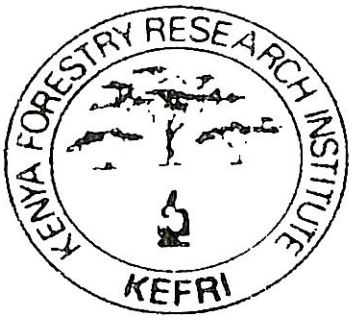
# COURSE REPORT

*Third Country Training Programme in Kenya*

# REGIONAL TRAINING COURSE FOR THE PROMOTION OF SOCIAL FORESTRY IN AFRICA

**29th September - 31st October 1997**




**KENYA FORESTRY RESEARCH INSTITUTE (KEFRI)**

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

**December, 1997**

# *COURSE REPORT*

## *THE THIRD REGIONAL TRAINING COURSE FOR THE PROMOTION OF SOCIAL FORESTRY IN AFRICA*

*(29th September - 31st October 1997)*

*Compiled and edited by*
*Michael O. Mukolwe*

KEFRI/JICA
Kenya/Japan Social Forestry Training Project
*Third Country Training Programme In Kenya*

December, 1997

## PREFACE

Countries in the African region are various facing similar problems, most importantly, sustaining natural forests/tree resources, from destructive effects of deforestation, fuelwood shortage and environmental degradation, among others. The severity of these negative effects vary not only from country to country, but also the areas involved. In order to address these forest/tree related issues, most countries in Eastern, Central and Southern Africa, are more than ever before placing emphasis on the introduction and/or development of Social forestry policy and programmes in the region which involve their rural populations in conservation and management initiatives. The development of Social forestry in the region is at various stages and therefore, regional cooperation and exchange of information and experiences in this field is of great importance in facilitating its advancement.

It is in this respect, that the "Regional Training Course for the Promotion of Social forestry in Africa" was initiated in 1995 for five years, with one course lasting five weeks per annum. The Third course was held from September 29th to October 31st 1997, and conducted by the Kenya Forestry Research Institute (KEFRI) with support of the Japan International Cooperation Agency (JICA), under JICA's Third Country Group Training Programme.

A total of 21 participants, comprising 14 males and 7 females, were invited from 9 countries in the region, namely; Botswana, Ethiopia, Lesotho, Namibia, South Africa, Tanzania, Uganda, Zambia and Zimbabwe. The third course of the five-year programme was conducted successfully according to schedule. It was further strengthened by its joint implementation with the First Social Forestry Conference on tree planting, in which information and experiences on Social Forestry Training Project (SFTP) phase II (1992 - 1997) were presented. The conference which came right in the mid-way of the training programme was held at KEFRI from 29th September to 2nd October 1997. About forty paper were presented and a field trip organised to the Project sites in Kitui.

Special thanks are due to JICA for sponsoring the course, to the participants for their very active participation and discussions, and to the resource persons for their dedicated contribution. We would also like to thank the Chief Conservator of forests, and JICA Resident Representative in Kenya for their most encouraging speeches at the opening ceremony, not to mention the representatives of the Director, Commissioner and General Manager of Forestry in South Africa, Uganda and Zimbabwe, respectively, for their encouraging presentations on their country experiences.

We hope that the other subsequent courses will be further improved by incorporating experiences from this course and conference , and that this would contribute to the development and conservation of forest resources in the region through the promotion of Social forestry.

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## 1.0 IMPLEMENTATION

### 1.1 Administration

(1) Course Title

"Regional Training Course for the Promotion of Social Forestry in Africa"

(2) Duration

29th September - 31st October, 1997: (5 weeks)

(3) Objectives

At the end of the course, the participants are expected to have:-

1. fully understood the concept of Social forestry and its usefulness in enhancing forest conservation and mitigating desertification in the region.

2. developed their abilities in policy formulation to promote Social forestry which enable the application of Social forestry strategy to various local conditions of participating countries.

3. learnt effective measures to be taken to disseminate the practice and related techniques of Social forestry to farmers and other beneficiaries.

4. redeveloped their abilities to resolve problems in the promotion of Social forestry by expanding their knowledge and techniques and by exchanging experiences, among participants from other countries.

(4) Course Preparation

| | |
|---|---|
| 10th - 15th October 1995: | JICA Study Mission in Kenya |
| 21st November 1995: | Signature to Record of Discussions |
| 23rd June 1997: | Distribution of G.I to participating Countries |
| 20th August 1997: | Selection of the participants |
| 3rd September 1997: | Invitation letter to the participants |

(5) Number of Applicants and Selected Applicants
See Appendix 2-b

(6) List of Participants
See Appendix 2-c

## 1.2. Summary of Course Curriculum

The detailed course programme is attached as Appendix 3.

*1) Introductory concepts*

* Introduction/Programme Review
* Social Forestry Development Overview
* Introduction to Social Forestry Concepts and Practices
* Introduction to Agroforestry Concepts and practices
* Global Environmental Issues with reference to Africa
* Japanese Forestry and Cooperation
* Policy and Social Forestry Development
* Urban and Amenity Forestry

*2) Development*

* Classification of Agroforestry technologies and Practices
* Tree Seed Production, Collection, Processing and Handling
* Social Forestry Development Strategies
* Social Forestry Nurseries, Establishment and Management Techniques
* Tree Species for Social Forestry Development
* Appropriate Tree Establishment Techniques
* Appropriate Tree Management Options and Techniques
* Woodfuel Production, Consumption and Conservation Systems
* Pest Management in Social Forestry Systems
* Disease Management in Social Forestry Systems
* Small-scale Social Forestry Industries, Products and Services
* Adaptive on-farm Agroforestry research and development

*3) Application*

* Socio-cultural and Economic Issues in Social Forestry Development
* Gender Issues in Social Forestry Development
* Negotiations and conflict management for sustainable Social Forestry Development
* Rehabilitation and Integrated Management of Degraded Areas
* Integration of Land Use Systems for Social Forestry Development
* Silvipastoral Management Strategies in Grazing Areas
* Social Forestry Extension Surveys and Appraisal Methods
* Research-Extensionist-Farmer Linkage Mechanisms
* Framework for Planning and Management of Participatory Social Forestry Projects
* Social Forestry Extension Strategies
* Communication Skills for Social Forestry Development
* Psychology of Adult learning and Development
* Participatory woodland management in Dryland Ecosystems
* Planning and Designing of Social Forestry Training Programmes

* Leadership Skills for Social Forestry Development
* Monitoring and Evaluation of Community Oriented Programmes

4) *Support*

* Presentation of Country Reports
* Case Study: Social Forestry Training Project (Kitui)
* Case Study: Miti-Mingi Mashambani Project (Nakuru)
* Case Study: KWAP Busia
* Case Study: Maseno On-farm Agroforestry (Maseno)
* Case Study: Mt. Kenya Region (Embu, Nanyuki)
* Case Study: Elangata Wuas Ecosystem Management Programme (Kajiado)
* Case Study: Lomizones Farmer organized field day (Migori)
* Case Study: Bamburi Portland Farm Project (Mombasa)
* Presentation of Group Work and Summary
* Field Visits/Study tour Reports and Summary
* Course Evaluation

## 2.0 EVALUATION

### 2.1 General Comments by the Host Institute

#### 2.1.1 *Introduction*

The Kenya Forestry Research Institute (KEFRI) has since inception in 1986 continued to strengthen its capacity to do research and disseminate appropriate technologies. The institute has played a leading role in a number of forestry disciplines, particularly Social forestry.

Social forestry is one of KEFRI's priority programmes that, through the Kenya/Japan Social Forestry Training Project (SFTP), has facilitated the enhancement of awareness, knowledge, operational skills, initiatives in technology development through attitude and local involvement of the beneficiaries. This has been realized through organized Pilot forest activities and short-intensive in-service training courses, workshops and seminars for a broad spectrum of participants. Training has been carried out at local, national and currently regional levels. As a result of experiences accumulated at national level, a pool of readily available experienced resource persons, availability of modern training facilities, and the common development needs among African, countries to mitigate land degradation and improve the living standards of the rural communities, SFTP initiated through the Third Country Training Programme entitled, "Regional Training Course for the Promotion of Social Forestry in Africa". This has been made possible with the financial support of the Government of Japan through Japan International Cooperation Agency (JICA).

The Regional Training Course is a unique annual training programme scheduled to run for five years (1995-1999). It is intended to cover 13 counties in Eastern, Central and Southern Africa, all of which, have more or less similar natural resource conservation issues, socio-cultural and economic as well as bio-physical conditions. The Regional Training Course is seen as unique in the sense that it has enormous potential to facilitate the preparedness to take Africa across to the new century. Most importantly, it has not been chosen but has be participatorily formulated to address a set of specific problems or circumstances, through consolidated efforts of past and current achievements.

The Third Regional Course is further unique in that it was implemented concurrently with the First Social Forestry Conference on Tree Planting in semi-arid areas which was organized by SFTP and held from 29th September to 2nd October 1997, at KEFRI, Muguga

#### 2.1.2 *Course Objectives*

The Third Regional Course for the Promotion of Social Forestry in Africa like the two previous ones had the objectives that the participants would at the end of the course to have:-

- fully understood the concept of Social forestry and its usefulness in enhancing forest conservation and mitigating desertification in the region.

- developed their abilities in policy formulation to promote Social forestry which enable the application of Social forestry strategy to various local conditions of participating countries.

- learnt effective measures to be taken to disseminate the practice and related techniques of Social forestry to farmers and other beneficiaries.

- enhance their abilities to resolve problems in the promotion of Social forestry by expanding their knowledge and techniques any by exchanging experiences, among participants from other countries.

It is commendable to note that most of the participants expressed that these objectives were met. However, only one topic on Negotiations and Conflict management in Sustainable Social Forestry Development was not covered. This was because the resource person was not available as scheduled. Nevertheless, the topic was exhaustively covered during the group discussion/panel sessions.

### 2.1.3 *Course Participants and Resource Persons*

The 3rd Regional Training Course was attended by twenty one (21) instead of the normal twenty(20) invited participants. They were drawn from nine (9) countries in Eastern, Southern and Central Africa, namely; Botwana (1), Ethiopia (3), Lesotho (3), Namibia (2), South Africa (2), Tanzania (3), Uganda (1) Zambia (3), and Zimbabwe (3). This was necessitated by the inclusion of a late Ugandan participant. However, his inclusion was catered for within the available budgetary allocation. The disciplines represented by the participants were mainly forestry, agriculture and/or wildlife and beekeeping. The participants were drawn from extension, research, training and education institutions.

The course was further strengthened by the presence of representatives of South Africa's Director of Water and Forestry Affairs (Mr. T.J. Van der Merwe), Deputy Director, Community Forestry; Zimbabwe's, General Manager (Mr. Mushaka) and Uganda's Commissioner of Forestry (Mr. Ignatius Akileng)

The course also drew resource persons from KEFRI, related Government Department/Institutions, University, Non-governmental Organizations, and Nairobi based International agencies.

It is evident that such diversity in the backgrounds of participants, countries, resource persons and their interactions with farmers greatly served to enrich the broad exchange of ideas and experiences among the participants.

### 2.1.4 *Course Curriculum*

The course contents were generally comprehensive and sequentially spread across the four broad course objectives or themes, namely; introductory, development, application and supportive disciplines. Some topics were not directly presented as has been the case with the previous regional

courses. This is because they formed major presentation topics during the Social Forestry Conference. Activities presented were considered as most interesting and beneficial by the participants. No new topics were proposed or old topics to be deleted. However, there is need to identify appropriate resource persons who are able to fully meet the learning objectives. The course programme is included as Appendix 3 of this report.

### 2.1.5 *Course Structure*

There is no doubt that the course was structured in conformity with the principles of education and training as well as the continuum of teaching/training methods, thus drawing on participants active involvement and initiatives. The course comprised of conference sessions, improved lectures, group work discussions, presentations, audio-visual observations, demonstrations both with and without practice and field visits to related institutions and farmers in Central, Eastern, Rift Valley, Nyanza and Western provinces of Kenya. Indeed, only the North-eastern and Coast Provinces were not covered. The methods were in most cases employed with enthusiasm and diligence making the course appropriate and topics applicable in different situations. However, there is need to review respective topics' time allocation and identify other potential field visit areas.

### 2.1.6. *Sustainability*

For this first time the nominating countries/organisations were required to meet the Airport tax at both ports of entry and departure for their successful applicants. This was received with mixed feelings but just because it was not brought to the attention of the successful applicants by the nominating organizations, despite it having been clearly indicated in the G.I.

### 2.1.7 *Course Evaluation*

Generally, three different modes of evaluation were employed in assessing the way the Third Regional Training Course was organized and implemented. These included *Extra Evaluation Form* which basically gave a feedback on the performance of each resource person and the *General Course Evaluation Form* as the standard of immediate impact of the training as well as frank responses from day-to-day interaction with the participants.

It is evident from the frank responses of the participants that the course was very successful. They further conceded that positive attempts were made to meet their different expectations. Most resource persons were rated as *good* to *excellent*, and where this was not realized, efforts would be made to improve on the same. However, the participants did express concern and/or appreciation over the following for future courses:-

(i) Include Kenyan participants to enrich the training programme.
(ii) Improve on overall time management.
(iii) Per-diem be increased to US$25-30.
(iv) Any new and useful development or findings should be communicated to the ex-participants.

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(iv) Any new and useful development or findings should be communicated to the ex-participants.

(v) The efforts and achievements of the Kenya/Japan SFTP is a good example to other African countries.

### *2.1.8 Achievements since the first regional course*

Table 1. Attendance by country per year.

| Country | 1st Course | 2nd Course | 3rd Course | Total |
|---|---|---|---|---|
| Angola | - | - | - | - |
| Botswana | 3 | 1 | 1 | 5 |
| Ethiopia | 3 | 1 | 3 | 7 |
| Lesotho | - | 1 | 2 | 3 |
| Malawi | 2 | 2 | - | 4 |
| Mozambique | - | 1 | - | 1 |
| Namibia | - | 2 | 2 | 4 |
| South Africa | 2 | 2 | 3 | 7 |
| Swaziland | 1 | 1 | - | 2 |
| Tanzania | 2 | 2 | 3 | 7 |
| Uganda | 3 | 1 | 1 | 5 |
| Zambia | 2 | 2 | 3 | 7 |
| Zimbabwe | 2 | 2 | 3 | 7 |
| TOTAL | 20 | 18 | 21 | 59 |

- The regional course has continued to provide an avenue for facilitate regional collaboration in rational and sustainable natural resources management.

- The participants who successfully complete the course are awarded a certificate of participation by JICA/KEFRI.

**Future prospects**

- The field of Social forestry is very dynamic. It is rapidly becoming important as a subject for scientific research and a popular sector for community development. Indeed, new development initiatives are being taken up, experiences built up and new hot topics such as environmental economics, gender equity, negotiations and conflict management, urban agroforestry and agriculture and monitoring and evaluation mechanisms due to the current development trends.

- The regional course is seen as unique in the sense that it has enormous potential for facilitating the preparedness needed to promote social forestry as a policy instrument for enhancing environmental conservation, mitigating the adverse effects of desertification and contributing to improvement of the living standards of both the rural and urban communities.

- That the regional course will continue to provide an avenue for facilitating regional collaboration.

- That the regional course will provide a pool of trained personnel to initiate and facilitate in the implementation of social forestry programmes in all the participating countries. The desired impact will be realized by the level of community involvement and achievement of sustainable levels of their basic tree based needs.

- It is not too early to start thinking about the sustainability of the regional course particularly after, 1999.

### 2.1.9 *Conclusion*

There is no doubt that the Third Regional Training Course was successful. Most participants were satisfied with the course. They felt motivated as they had been provided with knowledge and new skills in Social forestry development.

## 2.2 Summary of evaluation by the Participants for the First and Second Regional Courses

** Each question was given the score from 1 to 5 for example, score 1 was given to "unaware at all" and 5 to "fully aware" in the question 1-(1) below.*

** The figure shown in the results here is the number of each respondent (total 21), and average score of each question.*

** The comments given below are some exampled that appeared tobe quite common observation among the participants, although there were several countrary comments.*

### 1. *Objectives*

*a) Awareness of course objectives before coming to Kenya* ***average 4.0***

| not aware at all | | | | fully aware |
|---|---|---|---|---|
| (1) | (1) | (4) | (6) | (9) |
| 1 | 2 | 3 | 4 | 5 |

*b) Objectives met* ***average 4.5***

| not met | | | | fully met |
|---|---|---|---|---|
| | (2) | (13) | | (6) |
| 1 | 2 | 3 | 4 | 5 |

*c) Fulfilment of expectations from the course* ***average 4.0***

| not fulfilled | | | | fully fulfilled |
|---|---|---|---|---|
| | (4) | (13) | | (4) |
| 1 | 2 | 3 | 4 | 5 |

***Comments related to the above issues***

* Generally well covered objectives.

### 2. *Course Curriculum*

*a) Coverage of topics* ***average 3.4***

| incomplete | | adequate | | too broad |
|---|---|---|---|---|
| | | (12) | (9) | |
| 1 | 2 | 3 | 4 | 5 |

b) *Level of lectures- **average 3.3***

| too elementary | | adequate | | too advanced |
|---|---|---|---|---|
| | (1) | (12) | (7) | (1) |
| 1 | 2 | 3 | 4 | 5 |

c) *Teaching method- **average 3.8***

| very poor | poor | good | very good | excellent |
|---|---|---|---|---|
| | | (7) | (10) | (3) |
| 1 | 2 | 3 | 4 | 5 |

***Topics rated as most interesting include:- (In order of rating)***

* *Communication Skills for SF Development*
* *Social Forestry Extension Strategies*
* *SF Extension Surveys and Appraisal Methods*
* *Role of Gender and Participatory Approaches to SF*
* *Tree Seed production, collection and handling*
* *Psychology of adult learning and development*
* *Research-Extension-Farmer Linkages*
* *Urban and Amenity forestry*
* *Global Environmental Issued with reference to Africa*
* *Adaptive on-farm AF research and development*
* *Monitoring and Evaluation of community oriented SF programmes*
* *Socio-cultural and economic issues in SF Development*
* *Silvopastoral Management strategies in grazing areas*
* *Policy and SF Development*
* *Pest and Disease Management*
* *Leadership skills for SF Development*
* *Field Visits*

***Additional suggested topic(s)***

* *Environmental Assessment Techniques.*

3. ***Time allocation***

a) *Lectures presented **average 3.2***

| too little | | adequate | | too much |
|---|---|---|---|---|
| | (3) | (11) | (7) | |
| 1 | 2 | 3 | 4 | 5 |

*b) Study tours undertaken* ***average 3.0***

too little adequate too much

(5) (11) (5)

1----------2----------3----------4----------5

*c) Level of lectures presented* ***average 3.0***

too elementary adequate too advanced

(1) (3) (11) (6)

1----------2----------3----------4----------5

*d) Discussion sessions-* ***average 3.0***

too little adequate too much

(1) (3) (11) (6)

1----------2----------3----------4----------5

e) *Intensity of the course -* ***average 3.2***

leisurely adequate too hard

(4) (14) (3) (3)

1----------2----------3----------4----------5

*f) Total Duration of the course (%)*

too short adequate too long

(1) (4) (12) (4)

1----------2----------3----------4----------5

***Comments related to the above issues***

* A good course curriculum covering a wide range of subjects.
* Generally good resource persons drawn from different professions hence good lectures and well covered discussion sessions.However, there is need to change a few of them as indicated in the *Extra Evaluation Forms.*
* Very participatory teaching - learning methods employed, thus contributing to educative and interactive lectures and field study tours.
* Managed to cover all scheduled topics within a short time, despite the heavy work load.

h) *Applicability of techniques learnt in participant's country-**average 3.8***

almost none almost 100%

(7) (11) (3)

1----------2----------3----------4----------5

***Comments on applicability of knowledge and skills learnt***

* The spirit of the farmers towards Social forestry is very high, while the activities of the women groups were very interesting and encouraging.
* With a little modification based on bio-physical and socio-cultural conditions, most techniques observed are applicable in our respective countries.

4. ***Course Administration and Management***

a) *Pre-course information (briefing/orientation etc) -**average 4.0***

very poor good excellent

(1) (2) (6) (5) (6)

1----------2----------3----------4----------5

b) *Minimum preparation time at the participants home country - **average 2.6***

2wks 3wks 4wks 8wks 12wks plus

(3) (5) (10) (3)

1----------2----------3----------4----------5

c) *General course coordination - **average 3.6***

very poor good excellent

(3) (5) (10) (3)

1----------2----------3----------4----------5----------(No answer)

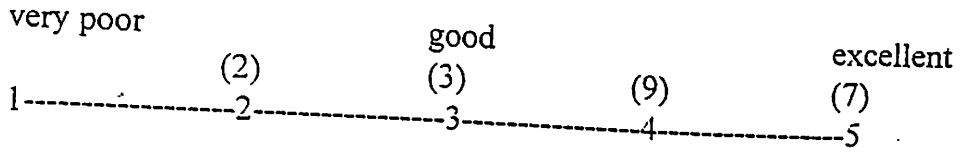
d) *Arrangements for study tours and field visits- **average 3.8***

very poor good excellent

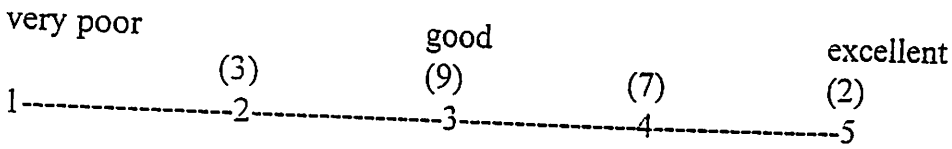
(2) (6) (7) (6)

1----------2----------3----------4----------5

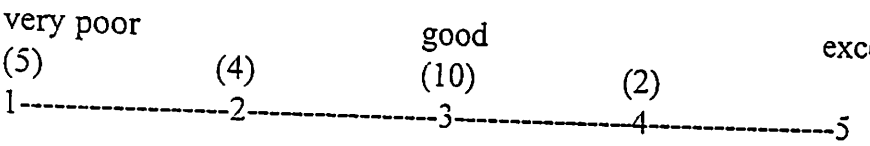
*e)* *Accommodation in KEFRI - **average 4.0***



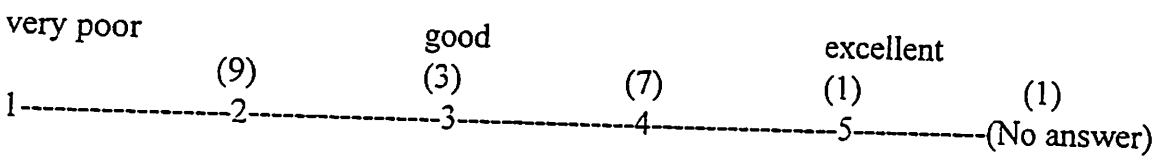

*f)* *Accommodation during study tours - average 3.4*



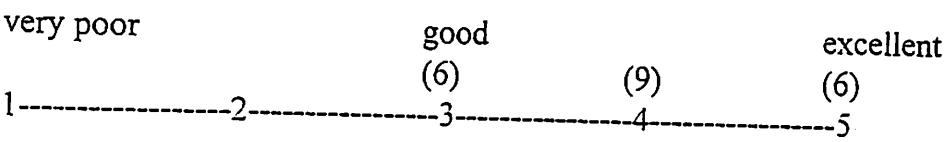

*g)* *Meals in KEFRI - average 2.4*



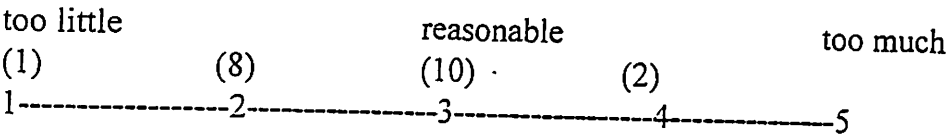

*h)* *Social programme and weekend activities - **average 2.1***




*i)* *Communication among participants - **average 4.0***




*i)* *Allowances - **average 2.6***




***Comments on general course administration and services***

* It was good and all the required information was received and handled with care. Keep it up.
* Clean and comfortable accommodation.
* Improve on time management.
* Improve on meals at KEFRI.

