

SONGEA AGRO-FORESTRY AND SOIL CONSERVATION PROJECT: AN OVERVIEW

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INTRODUCTION

Songea Agroforestry and Soil Conservation Project is a component of the ASSP/Food Security programme and began in July 1991. Today the project is operating in 33 villages in the four Division of Madaba, Mputa, Mahukuru and Ruvuma, covering two-thirds of the total district area. The long term objective of the project is to contribute to sustainable rural development and environmental conservation in potential coffee and maize growing areas by encouraging agroforestry and by forestry measures, ensuring a sustainable supply of forestry and agricultural products.

PROBLEMS FACING SONGEA DISTRICT

The Agroforestry and Soil Conservation Project was initiated in Songea District for a number of reasons. Songea District covers 3392 km, 50% of the total area of Songea Region. Agriculture occupies 5% of the total District area and more than 90% of the population depends on agriculture for their living and employment. Smallholders cultivate about 1 hectare per household using simple technology, including fertilizer application. Reports from the Ruvuma Regional Agriculture and Livestock Development Officer (RALDO) show that out of 26,824 tonnes of fertilizer used in Ruvuma, Songea District alone consumed 70%. Farmers who have been using artificial fertilizer continuously on the same farmland for a period of four years experience diminishing returns in the fifth year when the same amount of fertilizer is applied. The soils in Songea appear to be becoming increasingly acid (pH 4.6).

Monoculture maize production is the predominant farming system, but maize does not provide good soil cover and hence does not provide protection from soil erosion. The soil cover provided by mixed cropping, or by dense forest, is better than that provided by a monoculture where there is bare soil.

In the hill area of Madaba the land is subjected to soil erosion by surface run-off, and in Mputa Division, especially in Likuyu Settlement and Suluti Village, is subjected to strong wind erosion that destroys crops and houses. In January 1992 more than 100 houses were destroyed leaving hundreds of inhabitants homeless.

Encroachment into forest water catchment areas disrupted the water cycle for example in the Matengo catchment which is vitally important in the supply of water for rural people in Songea. The inhabitants now experience water shortage during the dry season as a consequence of a decrease in the water table level. The same applies to other village-based water catchments.

The district is facing an alarming rate of deforestation as a result of the expansion of farms and shifting cultivation and the use of wood fuel for domestic and non-domestic needs. Little attention is given to the replacement of trees by the development of community forests and the practice of agroforestry. According to a survey of wood fuel consumption done by the Songea District Forest Department in 1988/89, the ratio of replanting to harvesting is 1:30. The resulting decline in the forested area means that women have to walk about 4-8 km in searching of firewood. The present annual demand for, and supply of, wood products in Songea District is shown in Table 1.

Table 1. Present annual demand for and supply of wood products in Songea District (population 269,857)

	Amount of wood (m ³)
<i>Demand</i>	
Domestic fuelwood (2 m ³ person ⁻¹)	539 714
Polewood (0.25 m ³ person)	67 464
Fuelwood for tobacco curing (100 m ³ t ⁻¹ , 4000 t)	400 000
Sawnwood (0.0015 m ³ person ⁻¹)	10
Fuelwood demand for other uses including brick making, brewing and pottery (estimated at 1% the above total)	10 080
Total	1 018 068
<i>Supply</i>	
Total production from the National Forest, estimated to cover about half of Songea District	1 696 250
Surplus	678 182

Source: Mbwana, 1991.

PROPOSED SOLUTIONS

A number of solutions have been proposed to counter these problems, including: the promotion of water and soil conservation measures on farms for improved and sustainable crop production; rehabilitation of catchment forests and degraded hills, aimed at water, soils and forest conservation; the introduction and improvement of agroforestry techniques by means of training and demonstrations of results; the demarcation and recording of water catchments to allow the planning of a continuous supply of water; the promotion of permanent tree shade and windbreaks in coffee and food crop areas; the promotion and encouragement of tree planting, by training the villagers on simple and cheap means of nursery establishment, and tree management on a self-help basis, with the aim of achieving community participation to ensure that the project is sustainable.

To achieve these objectives the project is targeting a number of groups; individual farmers (for agroforestry and community forestry); groups and institutions such as school (for agroforestry and community forestry), womens' groups and non-governmental organizations (NGOs); rural communities (for village-based water catchments and community forestry); and regional, district and village extension workers (for project sustainability).

ACTIVITIES UNDERTAKEN UP TO JUNE 1992

Activities associated with the management organization of the project include the selection of extension staff, the recruitment and training project of project staff and the establishment and organization of the infrastructure (office construction and procurement of tools, materials, equipment and transport facilities).

