

# The other Route: an ITK based Approach to Sustainable Land Management

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## 1. Abstract

After more than half a century of failed land management activities in tropical developing countries, technical specialists and policy makers are and should be rethinking their strategies. It is increasingly recognized that the land users themselves have valuable environmental knowledge contained in their indigenous technical knowledge (ITK). Really, the importance of ITK as a basis for sustainable land management cannot be over emphasized.

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 that the ITK of a given locality forms the basis on which sound land management measures are developed to meet the economic and environmental challenges of the modern world.

This paper reviews the role of ITK as a basis for sustainable land management as a starting point for developing technologies and programs; a means to achieve empowerment of the local people in land management; and as a tool for transfer of technologies for sustainable land management to other parts of the world with similar agroecological conditions.

## 2. Introduction

Many specialists and policy makers now appreciate and acknowledge that the conventional approaches to land husbandry have failed with small-scale farmers in the developing tropical world. Land degradation continues unabated and land productivity continues to decline. Land productivity sometimes increases to very high levels only to tumble down at an alarming rate symptomatic of a non-sustainable approach.

There are pernicious and widespread problems of land degradation in most of the tropics and subtropics. The problem is made even worse as the fragile tropical ecosystems absorb a growing population (El Ashry, 1988). The problem of land degradation was recognized years ago when colonial governments in most of Africa developed remedial programs as early as the 1930s (Anderson, 1984).

However, the early approaches were and continue to be, characterized by a top down approach and a transfer of technologies from the western world. The local

people were seen as part of the problem to be solved despite the fact that those people survived with their approaches for centuries. Technologies developed in areas with totally different biophysical conditions were imposed on the 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 and in yet others they worked but for a short time after which the land resources base was destroyed. The people either had to move away or spend almost all available resources to at least produce enough for their survival.

A new approach is needed if this problem is to be solved. A system based not only on the technical understanding of the land but also on the knowledge developed by the local people through years of continued and continuous land use. This is an approach based on the ecological and socio-economic understanding of the environment and the local people and their relationship.

A new approach to land husbandry is emerging. Cardinal to the new approach is the prerequisite for active participation and collaboration between the local users and the technicians and development agents. Of direct relevance to this new paradigm is the increase recognition of the importance of Technical Knowledge (ITK).

The need to utilise ITK is not new as it has been increasingly articulated since the early 1980-s (e.g. Chamber, 1983; Collinsons, 1984; Chambers et al.,1989 to mention but a few).

### **3. What is Indigenous Technical Knowledge (ITK)**

ITK has been defined differently by many authors and specialists. However all definitions point to the fact that ITK is developed in a given locality and culture and improved through the years in response to social and biophysical changes both internal and external. The community and individual goals, and biophysical conditions all determine the way people develop their ITK. Warren (1991) states that the ITK is unique to a given culture or society.

It is important to realize that ITK contains aspects of natural resource utilization by a given community. The community, as it strives to be stable and durable, acquires the skills and dexterity to procure from the natural resources what it needs to survive (Mwale, 1995). Bodley (1996, cited in Warner 1991) defined ITK as practical knowledge of the environment and procurement strategies based on intimate experience accumulated over many generations.

For a community to be durable it was, and still is, necessary to gradually, but orderly change to meet its goals. In striving to do this, ways and means of treating their surroundings evolved and were constantly improved on to meet changing circumstances. One can then say that ITK develops and accumulates as a result of the continuous effort of local people to combine their environmental knowledge and ecological and available resources to complex and changing conditions and new ideals in order to maintain a viable form of productivity and community stability (Mwale, 1995). Community stability here is used to mean not a static condition but a lasting, durable and permanent society.

ITK is not without experimentation. It relies strongly on experimentation, historical experience and knowledge developed over decades by a people whose aim be safe

and stable surely should not be abandoned just because the people are believed not to be scientifically trained.

#### **4. Improved Fallow: A Promising Land Use System Based on ITK**

The people of Central Northern Zambia practice an indigenous farming system called Chitemene, which in essence is a type of shifting cultivation. In this practice the trees are lopped and pollarded and the cut wood piled and burnt on a selected site and crops planted in the ash-covered area.

The trees are cut from a larger area (outfield) they are burnt in the center (infield) which is used for crop cultivation while the cleared land is left to re-generate (Mulongoy and Marckx 1991). A new Chitemene is opened each year while the opened Chitemene is used for a period of 5 to 6 years after which it is left to regenerate for 10 to 30 years. Important ITK in this system include:

- (a) selection of an appropriate area for tree cutting and burning which will not disturb the land resources;
- (b) the way each tree species is cut and piled and burnt. While some trees are pollarded, others are merely pruned and yet others are coppiced;
- (c) the timing when to clean the land and when to burn to avoid damage to the resources;
- (d) the method of burning to get the best ashes;
- (e) the selection of which crops to start with and which crops to follow in subsequent years;
- (f) the farmers also decide which crops are intercropped;
- (g) finally the understanding and identification of indicators showing that the piece of land is exhausted and needs resting.