*Suggested improvement for the next course*

* Improve on time management.
* Include a Kenyan participant.
* Display any books of interest early enough to improve on purchase of textbooks.
* Give more time to the topic on Social Forestry Surveys and Appraisal Methods, particularly include a practical session.
* Incude topics on the Southern Africa Environment.
* Conduct courses during dry season for ease of accessibility to field study tour sites.

## APPENDIX 1

## OPENING ADDRESS

By

Dr. P.K. Konuche (Director, KEFRI)

Mr. Chairman,
Distinguished Participants,
Ladies and Gentlemen.

I am pleased to have this opportunity to address you during this conference. I would like first to take this opportunity to welcome all the participants to this important conference and to express my appreciation for the efforts made by the organizers to hold the conference before the end of the second phase of Social Forestry Training Project.

### Importance of Drylands

Mr. Chairman, the drylands of Kenya cover approximately 88% of the country. They are endowed with important resources which have not been fully exploited for socio-economic development of our country. First, because the drylands are sparsely populated, supporting about 20% of the country's human population, they have the potential to absorb excess populations from the densely populated high potential areas. Secondly, the drylands have approximately 70% of livestock population and are therefore important in protein production and hence food security. Thirdly, our drylands contribute significantly in generating foreign exchange from tourism as most of our National Parks and Game Reserves are located here. Finally, of the total country's wooded area comprising different forest types, woodlands, bushlands and wooded grasslands covering approximately 49 million ha, about 38 million ha (78%) are found in the drylands. The drylands therefore contain valuable woody resource for production of firewood, charcoal, wood carvings and poles, fodder for livestock, a wide range of non-wood forest/tree products and for environmental protection including biodiversity conservation.

### Challenges Facing Forestry Development

The drylands receive low and erratic rainfall and water scarcity is therefore a major factor limiting not only plant growth, but also the development of agriculture, forestry and other related resources. Although the inhabitants of the drylands have traditionally been nomadic pastoralists, there is increasing sedentarisation, resulting in overuse of vegetation resource in or around settled areas. The migration of people from the high potential areas to the drylands has resulted in deforestation due to clearing of woodlands for crop production and increasing demand for woodfuel by the rapidly expanding urban areas. In Kenya, the rate of deforestation is currently estimated at approximately 19,000 ha per year and this is mainly contributed by the clearing of woodlands in semi-arid areas. Conversion has been common on land that is vital for dry season grazing, for example, the riverine woodlands and forested hills. This has reduced the access of livestock and wildlife to such areas

during droughts. Cultivation has also led to decreasing soil fertility and increasing environmental degradation.

Ladies and Gentlemen, the challenges to forestry development in drylands are therefore many. In order to achievé our national and forestry development goals of increasing forest and tree cover, conserving the remaining natural habitats and biodiversity, alleviating poverty and promoting rural development, the following issues and problems must be addressed:-

- Arresting deforestation and degradation by addressing their real causes and reforming policies which negatively affect forest/woodlands resource management,
- Mapping out strategies where forestry can support livestock, tourism, farming and other development activities in an integrated approach,
- Improving the utilization of wood and non-wood dryland forest/tree resources, especially promoting income generation to alleviate poverty,
- Improving the understanding of traditional technologies and dryland forest resource management systems/practices,
- Determining the entry points for tree planting and rehabilitation of degraded areas as well as improving tree establishment and growth, and
- Strengthening research - extension - farmer/pastoralist linkages to improve technology adoption rate.

**Research Strategies**

*Priority setting*

Because of inadequate resources to undertake research on diverse problems in drylands, it is necessary to set research priorities and focus on the most critical problems. The following problems have recently been identified and ranked as research priority areas in drylands of Kenya:-

i) Large areas of Kenya's drylands are undergoing degradation/deforestation.
ii) Inadequate information on availability and utilization of wood and non-wood dryland resources.
iii) Inadequate technologies and lack of clear management guidelines for dryland forest management.
iv) Insufficient validation and documentation of indigenous knowledge and practices in dryland forest resources management and conservation.
v) Serious constraints to tree establishment.
vi) Unclear land and tree tenure arrangements to support effective dryland forest resource management and conservation.

*b) Integrated approach*

Research in drylands should develop technologies/systems for integrated forestry/vegetation, livestock and wildlife management to achieve greater animal production and food security, enhance

income generation from tree products and tourism and improve ecosystem resilience. Strengthening of linkages between forestry research and institutions dealing extension and resource management in forestry, livestock, water and wildlife is therefore necessary.

*Involvement of Local Communities*
In order to understand well the existing practices before improving them, participatory research with the local communities is needed. Development of appropriate systems of resource sharing in forests to be jointly managed with the local communities will be necessary. Pilot tests on joint forest management will need to be carried out.

*Coordinated Research*
There are many NGOs and government institutions doing research related activities in the drylands. There is a need therefore, to improve the coordination not only in collaborative research, but also in sharing of information through networking.

*Focus Research Implementation in Key Centres*
Since the drylands cover extensive areas of the country with poor communication problems, the scarce resources for research should be concentrated in one or two key centres instead of spreading them thinly. For example, with modern facilities, Kitui Regional Centre stands out as the most strategic centre for dryland forestry in the country.

*Information dissemination*
Dissemination of research findings should be allocated more resource, especially if results have to be widely disseminated to the other dry areas of the country

*Training of Staff*
Skill upgrading in dryland forestry research is needed if researchers are to be effective in planning and implementing research programme.

## Extension Strategies

Ladies and Gentlemen. I will now turn to forestry extension which is also an important topic in my address. Forestry extension involves providing information and technologies to people to assist them to carry out forestry activities (Emerton, 1996). I therefore see extension as being a strong bridge between researchers and users of research findings. Extension is also expected to translate research results into a language that can easily be understood by the users

Ladies and Gentlemen, upto the late sixties, forestry extension in Kenya was regarded as a form of propaganda used to protect to the gazetted forests from the rural communities. In the early seventies, following the energy crisis, the government realized the need to promote tree planting in areas outside gazetted forests and the Rural Afforestation Extension Scheme (RAES) was launched. However, for along time, forest extension was synonymous with seedling production and tree planting and little attention was given to providing information to users on other aspects of forestry,

e.g, utilization of forest/tree products.

The problems which constrain the transfer of appropriate research information to the beneficiaries include:-

- Inadequate participation of users in the identification of their problems and in the development and validation of technologies.
- Inadequate monitoring and evaluation of the adoption level of the introduced new technologies.
- Narrow view of forestry extension, where extension is biased towards seedling production and tree planting.
- Low priority given to dissemination of information by researchers.
- Due to inadequate policy guidelines, extension messages are usually conflicting especially in cases related to land use.
- Research and extension are usually carried out by different government institutions whose linkages are usually weak.
- Weak forestry extension agencies.
- The many NGOs involved in extension are poorly coordinated and have weak links to research.
- Training of extension workers is heavily biased on bio-physical conditons and their understanding of socio-economic issues which are more important to the clients is inadequate.

**Developing effective extension approaches**

*Baseline surveys*

These are needed to understand the socio-economic conditions of local communities, their needs and priorities. This will facilitate development of relevant extension packages.

*Participatory approach*

Participatory approach should be encouraged although it might be complex and time consuming. The communities should be involvement in all stages of planning and implementation of extension activities.

*Integrated Extension approach*

In order to reduce costs and avoid conveying conflicting messages to the users, it is necessary to come up with a unified multi-sectoral approach to extension by the government extension institutions.

*Strengthening of Research-Extension Linkages*

It is generally agreed that linkages between research and extension are weak and need to be strengthened. Researchers should therefore join extension agents in their work. This approach will strengthen the linkages between extensionists, researchers and users since they work as a team in all forestry activities. It is also worth testing the cost-effectiveness of researchers doubling up as

extension agents.

*Self-sustaining approaches*
Forestry extension is much easier where local communities or farmers directly get financial benefits. Development of income generating activities and identification of markets for forest products are therefore strong extension approaches strategies.

*Training of Extension Staff*
Integrated training of extension agents and emphasizing socio-economic issues and communication skills are necessary to improve on their performance.

## Conclusion

In conclusion, Mr. Chairman, I would like to stress that priority on forestry research in our drylands should be on policy issues and developing technologies and improving practices on management of existing woodlands. Tree planting interventions should only be considered in settled areas. I would also like to conclude by saying that researchers need to pay more attention to dissemination of research findings. They should work more closely with extension agents. The extension agents, on the other hand, need to understand more the socio-economic issues affecting the local communities. Our extension activities should also be more integrated in order to improve the rate of adoption of technologies.

Thank you Mr. Chairman, Ladies and Gentlemen for keenly paying attention to my key note address.

# OFFICIAL OPENING SPEECH

By

Dr. K.W. Kipkore (Chief Conservator of Forests)

The JICA Resident Representative,.
D/Director Research, KEFRI,
The Chief Adviser, SFTP
Conference and Course participants,
Distinguished guests,
Ladies and Gentlemen.

## Introduction

It gives me great honour and pleasure to welcome our guests and participants of the Third Regional Training Course for the Promotion of Social Forestry Training Project. I understand that this is the first time a Social forestry course and Conference are being held at the same time. For purposes of economics this is a good strategy as you will minimise on resources required to organize the two functions. Besides, this has the added advantage of disseminating information to a larger audience, and the practice should be encouraged for the future.

## Objectives

I am informed, ladies and gentlemen, that the course has four main objectives. These are:-

- to enable participants understand the role of Social forestry in increasing the supply of forest products and enhancing the quality of the environment.
- to improve the capability of participants in facilitating the application of Social forestry technologies and practices.
- to sharpen communication skills in dissemination of practices and technologies necessary for Social forestry expansion.
- to give a forum for participants to share ideas and experiences in Social forestry from different parts of Africa.

I am told that the number of participating countries in the region has increased from the previous course. This is a good indicator of our common concern in forestry and environmental consideration for the countries of this region.

Ladies and gentlemen, the countries in this region have some common problems in forestry and related land use systems. One of these is the limited forest resource base caused by harsh climatic conditions and unsuitable land practices. The second issue is the growing human population. Population growth has increased pressure on natural forest reserves through conversion of forest land to agricultural land and has also increased the demand for forest products. New homes, schools, towns have had to be constructed with an increase in demand for construction poles, timber and fuelwood. This has resulted in a growing fuelwood deficit running into millions of cubic metres of

wood per year. Decreasing forest cover has also resulted in declining food production, disappearance of biodiversity and worsening of environmental degradation, especially, in the dryland areas.

**Challenge**

Ladies and gentlemen, no amount of assistance from the outside world will improve our environment without our own concerted efforts. Assistance from external sources should be taken as a step in helping us achieve self-realization. Our own input should be geared towards self-sufficiency in food production and production of a surplus in forest products.

I am happy to note that there has been a growing awareness in this region of the need for Social forestry to address these issues. It is evident that most countries in the region are at the initial stages of introducing Social forestry programmes, but have yet to acquire the necessary capability. Kenya, through KEFRI, with the support of Japan International Co-operation Agency (JICA) has run the Social forestry programme for the past eight years. It is for this reason, that KEFRI, supported by JICA, has organized this conference. It is my belief that through this conference and course, the people of this region will benefit greatly from lessons learned during the project implementation and from strategies evolved in areas of rural grassroots development and environmental conservation. It is my hope too, that the necessary networks will be set up to accelerate inter-state and institutional co-operation between our countries to increase knowledge and wealth.

Allow me ladies and gentlemen to highlight some achievements of the Social Forestry Training Project. At the Muguga National Social Forestry Training Centre and Kitui Regional Centre, more than 2000 persons have participated in 75 courses.

Over 172 ha of Pilot forest have been established in Tiva area of Kitui. Data on growth-water relationships have been gathered, through examining tree physiology. A major achievement has been in the field of silviculture, in the integrated planting approach adopted by the project.

In a bid to produce quality seed, I am informed that tree phenology has been studied comprising budding, flowering, fruiting, leaf-fall and seed dispersal seasons on 35 tree species. Approximately 516,000 seedlings have been produced and supplied to extension, nursery experimentation and the pilot forest activities.

Ladies and gentlemen, the statistics speak very well but they are not complete until they can translate into an improvement in the quality of lives for our people. The benefits of Social forestry have yet to transform themselves into economic benefits for our people. That is, when these benefits become meaningful. Because then, parents will count the number of trees educating their children, poles for construction of their homes, fruits to enrich their diet, medicines among other benefits.

I am informed that participants from other countries will also table reports on the status of Social forestry in their own countries. I shall keenly expect to get copies of those reports alongside those of their Kenyan brothers when the proceedings are published.

**Appreciation**

Allow me, ladies and gentlemen, to thank JICA and the people of Japan for the wonderful support given to our country and to KEFRI in particular. May I also thank the organizers of this conference and training for their tireless efforts to make these activities a reality.

My thanks also go to the participants for setting aside their busy schedules to be here today. And to you all, I say thank you for agreeing to come here to grace this occasion.

Finally, ladies and gentlemen, it is my pleasant duty to declare the Third Regional Social Forestry Training Course and the First Social Forestry Conference officially open.

Thank you.

## SPEECH

**By**

**Mr. Atushi Matsumoto**
**Deputy Resident Representative**
**JICA Kenya Office**

Chief Conservator, Forests, Dr. W. K. Kipkore,
Representative, Embassy of Japan,
Representative from Ministry of Research Technical Training and Technology,
Director, Kenya Forestry Research Institure, Dr. P. Konuche,
Distinguished Guests, Participants, Ladies and Gentlemen.

It gives me great pleasure on behalf of Japan International Cooperation Agency (JICA) to be able to address you on this occassion of the dual opening ceremonies of the Third Country Training course titled " Regional Training Course for the Promotion of Social Forestry in Africa" and the Conference on "Social Forestry and Tree Planting Technology in Semi-arid Lands".

Allow me to begin by extending a hearty welcome and congratulating the twenty one participants, who were selected for the Third Country Training Programme and have managed to travel safely here. In total, you represent nine countries within this region, namely; Botswana, Ethiopia, Lesotho, Namibia, South Africa, Tanzania, Uganda, Zambia and Zimbabwe. I have realiably been informed that four other countries had also been invited but due to various reasons were unable to participate this time. We do hope that they shall manage to participate in next year's training.

I would also like to gladly welcome the one hundred and thirty or so participants and specifically those representing the respective Heads of Forestry in their countries, and have come to attend a Conference on "Social Forestry and Tree Planting Technology in Semi-arid lands". These participants represent three countries namely; South Africa, Uganda and Zimbabwe.

This is the first time our organization is sponsoring a conference such as the one you are about to attend which, slightly unlike the Third Country Training Course, aims to study and present information generated in developing suitable technology for the semi-arid lands. It is rather a short conference, four days to be precise, but nonetheless very important too, in its scope of study. As part of this conference, later on today, the participants shall have a chance to be addressed by Mr. Mishima, who is the JICA Chief Adviser to Social Forestry Training Project, and shall thus be able to understand our objectives in this project. All the same, as this is the pioneer conference in this discipline, I wish you all successful deliberations in order that we may consider sponsoring a number more in the years to come.

If I may now say something about the Third Country Training Course, it is now the third year that Kenya Forestry Research Institute (KEFRI) is implementing this course which has been scheduled for a period of five years thus making this the mid-point of the implementation period.

I would therefore like to briefly explain what the objective and concept of Third Country Training is all about. First of all, JICA is the official agency of the Government of Japan charged specifically with the responsibility of implementing Official Development Assistance (ODA) programmes in the areas of technical cooperation and capital grant aid. Our organization strives and whenever possible tries to contribute to the economic and social development of developing countries and at the same time promote international cooperation. Ever since its foundation, JICA's mission statement has been "human development, national development and bringing people together". In this regard, we attach a lot of value to the development of human resources for the sake of a more prosperous world. Generally, "human resource development" is used to describe cases where training is provided which is necessary for the national development of a country for this is the single most important resource any country may have.

This leads us to what exactly the Third Country Training is all about. It is no secret that lately around the world, a phenomenon known as "aid fatigue" has appeared in industralized countries depite the ever increasing need to try and whenever possible assist another country which may be in need. To counter this, by the Japanese government providing assistance in the form of training is one sure way of ensuring that knowledge in a relevant field is passed on for the good of the recipient countries. The objectives of the Third Country Training are to promote a training course which better fits the needs and socio-economic conditions of the participating countries whereby the participants are able to gain a lot for they are offered training in a third country near to their own countries and which has the necessary resources and infrastructure, Kenya being the case this time, to successfully implement the training. This selected country is close to the participants home countries and has similar cultural, social and linguistic background in addition to similar needs in the training field. This allows participants to settle quickly and discuss their various experiences for quicker, more regionally suited solutions. The other objective which is to promote technical cooperation among developing countries, also called South-South cooperation, basically tries to support regional cooperation between developing countries in the southern hemisphere. We believe with the increasing interdependency of the international economy, it would be rather effective to promote cooperation within regions for problems to be tackled and solutions to these found as a coherent group. This hopefully shall one day translate into a world full of friendships among different people.

Finally, this training in Social Forestry Promotion will try to enhance forest conservation and mitigate desertification in the region. I personally believe this is a very important field in the world, for it shall contribute to the improvement of living conditions for rural people and enhance environmental management in the surrounding regions not to mention the added benefit of a greener world.

With those remarks, I would therefore, like to take this opportunity to wish all the participants from both groups successful deliberations.

Thank you very much.

## APPENDIX 2-a

## LIST OF INSTITUTES TO WHICH GENERAL INFORMATION (G.I) WAS SENT

**Tanzania**

* Forestry and Beekeeping Divisioin, Ministry of Natural Resources and Tourism, Dar-es-salaam
* Tanzania Forestry Research Institute (TAFORI) Morogoro
* Forestry Training Institute, Arusha
* Faculty of Forestry, Sokoine University of Agriculture, Morogoro
* JICA Kilimanjaro Village Forestry Project, Moshi

**Uganda**

* Forest Department, Ministry of Agriculture and Forestry, Kampala
* Uganda Forestry College, Masindi
* Faculty of Agriculture and Forestry, Makerere University, Kampala
* Bukalasa Agricultural College, Wobulenzi
* African 2000 Network, Kampala

**Ethiopia**

* Department of Forestry, Ministry of Agriculture
* Wondo Genet College of Forestry, Shashemene
* Alemaya University of Agriculture, Dire Dawa
* Menagesha-Suba Forestry Training Centre

**Malawi**

* Department of Forestry, Lilongwe
* Malawi College of Forestry, Lilongwe
* Forestry Research Institute, Zomba

**Zambia**

* Forestry Department, Ministry of Forest and Natural Resources, Ndola
* Zambia Forestry College, Kitwe

**Swaziland**

* Ministry of Agricultural Cooperatives Forestry Division

**Zimbabwe**

* Department of Natural Resources, Harare
* Forestry Extension Services, Forestry Commission, Harare
* Department of Agriculture Technical and Extension Services (AGRITEX), Ministry of Agriculture, Harare
* Zimbabwe College of Forestry, Mutare
* Environment and Development Agency (ENDA) - Zimbabwe

**Botswana**

* Division of Forestry and Range Ecology, Ministry of Agriculture, Gaborone
* Forestry Association of Botswana, Gaborone
* Botswana College of Agriculture, Gaborone
* JICA Botswana

**Lesotho**

* Department of Forestry; Maseru
* Lesotho Agriculture College, Maseru

**South Africa**

* Department of Water Affairs and Forestry, Pretoria
* Farmer Support Group (FISG)

**Namibia**

* Directorate of Forestry, MoET, Windhoek
* Department of Forestry, University of Namibia, Windhoek
* Ogongo Agricultural College

**Mozambique**

* Ministry of Agriculture, National Directorate of Forestry and Wildlife
* Department of Forestry, Faculty of Agronomy, Edwuardo Mondlane University
* Instituto Agrario de Chimoio

## APPENDIX 2-b

Table 2. Number of Applicants and Selected applicants

| Invited Countries | Number of applicants | Number of selected applicants |
|---|---|---|
| BOTSWANA | 1 | 1 |
| ETHIOPIA | 5 | 3 |
| LESOTHO | 3 | 3 |
| NAMIBIA | 2 | 2 |
| SOUTH AFRICA | 3 | 2 |
| TANZANIA | 5 | 3 |
| ZAMBIA | 4 | 3 |
| ZIMBABWE | 4 | 3 |
| UGANDA | 3 | 1 |
| MOZAMBIQUE | 0 | 0 |
| MALAWI | 0 | 0 |
| SWAZILAND | 0 | 0 |
| TOTAL | 31 | 21 |

## APPENDIX 2-b

Table 2. Number of Applicants and Selected applicants

| Invited Countries | Number of applicants | Number of selected applicants |
|---|---|---|
| BOTSWANA | 1 | 1 |
| ETHIOPIA | 5 | 3 |
| LESOTHO | 3 | 3 |
| NAMIBIA | 2 | 2 |
| SOUTH AFRICA | 3 | 2 |
| TANZANIA | 5 | 3 |
| ZAMBIA | 4 | 3 |
| ZIMBABWE | 4 | 3 |
| UGANDA | 3 | 1 |
| MOZAMBIQUE | 0 | 0 |
| MALAWI | 0 | 0 |
| SWAZILAND | 0 | 0 |
| TOTAL | 31 | 21 |

## APPENDIX 2-c

Table 3. List of Participants

| No. | Name | Sex | Age | Organization and Post | Academic Back ground |
|---|---|---|---|---|---|
| 1. | Lethata Ebineng | F | 30 | Technical Officer Beekeeping. Maun Regional Agricuculture office-Botswana | Dip. Beekeeping |
| 2. | Seleshi Gesese C/Rufael | M | 39 | Senior Natural Resources Ext. Officer. Ministry of Agriculture-Ethiopia | Bsc. Forestry |
| 3. | Abebe Seifu W/Sadik | M | 34 | Graduate Assistant II. wondo Genet College of Forestry-Ethiopia | Bsc. Forestry |
| 4. | Tesfay Teklay | M | 27 | Lecturer, Alemaya University of Agriculture-Ethiopia | Msc. Farm Forestry |
| 5. | Kutoane Limpho Lilian | F | 24 | Forestry Extensionist. Lesotho Durham Link Community Forestry-Lesotho | Cert. Wood Technology |
| 6. | Peter Mphale | M | 39 | Forester, Forestry Division-Lesotho | Dip. Forestry |
| 7. | Pama Mokete Martin | M | 35 | District Forestry Officer, Forestry Division-Lesotho | Bsc. Forestry |
| 8. | Mwanyangapo M. | F | 24 | Forestry Technician, Directorate of Forestry-Namibia | Dip. Agriculture |
| 9. | Felix Bainga | M | 28 | Forestry Technician, District Forest Office-Namibia | Dip. Forestry |
| 10. | Masuku Sipho S. | M | 38 | District Community Forester. Department of Water Affairs and Forestry-South Africa | Dip. Forestry |
| 11. | Paneng Relebohile | F | 24 | Agroforester. Farmer Support Group. University of Natal-south Africa | Msc. Agronomy |
| 12. | Hyasinta C. Kessy | F | 36 | Agricultural Science Teacher. Machame Secondary School Machame-Tanzania | Dip. Agriculture |
| 13. | Danda Anitah Lukezo | F | 38 | SMS Horticulture. Ministry of Agriculture Livestock and Cooperative-Tanzania | Dip. Plant Protection Man. |
| 14. | Bruno Samuel Mallya | M | 33 | Field Station Officer, East Usambara Catchment Forest Project-Tanzania | Dip. Forestry |
| 15. | D. Kasaro | M | 30 | Provincial Extension Officer. Forestry Department. Office of CCF-Zambia | Dip. Forestry |
| 16. | L. Musonda | M | 34 | District Extension Officer, Ndola Copperbelt, Forestry Department-Zanbia | Dip. Forestry |
| 17. | J. Mulenga | M | 38 | District Forest Officer and District Extension Officer - Masaiti Copperbelt-Zambia | Dip. Forestry |
| 18. | Sithembile Mawoneke | F | 24 | Environmentalist, ENDA- Zimbabwe | Bsc. Agriculture |
| 19. | Moyo Clyton | M | 26 | Agroforestry Specialist. MoA-Zimbabwe | Bsc. Agriculture |
| 20. | Mapeza Gift | M | 27 | Agriculture Extension Officer, MoA Zimbabwe | Bsc. Agriculture |
| 21. | Polly Mubangizi | M | 37 | Programme Assistant/Trainer, Africa 2000 Netwwork, Kampala Uganda | Bsc. Forestry |