In relation to soil conservation and erosion control, 6.8 km of macro-contour bunds have been laid out and planted with multi-purpose tree species and shrubs. A total of 120 farmers have been trained

in contour layout. Windbreaks totalling 8 km have been established by individual farmers around their farms in Mputa Division, although the survival rate to date is only 55%.

Under self-help and self reliance reforestation schemes, a total area of 188 ha has been planted, 40 ha by schools, 112 ha by individuals, 20 ha by village government, 11 ha by mission and 5 ha by UWT. However, the survival rate so far is only 65%, and less than 55% in the Umoja wa Wanawake Tanzania (UWT) woodlot.

To protect village-based water catchments, 542 ha in four catchments that include Londoo, Machinjioni, Lilondo, Chabruma, Igawisenga and Maposeni have been demarcated and surveyed. A total of 20.5 km of boundary have been cleared or opened, and 26 ha planted with indigenous species to fill gaps in the forest cover of the catchments.

Up to June 1992, 1.7 million seedlings have been raised in 10 project nurseries, at Bombambili, Lilondo, Mputa, Luguwisenga, Lumecha, Mpitimbi, Maposeni, Mbinga, Mhalule and Matetereka. The 68 targeted groups are being encouraged to establish on-farm nurseries.

The targeted groups have been trained in nursery operations. Other training activities to date include 121 mobilization meetings to stimulate interest and involvement, and an agroforestry field study session held at Mbinga for 35 contact farmers attained.

AGROFORESTRY MEASURES PRACTISED AND RECOMMENDED

In areas of poor fertility where fertilizer is applied in Ruvuma and Mahuku, it is recommended that alley cropping (hedgerow intercropping) should be introduced. This involves the management of rows of trees planted with annual crops in the alleys between. This practice should maintain and increase crop yields by improving the soil and the micro-climate. The hedge trimmings can be used as a mulch to help control weeds. Nitrogen-fixing tree species can be used as the hedge, with a spacing of 2 m within rows and 8 m between rows of trees.

On the sloping ground of Madaba, macro-contour bunds planted with different multi-purposes trees (fanya chini) and shrubs will be introduced. In areas where the slope is more than 20%, supplementary alley cropping with leguminous plants, such as *Crotolaria acroica*, will be used to increase soil and serve as a mulch to protect against run-off erosion.

In Maputa and Suluti windbreaks will be supplemented by intercropping with fast growing, legumes, such as *Sesbania Sesban* to provide wind protection as quickly as possible, and to improve soil fertility and provide shade before the windbreaks are mature. The recommended spacing is one row of trees in every five rows of maize, with tetrees spaced 90 cm apart. *Sesbania* should be planted at intervals to produce a 5 m triangular spacing.

The planting of shade trees in coffee and shelter belts on farmland is an agroforestry practice already being undertaken by individual farmers.

IMPACT OF THE PROJECT

The long term outcome of the project is yet to be realized. However, there are already indications that its recommendations are being accepted. For example: an increase in the number of farmers requesting contour bund layout; establishment tree the nurseries by individuals and participation in the planning and implementation of project work.

PROJECT METHODOLOGY AND APPROACH

Because of the complexity of project intervention (involving agriculture, forestry, land use, livestock etc.), staff from all these departments, and those involved in community development and beekeeping,

have been incorporated in the project. Integration occurs at both the village and District level (village and zonal extension workers). There is a management and steering committee.

A participatory approach is being adopted. Village environmental protection committees have been introduced. These formulate their strategy plans for intervention by the project in their respective areas.

A number of mobilization and other extension approaches are used. These include: direct farmer contact (field visits for advice and training), farmer study tours (for the demonstration of results), meetings and seminars, film shows, and primary school dramatic competitions.

In order to achieve proper planning and monitoring, the project has started to use the objective-oriented planning method and to carry out hierarchical logical analyses of problems and solutions.

CONSTRAINTS

Constraints to the successful implementation of the project include: the farmers slow rate of adoption; the limited resources to cover the affected area; the land tenure system (individual ownership of farms delays work on contour layout because of the long time spent in negotiation); and uncontrolled fires.

FUTURE PLANS

In future, the project has plans to: strengthen existing activities; expand activities to include tobacco growing areas; introduce *Macadamia tetraphila* in coffee growing areas as a supplementary cash crop; co-operate with other institutions; and improve people's participation to ensure project sustainability. The project also aims to increase the involvement of women and to investigate the problems which prevent full participation by women in the project at present. This will go in parallel with an increase in the number of female extension staff.