomic methods. These measures are the result of a "gradual learning process and emerge from a knowledge base accumulated by rural people by observation, experimentation, and a process

of handing down through generations people's experience and wisdom" (Krüger et al 1996). These practices are also shaped by and emerge from a detailed understanding of local conditions, and are modified in response to changing socio-economic, political and ecological conditions.

Unlike that of the 'conventional' ones, these above-mentioned measures are applied with a wide range of flexibility. In addition, some of them are implemented over a course of time. They are initiated in one cropping season and are extended to the next (Michael 2001). Most indigenous land management practices [both soil conservation and soil fertility improvement] are characterized by several strengths, such as multi-functionality, multiple benefits, flexibility, low external input dependence, compatibility to the farming systems, etc.

(a) Multi-functionality and Multiple-benefits

Their multiple functions and multiple benefits characterize most indigenous land management practices. They are the reflections of the basic strategies developed by the land users in response to the great variability of biophysical and socio-economic conditions. For instance, crop rotation, one of the most widely applied soil fertility enhancing measures has a number of functions as well as benefits to the farmer. It improves the soil fertility, controls the spread of weeds and insects.

In addition, the indigenous structural conservation measures, i.e., traditional ditches or *'feses'*, do have multiple function and multiple benefits. They have been used since long ago as a measure to decrease seed loss, as a measure to protect soil from erosion, and as a measure to decrease water logging problems. Besides their conservation and drainage importance, they are also considered to be space saving. Inter-cropping and cover-cropping are the other most commonly used methods for both soil conservation and soil fertility management. Inter-cropping ensures the soil coverage and protects it from rains so that the soil particles may not be disintegrated and washed by erosion. Moreover, it improves the fertility status of soil.

(b) Flexibility

Flexibility is the other fundamental characteristic of the indigenous land management practices. Since they are flexible, they can be easily adapted to changing biophysical and socio-economic conditions. For instance, farmers' usually change the position of the traditional ditches in order to avoid a gradual widening and deepening over time so that the ditches will not develop into a gully. In addition, the gradient, number, spacing, depth, width and even function of the traditional ditches on cultivated land differ from farmer to farmer, from plot to plot, and even from crop type to crop type.

(c) Efficiency in labour utilization

Though it is not true in all cases, low labour requirements as well as efficiency in labour utilization characterize most of the indigenous land management practices. In small-scale farming system, soil conservation measures, particularly mechanical structures are not built in one go but gradually. They are developed on incremental basis over many years. Therefore, this spreading of labour requirements for construction and maintenance helps to reduce peak times and labour shortage.

(d) Compatibility to the farming system

One of the features of the indigenous land management practices is their compatibility to and high integration with the current farming systems. The process of developing indigenous land management practices reflects the degree of integration of these measures into the farming system. That is, the construction and maintenance of the indigenous land management may not happen apart from the prevailing farming practices.

(e) Low external input dependence

Indigenous land management practices do not demand import of materials as they are depending only on locally available resources. Their construction and maintenance using locally available tools and materials, the ox plough and human labour characterize most indigenous land management practices. For instance, the practice of inter-and cover-cropping, crop rotation,

manuring, fallowing, as well as the construction and maintenance of the physical soil conservation measures may not demand external input.

Another characteristic that makes traditional land management practices attractive to the farmers is their low financial requirement and their complimnetarity. For example, cropping *'gibto' (Lupines lupine)* dose not cost farmers too much. Moreover, most indigenous land management practices are complimentary to each other within a particular plot. For instance, different agronomic and physical/structural conservation measures that are applied on a given plot are complimentary to each other.

Some of the indigenous land management measures also have some problems or limitations. For instance, fertility management practices such as manuring require more labour force to transport the manure to fields that are located at long distances, away from the homesteads which is by far beyond the capacity of most individual families. Moreover, the physical soil conservation measures, such as traditional ditches, traditional cutoff drains and traditional waterways may aggravate soil erosion in areas where they are ill-designed.

CONCLUSION

Pools of land management practices were/are practiced by farmers in the highlands of the country. These measures are well adapted to local conditions and widely practiced by farmers. In order to achieve sustainable land management in the foreseeable future in the country, the following points should be critically considered.

Farmers of the country do have valuable knowledge of the biophysical setting of their locality [their land], and have developed their own indigenous land management practices that are suitable to the biophysical settings and fit the socio-economic conditions. Therefore, this valuable knowledge of farmers and their locally adapted indigenous land management practices should be seriously taken into account as they are helpful to understand the local biophysical conditions and provide the starting points for the development of alternative sound and sustainable land management systems. Moreover, understanding the indigenous land

management system may reveal important clues for the development of alternative sound and sustainable land management solutions and may encourage farmers to actively participate in land management activities. Therefore, there is need to critically assess their merits and demerits, take a lesson from their merits, and hence link them to the 'conventional' measures to achieve the desired goal.

The newly introduced 'conventional' land management [both soil conservation and soil fertility management] measures are not designed based on the microscale biophysical and socio-economic realties. Therefore, before introducing new measures and implement them, the realities at the ground should be critically assessed by participating farmers. This may enable to develop appropriate technology that best fits the current land use system as well as to the microscale biophysical conditions and socio-economic realities.

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