# REGIONAL TRAINING COURSE FOR PROMOTION OF SOCIAL FORESTRY IN AFRICA
## 29TH SEPTEMBER - 31ST OCTOBER 1997, NAIROBI - KENYA

| Date | 8:30 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 |
|---|---|---|---|---|---|---|---|---|---|---|
| WEEK 2<br>5/10/97<br>(SUN) | FREE | | | | | | | | | |
| 6/10/97<br>(MON) | Policy and SF development<br>*O Owira (UoN)* | | | Break | Adaptive on-farm Agroforestry research and development<br>*D. Nyamai (KEFRI)* | | Lunch | Tour of AF demonstration plots - KEFRI/KARI<br>*D. Nyamai (KEFRI)* | | |
| 7/10/97<br>(TUE) | Tree Seed Production Collection and handling<br>*B. Kamondo (KEFRI)* | | Break | Tree Seed Visit to Seed Centre<br>*J. Ahenda (KEFRI)* | | | Lunch | Global environmental issues with reference to Africa<br>*G. Ochieng (FD)* | | Japanese Forestry<br>*S. Mishima (SFTP)* |
| 8/10/97<br>(WED) | Role of research in SF development<br>*P K. Konuche (KEFRI)* | | Break | Tree Species for SF development<br>*P. Oballa (KEFRI)* | | Lunch | Field visit to Karai<br>*M. Mukolwe/F Chege/P Karuma (SFTP) (Farmer)* | | | |
| 9/10/97<br>(THU) | Integrated land use systems for SF development<br>*B.J M. Ngala (Egerton Uni)* | | | Break | Negotiations and Conflict management for sustainable SF development<br>*G.Gathara (KWS)* | | Lunch | Pest and disease management in social forestry<br>*M. Gichara/L. Mwangi (KEFRI)* | | |
| 10/10/97<br>(FRI) | Socio-cultural and economic issues in SF development<br>*P. Ongugo (KEFRI)* | | | Break | Urban and Amenity Forestry<br>*M. Mukolwe (SFTP)* | | Lunch | Visit Nairobi Arboretum<br>*M. Mukolwe/B. Omwor (SFTP)* | | |
| 11/10/97<br>(SAT) | FREE | | | | | | | | | |

# REGIONAL TRAINING COURSE FOR PROMOTION OF SOCIAL FORESTRY IN AFRICA
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|---|---|---|---|---|---|---|---|---|---|---|
| WEEK 2<br>5/10/97<br>(SUN) | FREE | | | | | | | | | |
| 6/10/97<br>(MON) | Policy and SF development<br>*O Owira (UoN)* | | | Break | Adaptive on-farm Agroforestry research and development<br>*D. Nyamai (KEFRI)* | | Lunch | Tour of AF demonstration plots - KEFRI/KARI<br>*D. Nyamai (KEFRI)* | | |
| 7/10/97<br>(TUE) | Tree Seed Production Collection and handling<br>*B. Kamondo (KEFRI)* | | Break | Tree Seed<br>Visit to Seed Centre<br>*J. Ahenda (KEFRI)* | | | Lunch | Global environmental issues with reference to Africa<br>*G. Ochieng (FD)* | | Japanese Forestry<br>*S. Mishima (SFTP)* |
| 8/10/97<br>(WED) | Role of research in SF development<br>*P K. Komuche (KEFRI)* | | Break | Tree Species for SF development<br>*P. Oballa (KEFRI)* | | Lunch | Field visit to Karai<br>*M. Mukolwe/F Chege/P Karomo (SFTP) (Farmer)* | | | |
| 9/10/97<br>(THU) | Integrated land use systems for SF development<br>*B.J M. Ngoda (Egerton Uni)* | | | Break | Negotiations and Conflict management for sustainable SF development<br>*G.Gathara (KWS)* | | Lunch | Pest and disease management in social forestry<br>*M. Gichara/L. Mwangi (KEFRI)* | | |
| 10/10/97<br>(FRI) | Socio-cultural and economic issues in SF development<br>*P. Ongugo (KEFRI)* | | | Break | Urban and Amenity Forestry<br>*M. Mukolwe (SFTP)* | | Lunch | Visit Nairobi Arboretum<br>*M. Mukolwe/B. Owuor (SFTP)* | | |
| 11/10/97<br>(SAT) | FREE | | | | | | | | | |

REGIONAL TRAINING COURSE FOR PROMOTION OF SOCIAL FORESTRY IN AFRICA
29TH SEPTEMBER - 31ST OCTOBER 1997, NAIROBI - KENYA

| DATE | PLACE | ACTIVITIES | ACCOMMODATION |
|---|---|---|---|
| WEEK 3<br><br>(Sun.)<br>12/10/97 | Muguga-Nakuru<br><br>*M. Mukolwe (SFTP)* | - Travel to Nakuru | Nakuru |
| (Mon.)<br>13/10/97 | Nakuru/Bugoma | - Farm Forestry activities in Nakuru District (FD) (Nakuru, Bahati, Molo)<br>- Travel to Bungoma | Bungoma |
| (Tue)<br>14/10/97 | Bungoma/Busia | - Visit individual indigenous woodland/trees management<br>- FD/group afforestation/soil conservation activities<br>- Travel to Busia | Busia |
| (Wed.)<br>15/10/97 | Busia | - Gender issues in Social Forestry Development (**Lecture**)<br>*F. Adoyo (KWAP)*<br>- Field visit to KWAP/FD activities | Busia |
| (Thu.)<br>16/10/97 | Busia/Maseno/Rakwaro | - Travel to Maseno<br>- Visit KEFRI/ICRAF centre activities-Maseno<br>- Travel to Rakwaro<br>- Field visit - 1997 National Social Forestry Prize Day Winner (Rakwaro) | Rongo |
| (Fri.)<br>17/10/97 | Migori-Masara | - Travel to Masara<br>- Farmer organised field day(Masara) | Rongo |
| (Sat.)<br>18/10/97 | Rongo/Londiani/<br>Muguga | - Travel to Kenya Forestry College (Londiani)<br>- Travel to KEFRI-Muguga<br>- Field Report writing - Western Kenya/Rift Valley | Muguga |

# REGIONAL TRAINING COURSE FOR PROMOTION OF SOCIAL FORESTRY IN AFRICA
## 29TH SEPTEMBER - 31ST OCTOBER 1997, NAIROBI - KENYA

| Date | 8:30 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 |
|---|---|---|---|---|---|---|---|---|---|---|
| WEEK 4<br>19/10/97<br>(SUN) | FREE | | | | | | | | | |
| 20/10/97<br>(MON) | Research-Extension-Farmer Linkage mechanisms<br>*A.A. Kaudia (KEFRI)* | | | Break | Leadership Skills for SF development<br>*J.M. Gitsemba (KEFRI)* | | Lunch | Planning and designing of SF training programmes<br>*A. Mwamburi (SFTP)* | | |
| 21/10/97<br>(TUE) | Rehabilitation and integrated management of degraded areas<br>*M. Mbegera (PPCSCA)* | | | Break | Silvipastoral management strategies in grazing areas<br>*D. Mtana (KARI)* | | Lunch | Framework for planning and management of participatory SF programmes<br>*F. Chege (SFTP)* | | |
| 22/10/97<br>(WED) | Small scale SF industries, products and services<br>*J. Onchieku (KEFRI)* | Break | | SF Extension Strategies<br>*P.M. Mung'ai. (NCST)* | | Lunch | | Field visit to ICRAF HQ<br>*F. Chege (SFTP)* | | |
| 23/10/97<br>(THU) | Woodfuel production, consumption and Conservation systems<br>*R.A. Kapiyo (KENGO)* | | | Break | SF extension surveys and appraisal methods<br>*Z. Mugomri (SIFCII)* | | Lunch | Communciation Skills for SF development<br>*D. Mulama (Egerton Uni.)* | | |
| 24/10/97<br>(FRI) | Participatory Woodland management in dryland ecosystems<br>*J. Odera (NMK)* | | | Break | Monitoring and evaluation of community oriented SF programmes<br>*P. Ongugo (KEFRI)* | | Lunch | Psychology of adult learning and development<br>*K. Wa Kangethe (BAE)* | Break | |
| 25/10/97<br>(SAT) | TRAVEL TO NANYUKI (MT. KENYA REGION) | | | | | | | | Acc. Nanyuki | |

| DATE | PLACE | ACTIVITIES | ACCOMODATION |
|---|---|---|---|
| WEEK 5<br>(Sun.)<br>26/10/97 | Nanyuki | - Briefing - LRP activities, visit LRP station and farmer | Nanyuki |
| (Mon.)<br>27/10/97 | Nanyuki-Embu | -Visit ARU - station, and Agroforestry activities<br>- Travel to Embu through Meru | Embu |
| (Tue.)<br>28/10/97 | Embu | - Visit AREP on-station and on-farm activities | Embu |
| (Wed.)<br>29/10/97 | Embu-Muguga | - Visit small scale social forestry industry - Embu-weavers<br>- Travel to Muguga through Kiambere and Thika | Muguga |

NB:

FD - Forest Department
KEFRI - Kenya Forestry Research Institute
KWAP - Kenya Woodfuel and Agroforestry Programme
KWS - Kenya Wildlife Services
NCST - National Council for Science and Technology
SFTP - Social Forestry Training Programme/Project
SWCB - Soil and Water Conservation Branch
PPCSCA - Permanent Presidential Commission on Soil Conservation and Afforestation
KENGO - Kenya Environmental and Non-governmental Organisation
KARI - Kenya Agricultural Research Institute
UoN - University of Nairobi
NMK - National Museums of Kenya
EWEMP - Elangata Wuas Ecosystem Management Programme

# *Regional Training Course for the Promotion of Social Forestry in Africa*

*29th September - 31st October 1997*

## Questionnaire for the Course Evaluation

*(AFTER COURSE)*

# REGIONAL TRAINING COURSE FOR PROMOTION OF SOCIAL FORESTRY IN AFRICA
## 29TH SEPTEMBER - 31ST OCTOBER 1997, NAIROBI - KENYA

| Date | 8:30 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 |
|---|---|---|---|---|---|---|---|---|---|---|
| WEEK 5 CONTD. 30/10/97 (THU) | Field Report writing (Mt. Kenya Region) | | | | | Lunch | Group discussions/Compiling field report *M. Mukalwe/F. Chege/A. Mwambuti/B. Owuor (SFTP)* | | | |
| 31/10/97 (FRI) | Group presentation/ Panel discussions *P. Mungala(NCST) S. Mishima(SFTP) A. Kaudia(KEFRI)* | | Break | contd. *F. Chege (SFTP) M. Mukalwe(SFTP) R. Wainaina (KEFRI)* | | Course Evaluation *A. Mwambuti M. Sato (SFTP)* | Lunch | | Closing Ceremony *Resi. Representative (JICA)* | |
| 1/11/97 (SAT) | DEPARTURE | | | | | | | | | |
| 2/11/97 (SUN) | DEPARTURE | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

## I. OBJECTIVES

The course objectives are as follows:-

At the end of the course, the participants are expected to have;

1. fully understood the concept of Social forestry and its usefulness in enhancing forest conservation and mitigating desertification in the region.
2. developed their abilities in policy formulation to promote Social forestry which enables the application of Social forestry strategy to various local conditions of participating countries.
3. learnt effective measures to be taken to disseminate the practice and related techniques of social forestry to farmers and other beneficiaries.
4. redeveloped their abilities to resolve problems in the promotion of Social forestry by expanding their knowledge and techniques and by exchanging experiences among participants from other countries.

(1) To what extent were you aware of the objectives of this training course before you came to Kenya ?

** Please circle the appropriate rating number.*
*(same for the following questions)*

1 2 3 4 5
unaware at all — fully aware

(2) To what extent do you think the objectives have been met ?

1 2 3 4 5
not met — fully met

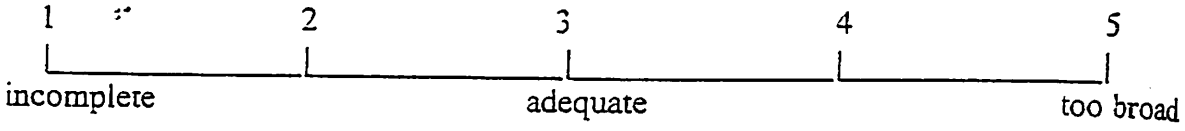
(3) In your opinion to what extent was your expectation from this course fulfilled ?

1 2 3 4 5
not fulfilled — fulfilled

* Please give us your comments on your evaluation on any of the above items from (1) to (3);

## II. COURSE CURRICULUM

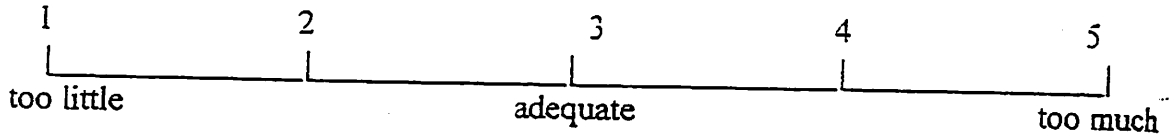
### *(1) Coverage of the topics*



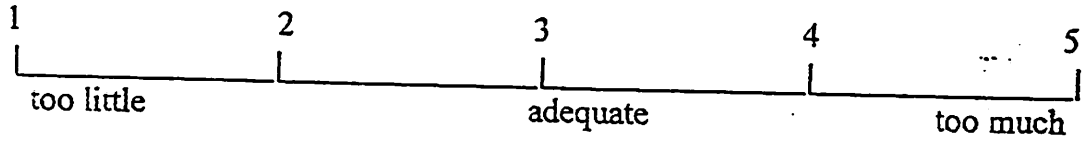

* Please select the three (3) most interesting and beneficial topics for you in the training programme;

### (4) Time allocation to:

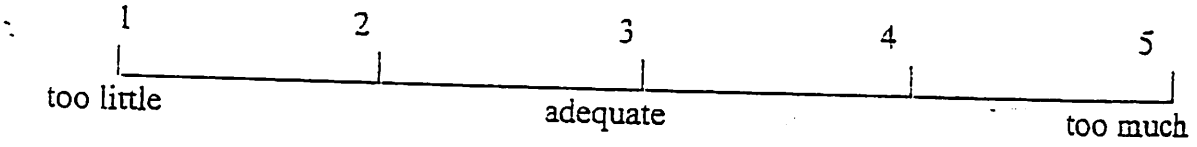
(a) Lectures



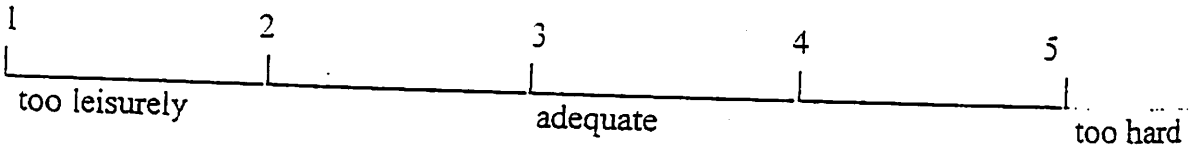

(b) Study tour / Field visit



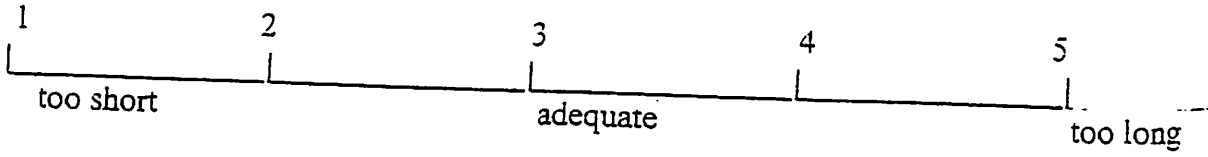

(c) Discussions




### (5) Intensity



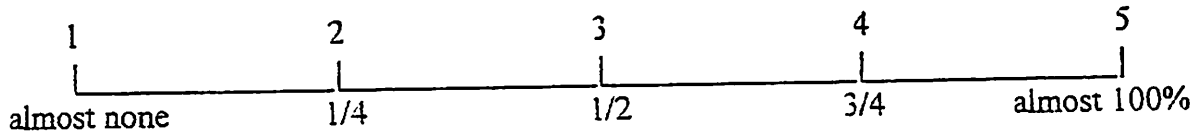

### (6) Total duration



* Please give your comments on any of the above items from (4) to (6);

(7) **Application of techniques and knowledge**

To what extent do you think the techniques and knowledge you have attained in this course will be applicable in your country ?

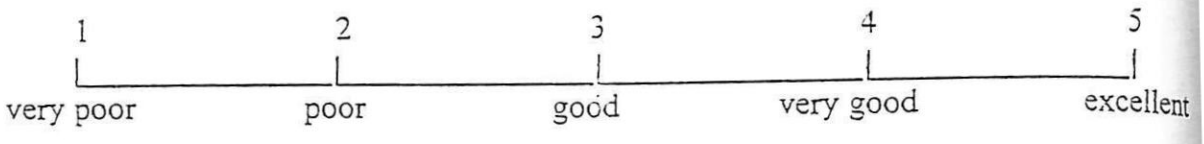



* Please give your comments on the above (7);

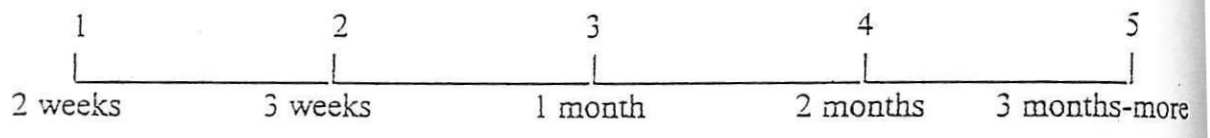
## III. ADMINISTRATION AND MANAGEMENT

How would you evaluate the general administration and management of the course ?

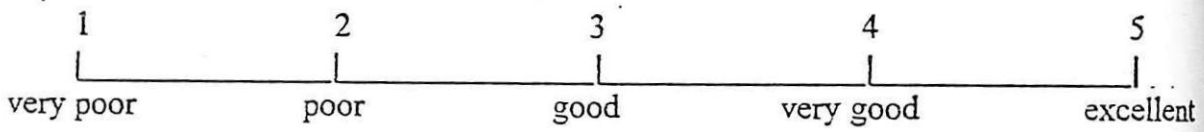
(1) Pre-course information ("General Information", briefing, orientation)



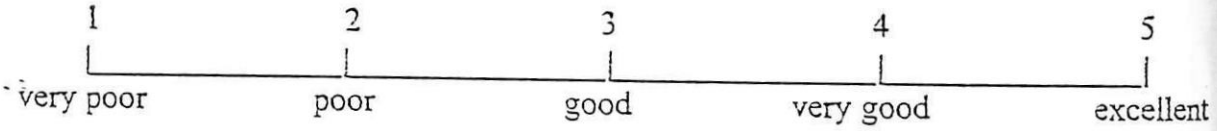

(2) What is the minimum period you would require for preparation of the course after receipt of the invitation letter ?



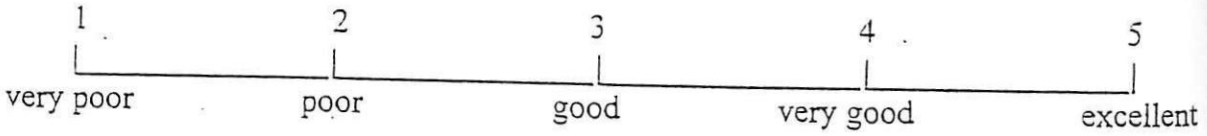

(3) General coordination for the course conduct;



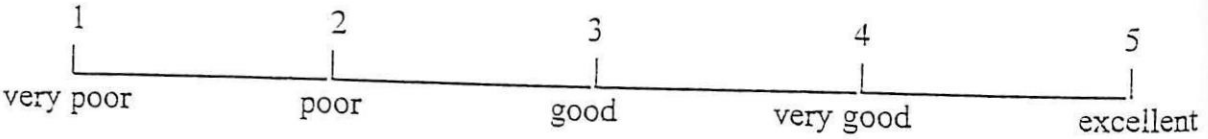

(4) Arrangements for the study tour and field visits;



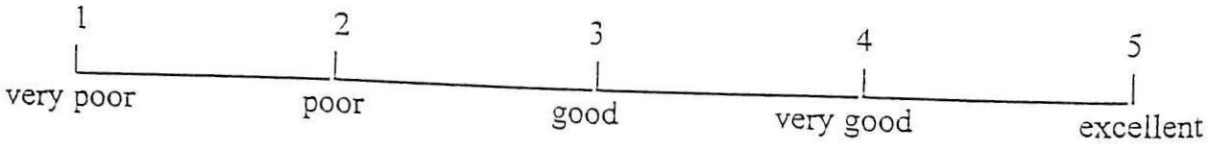

(5) Accommodation in KEFRI;



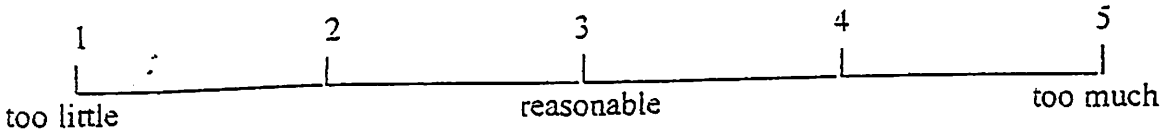

(6) Accommodation during the study tours;



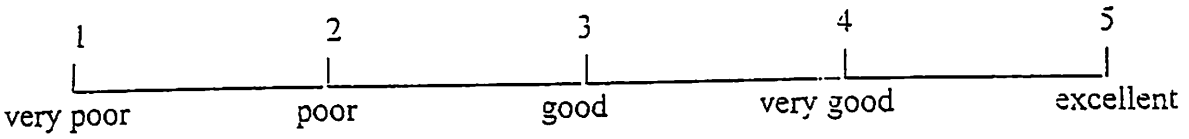

(7) Meals in KEFRI;



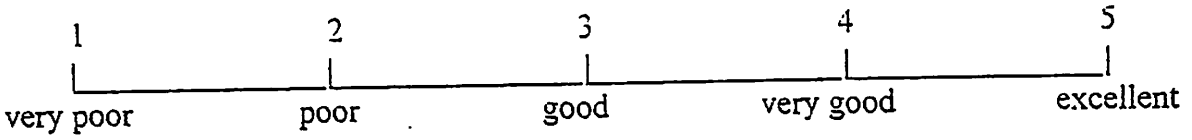
(8) Allowance;




(9) Social programme and weekend programme;




(10) Communication among the participants;




* Please give your comments on the course administration and services in general;

** Finally we would appreciate your comments and suggestions for the improvement of the next course (e.g. topics, time allocation, administration, study tours, or on any other issues);

*Thank you for your cooperation.*

## APPENDIX 5

## GROUP DISCUSSIONS

**Objective:** To provide an avenue for sharing experiences, problems and solution on pertinent issues affecting Social forestry and related disciplines.

**Operations:** The groups address a topic each.
(S)elect a chairman/rapporteur.
Group discusses topic during group discussion session.
Group presents results of their discussion at panel discussion the following day.
Each presentation will take 30 minutes including, question(s)/answer(s) session and/or comments.