The Chitemene system was a very viable system which is now failing because of the increased population and consequent lack of land which preclude that the used land parcels re-generate and recover.

A system grafted onto this indigenous farming practice had to be developed. Improved fallow was tried through the Soil Conservation and Agroforestry Extension Programme (SCAFE) as one method to improve fertility. In improved fallow the farmer merely plants the land which is not under cultivation for different reasons with some trees or shrubs.

The planted tree species are selected to fit the farmers labour and other socio economic aspects and indeed the farming methods the farmers apply. Further research into the practice is going on at the Msekera ICRAF station in Chipata Eastern Zambia though there has been no contact with the SCAFE Program in Central Zambia. We hope to learn from their research findings to perfect our messages.

The development of the improved fallow as a type of land management system fitted very well with the indigenous system. The improved fallow is different from the indigenous farming system only in the sense that the land is made to regenerate faster than it does naturally by planting fast growing tree species and preferably nitrogen fixing tree species. This is a practice, which in Central Zambia is purely based on and developed from ITK.

## **4.1 The Survey**

A questionnaire survey was conducted with the help of local people. The survey sought information on which of the introduced measures was adopted and why. Among these are:

- Improved fallow
- Alley cropping
- Winter ploughing
- Mulching

This survey was conducted in August 1996 and involved 49 households. The respondents were farmers who had been contacted by SCAFE programme. Each interview was followed by a field inspection.

## **4.2 Results**

Of the 150 respondents, 95% preferred improved fallow over all other assessed measures. Of these 30% said because it was not labour intensive, 23% said because it was easy to understand and adopt and the remainder said because it was more like what they were already doing.

## **5. Indigenous Land Management**

Comprehensive land management must be based on knowledge and awareness of ecological interactions and interdependencies. Yet we know far too little about most ecosystems to make assessments with any certainty. We used further to assume that the person who has lived with and utilized the land does not know either. However all ecosystems have two common properties: complexity and dynamics. Only the local people understood these for their particular ecosystems. Understanding the evolution of communities through study of ITK is important for identifying the ecological conditions that must underlie sustainable land management.

One can then conclude that ITK is important because it provides the starting points for development of sustainable land management practices and it helps to achieve active participation of bed land users.

The success of land management projects often depends on local participation. Familiarity with ITK can help extension officers to understand and communicate with local people enhancing for participation and sustainable approaches to land management (Warren 19910). ITK used effectively in one society can help to solve problems faced by another society with a similar agroecosystem in another part of the world; normally with some modifications.

## **6. The Other Route**

So, in land management where did we really go wrong? My analysis of the situation is rather simple. On no one occasion did we try to understand what the local people were doing and why they were doing what they were doing.

We did everything that 'the west' was doing to increase agricultural production but we never bothered to look at what the people were doing. At best we ignored it and at the worst we persuaded with them to stop what they were doing for it was primitive and unworkable.

We applied straight and compound fertilizer, we cleared vast areas of land of all trees, we planted vast areas to monocrops and we removed all weeds from our fields. We abandoned our own seeds which had a broad genetic base and rushed for hybrid seeds with a very narrow genetic base after years of removing genetic diversity in the name of breeding.

What we have chosen to forget is the simple fact that the land management practices developed in the west were based on what the people were doing. The scholars understood what was happening and struggled to improve on it. They did not look for entirely new technologies and practices from elsewhere. are being practiced now.

We in the developing world were unaware that the measures introduced were based on the practices applied in the west. We apply them to our fragile ecosystems with no regard for ecological concepts and we continue to witness failure.

So there is much to do. It will continue to be very difficult for land management to improve in the tropics and subtropics as long as the local community's ways are not understood. After all it is the local people who manage the land and who will continue to make decisions on what should be done. Until technicians and policy makers faithfully represent and apply what is on the ground, not let a few academicians dictate what is one the ground but let the people on it say how they do things, until they reflect what the local people want and more important until they reflect the knowledge that comes from the grass roots, we will not be able to make sustainable land management a reality.

The trick is that we should not struggle to invent land management technologies but that we must discover land management technologies and indeed spend all effort to improve on them so that they fit in the modern world with its increased challenges of food security and sustainability.

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