

**THE HIMA PROJECT: ADOPTING A FARMING SYSTEMS
PERSPECTIVE IN ORDER TO DO SUCCESSFUL
PARTICIPATORY FORESTRY**

[Adopting a Farming System Approach to Facilitate Participatory Forest]

By

¹Richard Minja & ²Robert East

**1. Regional Catchment Forest Officer, -RPMU
2 Agroforestry Advisor/ Team Leader, MMA-Makete**

**Paper for World Bank/UNEP Africa Forestry Policy Forum. Nairobi, Kenya,
29-30 August, 1996.**

1.0 INTRODUCTION

HIMA ("Hifadhi ya Mazingira" in Swahili) is a land-use management and natural resource conservation programme in Iringa Region of the Southern Highlands of Tanzania. The programme was originally part of DANIDA's (Danish International Development Assistance) environmental sector support portfolio in Tanzania. Recent changes in DANIDA policies have placed HIMA under agricultural sector support.

As the HIMA Programme shifts its emphasis towards supporting the agricultural sector, it is appropriate to recall that woody vegetation comprises a significant component of the agricultural landscape in Iringa Region and is actively managed as part of the farming systems of the region (Wardell, 1991; HIMA/MARTI-Uyole, 1994; 1995). There may be both traditional as well as recently experienced economic reasons why farmers in high potential areas of the Region choose to establish/maintain trees on large expanses of land which could potentially generate more income from other crops (Deweese, 1994). Whatever the case, it is of paramount importance that forest resources be managed within the context of overall land use and natural resource management plans and for continued integration of the forestry sector with other pertinent sectors (DANIDA, 1995).

2.0 BACKGROUND

During the past decade, Iringa Region used to play a key role in agricultural production and natural resources productivity. Historically, Iringa Region was among the 4 major maize producing regions of the country. The estimated 300,000 hectares of natural forest land comprises part of the renowned Eastern Arc Forests which are characterized by a high level of biodiversity.

As a result of population increase, which is estimated to be 2.7% annually (Bureau of Statistics, 1988) more demand for forest produce, arable land for cultivation and other development activities has been created. Shifting cultivation, which is associated with use of fire, has become rampant. Uncontrolled grazing, which has led to devegetation and soil erosion, has continued unchecked. Wildfires, coupled with legal and illegal over-exploitation of forest products, have also been subsequent phenomena which have reached an alarming stage (Rodgers & Homewood 1983).

Consequently, both the viable forest ecosystems and potential agricultural land have been impaired or severely depleted to the extent of threatening the disappearance of rare and endemic plant and animal species (Rodgers and Homewood 1983; Lovett 1992; Mmari, 1996). This situation has, to a great extent, disturbed the equilibrium of rural livelihoods and their relationship with the natural resource base. For example, women in Mazombe and Wanging'ombe Divisions have to walk longer distances in search of firewood, thus undermining their roles in agricultural production and child care.

This has serious nation-wide implications considering that more than 90% of the rural population depend on firewood and charcoal as their major source of energy (TFAP, 1990) while at the same time an estimated 0.7% of the existing woodland/bushland within the country is cleared annually (McNeely, 1990). A notable contributing factor to woodland destruction around Mazombe, Idodi, Pawaga and Ismani areas has been tobacco farming/curing operations (CONCERN, 1989) which have also created conflicts of interest between household woodfuel needs and tobacco-curing uses.

A consequence of this overall increasing land pressure has been decreasing fallow periods on some agricultural land from the usual 5 years down to 2-3 years as observed in Kilolo and Bulongwa Divisions of the Region. Concurrently, it has become increasingly difficult to support agricultural production

without using inorganic fertilizers. According to UAC/DANIDA (1992), during the period of 1989 to 1992, 113,507 tonnes of fertilizers were distributed in Iringa Region.

During the 1970's and 1980's, encroachment into government controlled forest reserves increased at an alarming rate (Wardell, 1991). Uncontrolled tree felling and cultivation around water sources and within important watersheds has resulted in reduced dry season flow. Since 1991, a notable manifestation of this problem within the Region has been insufficient electrical output from the 80-megawatt Mtera Hydroelectric Dam along The Great Ruaha River which supplies 70.3% of the installed hydropower to the national grid. This problem has culminated in intermittent power supply to the national grid up to the present day, resulting in decreased industrial output and insufficient services to the social sector.

In 1989, HIMA-Iringa was incepted to arrest and remedy the severely degrading situation in Iringa District. The HIMA Programme started Region-wide operations by including Njombe and Makete Districts in 1993.