Written submissions from each group is expected (at least 3 pages)

### 1. NETWORKING

African countries are faced with numerous environmental problems. One among them is the rapidly declining forest cover. Networking is one of the important avenues through which developing countries in Africa can promote to facilitate the processes or interventions to address this situation. Discuss the strategies and mechanisms that would enhance this avenue

### 2. NEGOTIATIONS AND CONFLICTS MANAGEMENT
### CASE STUDY: "QUIT OR ELSE"

As facilitators of forestry development initiatives, one should endeavour to know your target group well and critically interpret their behaviour which you may want to influence upon.

Please read the following article very carefully and then proceed to deliberate on the assignment as explained.

"The EVERGREEN District Chief Mr. LAW, yesterday ordered people who have settled in VIRGIN forest/nature reserve to quit immediately before punitive measures are taken by the government against them.

Mr. LAW revealed that a number of families from SOS location, DISTRESSO zone of EVERGREEN district had migrated from MOPANE valley and settled in the forest in the highland areas.

The District Chief described and castigated the indiscriminate destruction of trees and related plant materials in the area saying that VIRGIN forest reserve and others in the highlands were sources of major rivers which the people of MOPANE valley relied on for their domestic needs, farming activities and rich habitat for biodiversity. He emphasized that if the indiscriminate destruction continued, farming activities in the lowlands would be in jeopardy.

Mr. LAW gave orders in his public address at VIRGIN trading centre in PLENTY zone of the district. During his address, he interdicted the VIRGIN forest reserve Manager Mr. GENERESIO and warned two of his assistants that if they did not take action against the invaders of the forest, they also risked disciplinary action.

Mr. LAW who was accompanied by senior police officers from the District and Regional forest conservation officer, Mr. CONSERVO said the policemen would be mobilized anytime to comb the forest and evict the invaders".

Suppose you are the Assistant officer-in-charge of VIRGIN forest reserve and you are instructed by your superiors to discuss with the affected people:-

i) List down all possible questions you would want to ask them.
ii) Develop a structured guide for the discussion questions and define (group) them as objective, reflective, interpretive or decisional level questions.
ii) Give possible solution(s) to any three listed questions you consider as most important.

## 3. INTEGRATION OF SOCIAL FORESTRY DEVELOPMENT

The goal of Social forestry is to provide farmers and other potential land users with an opportunity to utilize land and tree resources in a sustainable manner, for their benefit and posterity. This calls for an integrated approach to land use management. Quite often, participation in Social forestry is hindered in many developing countries by lack of clear land use planning, land tenure systems and infrastructural support from relevant authorities. What do you think can be done to alleviate this problem to enhance Social forestry development in such countries.

Discuss this considering:-

(i) Land tenure system and user rights.
(ii) What aspects of integration are necessary.
(iii) How this can be approached without causing friction among different sectors of society/ economy.

## 4. EXTENSION

Rural development issues are complex and cut across different disciplines and government sectors. In developing extension strategies for promotion of Social forestry in your areas of operation, how will you do the following?

(i) Determine the various needs of the target community.
(ii) Develop mechanisms for collaboration with the various sectors and involve various disciplines.
(iii) Package and disseminate the technologies.
(iv) Sensitize the local communities to plant more trees despite it not being among their top priorities.

## SUMMARY OF GROUP DISCUSSIONS

### Group 1: NETWORKING

Two-way exchange of information between two or more parties whereby:-

- all parties involved derive benefits though not at equal terms,
- it may be formal or informal,
- structured on non-structured, and
- the network revolves around solving a common problem.

The outcome of the deliberations on networking is summarised as tabulated below.

Table 1. Networking problems, strategies and mechanisms

| Problems | Strategies | Mechanisms |
|---|---|---|
| 1) Deforestation<br>- fuelwood shortage<br>- opening land for agricultural activities (currently no food security) | - Education and awareness ie. on establishment of woodlots.<br>- Introducing of fuel conserving technologies eg. cook stoves.<br>- Arbor days<br>- Implementation of existing policies on forests. | -Barazas, using existing community structures, ie, women groups, schools, churches etc.<br>- Mass media<br>- Lobby government and local authorities |
| 2) Overgrazing<br>- tramping leading to extinction of highly palatable indigenous vegetation.<br>- woodland encroachment | - Pasture improvement.<br>- Fodder conservation ie. standing or hay/silage.<br>- Provision of health facilities<br>- Diversification of livestock production. | Awareness on:<br>- Destocking<br>- Rotational grazing<br>* Incentives, ie. training of para-vets, free seeds. |
| 3) Desertification and drought<br>- Imbalance between utilization and conservation dealing to food insecurity. | - African countries should develop effective drought management systems ie. appropriate food storage facilities, drought resistant crop varieties, etc. | - IGAD memberships could be enlarged to include other African states and their resolutions be disseminated to relevant implementing national structures.<br>- Construction of national silos.<br>- Improved dissemination of research findings to farmers through extension agents. |
| 4) Pollution<br>- rural - urban migration<br>- move towards industrialization<br>- damping of wastes from developed countries - some intentional and others not<br>- environmental sanitation | - Creation of job opportunities in rural areas.<br>- Proper planning for disposal of industrial waters.<br>- Community based health care services. | - Integrate indigenous knowledge of skills in designing village based projects on participatory basis.<br>- Promote community health care campaigns. |

| | | |
|---|---|---|
| 5) Scarcity and mismanagement of water resources<br>- drainage of swamps<br>- planting exotic trees on riparian areas when impact on water resources is not known<br>- soil erosion<br>- poor farming practices | - Proper management of water catchment areas.<br>- Joint management of water resources locally with community or internationally on shared waters.<br>- Promotion of integrated management of land use systems involving all stakeholders. | - Enforcing policies and regulations concerning conservation of catchment areas.<br>- Get as much information as possible about newly introduced tree species and small trials be carried out on-station.<br>- Joint planning seminars/ workshops with stakeholders.<br>- Farmer to farmer visit for purposes of learning from each other.<br>- Video shows<br>- Posters<br>- Music and drama |

Group 2: NEGOTIATIONS AND CONFLICTS MANAGEMENT
CASE STUDY: " Quit or else"

**Objective Questions**

1. When did you start settling in this forest?
2. Where did you come from?
3. Why did you move from your area?
4. How is your community organized?
5. What agricultural activities are you involved in?
6. What forestry activities are you involved in?
7. Do you have rules and regulations governing your activities in the forest. If so, what are they?
8. Do you know that the government owns this land?
9. What steps are taken before one settles in this forest?
10. Based on gender, what benefits do you derive from the forest?

**Reflective Questions**

1. What are the consequences of your activities in this Forest?
2. Are there any natural resources conservation measures in place?
3. If so, what are they?

**Interpretive Questions**

1. Based on the consequences what would happen to future generations if you continue doing these activities.

2. Are you aware of the action that the government may take against you by settling in the forest?

**Decisional Questions**

1. What suggestions do you have to solve the settlement problem?

**Possible solutions to any three listed questions**

*Consequences of activities*

- Deforestation
- Soil erosion
- Decline in soil fertility leading to low yield
- Siltation of rivers
- Lowering of the water table
- Shortages of Fuelwood.

*Benefits from the forests*

| *women* | *Men* |
|---|---|
| - Firewood (domestic) | - Timber |
| - Medicines | - Charcoal |
| - Foods (mushrooms, fruits, honey) | - Carvings/curios |
| - Initiation ceremonies | - Beekeeping |
| - Cooking utensils | - Firewood (Brick making) |
| - Basketry | - Basketry |
| | - Hunting |

*Suggestions to solving settlement problem*

Will be moved to a designated area outside the forest but will be allowed to continued with so of the activities in the forest. The recommended activities include:-

- Collection of foods
- Firewood (dry wood)
- Honey
- Sustainable agriculture in specific areas.

They should also agree to be trained in natural resource conservation techniques such as:-

- Contour ridging.
- Tree planting.
- Agroforestry.
- Terracing.
- Cut-off drains.

## Group 4: EXTENSION

Submitted in practical fulfillment of the requirements of the Regional Course for the Promotion of Social Forestry in Africa, Muguga, Kenya.

### (a) Determination of various needs of the target community

#### Step 1. Conduction of a Survey

This will be preceded by collection of a secondary information, and meeting or contacting the key informants to obtain background of the target community. The survey will then include bio-physical, socio-economic and cultural characteristics of the community and their environment. Participatory methodologies for example, PRA will be used in conducting the survey.

#### Step 2. Data Analysis

All the data collected and compiled will be analyzed with the community to identify the problems. This is also to ensure that the community owns the whole project and feels it is theirs from the beginning.

#### Step 3. Ranking of Problems

The problems will be listed according to their importance. This will be done depending on the data available.

### (b) Development of mechanisms for collaboration with the various sectors and involvement of various disciplines

Based on the survey data, we will identify organizations and institutions that work in the target area. We will then hold discussions with these organizations explaining our objectives and the needs of the community and express our concern as far as collaboration and focus on the relationship among the different disciplines until we reach a common understanding. After this, a proposal on how collaboration is to be made shall be drawn and the responsible bodies (individuals/groups/institutions) will be elected.

### (c) Packaging and dissemination of technologies

Firstly, we will identify appropriate technologies that can help in the promotion of Social forestry. This can be either demand-driven or research/extension driven. Then we will identify input quantity, quality, price and technical knowledge (easy operation or implementation of technology) of the target group. This will be followed by devising mechanisms for supply of the inputs and decision on the methods of transferring the package. Lastly feedback mechanisms (for improvement purposes) will also be devised.

### Dissemination

In the dissemination of the technology, the following steps will be followed:-

## APPENDIX 6

## FIELD TOUR REPORTS

### Introduction

The 3rd Regional Training Course for the Promotion of Social Forestry in Africa ran for five weeks (29th September - 31st October, 1997) at KEFRI Muguga - Nairobi, Kenya. Field study tours were employed as one of the methodologies for conducting the course. They presented opportunities to assess and to have a practical experience in Social forestry in different agro-ecological zones. These tours took place in three phases.

*Phase one*
This took place from 2nd to 4th October, 1997. During this tour, participants were exposed to the ASALs of Central Kenya where they visited the KEFRI field station at Tiva in Kitui district and its (KEFRI) partner farmers and schools. Activities visited included tree nurseries; seed collection and handling; seed stand; model farm demonstration; trial plots on land management and initiatives by individual farmers, women groups and schools to establish their own tree plantations. The last leg of the tour saw the participants in Kajiado district where they visited the Elangata Ecosystem Management Programme based at Elangata Wuas and ended with an afforestation programme at Isinya-Moi Girls Secondary School being implemented by the students themselves.

*Phase two*
This involved visiting the high, medium and low potential areas of Western Kenya from 13th to 18th October, 1997. Participants visited the Miti Mingi Mashambani KENYA - FINNIDA Project in Nakuru district (Nakuru and Bahati); Forest Department and its outreach programmes in Bungoma district; KWAP activities in Busia district; KEFRI on-farm-research trials in Maseno, integrated on-farm activities at Rakwaro in Rachuonyo district, farmer organised field day in Migori district and Kenya Forestry College, Londiani.

*Phase three*
This involved organized field visit to the Mt. Kenya region which took place from 25th-29th October (5th Week). The trip exposed the participants to the landuse and environmental challenges of the highland ASALs of Kenya and also the challenges associated with settlements and land subdivision. Activities included visits to Laikipia district on the north western slopes of Mount Kenya. Specifically, the participants visited the Laikipia Research Programme (LRP) - an ASAL landuse data collection/analysis programme, the Applied Research Unit (ARU), farmers' fields and on-station demonstration plots. Issues on landuse management on highland ASALs and those associated with settlement and land degradation were discussed. This particularly benefitted participants from South Africa, Zimbabwe and Zambia were settlement programmes are at present underway. The participants also visited the collaborative KEFRI/KARI/ICRAF research and extension programmes activities in Embu (DAREP) - a medium potential area of Kenya.

Activities visited in the three phased field study tours included: private nurseries; soil conservation practices; rain water harvesting systems; citrus fruit orchards; Agroforestry

practices; individual woodlot establishments; compost manure making; liquid manure preparation; conservation of indigenous vegetation for medicinal purposes and production of organic pesticides. Also visited was Embu weavers - to underpin the cottage industries to the development of Social forestry.

The participants were divided into three groups dealing with three themes, namely; Technology Development, Extension and Community involvement/participation in Social forestry based on field observation, and sometimes country experiences. The deliberations on these themes are summarised in the subsequent section.

## GROUP 1: TECHNOLOGY DEVELOPMENT ACTIVITIES IN SOCIAL FORESTRY

### Issues observed

Participants observed that there were a lot of technologies that were common to both on-farm and on-station research. Therefore this report gives on outline of all technologies as seen in the field without necessarily separating those at on-station from those at on-farm. However, examples of where a given technology is being applied will be highlighted.

### Nursery activities

*Objectives for nursery establishment*

(i) Developing the right tree species for afforestation and agroforestry.
(ii) Establishing sources of propagating material.
(iii) Promotion of income generating activities to farmers.

### Nursery technologies

*Sunken beds*

The main purpose of constructing sunken beds is to conserve moisture especially in the ASALs. This conclusion was reached at after researchers at Tiva site in Kitui district carried out trials comparing sunken beds with raised beds. However, raised beds are widely practised in high potential areas.

*Utilization of locally available materials for seedling production*

Seeds are collected locally because of adaptability in terms of provenances and minimizing production costs. Local materials such as bamboo stems, waste milk sachets, empty cans, old car tyres and banana sheaths are also used so as to minimize production costs.

*Nut cracker machine*

This is a machine that was locally designed and developed by KEFRI/SFTP at Kitui Pilot forest to assist in quick extraction of seed from hard coats. This improves the germination rates of seeds.

*Termite extraction method*

This involves dewinging of winged seeds using termites. Conditions favourable for termites are created around the seeds. The termites then invade the seed and eat off the outside wings. A researcher keeps close surveillance. After a period of about 10 days, the seed is collected for sowing. This also enhances germination.

*Tree shades*

Seedlings are raised under tree sheds instead of constructing nursery structures in order to minimize costs in time wastage.

*Compost manure*

This is used in pot filling and tree planting to improve soil fertility.

*Liquid manure*
It is used for top dressing vegetable gardens and tree seedlings. It preparation requires: cowdung; Calliandra; Tithonia and Neem leaves; poultry and rabbit droppings.

Equal amounts of chopped leaves and the animal wastes totalling 8 kg are added to 15 litres of water and kept for 30 - 40 days. The solution is filtered and an equal amount of water is added before it is applied to the field.

*Irrigation and mulching*
Bottle drip irrigation, murram and sand mulching technologies were only observed at Tiva station still under trails. They were not yet adopted by farmers.

*Organic pesticides*
Organic pesticides were also commonly concorted locally using Neem, pepper and onion leaves. These are chopped and mixed in equal proportions of 2 kg of the material to 5 litres of water. The solution becomes effective after a period of 10 days.

Tobacco leaves or cigarette filter solutions are being used for controlling lady bird beatles, bug, stalk borers and other pests. The tobacco leaves are boiled for 45 minutes, cooled and filtered for use, while cigarette filter solution is used after boiling to produce a toxic solution which is effective to a wide range of pests.

Ash is used as a repellant to pests by sprinkling it when it is cool and dry on the ground around the seedlings or plant or on affected leaves.

**Agroforestry interventions**

Agroforestry as a land use concept is popularly applied by farmers both in ASALs and high potential areas. The interventions employed include; alley farming, fallow cropping, boundary and border planting, planting along water ways, and woodlots, among others. The purpose of these are; food supply, fuelwood, soil erosion control, increasing soil fertility, building materials, fruits, fodder, manure, medicine and many others.

*Alley farming*
Farmers have adopted this system where arable crops are grown in spaces between rows of planted trees and shrubs. The plants are cut and their leaves and twigs used as mulch and manure to enhance food production. The branches are used as fuelwood and poles. The leaves are also used as fodder for animals. In some cases, trees were being used for timber and fruit production to earn some income. A good example of the later case was observed in Mr. David K. Ngonde's farm in Nzambani location, Kitui district. The species grown by the farmers include *Sesbania sesban, Grevillea robusta, Leucaena leucocephala*, and *Calliandra calothyrsus*, among others.

*Hedgerow intercropping*
Some farmers in the visited areas were growing food crops between the rows of trees. The tree grown performed well and were encouraging. They included *Grevillea robusta, Leucaena leucocephala, Sesbania sesban* and *Calliandra calothyrsus*. The example in this regard is a farmer Mr. Paul Karomo of Karai-Nachu location, Kikuyu division, Kiambu district.

## Medicinal Plant Conservation

Farmers have realised the rate at which medicinal plants are diminishing and have resorted to the domestication of the remaining species on their farms. Farmers are also raising medicinal seedlings to plant on their farms. Examples of such farmers were Mr. Wafula who is a farmer/teacher and Mr. Mubukusu, a farmer in Namwera location, Bungoma district.

## Beekeeping

Beekeeping activities were also being carried out by some farmers. They used both modern wooden box hives as well as traditional ones made from hollowed sisal stems. They yields varied with the system used.

## Soil conservation practices

The majority of farmers have gone a long way to develop soil conservation structures on their farmlands. A number of interventions were observed.

### *Terraces*

There were three common types of terraces observed, namely; *"fanya juu"*, *"fanya chini"* and bench terraces. The creation of soil bands was one common feature of these interventions. Grasses such as napier and trees such as Calliandra were planted on the soil bands to stabilise them. However, trees seemed to be the most appropriate for the ASALs, because grasses got scorched and dried of during the long dry spells.

### *Cut-off drains*

These are water channels that are dug to divert excess run-off water from the farm land and direct it to the main drainage. This can be a stream, river or water reservoir.

### *Contour bands*

These were in form of stones or trash/crop residue bands. In cases where stone bands were employed, stones were piled along the contour to form a barrier. Trees or grasses were planted along the lower part of the band for reinforcement. Trash or crop residue bands were made by piling trash or crop residues along the contour for the same purpose as stone bands. Trash eventually rot to form manure for the farmland. Trash bands are therefore constructed seasonally.

### *Grass strips*

Strips of vegetation of about 60 cm wide were conserved between plots of farm lands along contours. These also formed barriers for soil erosion control.

### *Micro-catchments*

These were small basin-like ditches dug around single tree stands to harvest water, especially in the ASALs, where soil moisture is critical.

## Energy Conservation Technologies

Woodfuel was a very scarce resource in all areas visited. The rural communities were tackling the problem form two fronts by planting and conserving trees and development of fuel/energy saving stoves or *jikos* for household use. The energy saving technologies/devises observed included:-

- Enzaro jiko,
- Maendeleo jiko,
- Kuni Mbili jiko,
- Upesi jiko,
- Solar cooker,
- Biogas digester, and
- Improved charcoal kilns.

## Food processing

There was an encouraging trend in fruit tree growing though without clear marketing system for the fruits. Women were steadily going into fruit processing and preservation in order to avoid losses since fruits are perishable. This was observed in Rachuonyo and Migori districts in Nyanza province, at Mr. and Mrs. Okoth's farm and Mr. and Mrs. Nyangile's farm. The potential use of solar cooker was demonstrated at Mr. and Mrs. Paul Karomo's home in Karai-Nachu in Kiambu district where the participants were treated to a solar cooked "*Ugali or Sima*" from maize flour.

The technologies observed were:-

- Fruit salad processing from mangoes and pawpaw.
- Fruit juice processing from mangoes, oranges, pineapples and pawpaw.
- Solar cooker for preparing simple meals.
- Solar drying.

## Collaborative Research

KEFRI/KARI/ICRAF in collaboration with farmers are carrying out on-farm research for improved fallow in Maseno. The research is being carried out on land voluntarily offered by farmers. They are particularly using *Tithonia, Sesbania* and *Calliandra* species. According to information from the researchers, *Tithonia diversifolia* produces better results than Calliandra or *Sesbania*.

Community members, including the owners of the land on which the research is being carried out offer cheap labour during the trials. The same members of the community are also expected to adopt the technology being demonstrated from on-farm research in their on fields.

## Problems

The potential of Social forestry technology development to solving forest/tree related human requirements are high and encouraging. However, it is still constrained by factors associated with its development, some of which are outlined below.

1. There is inadequate quantity and quality of seeds of appropriate species.
2. Ineffective extension methods for dissemination of research findings to the users.
3. Lack of documentation and validation of indigenous knowledge and systems.
4. Underdeveloped market for forest wood and non-wood products, i.e., seedlings from private farmers.
5. Harsh climatic conditions especially moisture stress in the ASALs.
6. Limited land in the high potential areas.
7. Less emphasis is given to the management of existing indigenous tree species.
8. Seeds are too expensive for an ordinary farmer.
9. Lack of integrated approach to Social forestry technology development, i.e., without addressing other related problems such as water.
10. Poor soils in the ASALs.

## Opportunities

Inspite of the numerous constraints to Social forestry technology development, there exist potential opportunities on which all stakeholders can build on. Some of these include:-

1. Existence of training facilities at KEFRI for training of more farmers, extension staff, teachers and other interest groups.
2. Materials needed for live fencing are locally available.
3. Propagation materials, especially seeds of indigenous tree species can be locally collected.
4. Farmers are willing to participate in Social forestry activities.
5. Existence positive government policy and frameworks towards afforestation programmes.
6. Current collaboration and networking both within and outside Kenya, i.e., national, regional and international networks.

## Recommendations

1. Since termites are a big problem in the ASALs, live-fencing of tree nurseries, homesteads and farms should be done using termite resistant tree species, especially *Euphorbia*, Kei apple, etc.
2. Extension services especially to the non-contact farmers should be strengthened so as to boost their morale.
3. On-farm participatory research is an encouraging development that needs more emphasis and strengthening.
4. *Enzaro Jiko* (energy saving stove) technology needs to be improved to include a chimney for better efficiency and health of the users, particularly the women.

## Conclusion

There is now an increasing recognition of the importance of Social forestry activities in the country (Kenya). Indeed, farmers are raising, tending and conserving trees on their own in their land. This is one of the most avenues through which forests/trees resources can not only be met but also diversified, expanded and sustained, to meet the growing demand for these resources at all times. In addition Social forestry also presents an avenue for reducing soil erosion and maintaining soil fertility which would result in increased crop yields.

Considering the above major benefits of Social forestry development, the government, community and all other interest groups should combine their efforts in order to alleviate the current prevailing biophysical, technical and socio-economic constraints that all actors and beneficiaries are subject to.

## GROUP 2: SOCIAL FORESTRY EXTENSION ACTIVITIES

### Introduction

During our visit we got a chance to meet the stakeholders (Researchers, Extension worker, farmers, the School community, women group) in Social forestry. It was good for us to share experiences and to acquire knowledge in "tree planting by the people, for the people, of the people" in the areas mentioned under phases one and two.

This section presents Social forestry extension activities, and in particular extension approaches, strategies, linkages, participation, training, challenges, constraints and opportunities as observed during the study tours.

### Social forestry extension

Social forestry extension is the transfer of tree planting technologies to the people through the active, effective and meaningful involvement of the stakeholders.

The general goal of Social forestry extension is to help the people for the betterment of their living conditions and their environment.

*Social forestry approaches*

We have observed that there are two popular modes of approach in Social forestry extension, namely; horizontal and participatory.

In the two-way horizontal approach both the farmers and extension agents share knowledge, experiences and skills. Examples of two-way horizontal approaches include the Opportunity farm, and Buteyo Miti park, in Bungoma district

In participatory approach we observed a meaningful involvement of all stakeholders in all aspects of development projects. Examples of this approach include: herbalists in Bungoma, and the participation of the pastoral Maasai in dry woodland ecosystem management at Elangata Wuas in Kajiado district.

*Strategies/Methods used*

- It ranges from individual approach to public gatherings
- Organized field days for farmers e.g. LOMIZONES services
- Training of farmers e.g. Kitui, KWAP, Isinya-Moi Girls Secondary School
- Public gathering/Baraza e.g. Churches and schools, Usenyo Primary School
- Farmers tours - KWAP (Busia)
- Mirror technique - KWAP (Busia)
- Mass extension through videos and publication

- National Social forestry prize day - Rukwaro (Rachuonyo)
- On-farm research e.g. Maseno Research Centre (ICRAF, KEFRI and KARI)
- Seedling distributing - Miti Mingi Project (Nakuru)
- Farmer-to-farmer extension in Karai (Kiambu) and Masara (Migori).

*Linkages/Collaboration*

Linkages is the flow of information/technologies and the connection between stakeholders. The group observed linkages in Kitui between researchers, extension workers and farmers through training.

Linkages at district levels in Nakuru was observed. The frontline extension agents from different ministries are working together to improve the living condition of the farmers.

In Bukhalarire catchment, the umbrella group was also observed to maintain effective linkages between farmer to farmer at grass root level.

In Bungoma linkages between the District Commissioner and Extension staff from different ministries was observed and appreciated.

*Participation/Involvement*

The active involvement of the farmers was demonstrated in various forms:-

- Farmers are agents of their own development. For instance, farmers were organized in groups and clubs to participate in different Social forestry activities.
- They were involved in strategies for on-farm planning and monitoring.
- There is equal opportunity in Social forestry for both men and women though participation is not equal (more participation from men).
- Schools community are also participating in tree planting activities through environmental clubs.
- Farmers are less resistant to adoption to new technologies.

*Packaging*

Social forestry packages includes both tangible materials and extension services as back-up. Some of these packages are tools and equipments, seedlings polythene tubes and technical know-how.

*Training*

The Social forestry training is implemented at two levels: national and grassroots level. The former is held at KEFRI - Muguga National Social Forestry Centre and the latter is held at KEFRI - Kitui Regional Centre. Beside these two centres training in forestry at certificate and diploma level is also offered at the Kenya Forestry College, Londiani. KWAP also trains farmers in PRA.

With the objective of promoting social forestry the KEFRI - Muguga centre train staff from NGOs, District level, Divisional level, Extension officers and Teachers. The Kitui centre draws the target groups such as Farmers, Community groups, Leaders and Frontline extension staff from Eastern province.

## Issues/Challenges

- Forestry extension is lagging behind the other extension services like agricultural and livestock. At the same time more emphasis is given on research than Social forestry extension.
- How sustainable is the wholesome privatization of nursery? Cost of seeds and seedlings will exclude some of the resource - poor farmers of which they are the main targets of Social forestry.
- Can we really say that Social forestry is reaching the target group ie. the resource poor farmers?
- How about the sustainability of the Maseno on-farm research after the phasing out of the projects?

### *Constraints/Problems*

- Low rainfall and unavailability of water for tree planting activities. As a result, the extension agent being seen as not effective.
- Disease and pest. *Cupressus lusitanica* is attacked by aphids and disease, while damage by termites is the problem in ASAL tree planting. Some *Leuecena* spp. are also attacked by aphids.
- Traditional taboos and cultures. In some parts of Kenya women are not allowed to plant trees.
- Marketing. It is hard to sell some of the seedlings from farm nursery.
- The Social forestry extension services is constrained by immobility of extensionists, low extension staff to farmers ratio, for example, in Bahati division of Nakuru district, the ratio is 1:500. Other problems related to these are high staff turn-over and transfer.

### *Opportunity*

- Women groups income generating capacity should be strengthened. By improving the quality of products like making fruit juices, handicrafts, furniture etc.
- Incorporation of the beekeeping in Social forestry system.
- Expanding the community wildlife industry and search for suitable markets.

## Recommendations

- Encourage farmers to practice improved method of water harvesting, mulching using locally available materials, selection of draught resistant species in water deficient areas.
- Encourage farmers to construct earth dams, individually or communally to overcome water problem.
- The government and NGOs should assist the farmer by buying seedlings during years of draught/crisis.
- Promotion of indigenous knowledge in disease and pest control should be encouraged beside the choice of the resistant species. (recording of existing knowledge by farmers)
- Integrated research into tree pests and disease control
- Sensitizing both male and female in Social forestry through training.
- Increasing the mobility of Social forestry extension services by improving the condition of services for extensionists.

## GROUP 3: COMMUNITY INVOLVEMENT IN SOCIAL FORESTRY

### Background

One of the most important strategies to promote Social forestry in Africa is through sharing of experiences, information exchange and strong linkages between various governmental and non-governmental institutions, groups and individuals in different countries of Africa.

This section deals with the third theme, community involvement. The major issues, the constraints and the potentials that exist have been discussed from the point of view of institutions, stakeholders, target groups, collaborations and participation. Finally, conclusions were drawn and recommendations made.

### Issues observed

During the field visits a number of issues arose up and revolved around the involvement of local institutions in Social forestry development, collaborations among different stakeholders, roles and responsibilities of men, women and children, socio-economic, socio-cultural and participation.

It was observed in general terms that there is evident soil erosion and land degradation in most areas in Kenya. In addition, in adequate water, low agricultural production especially in ASALs and over-grazing are factors affecting the people. In areas where there are no gazetted forests there is no alternative source of forest produce and people have more problems.

*Local Institutions*

The driving force behind the involvement of institutions varies at different levels. However, schools have been involved mainly in to create awareness and tree planting to provide land cover, windbreaks and shade. On the other hand, groups have done so mainly due to the possible economic benefits after planting the trees.

It was equally observed that women groups have men who provide the drive force putting the name "women groups" in question.

*Roles and responsibilities*
Although there is general awareness about gender issues, it was observed that traditions and culture play a greater role in molding the societies roles and responsibilities, especially for women, men and children.

*Socio-economic factors*
The general involvement of people in Social forestry activities was basically based on the potential income to expected from such activities. The principle of environmental rehabilitation has a less influence on people's involvement.

High population pressure has led to reduced land holding capacity and accessibility for people having small holdings. There was evidence of reduced tree cover in some areas due to sugar cane farming which is economically attractive.

*Participation*
On-farm research cannot be said to be heading in the right direction. It is not participatory since at the moment, designs of such research are basically academic and using farmers as possible cheap labour. Paying farmers is not participatory. There is need to look at real problems faced by farmers when doing research.

Privatization of the nurseries is associated with running such enterprises. People's involvement may as a result not be an issue but profit. This may reduce the possible involvement of people in relation to forestry extension.

Activities

The communities visited are involved in different activities depending on objectives of individuals and groups. Most activities are income generating, which stresses the needs of the people.

*Tree Nurseries*
Tree nurseries are ran by schools, individuals and groups, basically for sale and distribution to interested individuals and groups.

*Energy Saving Stoves*
Due to limited fuelwood such stoves help in reducing the amount of wood used in cooking. However, it has been an opportunity for the producers to earn income from the sale of such stoves.

*Small scale Handcrafts and Enterprises*
The basic aim is to earn income to sustain livelihoods. Different enterprises have been started and managed by the local communities. These include; basketry, weaving, sewing, bead fashions, jewellery, ostrich production, sale of fuelwood, carpentry, foodstuff production, herbal practices, ecotourism, especially in Maasai land, beekeeping, and seed and seedling production.

*Intensive Integrated Farming*
Very few people are involved in such farming systems in order to maximize production on very

limited land. The use of 'waste' from one enterprise as an input in another. Nothing goes to waste.

*Communal Natural Resources Management*
Management of indigenous forests has been taken up by very few people though the interest in indigenous trees seems to be growing because of their advantages over exotics, especially on attack by pests and diseases. On the other hand some farmers have gone into exotic forests management.

*Community Level Research by Individuals*
Research by individual farmers in order to increase production through improvement of soil fertility and use of indigenous of soil fertility and use of indigenous plants for manure has become evidently important. Farmers are now thinking broadly about improvement of production and use of Forest resources. They are for instance using cultural ways of disease of pest control.

*On-Farm Research*
Researchers have opted to start doing on-farm research to reduce risks of failure in adopting practices that are developed from on-station research. However, a lot still has to be done to ensure more meaningful participation of farmers, especially at KEFRI Maseno and its environs.

**Constraints**

*Water*
Water is evidently a big problem especially in ASALs. This has greatly reduced peoples involvement in Social forestry which basically requires water.

*Pests and Diseases*
Peoples interest and zeal in Social forestry has been reduced due to some attacks by termites. Some seedlings had fungal diseases that farmers could not control because of the high cost of fungicides.

*Seed Propagation*
Seed dormancy have altered peoples wishes of planting certain trees because of the difficulties in ensuring germination of the seeds. In adequate knowledge of seed propagation methods is also a contributing factor.

*Funds*
Inadequate funds to buy inputs like pesticides and seedlings have reduced chances of some individuals to participate in Social forestry programmes.

*Poaching of Forest Products*
Poaching of forest products conserved or planted by individuals or groups has frustrated efforts of ensuring good management of resources.

*Socio-cultural briefs*
Some cultural beliefs had in the past and still continue to effectively reduce participation of some women and men in planting trees. For example, in Bungoma, certain tree species can only be

planted by particular clans, although the trees can be used by the whole community.

*Localized Knowledge*
Some indigenous knowledge for use of some trees and plant materials, especially herbal medications is too localized and guarded to enhance conservation. There are beliefs against giving out such information. This information could be useful in convincing people to conserve and manage their forest/tree resources.

*Group Formation*
Groups that have been formed in some places have a lot of committees which basically strains the ability to perform certain duties effectively.

*Training*
There is inadequate training offered to individuals and groups. This clearly affects performance like in species selection and management of forest resources.

*Priorities*
Forestry is not a priority in many communities as a result participation is reduced. This calls for increased extension messages.

*Collaboration*
There are undefined collaboration guidelines (policy) for different agencies working together. This results in unequal distribution of resources and achieving unrelated objectives and visions.

## Opportunities

Although there are constraints affecting participation there are opportunities which could act as good entry points in ensuring that people are involved in Social forestry.

*Existing Groups and Model Farmers*
Due to different problems people are faced with, they have come together to form groups and work together. On the other hand, there are individuals who have successfully implemented forestry programmes and these can act as entry points of Social forestry development, hence farmer led extension.

*Churches and Schools*
These are possible avenues to involve communities in Social forestry, since they are composite of different individuals with similar backgrounds. They are equally organized.

*Commercialization of Forest Products*
Financial attachments to forest products like poles, fuelwood, fruits, etc., will enhance involvement by communities since they will try to get income.

*Collaboration*
Collaboration of different stakeholders, especially herbalists, health and forestry officers, have given the opportunity to find sustainable reasons of harvesting medicinal products.

*Awareness*
There is a great growing awareness of the importance of indigenous trees and this is an opportunity in developing management plans and research on indigenous forest research management.

*Socio-cultural Beliefs*
There are some cultural beliefs which help in understanding conservation. In some societies species are not supposed to be planted because one may die, become barren or trees are point of worship (spiritual).

Recommendations

*Collaboration*
Extensionists should come closer to farmers and other stakeholders in order to develop beneficial technologies together. Extensionists should go out to farmers instead of waiting for farmers to go to them. Examples are areas where construction e.g.. Kitui is going on and other areas where people do not have easy access to Extensionists.

*Increased and Enhanced Linkages*
There should be a deliberate policy to allow easy linkage between the Research, Extensionists and Farmers. This will help in delivering logical and beneficial technologies.

*On-Farm Research*
On-farm research should be more participatory than just using owners of farms/fields as cheap labour. Involvement of farmers should not be based on being used but participate in designing research that is beneficial to the farmers.

Research should be generally farmer-driven not only for academic purpose. There should also be more research on indigenous trees, especially phenology, propagation and management.

*Project design*
In designing projects, there should be a deliberate policy to include peoples priorities in relation to Social forestry programmes. For example, Social forestry programmes should include water well drilling where necessary, if it is essential to have water and it is peoples priority.

*Non-Wood Products*
It is important that non-wood tree products like fruits e.g.. Cashew nuts or indigenous fruit with income generating potential should be encouraged in order to give a wide range of possible sources of income. At the moment timber and poles seem to be the basic products.

*KEFRI Research and Extension*
KEFRI participatory approach should not only work with existing tree growers, but also initiate own efforts. This will help understand participation fully.

*Privatization of Nurseries*
Forest department should not give government property to individuals. If they are to lease out the nursery, it should be to an interested group that will not be profit oriented but one that will

consider the needs of the people and the environment.

## Conclusion

In conclusion, it was generally observed that farmers are participating in forestry activities and there is still room for increasing participation. Linkages and collaboration between forestry sectors and other stakeholders should be encouraged to foster rapid Social forestry development.

# MT. KENYA FIELD STUDY TOUR REPORT

## SUMMARY OF GENERAL DISCUSSIONS

### Technologies and application

*Soil and water conservation*
High level and integrated soil and water conservation interventions were observed at a contact farmer's plot. The farmer has integrated knowledge from different sources (Researchers/extensionist) and his own from reading materials. These included: hedgerow intercropping; terracing; crop rotation; mulching and contour ploughing.

*Amenity planting*
Roadside planting for soil and water conservation was also observed. Interestingly initiated by a private road construction company, but with alot of encouragement from the rural communities.

*Cottage industry*
The cottage industry was impressive but perhaps the equipment was crude. There is need to integrate more Social forestry cottage industries but with a varied approach

*Silvopastoral systems*
Improved animal production through provision of well balanced and cheap feed rations. This was through the innovations or technologies such as fodder banks and border planting of fodder crops/trees.

*Geographical information systems (GIS)*
The application of GIS in natural resource managed was observed in Laikipia district. It was also agreed that though the technology was applicable and could result in well planned natural resource utilization programmes, it was expensive.

*Research*
Both on-station and on-farm research on multidisciplinary approaches as in soil and water conservation, fodder tree and shrubs, intercropping local tree varieties for improved nutrition of human and livestock were observed as being applied by farmers within their communities as well as being researched upon..

*BOTSWANA*
*BY*
*LETHATA EBINENG - TECHNICAL OFFICER*
*MAUN - BOTSWANA*

## INTRODUCTION

Botswana is an arid and semi-arid country with a land area of 582,000 $km^2$. An estimated 6% of this area is suitable for arable agriculture, while 60% of the whole country is covered by shrub-like vegetation, sparse savanna and open woodland. The annual rainfall ranges from 650 mm in the north to 250 mm in the extreme south-west. The main forested areas are in the north and eastern regions. The climatic and edaphic conditions of Botswana support a varied range of *flora* and *fuana* which play a critical role in social, economic and ecological well being of the country.

The current population estimates 1.3 million people who are projected to be increasing at the rate of 3.5% per annum. The majority of the people reside in the eastern part of the country with Gaborone and Francistown as the major populated centres. Population and economic growth create demand for food, wood and space for human settlements hence there is definite pressure on natural resources.

The contribution of forests and woodlots to national economy in Botswana is not known. What is appreciated at local and national levels is that forests and woodlands contribute to the improvement of food security at household level; to meeting rural subsistence need; to generation of income; to agricultural productivity and to protection of the environment. Forests, woodlands and trees provide numerous essential benefits, many of which are fundamental to the well being of the nation.

It has been estimated that 53% of the total energy consumption is generated from wood, while electricity, coal , gas, paraffin, petrol and diesel account for the reminder. The major users of wood and energy are the rural people. The majority of whom are poor. Forest, woodlands and trees provide construction materials, forage, fodder and habitat for livestock and wildlife, food such as mushroom, honey, insects and game meat; herbal medicines, and materials for hand craft production, forests provide protection against soil erosion, conserve watersheds and biodiversity as well as concentrate carbon dioxide. Forests and wildlife are a major component of tourism and ecotourism whose contribution to the economy is significant.

Forest benefits accrue to all members of the society, however, those most dependent on such benefit and most threatened by their destruction are the poor.

Forests and woodlands in Botswana have a great potential for providing significant social, economic, ecological and environmental benefits to the present and future generations. However, the major constraints is that the real direct and indirect benefits provided by forests have been grossly undervalued and under estimated resulting in allocation of limited financial public appreciation of the role of forests in development.

## PROGRAMME AND PROJECTS AND ACTIVITIES TO PROMOTE SOCIAL FORESTRY IN BOTSWANA

There are many of programmes/projects which are under taken throughout the country to promote Social forestry. These include:-

### 1. Schools Programme

The main reason for initiating the schools programme was to educate school pupils in environmental matters, mostly in forestry and in this way spread the message for environmental awareness and knowledge among pupils and also their teachers and families. School pupils were chosen as the target group because it is regarded as most efficient to start environmental education already at young age. The youth of today are the decision makers of tomorrow for Botswana's natural resources such as forests and environment. This programme helps the children to understand better and appreciate the environment that they live in.

The primary education syllabus introduces forestry and environmental education at standard four level and it is the aim of the schools programme to support this initiative through the provision of technical support demonstration while, concurrently, to assist the Curriculum Development unit of the Ministry of Education in the developments of a comprehensive forestry syllabus to be incorporated into the official school syllabus.

### 2. Forestry Protection and Development Project

In 1993 the Government of Botswana and the European Union entered into a financial agreement of (Pula) P 10.7 million which is expected to last for the three (3) years. The project is implemented as the Forestry Protection and Development Project((FPDP) as part of the national indicative programme.

The main areas of operations of the project are the North-west and Chobe districts, Central and Francistown regions. The FPDP commenced its operations by implementing the Chobe Forestry Management plan, initiated a comprehensive forestry extension programme in (20) primary schools, supported by the development of seventy (70) backyard forestry nurseries, six (6) woodlots and seven (7) research trials, established three (3) new nurseries at Lethlhakane, Masinga and Shakawe as well as upgrading seven (7) existing nurseries. The project also provided financial assistance to Non-governmental organizations such as Forestry Association of Botswana, Veld products Research and Thusano Lefatsheng, and Serowe Forestry Brigade.

Three successful workshops were held in Ngamiland, Chobe and Franscistown in support of the development of the new forest policy for Botswana. The training financial agreement makes provision for training of the staff as follows:-

| | |
|---|---|
| Degree courses | 6 |
| Diploma courses | 24 |
| Short in-service courses | 12 |

The project's first phase training plan is as follows:-

| | |
|---|---|
| Msc | 1 |
| Bsc | 2 |
| Diploma | 7 |
| Certificate | 1 |

The breakdown of training courses to be implemented during the second phase are as follows:-

| | |
|---|---|
| Msc | 1 |
| Bsc | 2 |
| Diploma | 7 |
| Short term courses | 6 |

In NDP it is proposed that donor assistance will be sought to further develop implementation of Chobe Forest Management Plan, develop agroforestry and research programmes. Additional support will be given to finalizing a Forest policy and Legislation for the Forestry Section.

## 3. National Tree Planting Day

This is an annual event which was inaugurated by the President of the Republic of Botswana in 1985. It is meant to combat deforestation. A conclusive study showed that deforestation is caused by high demand of fuelwood in urban and semi-urban areas, resulting in indiscriminate cutting of trees. Large scale agricultural activities and other environmental degradation problems also play a part in deforestation.

The main objective of the programme is to arouse awareness on the need to plant trees to prevent further disappearance of the resource so essential in our daily lives. The following objectives were established for the programme with the above goal in mind.

- Combat the pressure on natural woodlands for forest products .
- Increase food production through the use of multi-purpose trees.
- Improve the socio-economic status of both urban and rural populations by providing various forest products.
- Provide habitat and fodder for both wildlife and livestock
- Increase awareness on the protection and conservation of fauna and flora for the present and future generations.
- Supply multi-purpose tree seedling to individuals, groups, institutions and communities for planting in suitable selected sites.

## 4. Forestry Drought Relief Programme

The fragility of Botswana's environment regarding the escalating rate of deforestation and degradation of forest resources has again come under spotlight.

The persistent droughts, growing population, over-grazing, fires, fuelwood collection and worst of all, indiscriminate cutting of trees and a host of other factors have all placed severe strains on Botswana's delicate forestry environment.

In views of these multi-dimensional problems the government of Botswana has come up with a conservation strategy to re-address degradation of natural woodland resources and to encourage community, participation in the management of existing woodland based on the principle of sustained yield, communities are encouraged under significant government support programmes to establish community woodlot to meet most of the basic domestic wood requirements.

## 5. Woodlot/Plantations

Afforestation programmes have been carried out in different areas in an effort to combat deforestation and general environmental degradation problems and in particular to reduce pressure on our natural woodlands.

## 6. Nurseries

The establishment of tree nurseries and raising of superior quality tree seedlings is a precursor to the successful implementation of afforestation and re-afforestation programmes.

Several nurseries have been established ranging from ornaments, fodder land rehabilitation and a variety of fruit tree species.

## 7. Botswana National Tree Seed Centre Project

The National Tree Seed Centre is a project sponsored to the tune of (Pula) P6.5 million by Botswana Government and the Canadian Government through the Canadian International Development Agency (CIDA) under the auspices of SADC Tree Seed Centre Network.

There is urgent need to establish a National Tree Seed Centre (NTSC) in Botswana to supply tree seeds of high quality for various forestry development projects.

A seed assessment carried out as part of the project feasibility missions in 1989-1990 indicated serious deficiencies in both quantity and quality of seed supplied or otherwise procured in relation to the projected national demand. A national Tree Seed Project is an integral part of intensive forest management which leads to successful forest development projects and environmental protection tree planting activities.

The centre will be responsible for handling the collections, processing, testing, storing and distributing seeds of both indigenous and exotic tree species.

So far a site for the NTSC has been identified and surveyed and we are only waiting for the Central Tender Board procedures before construction can start.

The centre will be next to the existing Gaborone Forest nursery.

### Achievements

- Purchase of a computer (Lap-top) with a printer
- Purchase of 4WD Toyota Land-Cruiser
- Purchase of Photo-copier

- Purchase of Books
- Practical attachments to Tanzania, Zimbabwe , Zambia and Swaziland
- Range of wide collection workshop and collections of *Sclerocarya birrea* (morula)
- Seeds have been dispatched to other SADC countries
- A site of 10 ha. was identified in Artesia for multi-locational and National trials and we are waiting for Kgatlen Land Board allocation.
- Two computer courses were conducted at Institute Development Management Gaborone
- The manager is presently pursuing a Master of Science Degree in Seed Technology at Stellenboshch University in South Africa.
- Several Tree Breeding Workshops have been held
- The International Union of Forestry Research Organization (IUFRO) held a symposium in Arusha, Tanzania in 1993.

**Major constraints**

- Delays by the Building and Architectural Department Services to start construction apparently aggravated by sub-constructors.
- Reduction of budgets by sponsors and late arrival of funds from Network Coordinators in Harare, Zimbabwe

## TRAINING COURSES ON SOCIAL FORESTRY/AGROFORESTRY AVAILABLE IN BOTSWANA

There are short-term courses and seminars/workshops which are usually conducted for the community. They normally last for a week.

For long term courses, the Botswana College of Agriculture offers

- Certificate in Forestry (3 years)

**Short Term Courses, Seminar, Workshops**

- Protection and sustainable utilization of forest resources
- Sustainable utilization and management of natural resources by the community
- The role of community in natural resources conservation
- Drafting of the forest policy
- Prevention of forest fires
- Entomoforestry courses
- Basic and advance Beekeeping courses

## CONSTRAINTS/PROBLEMS HINDERING THE PROMOTION OF SOCIAL FORESTRY

1. No Forest Policy

   This means that forestry professionals are setting goals and management objectives in isolation from the community, but a more formal public involvement in developing and implementing forest land use policies is essential. However, Forest policy draft has been

produced and comments are still being awaited from the community and heads of different departments

2. Government tree nurseries producing plants and seedlings are found in major towns and the rural population find it very difficult to travel to get the seedlings.
3. Veld fires area concern which cause destruction to valuable timber species in the forest reserves, such as *Pterocarpus angolensis* which produce timber for making furniture. There is also lack of manpower resources and equipment to combat veld fires.
4. The difficulty in integrating forestry into the rural community in agricultural setting due to the fact that most land use systems in operation today have their thrust towards food production.
5. It is difficult for the rural communities to appreciate the results of forests destruction until actual hardships develop. For successful integration of forestry with agriculture a profound change in attitude and behaviour of the recipient party is therefore called for.
6. Line of communication is very difficult. Division is under the department of Agriculture and is headed by an Agronomist and not a Forester.