3.0 OBJECTIVES

The immediate objectives of the HIMA Programme are exemplified by those of HIMA-Iringa:

1. Improve the productivity and sustainability of agriculture and natural resource management, so as to increase the level and security of incomes, including poorer households, by 2005.
2. Improve catchment protection, reduce soil erosion and improve moisture retention in priority catchments.
3. Strengthen local institutions to enable them to support local communities in achieving viable and sustainable agricultural, natural resources management and catchment protection.

In order to achieve the above objectives, people's participation, institutional development and capacity building have been adopted as major strategies of each District project (HIMA/DANIDA, 1995). Much assistance is provided to grassroots level institutions to promote their capacity in implementing project activities, including forestry, while minimizing dependency on external material and financial input assistance.

These institutions include:

- Informal groups - e.g. traditional village leaders
- Schools - Mainly primary schools
- Village governments - Including existing committees
- Religious institutions - Congregations & individuals

Other strategies include bolstering nongovernmental organisations (NGOs) to practice innovative and participatory forestry technologies, such as fully utilizing locally available planting materials. The programme also assists NGOs to develop cost-effective information systems e.g. brochures, leaflets, music tapes.

Additionally, the programme encourages promotion of cost-effective and modern technologies in enhancing land-use (including forestry) practices in the Region. An example is the intended use of the "taungya" system in reclaiming encroached areas inside selected forest reserves rather than rushing to prosecute offenders, who are often the landless poor (Boonkird et. al., 1985). It is anticipated that strategies of this nature will become part of Tanzanian national forest policy which is currently under review.

4.0 MAIN ACTIVITIES

The programme operates in an integrated manner through Community Development, Agriculture/Livestock and Forestry Departments within each District Council. A "catchment approach" was used to select priority pilot villages using criteria of i) position within the catchment, ii) severity of environmental degradation and iii) responsiveness in accepting the programme activities. This has facilitated localized testing of programme approaches and strategies before expansion into other areas. HIMA-Iringa, as the pilot project within the programme, started with 9 villages in 1989 and later expanded to 15 villagers in 1994. At Regional level, HIMA is expanding into Ludewa and Mufindi Districts.

Forestry activities promoted by the programme include:

A) Farmers' and extension staff training/study excursions:

These trainings have included soil and water conservation techniques, agroforestry, organic farming, community-based forest management, on-farm techniques of raising bare-root/potted seedlings and household/village woodlot management. An element of these trainings has included production of brochures and booklets in Swahili and local languages.

B) Integrating forestry with crops and soil and water conservation measures: In order to maximize benefits from agricultural practices, integration of multipurpose trees with food crops is being promoted. The trees provide products and/or services to farmers in terms of fodder, firewood, timber and soil fertility improvement. Commonly promoted species include *Leucaena spp.*, *Grevillea robusta* and the indigenous trees *Faithertia albida* and *Albizia spp.*

The use of natural regeneration to reclaim degraded areas is being encouraged, including the use of *Ocotea usambarensis* and *Hagenia abyssinica* wildings where appropriate.

C) Research activities:

The major first steps which have been taken in this area include farming systems surveys which have included quantification of current agroforestry outputs with a view of interfacing HIMA interventions with stable, indigenous systems. Subsequently, appropriate indigenous and exotic multipurpose trees have been included in on-farm trials to supplement/complement existing systems. As a result, several species have been increasingly adopted by farmers in the project area (Minja & Mchomvu, 1995). These include:

Dodonea viscosa (Iuhahi)

Croton macrostachys (Mhvulungu)

Acacia sieberana (Migunga)

Faidherbia albida (Mipogoro)

Dombeya rotundifolia (Mkiwu)

Erythrina abyssinica (Mhemi)

Some other on-going basic research includes appropriate techniques to combat termite problems in tree nurseries and in the field (e.g. Mexican merigold). Other areas include identification of suitable trees for direct seeding/vegetative propagation and appropriate seed collection and processing techniques. Some species have already proven promising for direct seeding or vegetative propagation, including *Leucaena leucocephala*, *Faidherbia albida* and *Syzigium cordatum*.