## SOLUTIONS TO PROBLEMS AND CONSTRAINTS

1. Formulation of Forestry policy, with public involvement. This is because a good understanding of the complexity of their problems, and it is essential that forestry development takes place with the full involvement and participation of rural communities, This will reduce deforestation rate in Botswana because people will be more aware of its dangers.
2. Decentralization of government tree nurseries, to create good access for the rural communities to seedlings and plants.
3. National Tree Planting Day was set up to encourage active participation by the rural communities in reforestation programmes. It is an incentive to the planting and also a testimony of the government's commitment to the proper management, sustainable utilization and enrichment of forestry resources.
4. Lack of manpower resources and equipment to combat the veld fires.
   Able bodied persons from the community are urged to take part in fire suppression, unfortunately their morale is low due to the fact that they are normally accompanied by government employees who are paid subsistence allowance. Should the government stop this allowance, then morale will go up.
5. Forestry Division to be a department on its own to manage its logistics properly and be headed by a professional forester.

## AREAS OF PARTICULAR TRAINING NEEDS

1. Tree Seed Technology
2. Woodland Management
3. Forest Extension

*ETHIOPIA*
*BY*
*TESFAY TEKLAY*

## BACKGROUND

### Present Status of Forests in Ethiopia

Historical sources indicate that some 35% of Ethiopia's land area of 120 million ha was covered by high forests of either the conifers or broad leafed type. If the savannah woodland are included, 66% of the country was covered with forests or woodland. Ethiopia's forests and woodlands have been declining both in size and quality, especially during the last century. Ethiopia's forests and woodlands have been declining both in size and quality. By the early 1950s, high forests were reduced to 16% of the total area. It has been estimated that by the early 1980s, the land area covered by forests had declined to 3.6% and by 1989 to about 2.9%.

The loss of forest resources was especially severe in the highlands. The highlands are the parts of the vast mountain massifs in the heart of the country which lies above 1500 m above sea level. They cover 44% of Ethiopia's land area, accommodate 88% of the population, contain 95% of the cultivated land, and 75% of the national livestock herd. The highland terrain is rugged, an estimated 33% of this area has slopes in excess of 30%. In prehistoric times, the highlands were probably completely covered by forests, with natural high forest accounting for more than 87% (EFAP, 1993).

The enormous reduction in forest cover has led to a marked increase in grass and shrub vegetation. The transformation is most advanced in the North and East of the country, where population has been concentrated for centuries. Remnants of high forests in those areas, especially the North, could only be found around churches. It is only in parts of the South and South-west that many forest blocks remain, though pressure of agricultural development and resettlement are rapidly diminishing them. The main forces behind deforestation and forest degradation are population growth and economic pressures linked to increases demands for crops, pasture and timber. The current annual loss of the high forest area has been estimated to be between 150,000 and 200,000 ha. At this rate, all that would remain of these high forests in 15 years time would be scattered forest remnants in inaccessible areas.

### Forest Resource Base

There is dearth of information regarding forest resources: extent, volume of growing stock, growth rates etc. Information in use is a decade old from *FAO (1984)* and *Cesen (1986)* based on Landsat imagery. A subsequent review by de Vletter showed that the natural high forest was between 2.5 and 3.0 million ha. This contrasts with estimates by the State Forest Conservation and Development Department which estimates the natural high forest cover to be 3.0 - 5.0 million ha. The different estimates do not offer a consistent data.

According to the Ethiopian Forestry Action Programme (EFAP), the following classifications for Ethiopia's vegetation is used.

- Natural high forest.
- Woodlands.
- Bushlands.

- Plantations (industrial, peri-urban, community, catchment/protection), and
- Trees on farms.

Hence, estimates of Ethiopia's forest resource base for 1992 using the above classification are presented below.

Table 1. Estimates of area, growth stock and Incremental yields used in EFAP (1992)

| Forest Resource | Area Mil. ha | Growth stock $m^3$/ha | Annual Incremental Yield | |
|---|---|---|---|---|
| | | | Per unit area $m^3$/ha/a | Total Mill $m^3$ |
| Natural high Forests<br>Slightly disturbed<br>Heavily disturbed | 2.3<br>0.7<br>1.6 | <br>90-120<br>30-100 | <br>5-7<br>3-4 | 0.3 |
| Woodland | 5.0 | 10-50 | 1.2 | 6.4 |
| Bushland | 20.0 | 5-30 | 0.2 | 4.0 |
| Plantation | 0.2 | | 9.6-14.4 | 1.6 |
| Farm forestry | N/A | N/A | N/A | 2.1 |
| Total | | | | 14.4 |

The deforestation rate for the high forests is estimated at 150,000 ha per year, which is equivalent to 6 million $m^3$/ha (taking an average growing stock of 40 $m^3$/ha). Of the total of 200,000 ha plantation (starting late 1970s up to 1992), 95,000 is industrial, 3,000 ha are peri-urban and 70,000 ha are community woodlots). From these figures, we can see that the rate of reforestation is so insignificant to thwart the problem of deforestation.

The above figures mean nothing unless translated in terms of utility and demand of the product. The contribution of forestry to the national economy is in fact not properly assessed. However, according to EFAP, it is roughly estimated to account for 2.5% of the GDP. Data on import-export is sparse. In addition, forestry employment generation capacity is largely undocumented because official records report only on forest industry employment. In 1998/89, it amounted to 2.2% of the work force, 2.8% of these employed in the agricultural sector. Employment reported include: fuelwood production (half of the total forest employment), reforestation and afforestation (one third), wood based industries, incense and gum production etc.

The total incremental yield (from all kinds of forests) is 14.4 million $m^3$ (in 1992), out of which 13.8 million $m^3$ is available as wood and 0.6 million $m^3$ as fodder.

Based on the assumed per capita consumption requirement in 1992, total requirement for wood has been estimated to be 47.5 million $m^3$ of which fuelwood demand is 45 million $m^3$. Actual wood consumption/harvest is not known but must be assumed to be somewhere between the estimated demand requirement and incremental yield, ie., between 13.8 million $m^3$ and 47.5 million $m^3$ implying unsustainable use or depletion of the resource base. On the other hand, demand for wood and woody biomass products is projected to increase roughly at the rate of population.

## CURRENT PROGRAMMES, PROJECTS, ACTIVITIES TO PROMOTE SOCIAL FORESTRY

Up to now, forestry programmes have adopted the usual tradition of conventional forestry. All programmes/projects have been focusing on The *Northern model*, plantations aiming to meet macro-economic goals, a top down approach starting from initiation of projects to implementation and monitoring and evaluation. There has been little participation.

Nowadays, things seem to change towards people-centred, demand -driven approaches of forestry development and a number of activities/programmes and projects are being conducted.

On the national level, one of such activities is the formulation of a National Forestry Action Programme (NFAP), under the umbrella of the National Conservation Strategy (NCS). It is a very well prepared piece of working document upon which the future forestry activities, strategies and the general forest policy of the country hinges. The objectives and guiding principles of the forestry development programmes are:-

- Increased production of forestry products on a sustainable basis,
- Increased agricultural productivity through reduced land degradation and increases soil fertility
- Conservation of forest ecosystem products on sustainable basis, and
- By pursuing the above, improve the welfare of rural communities.

In order to meet such objectives, the action programme designs four primary and four supportive development programmes and Tree and Forestry Production is one of the primary development programmes. As can be seen from the guiding principles, forestry production is not an end in itself but a means towards improving the livelihood of the society, hence putting people at the centre. Community forestry and Farm forestry are given special attention in the new strategic document. Moreover, each regional state in Ethiopia is formulating a Forestry Action Programme (FAP) under the NFAP. In the is case too, Social forestry has got much attention.

Another activity in the promotion of Social forestry is the inventory of different Farm forestry technologies at different agro-ecological zones of the country by an AFNETA Task force. In such work, the various technologies, their ecological spread, structure, composition, the pros and cons was studied and recommendations have been given for different areas.

Moreover, previous efforts to promote Community forestry where people were confiscated land for plantations, coerced to participate and where people did not have any say on benefit sharing did not work. One of the best options for utilizing communal wastelands is distributing it to farmers.

Some regional states in Ethiopia are considering this idea (even implementing in some cases as in some parts of Tigray) of dividing a common land among inhabitants so that they could keep it under forestry and the benefits accruing to the farmers themselves.

Regarding the Social forestry activities/projects in my institution, so far we have focused on training conventional Foresters that could make 'forests'/'plantations' which, unfortunately, they could not due to a number of complicated and interacting factors. In fact, Social forestry is offered as a single subject. But now, a new curricula for our forestry faculty is on the making,

where we will have Social forestry and extension as a speciality instead of a subject, so that we could have Social foresters. Besides, short term training courses are arranged for Development agents working for the Ministry of Agriculture in order to upgrade their skills and to make them develop a multi-dimensional view of the farming system where trees are important components. Some of the courses to be offered include:-

- On-farm Tree propagation
- Introduction to agricultural extension
- Range management
- Agroforestry

In fact the curricula is not complete yet.

## CONSTRAINTS AND PROBLEMS HINDERING THE PROMOTION OF SOCIAL FORESTRY IN ETHIOPIA

Some of the major obstacles in an effort to promote forestry in general and Social forestry in particular, are summarized below.

1. Forestry development has been promoted as a centrally planned process with heavy emphasis on state involvement in production forestry in the form of industrial and fuel wood plantation. Government administrative structures and systems are ill-suited to the needs of commercial operations.

2. The push for 'Community forestry development has been seen by the farmers as state forestry in disguise. Local communities have come to distrust the government, having seen their grazing lands being 'expropriated' by the government for the establishment of protection forests or National forest priority areas. People were unwilling to participate in an activity with no clear basis of benefit sharing or the benefit of which does not accrue to them.

3. Individual private forestry and forest industries development have been effectively discouraged through policies that have prohibited private ownership of land and trees, established state monopolies on the market for wood and wood products and controlled prices at below the economic value of wood products.

4. Forestry development has been pursued largely in isolation from agricultural goals. The compatibility of development strategies and programmes has been not been examined. As a result, the relationship between forestry and agricultural development has tended to become confrontational rather than complementary. While to the farmer, trees, crops and livestock are interdependent farm enterprises.

5. Given the above orientation of forestry development, little emphasis has been placed on forestry research and extension. Government institution are ill equipped to assume such a challenge.

6. Resources are limiting for the farmer especially land and capital. Allocation of these scarce resources for tree production where the return is long number of years ahead is an opportunity cost for the farmer.

7. Neglect of women, while they are the ones intimately linked to trees and forests in their day to day life.

## RECOMMENDATIONS

- Promotion of private forestry development: Government should aim at promoting an environment that facilitates forestry development by the private sector. This should ensure that the rights and obligations in respect to the utilization of land, trees, and forests are clearly established and respected.
- The approach should be participatory: continuous dialogue between government and people, strengthening local organization and institutions
- Sectoral integration.
- Promotion of a credit and/or incentive system that promotes/encourages investment in trees by farmers.
- Gender considerations in any Social forestry project or activities.

*ETHIOPIA*
*BY*
*RUFAEL S.GESESE*

## THE PREVAILING ECONOMIC AND ENVIRONMENTAL REALITIES IN ETHIOPIA

With a land area of about 110 million ha. Ethiopia is one of the largest countries in sub-Saharan African. The highlands above 1500 m constitute around 45% of the total land area. They contain about $^{4}/_{5}$ of the human and $^{2}/_{3}$ of the livestock population. With relatively fertile and deep soils, the highlands provide a wide range of environmental conditions suitable for the growth of many tropical, subtropical, and temperate crops. The lowlands below 1500 m in the North-west, East and South, support nomadic infested humid and semi-humid lowlands, in the South-west and West, are sparsely populated groups of shifting cultivator and part-time hunters-gatherers.

Historical source indicate that about 42 million ha or the equivalent of some 35% of Ethiopia's land area might once have been covered with forest. With inclusion of Savannah woodlands, the estimation automatically rises to some 66% of the country. In ancient time, a significant portion of the Ethiopian highlands were thus believed to have been covered by forests of varying density. Remnants of these forests can be seen today around numerous churches where, by tradition, the trees are not cut. In the early 1950s, coverage was reported at 3.6%, and in 1989 it was estimated at only 2.7%. Some 5 million ha of savanna woodlands were remaining, giving a total forest and woodland area of about 7%.

This rapid deforestation, accompanied by a variety of other environmental problems, is caused by an escalating demand for fuelwood and land for cropping and grazing. This leads to a faster exploitation of the country's natural resources than natural replacement rates. The depletion and degradation of forests have implications for the whole ecosystems and have a fundamental influence upon the declining standards of living faced by many households. The remained of this section reviews key aspects and trends on poverty, population growth, economic growth and agricultural sector performance, and the state of the environment.

With a GDP per capita level of about US$ 120 a year, the country ranks as one of the poorest in the world. It is estimated that about 7 million people in rural areas are currently affected by drought.

As a consequence of this extreme poverty, Ethiopia has some of the worst social indicators in Africa. Half the population have no health facilities within 10 km of their homes. In rural areas, only 9% of the people have access to safe water. In addition, half of all urban dwellers and most of the rural population have no sanitation facilities.

While there are many reasons for poverty, two underlying factors have contributed significantly to poverty in Ethiopia: the acceleration of population growth and poor economic performance.

The present population of Ethiopia is estimated at 56.3 million, 80% of whom live in the highlands. The rate of population growth was around 1% per annum for the period 1920 - 1925, it increased to 3.3% for the period 1990 - 1995. The population of Ethiopia is expected to double by about the year 2000.

Agriculture plays a key role in the Ethiopian economy and accounts for around 45% of GDP,

85% of exports, and 80% of total employment. Over the last two decades the agricultural sector, like the overall economy, showed declining rates of growth. In fact, agriculture has been the main source of stagnation and variability of GDP growth.

The reasons for the poor economic growth are to be found in a combination of factors including recurring drought, insecurity, civil war, inappropriate economic policies insufficient infrastructure, and natural resource degradation. On the policy front, until the political change in May 1991, the state controlled the productive sectors, trade, finance, services, infrastructure and utilities. The private sector was held back by a lack of foreign exchange, state monopolies, and discriminatory practices which both restricted access to credit and heavily taxed profits. An overvalued currency discourage export-oriented production and encouraged speculation. The agricultural sector performance has been poor due to both structural and policy induced constraints. The structural constraints have included recurrent drought, environment degradation, poor state of rural infrastructure and low level of technological development in the peasant sector. The main policy-induced constraints have included weak development polices, severely distorted farmer incentives, elimination of private ownership of land, pricing, heavy taxation of export crops, state control of farmers' marketing of crops, poor extension services, and shortage of productive inputs. Significant public investment in state farms not only yielded low returns, but also crowded out resources for support and extension services.

Economic growth, and in particular, agricultural growth, is constrained by the country's deteriorating natural resource base and environment. If present trends in population growth continue, this deterioration will be even more rapid in the future. In addition to the depletion and degradation, including soil erosion and the loss of soil fertility due to the use of dung and crop residues as fuel, water resource degradation, and the loss of biodiversity. It is important to note that all these problems are directly linked to the mismanagement of the forest resource base.

There is no statistical basis on which to establish current rates of deforestation in Ethiopia. A figure of the equivalent of between 150,000 to 200,000 ha a year loss of closed/natural forest has been quoted in several recent reports. The estimated annual loss of between 150,000 to 200,000 ha is equivalent to about 6% of the remaining natural high forest. At these rates the natural forests will be gone in 15 to 20 years. Clearing of forest land is driven by the demand for cropping and grazing land. These demands, coupled with that for fuelwood, are responsible for the loss of tree and bush vegetation in forest, woodlands and bushlands. In as much as access to such resources is commonly perceived as "open", people find little reason to abstain from consuming woody biomass and thereby changing the use of the land.

Land degradation induced by deforestation involves both soil erosion and the loss of soil fertility. Soil erosion in severe, especially in the highlands. It has been estimated that in 1986 half of the arable land in the highlands was moderately or seriously eroded. Of the remaining half, 50% had soils susceptible to erosion which requires proper management. Erosion causes cropped areas to loose on average 100 tons of soil per ha annually, and the highlands to loose annually a total of 1.9 to 3.5 billion tons of soil as a result of erosion. The loss in soil fertility is due in part to the use of animal dung and crop residues as fuel. Dung and crop residues need to be returned to the land to maintain soil fertility. However, as the scarcity of fuelwood has grown, these organic matters have increasingly been used to meet household energy requirements. It is estimated that the present burning of animal dung and crop resides for energy represent a loss in crop production of 700,000 tons of grain. Both soil erosion and reduced soil fertility alter the agricultural production function for farmers. This leads, *ceteris paribus*, to reduced crop yields

and finally to the abandonment of crop land. The impact of soil erosion on crop yields is estimated to be a reduction between 1 and 2% per year. At the same time, about 20,000 to 30,000 ha of crop land in the highlands is being abandoned annually because cropping can no longer be supported by the soils. It is project that 2.4 to 3.8 million people will be affected by the year 2000 and that land degradation at present rates could destroy the farmlands of some 10 million highland farmers by 2010.

An important aspect of land degradation is the deterioration of the range land. Ethiopia has Africa's largest livestock population which tends to increase with the increase in human population. The deterioration of pastures is directly related to the low quality of animals, inadequate feedings systems, and the breakdown of traditional systems for management of cattle grazing. Such a breakdown was in large measure brought about by the nationalization of land in 1975 and subsequent individual and community insecurity regarding land access.

Ethiopia is an important regional centre for biological diversity. Reduced forest cover and the associated impact on land degradation threaten ecosystem for flora and fauna and thus, for genetic resources as well. A loss in biodiversity ultimately implies economic losses to Ethiopia and the world. In addition, the removal of vegetative cover reduces the amount of carbon that can be sequestered from the atmosphere. Thus, the forests, value as a "carbon sink" is reduced together with the size of their growing stock.

## FORESTRY'S ROLE IN ECONOMIC DEVELOPMENT

The contribution of forestry to the national income has not been surveyed systematically and therefore, data on forestry activities and even on the stock of forest resources are scanty. National statistics on GDP by sector for the last decade suggest that the agricultural sector accounts for about 45% of the total GDP. Over the same time period, forestry accounts for around 5.5% of the agricultural sector and 2.5% of the total GDP.

Data on the export and import of forests products is also scare. The value of imports of forest products, including fuelwood and charcoal, is minuscule compared to total imports.

Forestry's employment generating capacity is largely undocumented because official government documents report only on forest industry employment. In 1988/89, it amounted to about 2.2% of the total work force. In the same year, it contributed 2.8% to employment in agricultural sector. Employment reported includes that in fuelwood production, reforestation and afforestation activities, wood-based industries and industrial plantations and incense and gum production. Fuelwood production was found to be the largest employment generator (accounting for nearly half of total forest employment), followed by reforestation and afforestation activities (contributing about a third of the total work force).

### The Role of Women

Women in Ethiopia constitute just over half the population, the figures for rural and urban areas being about 49.7% and 55.5% respectively. In addition to their number, the role of women in the household and rural economy is central and critical and has considerable significance in the forestry context.

In Gojam, North-east of Ethiopia, for example, women are reported as working over 15 hours

per day; collecting water and fuel, marketing, preparing food and caring for children. Of significance is the 18% of this time spent in gathering wood and dung fuel. The Addis Ababa area, puts this figure at 38% of the working day. The EFAP report also noted estimates that rural women may contribute up to 50% of the labour for good and agricultural production, the main task being weeding, harvesting, transporting, crop processing, marketing and storage. Studies on pastoral women in southern Ethiopia revealed a comparable work regime, although some tasks were different and included herding animals and building temporary huts. It is thus clear that actions to deal with the forestry problems or rural communities, must take account of this central role women if they are to succeed. Interventions must be designed to reduce their burden, not to add to it.

Turning to the role that women could play in government and other agencies to deal with these problems, there are again a number of constraints. Women's access to education and employment is limited, which impinges on the opportunity to secure women's services to deal with forestry related and other problems of rural women. For example, women comprise only 23% of the total student population. While primary education enrollment includes 30% females, enrollment of women in agricultural colleges is only 5.5% and in the forestry faculty it is only 3.2% of the total. Employment opportunities for women in the agencies providing services to rural community are also limited. The present government is trying to change these situation by declaring new policy since 1996, with the following major objectives:-

- to ensure the equality of men and women; special emphasis being given to the participation of rural women,

- to ensure equal access of men and women to the country's resources, to the decision making process and the benefits derived from the central and regional institutions, and

- to ensure women's access to development institutions, programmes and objective

The related implementation strategies include *inter alia*, the following women's rights:-

- to work at any level in government.
- to equal pay and equal job opportunity.
- to participate in land distribution and ownership.
- to education at all levels in the academic and technical fields.
- to primary health care and family planning.
- to the establishment of Women's Affairs Departments, responsible for following up women's issues and concerns in every governmental office and organizations.

## THE CHALLENGES FOR AGROFORESTRY

Agroforestry has considerable potential in Ethiopia. Growing trees on an individual or communal basis yield various benefits.

- First, farmers grow trees on individual lots as part of their farming systems. The land allocated for trees and bushes adds to overall production. Benefits include fuelwood, poles, fodder and other tree products such as fruits. Tree also give shade to crops and livestock and may serve as fences and boundary markers. The potential for on-farm tree production on private land is considerable.

- Second, trees and forests grown on communal or public land offer direct benefits in the form of wood products, minor forest products and fodder. The benefits accrue to individual households according to community rules. For sedentary agriculturists these rules were frequently determined by the Peasant Association under the previous government. Pastoral communities follow traditional rules governing the use of grazing lands. In the past, political or outside interference has often challenged the autonomy of these communities. Today the TGE emphasizes decentralization of resource management and the right of local communities to decide on how to share communal resources.

- Third, trees and forests on communal and public land offer indirect benefits by protecting and conserving land and water resources. The benefits accrue to farmers in the community as well as to "downstream" farmers by securing or even enhancing crop and livestock yields. There are, however, inherent problems in getting individuals to support this type of forestry and efforts by the previous government to develop community protection forestry as part of an overall soil and water conservation programme has not resulted in sustained benefits. Particularly land-use planning, coupled with an appreciable incentive structure, is necessary to promote community protection forestry. At present regional national states are trying to develop and practice better policies and strategies.

For rural households, agroforestry offers means to acquire self-sufficiency in energy and a way to earn income by selling poles and fuelwood in local markets. Production of the necessary fuelwood would enable farmers to use dung and crop residues for soil improvement instead of for household energy.

The potential for tree growing and other woody biomass production on-farm is especially significant in the horticultural-hoe culture of the humid/sub-humid South-western highlands, where the conditions are similar to parts of the highlands in Kenya, Uganda, Northern Tanzania and Eastern Zaire. The traditional practice of growing trees together with perennial crops such as coffee, *chat* or *ensete* and root and tubers, offer a good basis for expanding farm forestry practices. In places outside the South and South-western highland conditions are distinctly different. Extensive cereal farming and overgrazing has resulted in noticeable land degradation. In these areas the promotion of agroforestry practices at the community and farm levels could increase the supply of fuelwood and make an important contribution to soil conservation and the reclamation of highly degraded land areas.

A key part of Agroforestry package programme, which is linked to the overall agricultural development strategy, is the mobilization of farmers and communities to grow trees on farms and communally held land. Public sector services need to be organized to effectively support this objective. Most importantly, extension for agroforestry and soil conservation in general is tried closely integrated with crop and livestock extension as part of an Extension service that is oriented towards local land-use planning and a farming systems approach.

## CONSTRAINTS AND ISSUES

There are a number of factors constraining the increased adoption of agroforestry practices by individual farmers and farming communities in Ethiopia. The most important ones are summarized below:

## Population Growth, Agricultural Productivity and Land Availability

Rapid population growth and stagnant agricultural productivity put pressure on all arable land. As a result, marginal areas are increasingly cultivated for crops and the availability of land for tree growing diminishes. Currently few farmers have access to agroforestry technologies that could reduce this competition between crop and tree production.

## Land and Tree Tenure

Because trees have long gestation periods, the decision to plant trees is greatly influenced by a farmer's perception of risks. Over the last 20 years, land and tree tenure policies have made tree growing unattractive to individual farmers. Frequently redistribution of land has added to farmers' perception of the high risks of future dispossession. The problem was further aggravated by the previous government's settlement and villagisation programme. Regulations regarding the use of trees grown on farms also added significant uncertainty to tree tenure.

## Open Farms and Livestock Pressure

In the cereal and agropastoral zone few farms are fenced. Uncontrolled animals enter the fields to eat crop residues after harvest, and many eat or trample tree seedlings. This adoption of farm forestry practices depends on measures to reduce the uncontrolled movements of animals, including stall feeding, controlled grazing and possibly appropriate systems of fenced paddocks. Future extension for agroforestry will need to be fully integrated with agricultural and animal husbandry extension.

## Farm Forest Technologies

Agroforestry development depends on viable technologies for growing trees as part of the farming systems, including growing trees on the land used for cultivation crops or grazing animals. The technologies are viable if, by allocating farm/grazing land to tree production, the farm household is better off then before. Technologies tried and proven elsewhere will need to be examined and tested for local adoption. The present capability of forestry research institutions in Ethiopia to undertake this takes is weak. The implementation of an effective research programme will take some time and may limit the speed with which agroforestry extension and development can proceed.

## Farm Priorities, Resources and Incentives

The priorities of resource-poor farmers are to meet subsistence needs and reduce the risks of not meeting these needs. Farmers, therefore, may be reluctant to adopt agroforestry practices because of the possibility of reduced crop yields due to shade from trees, root competition for limited soil moisture, reduction in the cropping area and increased crop damage from birds roosting in the trees. In addition, they may not appreciate very highly today what trees can contribute tomorrow (applying a high discount rate to the value of future benefits from tree-planting). This will make farmers reluctant to allocate resources to tree growing, unless the issue is addressed by appropriate incentive schemes.

## AGROFORESTRY IN ETHIOPIA

Agroforestry is not new to Ethiopia farmers. As an evidence, there are rudimentary arms of agroforestry practiced by the farmers. Tree species that are left on the arable land where the forests or wood is cleared for cultivation. In all agro-climatic zones these indigenous tree species where left in the farm as a shade for coffee, *ensete* and other important agricultural crops.

The severe pruning and pollarding carried out on many of these trees in the farm lands indicate that the trees are important and heavily used by the farmers as a source of fuel and soil conservation purposes.

At later stage former forestry and wildlife conservation and development authority and Ministry of Agriculture has tried to promote the introduction of different agroforestry systems, such as:-

- establishment of community woodlots by farmers associations,
- planting on farm boundaries,
- planning on croplands in scattered or line planting,
- homestead planting,
- planting on river banks, gullies and low productive sites in the farm,
- establishment of fodder block, and
- wind breaks in certain few areas.

Community forestry was started in 1976 with financial support from SIDA by a forming socio-economic team in the FWD which later developed to the formation of Extension Department (ED). In the recent restructuring of the Ministry of Agriculture, all extension activities are managed by the Agricultural Extension Department (AED).

Within the last two years the ED has initiated new approach in the form of package formation. At present about seven packages have been prepared and implemented by the Regional National States Agricultural Bureaus. The agroforestry packages have already been prepared and will be implemented beginning of 1998.

**The major objectives of the agroforestry package are to:-**

- increase agricultural productivity per unit area,
- diversify and improve farmers income,
- help the rural community to produce sufficient forest products for consumption,
- control and reduce soil erosion and on sustainable basis,
- reduce environmental degradation and maintain natural soil fertility.

The package also contains the species selected for five agro-climatic zones as in table 1. Most of the recommended trees are indigenous ones and well known exotic species by the local communities.

Regional agricultural bureaus will help the farmers to raise seedling by providing tree seeds, necessary working equipment and materials on credit basis.

Demonstration will be carried out on the farmland owned by adopter farmers selected as a model on voluntarily basis. The species selection is fully depend on the preference of the farmers. The

development agent will only supply information about the use of different tree species and their management systems.

Considering the past experiences of the rural community, the following major systems are incorporated in the package:-

- homestead planting,
- boundary planting,
- planting the crop land,
- establishment of fodder blocks or strip planting, and
- roadside planting.

The farmers have full opportunity to select one or more systems depending on the location, size and objective of their land holding.

Also the package will be reviewed and improved after certain period depending on feedback from regional agricultural bureaus. The ED is also trying to initiate research institutions to conduct more research on potential tree species.

Table 1. Main Trees Species Selected for Agroforestry Practices in Ethiopia

1. *Acacia abyssinica*
2. *Acacia albida*
3. *Acacia decurrens*
4. *Acacia melanoxylon*
5. *Acacia nilotica*
6. *Acacia saligna*
7. *Acacia tortilis*
8. *Albizia gummifera*
9. *Albizia lebeck*
10. *Albizia schimperiana*
11. *Arundinaria alpina*
12. *Azadirachta indica*
13. *Cajanus cajan*
14. *Catha edulis*
15. *Casuarina equisetifolia*
16. *Citrus species*
17. *Cordia africana*
18. *Croton macrostachyus*
19. *Cupressus lusitanica*
20. *Dovyalis abyssinica*
21. *Enset ventricosum*
22. *Erythrina brucei*
23. *Eucalyptus camaldulensis*
24. *Eucalyptus globulus*
25. *Eucalyptus saligna*
26. *Eucalyptus viminalis*
27. *Moringa oleifera*
28. *Ficus species*
29. *Hagenia abyssinica*

30. *Leucaena leucocephala*
31. *Juniperus procera*
32. *Mangifera indica*
33. *Mellitia ferrugenia*
34. *Moringa oleifera*
35. *Olea.africana*
36. *Parkinsonia aculeata*
37. *Podocarpus gracilior*
38. *Prunus africana*
39. *Prunus perica*
40. *Rhamnus prunoides*
41. *Sesbania sesban*
42. *Schinus molle*
43. *Psidium guajava*
44. *Tamarindus ofela*
45. *Tamarindus indica*
46. *Terminalia brownii*
47. *Zizyphus spinachristi*

## REFERENCES


1. *Agroforestry, An introduction, by R. Krezdorn, FAWDA*
2. *Ethiopian Forestry Action Plan (EFAP), Ministry of Agriculture, Ethiopia*
3. *Ethiopian Highland Reclamation, Ministry of Agriculture, Ethiopia*
4. *Multi-purpose Trees in Ethiopia by R. Krezdorn, FAWDA*
5. *Agroforestry Package, Ministry of Agriculture, Ethiopia*

*ETHIOPIA*
*BY*
*ABEBE SEIFU*

## INTRODUCTION

Occupying the North-eastern corner of African, Ethiopia covers an estimated area of 110 million ha. and it houses about 57 million people. The population density for the country as a whole is around 52 persons per km². But the population distribution is very much uneven and shows densities of three to four times the average for the country in some parts and even less than one-half the average in other parts. Generally the highlands are highly populated.

85% of the Ethiopian population are living in the rural areas as peasants or pastoralists, thus, agriculture is the main stay of the economy.

Economic growth, and in particular, agricultural growth, is constrained by the country's deteriorating natural resource base and environment. Besides the depletion and degradation of forests, the most pressing environmental problems in Ethiopia are land degradation, including soil erosion and the loss of soil fertility due to the use of dung and crop residues as fuel, water resource degradation, and the loss of bio-diversity. All these problems are directly or indirectly linked to the mismanagement of the forest resource base.

Arresting deforestation and expanding the forest resource base are therefore, vital elements of a development strategy addressing poverty in Ethiopia.

## PRESENT STATUS OF FORESTRY AND FOREST RESOURCES

### The Forestry Sector

Forestry sector in Ethiopia is at its infancy and its recorded contribution to the economic development of the country is very low. For example, the contribution to the national income accounts 2.5% of the total GDP and employ 2.2% of the total work force.

Out of the total value of imports, forest products ranks among the least imported items. Similarly, there is no export of forest products on regular basis. Even the question of exporting forest products is unthinkable as the volume of wood harvested has by far exceeded the incremental yield of forest resources.

### Forest resources

The country's forest and woody vegetation resources include natural high forests, woodlands, bushlands, plantations and trees on farms. Each of these resources variously contributes to production., protection and conservation functions. The available information on location, extent and volume of the growth stock, annual net growth and the rates at which the growing stock, are used is very limited.

The estimates presented in this report therefore have to be treated cautiously. But even with an inadequate data base it is clear that the present status of the country's forest and woody vegetation is diminishing at an alarming rate.

According to some sources, Ethiopia's natural forest have once covered about 42 million ha. of the country's land area. In 1989, the natural forests had dwindled to 2.7 million ha. With the estimated annual loss of natural forest cover of 150,000 to 200,000 ha, the remaining high forest is equivalent to 1.1 million to 1.5 million ha. If the present rate of deforestation continues, the remaining forests may be reduced to a scattered minor stands in the coming 13 years.

Today the remaining forests are located in the highlands of the less populated areas: that is the southern and western parts of the country.

Woodlands and bush lands are estimated at 5 million ha and 20 million ha., respectively. Both types of woody vegetation are largely restricted to the pastoral zone in the lowlands in the northwest, east and south. Large parts of the woodlands are now threatened by the spread of sedentary farming, growth of the livestock population, and increasing demands for fuelwood, construction materials and charcoal for urban markets.

The total estimated plantation area is 200,000 ha. Out of this, industrial and peri-urban plantations accounts for 130,000 ha, 20,000 ha community woodlots, and 50,000 ha catchment and protection plantations. Upto now, the expansion of industrial and fuelwood plantations was constrained by the availability of land and the limited capacity of the state bureaucracy to establish and operate commercial forestry undertakings. In addition, government policies severely limited private sector activities in the forestry sector. Community woodlots also did not play a significant role on a national scale. In the late 1970s the conservation programme, supported by the World Food Programme (WFP) , initiated the planting of trees on hilltops and hillsides to protect catchments and to control soil erosion.

While these initiatives were undertaken as "Community forestry development" they were carried out as centrally managed afforestation campaigns with little or no participation by local community organizations in planning or "ownership" in maintenance activities. When the hill side plantations were turned over to the peasant associations in 1991, farmers had already started to cut them at an alarming rate.

In some parts of Ethiopia, farmers have traditionally practiced tree growing within farming systems. These practices include; homestead tree planting, field tree planting and farm boundary planting. The size of these plantings is not known. Up to now, on-farm tree growing has not been officially encouraged or considered to be an important component in the development of the forest resource base.

## CURRENT PROGRAMMES, PROJECTS AND ACTIVITIES TO PROMOTE SOCIAL FORESTRY

Even though the Ethiopian Forestry Action Programme (EFAP), with a comprehensive forestry action programme, had been formulated in 1994, the implementation has not been yet effected.

In EFAP document, Social forestry is addressed under the Tree and Forest Production Programme (TFPP). Accordingly, the proposed objectives, strategies and action programmes including investment activities were set out for Social forestry for the coming 15 years.

**Objectives**

- To increase production of forestry products on a sustainable basis, and
- To increase agricultural production through reduced land degradation and increased soil fertility.

**Strategies**

1. Provide/ensure secure user rights to forest land and trees
2. Through a participatory process, assist local communities in acquiring the necessary technical and managerial skills
3. Establish an effective, integrated and participatory extension service which would introduce the concepts of equality of access to and benefits from Social forestry between men and women.
4. Secure an adequate initial supply of seedlings from government operated nurseries until farmers or communities produce their own seedlings.
5. Collaborate with local organizations, development associations, elders and religious leaders where appropriate.

**Actions and Investments**

The actions to implement the strategy, among others, security of land and tree tenure, incentive schemes, institutional arrangements for extension, are the key elements.

The proposed cost for implementing a fifteen year Social forestry programme amounts to US $ 65 million.

**Training Course on Social Forestry**

Forestry education at technical level is an old as Wondo Genet College of Forestry (WGCF). WGCF was established in 1978 with the objective of training Forest technicians at diploma level. Upto now 979 Forest technicians have graduated from the college.

Social forestry course in WGCF is given with 4 credit hours and 96 contact hours. Community forestry, Rural sociology and Extension methods in forestry and Introductory agroforestry are the three main topics covered in the course.

Beginning from the 1997/98 academic year the college have planned to introduce new courses on agroforestry and forestry extension. These two courses were previously taught under Community forestry course

The Forestry Faculty at the Alemaya University of Agriculture (AUA) offers a four year B.Sc course at the professional level.

The Forestry Faculty at AUA also run the course for the same credit hours and contact as in WGCF.

Vocational training in forestry is intermittently given in Botor Bocho, Mertto le mariam and Menagesha Suba training centres.

## CONSTRAINTS HINDERING THE PROMOTION OF SOCIAL FORESTRY AND RECOMMENDATION FOR THE SOLUTION

The constraints which have to be overcome to realize the potential benefits of Social forestry along with action needed are summarized here under.

- Because trees have long gestation periods, the decision to plant trees is greatly influenced by a farmer's perception of risks. The present government's policy initiatives concerning land tenure and other areas have sought to reduce the risks of investment in land improvements and tree planting. These initiatives need to be considerably strengthened by securing land and tree tenure for the farmer.

- Rapid population growth and stagnant agricultural productivity put pressure on all arable land. As a result, marginal areas are increasingly cultivated for crops and the availability of land for tree growing diminishes. Currently few farmers have access to social forestry technologies that could reduce this competition between crop and tree production. These constraints could be tackled through farming system research and extension with a team of subject matter specialists.

- Protecting downhill agricultural and grazing land by tree planting on steep hill slopes produces benefits that cannot be appropriated solely by any single individual or by a single community. Those who plant and maintain trees receive only a fraction of the total benefits; small amounts of fuelwood and poles. The main benefits of reduced erosion, higher downstream crop yields, stabilization of the watershed, etc. accrue to the population at large. On the basis of the downstream benefits created an incentive should be arranged for forest land planted on up stream.

## AREAS OF PARTICULAR TRAINING NEEDS

In the recent development, WGCF has carried out a survey on the trained man-power need in forestry and related fields. The main objectives of the study were:-

- to know both quantitatively and qualitatively the current status of trained manpower in forestry and related fields.
- to access the future need of trained personnel in Ethiopian forestry sector and related areas, and
- to identify major activities throughout the country.

In response to the question to prioritize the most important forestry and related activities, among others, Agroforestry including Community forestry ranked first. Based on this result, WGCF has a plan to strengthen it training on the clients preference.
To this end, Training the Trainers in the field of Social forestry and in particular, in rural sociology, communication and extension and planning participatory forestry projects is needed. In this connection, the "Regional Training Course for the Promotion of Social Forestry in Africa" could contributed for the effective implementation of the course in Social forestry.

*LESOTHO*
*BY*
*M. M. PAMA, L. KUTOANE AND P. M. MPHALE*

## INTRODUCTION

Lesotho is a tiny country mountain kingdom completely surrounded by the Republic of South Africa and is divided into ten (10) administrative districts. It is further geographically divided into highlands, foothills and lowlands. Altitudes are 1000 m in the lowlands and 2000 m above sea level.

Because of its geographical isolation, lack of natural resources and high poverty rate, Lesotho relies heavily on Republic of South Africa for its livelihood.

## CURRENT PROGRAMMES THAT ARE ENGAGED IN THE PROMOTION OF SOCIAL FORESTRY IN LESOTHO

### Forestry Division (FD)

This is a government sector that gives services at national level (throughout the country).

### Social Forestry Project (SFP)

Operates in only two districts in the lowlands namely, Maseru and Mafeteng (see table 1). It is funded by Germany donor GTZ, KFW, through the government of Lesotho.

### Production through conservation (PTC)

Through united extension services, they form team works to hold village headman's workshops (VHW). They get people's needs and people prioritize their needs. It is through this kind of workshops that common interest groups are formed.

### Others (Projects/Activities)

There are many other Projects that are still engaged in Social forestry development in Lesotho. By and large, emphasis is geared towards people's empowerment with regard to forestry enterprises, we have:-

(i) *(SWACaP) Soil and Water Conservation and Agroforestry Programme*
By making research in connection with Agroforestry.

(ii) *Lesotho - Durham Link*
As already mentioned, Lesotho is a tiny mountain kingdom with a high rate of poverty and destruction, it was with this in mind that the Lesotho Durham Link undertook the Community Forestry Project (CFP) in order to improve the livelihood of people living in remote and isolated rural areas of the country. The Link (as it is called) was formed in 1986 as an association between the Anglican Church Diocese of Durham in North-eastern England and Lesotho. In South Africa. it is registered as an NGO. The CFP is funded by European Union, and was established in 1993.

(iii) *Red Cross (NGO)*
Extension by itself until implementation stage

(iv) *Care Lesotho (NGO)*
An international organization that operates by itself until an implementation stage.

(v) *Rural Self-Help Development Association (RSDA)*

(vi) *Plenty (NGO)*
Funded by Canada, it is also an independent project that operates by itself at community level.

(vii) *Christian Council of Lesotho (CLL)*
Hold some companies to be engaged in Forestry promotion.

(viii) *World Vision*
The approach of Social Forestry Project (SFP) in Lesotho and the Lesotho - Durham Link with its Community forestry project are the same. They seem to be addressing the people's forestry needs in that they involve people in almost all their development stages. Local people got involved in the initial project's planning workshop implementation (choice of species and also including varieties of fruit tree species). Farmers plant trees in their own land, and as such will be the only beneficiaries. We have reasonable tree planting packages for all user groups (individuals, groups of farmers, whole community, schools, clinics etc).

Farmers have a choice of planting trees on individual land, individual plots within a communal woodlots or jointly on a communal woodlot for the community in collaboration with Lesotho - Durham Link. However, this is not that much practised but we encourage full ownerships.

In order to encourage planting of many trees, the projects have set a lower limit of trees they could offer free of charge to different target groups. Individuals are given a lower limit of 100 tree seedlings, while groups of farmers are limited to not less than 500 and a community from 1500 trees seedlings upwards. There are of course preconditions that farmers have to conform with, for instance, certain pits specifications and species as advised by the foresters before trees could be delivered to the beneficiaries. Farmers get continuous support in the subsequent years if trees die due to natural disasters. As to failure due to negligence, the project declines their support to that target groups.

For their extension work, SFP uses the already established extensionists while Lesotho Durham Link uses its own extensionists until implementation. The extension facilitators have to recognize the importance of the existing natural vegetation in the process, particularly trees. It is often easier to overemphasize what one is familiar with (e.g. tree nurseries, tree planting) rather than the wider less defined issues of sustainable natural resources management. The importance of participatory extension approach poses a lot of valuable knowledge about natural resource management, which should be used as a basis for improvement identifying constraints, potential problems and possible solution.

We issue the *"Form C's"* to ensure a full ownership after the successful planting.

## TRAINING COURSES

### Agroforestry Network (AFNETA)

This is highly technical. It also facilitate farmers symposium and there is exchange of ideas by innovative farmers.

### Participatory Development Forum

Train farmers on fields related to empowerment of development participation.

### Lesotho Agricultural College (LAC)

Offers a formal training.

### Village Headman Workshop (VHW)

See on two above.

## CONSTRAINTS

### Socio-political

- Disputes between farmers, the Chiefs and Village Development Council (VDC)
- Competition over land use (communal land)
- Issuing of *Form Cs* to owners, service charge fee on some other villagers
- Inaccessible places in the country
- Tree planting is a long term investment as compared to food crops (They are a bit reluctant)
- Fears associated with trees/forest, e.g.. rape, thieves, murder, lightning.
- Burning by herders to promote green grass.

### Technical

- Poor Social forestry extension by extension workers.
- Technical failure of production and management of trees
- Foresters not extensionist and so lack of extension skill.
- Other District Agricultural Office (DAO) staff do not accept foresters in some districts in the country
- Lack of legislation for private planting from the government.

### Natural Disasters

- Drought
- Snow

## RECOMMENDATIONS

- Training of farmers to sensitize them on Social forestry activities and its related fields.
- Through local government to facilitate access roads.
- Training of Chiefs and VDC so that they all know their boundaries limits.
- Train Foresters on extension and multipurpose trees.
- More interactions with the DAO.
- Approval of draft Legislation including private plantings and be used.
- Construct bonus to enable irrigation of trees, (practice dryland forestry management)
- Research on cold and drought resistance species.

## AREAS OF PARTICULAR TRAINING NEEDS

- To understand what Social forestry is and all its concepts.
- To skillfully communicate Social forestry and its concepts to farmers/target groups.
- To learn Social forestry techniques for its promotion in our country.
- Formulation of by-laws, as a uniting tool for communities, technicians and government authorities.

## WOODLOTS IN LESOTHO/SFP - Districts
## (Maseru/Mafeteng)

| File figures | Results of inventory 1995/96 | | | | | possible rehabilitation results or needs after privatization (in Woodlots managed by Community) | | | | possible rehabilitation results or needs after privatization (in Woodlots managed by Government) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Planted areas upto 1993/94 (ha) | plantable Woodlot area (ha) | Survived of actually stocked area (ha) | Replanting (Rehabilitation) need (ha) | add. Planting need (to plant the plantable area (ha) | Total No. of Woodlots | Number of Woodlots <10ha | stocked area of Woodlots <10ha | total plantable Woodlots are <10ha | Planting/ Replanting (Rehabilitation task for Community (ha) | Number of Woodlots | stocked area of Woodlots (ha) | plantable Woodlot area (ha) | Planting/ Replanting (Rehabilitation) task for Government (ha) |
| 3399.40 | 5031.20 | 2045.15 | 1354.25 | 1630.80 | 151 | 87 | 429.45 | 1656.30 | 1226.85 | 64 | 1615.70 | 3374.90 | 1758.20 |

## WOODLOTS IN LESOTHO

## (Whole Country)

| File figures | Results of inventory 1995/96 | | | | | possible rehabilitation results or needs after privatization (in Woodlots managed by Community) | | | | possible rehabilitation results or needs after privatization (in Woodlots managed by Government) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Planted areas upto 1993/94 (ha) | plantable Woodlot area (ha) | Survived of actually stocked area (ha) | Replanting (Rehabilitation) need (ha) | add. Planting need (to plant the plantable area (ha) | Total No. of woodlots | Number of Woodlots <10ha | stocked area of Woodlots <10ha | total plantable Woodlots <10ha | Planting/ Replanting (Rehabilitation task for Community (ha) | Number of Woodlots | stocked area of Woodlots (ha) | plantable Woodlot area (ha) | Planting/ Replanting (Rehabilitation) task for Government (ha) |
| 1062.55 | 11811.05 | 6130.90 | 4231.70 | 1448.45 | 485 | 332 | 1392.70 | 4411.20 | 3018.40 | 153 | 4738.20 | 7399.95 | 2661.75 |

# WOODLOTS IN LESOTHO

## (Whole Country)
## planting - and replanting costs (*) without and with privatization
## (important part of rehabilitation costs)

| Costs for Country without privatization | | | | | Costs which are taken over by the Community after privatization | | | | Costs which are left for the Government after privatisation | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| man days per ha | labour costs per ha (M/ha) | Replanting (Rehabilitation) need (ha) | add. Planting need (to plant the plantable area (ha) | Total planting + repl. costs for country | man days per ha | labour costs per ha (M/ha) | total planting + repl. Costs for Community <10ha | Planting/ Replanting (Rehabilitation task for Community (ha) | Number of Woodlots | stocked area of Woodlots (ha) | plantable Woodlot area (ha) | Planting/ Replanting (Rehabilitation) task for Government (ha) |
| 92 | 2393.84 | 4231.70 | 1448.45 | 13.60 | 92 | 2393.84 | 3018.40 | 7.23 | 92 | 2393.84 | 2661.75 | 6.37 |

*NAMIBIA*
*BY*
*M. N. MWANYANGAPO AND F. BAINGA*

## INTRODUCTION

Before the independence the Namibian forestry sector was neglected that there was no deliberate intervention from the colonial government to promote forestry development immediately after independence in March 1990. The Government of the republic of Namibia create the Directorate of forestry (DoF) in 1991 as the lead public institution responsible for promoting sustainable forestry development. The Donor community has supplemented government efforts by sponsoring forestry development project of varying orientation.

The DoF made an effort to come up with a forestry strategic plan to specify forestry objectives and strategies that will guide efficient programmes of forestry development projects within the framework of integrated national development. The DoF's organisational chart is as shown in Appendix I.