D) Local institutional capacity building:

Through appropriate and judicious on-farm input support, HIMA Programme has concentrated on assisting the farmers in carrying out forestry practices starting at nursery level by provision of Polythene tubes, improved tree seeds and development of local nursery tools and materials. However, emphasis is placed on assisting farmers/institutions interested in diversifying their tree crops. Bare-root nurseries are being encouraged in the middle-to-upper potential zones while containerized seedlings are promoted in lower potential zones (Polythene and suitable localized containers). The current levels of inputs may differ between District projects, depending on climatic, cultural and economic differences. However, the HIMA Programme as a whole is seeking to strengthen the private sector's ability to provide these inputs by means of dissemination of marketing information and transport assistance.

In addition, HIMA has given technical assistance in management of selected District Council softwood plantations as well as marketing options for the forest produce.

E) Awareness raising:

The strategies used in this area include mass village meetings, radio broadcasts, World/HIMA Environmental Days and focus group meetings i.e. livestock keepers, farmers cultivating within a particular sub-catchment, pitsawyers.

Major thrusts include promoting the establishment of woodlots closer to homesteads, promoting the development and enforcement of appropriate bye-laws, conservation of natural forest remnants within the villages, and wildfire prevention.

A key area of HIMA policy is in awareness raising on gender issues as related to equity in sharing the benefits of natural resources, including forest products. In some areas of the Region (e.g. Kilolo Division), women farmers have no equal access to benefits accrued from woodlot harvests as do their husbands, particularly timber sales. (Minja et. al., 1996).

F) Support to natural forest management and appropriate land-use:

The HIMA Programme places much emphasis on assisting villagers to manage their own forest resources as common property. This has been achieved through boundary identification, followed by demarcation using tree seedlings. As part of its overall management, targeted villages are assisted by project staff to formulate their own bye-laws so that the village forest resources are adequately conserved. In Iringa District, 4,440 ha of public-land forests have been earmarked for village controlled management whereby villagers will have full ownership and much of the management initiatives and efforts will come from themselves.

A proposed "Moratorium Fund" for HIMA-Makete and HIMA-Njombe is intended to assist District Councils in improving revenue collection from natural resources while better equipping them to protect natural forests e.g. fire-fighting equipment. Increasing efforts by particular villages in the Region to stop movements of illegally gained forest products underscore the weaknesses within the existing system.

The HIMA Programme has also facilitated the surveying, boundary maintenance and mapping of selected Central Government Forest Reserves within the Eastern Arc Forest range. The programme has sought to fully involve villagers in these exercises with some successes have been achieved e.g. traditional village leaders in Makete indicating where their sacrificial forests lie within the reserves.

Other efforts to involve farmers in developing policies for land-use practices surrounding forest reserves has been the attempted establishment of "buffer zones" around selected natural forests. In 1995, a total of 854 farmers surrounding the New Kidabaga-Ulong'ambi (3400 ha), Yising'a-Lugalo (14,000 ha) and Image Forest Reserves (8,000 ha) of Iringa District raised a total of 342,000 tree seedlings for this purpose. However, the seedlings were planted ineffectively far from the forest as farmers feared loss of ownership since the existing forest ordinance does not clearly indicate the rights of surrounding communities in regard to this approach. If successfully integrated into national forest policy, it is anticipated that the buffer zone approach will alleviate many problems and satisfy the needs of the surrounding communities (FAO, 1978).

The HIMA Programme has strived, through continuous discussions and awareness raising, to encourage people to cease encroachment into forest reserves for crop cultivation. During the villagization program in 1974, about 110 farmers surrounding the 2,620 ha Numbe Valley Forest Reserve in Makete District encroached into the forest for pyrethrum cultivation. In 1995, HIMA-Makete successfully managed to halt this encroachment after long, focused dialogue and awareness raising campaigns.

4.0 IMPLEMENTATION PROBLEMS AND HOW THEY WERE DEALT WITH:

Customary land tenure systems do not allow free access for marginal farmers (especially women) to land for tree planting/agroforestry activities thus hindering their active participation in tree planting which is widely accepted as part of farming systems. Inequitable access to arable land, coupled with environmental extremes existing within certain parts of the Region (e.g. unreliable rainfall, prohibitively steep slopes, acid soils) has further lowered the agroforestry potential.

Additionally, as mentioned above, women do not have equitable access to the benefits accrued from natural resource management. These problems are being addressed through awareness raising campaigns, gender issues trainings for staff and villagers and the implementation of a "Women's Participation Fund" for small income-generating projects.

The obsolete 1953 Forest Policy which was an inheritance from the old colonial era does not sufficiently address how, at local level, participatory forest management of state controlled forests can be pursued. If policies are enacted in a fair way, local communities should be able to see the direct benefits of their participation in managing the resources. At least, the forest ordinance should have guaranteed them free access to some forest produce in gazetted forest reserves without having a license or permit. However, this policy is currently under review, involving dialogue between the major stakeholders on how best to cater for everyone's interests.

The existing forest product needs of farmers within the Region are not being adequately met, thus efforts to improve available germplasm are being pursued. Drought and disease resistant tree species, which are compatible with existing farming systems, are being introduced in some project areas. In Iringa region, *Cupressus lusitanica* trees have been attacked by *Cinara cuppressi* aphid to the extent of having been wiped out in the field. Suitable species of *Casuarina* and other timber/pole species are being introduced to compensate for these losses. Drought resistant species such as *Melia azadrach* and *Faidherbia albida* have been encouraged in semi-arid areas of the Region.

5.0 RESULTS:

To date, HIMA has made significant progress, although a number of issues remain:

Farmers' awareness has been raised sufficiently on agroforestry and natural forest conservation, for example hazards of bush fires. In Iringa District target villages, 63% of people are aware of the importance of agroforestry and have been enabled to practice the integration of trees and agricultural crops (Mdoe & Mvena, 1995).

Approximately 13,000 villagers in Iringa District have been provided with short trainings, including study tours to different on-going environmental projects in Tanzania. Table 1 shows the number of villagers trained in Iringa District on agroforestry and soil conservation techniques.

Table 1: Number of farmers trained on agroforestry & soil conservation techniques (1991-95)

Year	Women	Men	Total
1991	849	1171	2020
1992	920	1147	2067
1993	758	1220	1978
1994	1253	1633	2886
1995	1757	1921	3688
Total	5537	7092	12639

Source: Minja & Mchomvu (1995).

Participatory planning and implementation is now an accepted procedure within HIMA. It has been shown that, after 2-3 years of project implementation, villagers can produce their own simple workplans, incorporating their own activities with those introduced by HIMA (HIMA/DANIDA 1994). This kind of bottom-up planning has helped ensure that the villagers' perspectives are fully taken into account in the project activities.

HIMA support in Iringa Region has completely shifted from large, central nurseries towards small, sustainable individual and group nurseries. In Iringa District, central nursery production was scaled down from 2.1 million seedlings in 1991 to 0.6 million in 1994 when they were totally abandoned. Consequently, individual nursery production was boosted to a level of 1.6 million seedlings in 1995/96. In contrast to 4 central nurseries which were formerly located in regional/district/divisional centres far away from the target groups, 890 on-farm nurseries exist today in Iringa District. Suffice it to say that individual nurseries are more sustainable, cost-effective and reduce mortality losses from nursery to planting site. Figure 1 shows central and individual nursery production in Iringa District.

Error! Not a valid link.

Source: Minja et al 1995

HIMA has significantly assisted and cooperated with the central government in managing forest reserves. Between 1989 and 1992, about 146 km of boundary length was re-surveyed and demarcated with tree seedlings in Iringa District and about 30,000 ha of natural forests were inventoried. Likewise, in Makete District from 1993 to 1996, 36 km of forest reserve boundaries were (re) established and maintained. This support has helped resolve some conflicts/confusion between village government and central government-controlled catchment areas and has facilitated participatory land-use planning. Consequently, agricultural encroachment into the catchment forests has been virtually halted.

The Udzungwa Forest Management Project was initiated in 1994 as a component of the HIMA Programme and is also centred on participatory approaches and joint management among the stakeholders. Some preliminary socio-economic and biophysical studies have been undertaken within the project area. The findings have provided important information necessary in decision making and preparation of management plans. Promising discussions are currently on-going between the project and The Forest Division concerning implementation of this unique project.

Some successes have been achieved in alleviation of village women's workload, primarily through promotion of woodlots close to households. During the period 1993-96 within Kising'a village of Iringa District, an estimated weekly average of 2.85 women household hours have been/will be saved as a result of tree planting, or 5.1 hours/week as from 1998 onwards (Minja et. al., 1995) (Figure 2). Figure 2.

Establishment of woodlot in villages has contributed in reduction of wood extraction from natural forest for timber, poles and firewood purposes.

Error! Not a valid link.
Source: Minja et al 1995

6.0 LESSONS LEARNT AND HOW THEY ARE SHAPING HIMA:

Woody vegetation constitutes an important component of the agricultural landscape in Iringa region and is actively managed as a perennial component of farming systems. It is thus appropriate that the programme has accorded farm forestry its due importance within agricultural sector support. The potential for agroforestry output appears to be great if issues of 1) socio-economics, 2) land tenure and rights (including gender issues) and 3) environmental amelioration (including biodiversity) are addressed by HIMA interventions.

The challenge for HIMA is to continue to introduce forestry/agroforestry technologies in an integrated, holistic manner as part of its "catchment approach", utilizing the farmers as true partners in on-farm trials. Their own criteria, including economic circumstances, must be taken into account to augment on-farm experiments (East, 1986; Pinney, 1991).

Individual tree nurseries have proven to be more economically viable, easily adoptable and sustainable relative to central nurseries. On-farm nurseries encourage farmers' initiatives and put the planting materials closer to where they are needed, thus ensuring healthier planting stock and lower mortality.

In order to forge ahead successfully in promoting sustainable and participatory forest resource management, it is vital that the existing forest policy be reviewed in order to fully accommodate the stakeholders' interests. Concurrently, existing national policies on land-use rights should be re-examined and ultimately up-dated to accommodate societal changes.

Judicious provision of appropriate, small-scale nursery support such as seeds, Polythene tubing and training has led to significant tree planting achievements within an environment of active peoples' participation. At the same time, HIMA has to strengthen support to the private sector (including NGOs) to achieve any measure of sustainability.

7.0 REFERENCE:

Boonkird, S. A, Fernandes ECM and Nair PKR (1985) Forest villages: An agroforestry approach to rehabilitating forest land degraded by shifting cultivation in Thailand. *Agroforestry Systems* 2: 87-102.

Bureau of Statistics (1988) Population census. Planning Commission, President's Office. Dar es Salaam.

CONCERN (1989) Description of Ismani Division. Report on Planning study.

DANIDA (1995) DANIDA Sector Policies for Forestry and Agro-forestry. Ministry of Foreign Affairs, Copenhagen, Denmark.

Dewees PA (1994) Social and Economic Incentives for Smallholder Tree Growing. FAO, Rome, Italy.

East RM (1986) Social Forestry Extension Methodologies and the Introduction of Agroforestry into Traditional Farming Systems of South Nyanza District, Kenya. KREDP/Energy Development International Working Paper, Nairobi, Kenya.

FAO (1978) Forestry for Local Community Development: Forestry Paper No. 7. FAO, Rome, Italy.

HIMA Makete/MARTI-Uyole (1994) A survey of the farming systems of Bulungwa Division, Makete District. HIMA-Makete.

HIMA/DANIDA (1994) HIMA phase II appraisal Report. Ministry of Foreign Affairs. Copenhagen.

Lovett, J.C. (1992) Udzungwa Forest Management Project. Main Report of Project Preparation Mission. Vol. I Prepared for DANIDA. Dar es Salaam, Tanzania.

McNeely, J. A., Miller, K.R.; Reid, M.V. ; Mittermeir, R.A. S, A Werner, T. B., Conserving the Worlds Biodiversity. The World Bank, WRI & WWF . Glard and Washington.

Mdoe & Mzena (1995) HIMA Iringa Impact study. A consultancy report. 1-UMA. July 1995.

Minja R. and J. Mchomvu (1995). An overview of Agroforestry practices in HIMA project Iringa, Tanzania. A paper presented to Technical and Professional Agroforestry Education Workshop in Eastern and Southern Africa held at Sokoine University of Agriculture, Morogoro 4-5 December 1995 .

Minja, R., F. Nikata, I. S. Massam and P. Kerkhof (1996). Farm Forestry Impact in Southern Highlands Watershed, Tanzania. In Jensen J. R. , T. Sawhney, S. L. Seth & P. Kumar (Edts). Proceedings of Danida's International Workshop on Watershed Development. 2-11 December 1995. Hubli & Karnataka State, India. WDCU Publication No 1. page 433-446. April 1996. New Delhi.

Rodgers, W A & K. M. Homewood (1982). Biological Values and Conservation prospects for the forests and primate populations of Udzungwa Mountains, Tanzania. Biological Conservation 24: 285-304.

TFAP (1990) Tanzania Forestry Action Plan. Ministry of Natural Resources and Tourism, Technical Paper No 1990/91 -2007/08.

UAC/DANIDA (1992) A study of the feasibility of sustainability of substituting NPK (8:35:5) with TSP fertilizers for application on food crops production (Mainly maize in southern highlands of Tanzania)

Wardell (1991) Identification report and preliminary project proposals for Makete District. DANIDA/GOT Identification Mission.

Location map