## MISSION STATEMENT

To practice and promote the sustainable management of forests and other woody vegetation with the involvement of local communities in order to supply products and services to enhance socio-economic development for rural people.

## EXTENSION ACTIVITIES AND PROGRAMMES/PROJECTS

Extension activities in the country are carried out at the district level liaising together with extension, training and planning section.

Table 1. Current extension programmes

| Programmes | Organization | Involvement |
|---|---|---|
| (i) Community level forest management | DoF | AFF., F.M |
| (ii) Community forestry and Extension | DoF | AFF., F.M |
| (iii) Forestry awareness | Ministry of Education | Awareness |
| (iv) DBC | NGO | Tree planting |
| (v) DAPP | NGO | Tree planting |
| (vi) Green Namibia | NGO | Environmental awareness |
| (vii) Forest fire control | DoF | Protection |

### Extension methods

1. Radio programmes talks both on local and national radio.
2. Production of printed posters and T-shirts on memorable planting days e.g. Arbor day, World Environmental day.
3. Distribution of free seedlings to individuals, Community groups, women groups, schools
4. Production of bill boards, stickers.
5. Encourage joint-management of the existing forestry resources.
6. Production of school book with special message of forest protection.

## CONSTRAINTS TO SOCIAL FORESTRY ACTIVITIES

### Physical/Biological

*Climate*

Namibia is the driest country South of Sahara. The climate is dry with extremely variable and unpredictable rainfall. The rainfall as low as 400 mm - 700 mm.

### Land degradation

The fertility of the soils are very poor in most parts of the country. That makes if difficult for successful tree planting, farming activities, while deforestation is the main contributory factor towards land degradation.

### Species/varieties

Research on suitable is not yet complete. It becomes difficult to promote Social forestry in absence of appropriate tree species.

### Traditional systems

Land tenure is a crucial issue in Namibia. The land is divided into three categories, stateland, communal and commercial lands. Therefore, the communal people feel they have no ownership rights to the land, hence they cannot plant trees on behalf of DoF.

### Institutional

*Research*

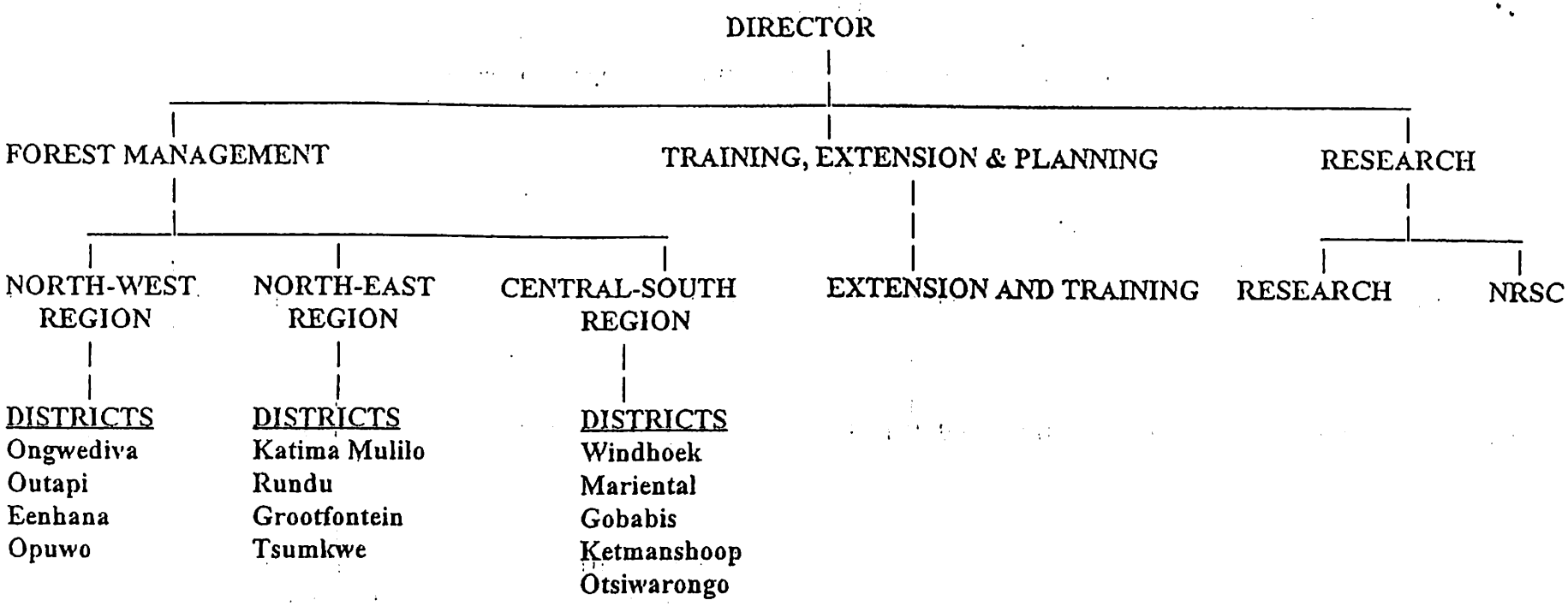
Lack of adequate adoptable research information as well as training and extension measures limit venturing further into Social forestry activities..

## CONCLUSION

The Directorate of forestry is still young, but picking up rapidly. However, there is need for the government of Namibia to concentrate on training in the fields of Social/Community forestry and Agroforestry in order to realise the long term objectives of the forestry sector. Learning from other countries with experiences in these disciplines provides a faster avenue to this effect.

Appendix I

*Organisational chart of the Directorate of Forestry in Namibia*



*SOUTH AFRICA*
*BY*
*RELEBOHILE PANENG*

## THE PRESENT STATUS OF FORESTRY AND FOREST RESOURCES

South Africa has very large and valuable forest resources. There are mountain and coastal forest and some small forests within the grassland and fynbos habitats. These are used for medicinal and local purposes and for their spiritual qualities. The most extensive resource is the woodlands which was originally about 40 million ha of savanna and bushveld. At present only 50% of these remains. There are also about 1.45 million ha of industrial forest plantations. This resource supports a multimillion rand industry which employs hundreds of thousands of people.

The forest resources that the country has are used for making wood products for industrial processing and for fuel, non-wood forest products, such as resin, fruit, medicine plants, bark and fibres and wildlife that is harvested. They also create opportunities for recreation and tourism development. Non-marketable uses of these resources include, spiritual religious and cultural values, protection of water resources, conservation of biological diversity and fixing of carbon dioxide from the air to compensate for industrial emissions which are increasing. The forest policy in the country is to promote the forestry sector so that it is able to provide these goods and services now and in the future.

## CURRENT PROGRAMMES, PROJECTS AND ACTIVITIES TO PROMOTE SOCIAL FORESTRY IN THE COUNTRY WITH PARTICULAR REFERENCE TO WHAT FSG DOES

The Farmer Support Group (FSG) is an innovative service organization of the University of Natal which serves farmers with limited resources, including women and the poor. The organization assists the communities in productive and sustainable natural resource management, development of capacity for collective action and gaining community forestry specifically. Non-formal training on Community forestry is offered to rural communities. Through the Community Agricultural Facilitators (CAF's) who are community members that the FSG employs, community level training occurs in a participatory way which is now being adopted by the country as a whole.

The FSG is also involved in training agricultural and forestry extension officers, participatory methods and the farmer to farmer approach which are useful tools in the dissemination of information at community level. FSG is also involved in establishing nurseries and woodlots in communities with assistance from the Department of Water Affairs and Forestry (DWAF).

## TRAINING COURSES ON SOCIAL FORESTRY AND/OR AGROFORESTRY AVAILABLE IN THE COUNTRY

Apart from non-formal training, many government departments, NGOs and CBOs offer in-house training. The Universities of Natal, Pretoria, the North and Stellenbosch offer certificates, diplomas and degrees courses in forestry. Social forestry is included in the modules offered but emphasis is on Commercial forestry.

## CONSTRAINTS AND PROBLEMS HINDERING THE PROMOTION OF SOCIAL FORESTRY IN SOUTH AFRICA AND RECOMMENDATIONS FOR THE SOLUTION

### Problem

There is a decline in the number of trees and associated resources that at least two million rural households in South Africa have been gaining benefits. Community forestry efforts in South Africa have failed to reverse the situation although there are notable successes. In order for Community forestry to succeed in South Africa, interventions must include all the known factors.

### Solution

Institutions, services, technologies and conditions must promote self-sustaining Community forestry in both rural and urban areas in South Africa where Community forestry can support economic, social and environmental development which is self-sustaining and efficient in providing the highest benefit for the least cost. This can be achieved through client-led support services and a national mobilization strategy.

### Problem

The roles of the various organizations which support or should support Community forestry in South African are poorly defined. Communication between them is ineffective and they are not coordinated in an overall strategy.

### Solution

A coordinated system, through which government and non-government institutions can offer efficient, effective and complementary support services for Community forestry should be adopted. This can be either a decentralized strategy or a structural improvement strategy.

### Problem

Little Community forestry support service to-date has been directed towards improving local ability to manage and develop resources. There has also been little focus on support for management of existing resources, particularly woodlands.

### Solution

Community forestry support will be greatly improved if its scope is broadened and it focuses on the inducer, to ensure that it is relevant, affordable, widely available and competently delivered. End-users should receive integrated services appropriate to their needs on a sustainable basis through service providers in the public and private sector. Strategies to achieve this are incremental improvement to existing services or a market-focused strategy.

*SOUTH AFRICA*

*BY*

*T.J. van der MERWE AND MASUKU SIPHO S.*

## INTRODUCTION

Due to historical events in the Republic of South Africa (RSA), little happened in the field of Social forestry or Community forestry (CF), as we prefer to call it, prior to 1992. The odd intervention that did occur, was usually a woodlot planted for the supply of fuelwood, in the rural areas of the country. These interventions were mostly Government steered using a top-down approach. These interventions were seldomly accepted as the property of the local community, and in many instances, the perception is still that it belongs to the State.

Since 1992 things changed rapidly and today, a clear Community Forestry Policy is on the table. The implementation of the "*National Forestry Action Programme*" (NFAP) is currently our main task in the Government forestry sector. The NFAP is not seen as cast in concrete and will be reviewed every three years and the necessary changes, made.

## DEFINING COMMUNITY FORESTRY

To be able to follow the progress of Community forestry (CF) in South Africa, it is thought timeous to give a modern (1997) definition as to what Community forestry is. The NFAP defines Community forestry as*" forestry designed and applied to meet local, social, household and environmental needs and to favour local economic development. It is implemented by, or with the participation of communities. It includes farm forestry, agroforestry, community or village planting, woodlots and woodland management."*

The definition has the following important characteristics:-

- it brings people rather than trees to the forefront of forest policy and programmes,
- it is based on active community participation in the design and implementation of resource management and development for the communities' own benefit,
- it recognizes that CF generates benefits which includes income. CF is not exclusively concerned with meeting subsistence needs, and
- it is a much wider and inclusive concept than tree planting or greening. Management (stewardship) of natural woodlands is a central component of CF as is the establishment of woodlots for commercial reasons.

## HISTORY OF FORESTRY IN SOUTH AFRICA

### *Historical to 1992*

As in all African countries, forests played a role from the earliest time. The commercial side of forestry became an issue after the first European settlers settled in the vicinity of Cape Town in 1652. They did not have sufficient building timber and had to move east it find it. Within time a healthy furniture business developed and this also impacted on the relatively small closed canopy forests. It was however the discovery of diamonds in 1870's that caused an even larger demand for timber products mainly to build railway lines. At the same time, the development of

## AREAS OF PARTICULAR TRAINING NEEDS

- Formal academic, education and training institutions that offer training on community forestry.

1. The use of "Farmer Led Extension" in the non-formal training that is mostly used in the country at present.

2. Holistic planning that includes both technical and people skills as part of community forestry training.

3. Training of trainers in community forestry.

telephone systems became an issue. To make matters worse there was a shortage of coal for locomotives and they used timber to fire their boilers.
This resulted in the first *Eucalyptus* plantations to be planted in the country.
It soon became clear that plantation forestry was a possibility. Plantation forestry got a boost after the shortages experienced during the First World War. The Government then got involved in planting of plantations. This was yet again boosted in the depression years around 1933 when employment creation schemes were launched. A shortage of timber occurred yet again in the Second World War. After the war, economical powers started driving the industry and private concerns started planting commercial plantations.

Today (table 1), almost 1.5 million ha. of plantations exist. The income generated from this is Rands (R) 1.8 billion, equalling 8.7% of agricultural output. A further R 10.2 billion is added by the forest product manufacturing trade. The sector employs 111,500 people.

Areas under natural forests and woodlands are approximately 24 million ha. It is estimated that approximately 3 million households use forest goods

Table 1: Summary of economic benefits of the forest sector in South Africa

| Categories of benefit | Industrial forestry | Community forestry including natural forests |
|---|---|---|
| Monetary contribution | R 1.8 billion, 8.7% of Agricultural output, plus R 10.2 billion from manufacturing | 3 million households derive benefits from woodlands, plus R 500 million from tourism |
| Employment | 111,500 people | Uncertain |
| Household livelihoods | 200,000 households derive income from forestry sector | 3 million households depend on these resources |
| Foreign exchange | R 4.8 billion | Uncertain probably more than R 300 million |

Developing woodlots for fuelwood and building poles took place throughout this century. It was however not done in consultation with communities. It became evident that this top-down approach had failed and a whole new strategy had to be devised. This era started in 1992.

## COMMUNITY FORESTRY SUPPORT FROM 1992 TO 1997

*Department of Water Affairs and Forestry (DWAF)*
The DWAF redirected the main thrust of its extension organization towards addressing the fuelwood needs in rural areas in October 1992. The organization had 21 extensionists at the time who enthusiastically took on board the new brief of serving impoverished communities and individuals in their tree needs. Three nurseries were also included. The various ways in which the target audience was served through projects involving:-

- Nursery provision in communities, interest groups or individuals.
- Woodlot establishment where requested.
- Greening initiatives in towns/communities or specific areas in towns.

By the end of 1996, the Department had initiated 635 projects throughout the country. Other activities included:-

- Arbor Day promotion and ceremony facilitation
- President's Forestry Award promotion
- Seed supply from a central seed centre
- Posters
- Tree of the Year booklet
- Talks to schools, communities
- radio and television contributions
- Field days and workshops.

Extensionists were mainly operating in rural areas with a minority focusing on Urban forestry matters. The extension approach generally was opportunistic and reactive in nature, having been in some cases emphatic in top-down, supply led, fuelwood focus, poor participation, designs. The demand from individuals, communities and schools left no room for the few extensionists to work systematically.

Rationalization of forestry staff of the previously independent and self-governing states and the old RSA took place in 1996. The DWAF extension service increased from 21 to 70 extensionists as at present. The nursery network increased from three to twelve nurseries

***Biomass Initiative***

The Biomass initiative (BI) was part of a broader, integrated energy provision strategy aimed at resolving the rapidly deteriorating energy supply situation in many rural areas. The Department of Mineral and Energy Affairs (DMEA) started this in 1993. A steering committee comprising government department representatives was formed by DMEA in order to commission the control of government funds provided to various State and non-State organizations for research projects. DWAF also received a share for initiating Community forestry projects. The assistance provided additional financial capacity for making interventions and this in turn resulted in faster gains in DWAF's extension experience.

The BI only managed to conclude the research phase after two years. Prior to the Cabinet Memorandum requesting funds for an implementation phase, the responsibility in addressing rural biomass needs was transferred to the DWAF for inclusion in its already existing Community forestry development programme.

*Other Organizations*

Other NGOs were also addressing, amongst other activities issues relating to CF. Some of the more prominent one were; Independent Development Trust (IDT), Environmental Development Agency (EDA), Trees for Africa (TFA).

*Donor Programmes*

Since 1996 various donor countries have offered to support Government in CF initiatives. The following donor programmes are either in progress or being planned:-

- DANCED (Danish Aid)
  A five year CF programme in the Northern Province. Cost is R 8 million and started in December 1996.
- FINNIDA (Finnish Aid)
  A four year CF programme also in Northern Province. Cost is R 10 million. The programme started in the second quarter of 1997.

- DFID (British Aid)
  A three year programme envisaged for Eastern Cape. This programme will be a Pilot where DWAF will be capacitated as facilitators towards other service providers. Coordination and linkages are central to the design. The programme will start in 1998.
- IRELAND
  A two year programme in Eastern Cape where an expatriate is piloting the development of woodlots to communities. Another expatriate assisted DWAF with transformation processes at Head office level for the last three years.
- TAIWAN
  A grant of 1 million US Dollars is currently in State's possession. DWAF is however awaiting Taiwan's approval of the submitted business plan before proceeding.

## COMMUNITY FORESTRY IN THE FUTURE

*The NFAP Process*

The National Forestry Action Programme document was launched on 1st September 1997. The document was compiled after feedback was obtained as asked for in the Discussion Document (*Green Paper*) on forestry matters. This resulted in a *White Paper on Sustainable Forestry Development* the culmination of the new NFAP document. Throughout the whole process other White Papers, like those on *Rural Development Strategy* and *Transformation of the Public Service*, had to be borne in mind. This detailed document of international standard, is first for South Africa. It provides guidelines as to the direction that needs to be taken in all forestry related issues. It is however not cast in concrete and will be constantly reviewed.

The document discusses five (5) key issues relating to CF. These are in brief:-

- Community forestry: Its current and potential contribution to national goals.
- Organizing for effective support to Community forestry development.
- Services to support Community forestry development.
- Enabling Community forestry to succeed.
- Urban forestry.

Read together with this are the three (3) relating to Conservation Forestry. They are in brief:-

- South Africa's natural forests and woodlands: value, status and trends.
- Organising and providing services for sustainable management of natural forests and woodlands.
- Enabling sustainable management of natural forests and woodlands.

*DWAF Transformation*

A key component of the NFAP is the transformation of CF support services. The increasing demand on DWAF support service to address requests for assistance and the variedness of the requests, forced it to take stock and reconsider its role, particularly with regard to an increasing effectiveness with a limited organization of field staff relative to an extensive needy population. Being in a steep learning curve and having to deal with changes involving values, gender/race balances, DWAF started moving to a new vision. A collective and consultative process started which resulted in the recognition of seven (7) key performance areas in CF has a responsibility:-

*Planning (Policy and Strategy)*

CF staff in each Province, as well as Head office, will incorporate into the plans their actual planning approach when planning extension strategies and actions. Linkages with other institutions need to be planned. Internal issues like "efficiency" or "communication" should be addressed. Central to this function will be the development of Province specific unified service deliveries.

*Education*

DWAF's role in making a CF contribution in formal education on a national as well as Provincial level must be considered. The following areas are examples:-

- Strategy towards presenting modules to agricultural schools and colleges.
- National and provincial curricula.
- Role of identified staff.

*Awareness*

Awareness making cannot be ignored by the Department. It includes the awareness of the services we provide as well as " tree awareness". Examples of tree awareness are:-

- Awareness plan per Province
- Promotion of Arbor Week and President's Forestry Award
- Information centres, exhibits.
- Targeting schools
- Newsletters, media.
- Role of identified staff.

*Research*

The Department has the responsibility of funding, commissioning, directing and coordinating Community forestry research.

*Plant supply*

The provision of trees is a very important function of CF and Government is looked upon as the responsible agent in this regard. However, development principles, capital expenditure and human capacity requirements, require consideration to be given to methodologies adopted. Policy and strategy become very important. The following principles have already been adopted:-

- DWAF will not build new nurseries.
- devolve existing nurseries to other parties.
- supply policy should be introduced which includes pricing.

- plant supply must be needs-based and will include fruit trees.
- plant distribution and sourcing options must be explored.

*Seed supply*

DWAF's Seed Centre plays an integral part in the provision of seed to CF service suppliers and end-users. It is largely dependent on DWAF staff to collect seed from sources country wide. The following thus needs attention:-

- Targets for annual seed procurement must be set.
- The purpose and function of the Seed Centre must be reviewed.
- Quality will be improved if possible.

*Service provision*

In their roles of providing a service with respect to the above areas, extension officers must address issues like the following in their business plans:-

- A training programme foe DWAF staff and others to be trained,
- Monitoring and appraisals of work,
- Linkages with other service providers,
- Extension materials and methods necessary for projects.

Some cross cutting issues are:-

- operational efficiency
- gender issues
- HRD
- administration issues
- management styles
- internal communication.

DWAF extensionists will submit business plans in which their role in each of the above areas, relative to their circumstances and needs in their Province, will be described together with specific tasks for the year.

*Research*

To address current shortcomings, a research network has been established between Universities of the North, Western Cape and Stellenbosch. It is envisaged that this network will investigate the need for Community forestry research and develop appropriate research projects.

Research objectives are as follows:-

- To develop a framework that ensures that research is need-based/demand driven and focused on poverty relief and equity. End users must play a participatory role in both design and implementation of the research project.
- To encourage a multi-disciplinary approach to redress the imbalance between technical and socio-economic and institutional research.
- To contribute towards the empowerment of local communities to manage their resources on a sustainable basis.
- To emphasize the inclusion of researchers from disadvantaged backgrounds and

thereby improve their research capacity.

There are currently seven (7) research projects in progress, being:-

- Establishment of best management practices and market analysis for Mopane (*Colophospermum mopane*).
- The potential of traditional Agroforestry systems in South Africa.
- The influence of trees in Agroforestry systems on water use and crop production with special emphasis on windbreaks in low rainfall areas.
- Improved production of indigenous fruit trees, preferred by communities, through domestication and cultivation.
- Species, provenance and demonstration trials in arid zones to establish potential for Community Development.
- Ownership and management options of woodlots and plantations in the former homelands.
- A survey of township people's aspirations for greening.

## CONCLUSION

Although Community forestry is relatively new in South Africa, a clear policy has evolved. Government is serious about using trees to develop areas, communities and individuals. Through implementing the policy, much knowledge will be gained. Already there are many exciting things happening on this front. It can be stated that South Africa will shortly be in a position to contribute more widely to the understanding and practice of Community forestry in Southern Africa. This is a challenge that practicing community foresters are looking forward to.

*UGANDA*

*BY*

*I. OLUKA-AKILENG AND POLLY MUBANGIZI*

## BACKGROUND

Uganda is a small country lying astride the equator. About 22% of the country receives an average of 750 mm of rain or less. These are the Semi-Arid Areas (SAA) and cover the North-east and South-west of Uganda. They are characterized by harsh weather conditions some form of nomadism and invariably livestock keeping. These and other factors have led to serious soil degradation and poor agricultural and forestry productivity in these areas.

Social forestry technologies have not been fully developed in the SAA of Uganda. However, there exist simple technologies in various forms of development. These include agroforestry systems like aboriculture, agri-silviculture and agri-silvo-pastoralism. The form of the system is influenced by geographical, ecological, cultural and socio-economic environment of the individuals and communities.

There is a high potential in the development of other viable Social forestry technologies like bush following, green/live fences, fruit tree growing, farm forestry, woodlots and other woody perennials arrangements.

Major constraints to Social forestry development include poverty, poor precipitation, fragile soils, cultural practices, land/tree tenure systems, politics and the remoteness of the SAA.

Lastly, the successful development of viable Social forestry technologies will require, planning, sensitisation of the target communities, committed extension service and an injection of considerable resources.

## INTRODUCTION

Uganda is a small country lying across the equator and covers an area of 236,000 $km^2$ (fig. 1.). Most of the country lies at an altitude of 900 m - 1500 m above sea level. The country's tropical climate is considerably modified by the local relief and elevation above sea level. Mean annual temperatures range from 8-35$^0$C, with a relative humidity of 70-100%. Most of the country receives 1015 mm - 1525 mm of rain per annum increasing with altitude (fig.2). About 12% of the country receives less than 500 mm, while a further 10% receives 500 mm - 750 mm. These areas are the semi-arid areas (SAAs) of Uganda and comprise the districts of Karamoja and Kotido in the north-east and parts of Mbarara and Masaka to the south and south-west. The areas adjoining lakes George, Edward and Albert in the western arm of the Rift Valley, too have similar features.

Fig. 1. Uganda: Political boundaries

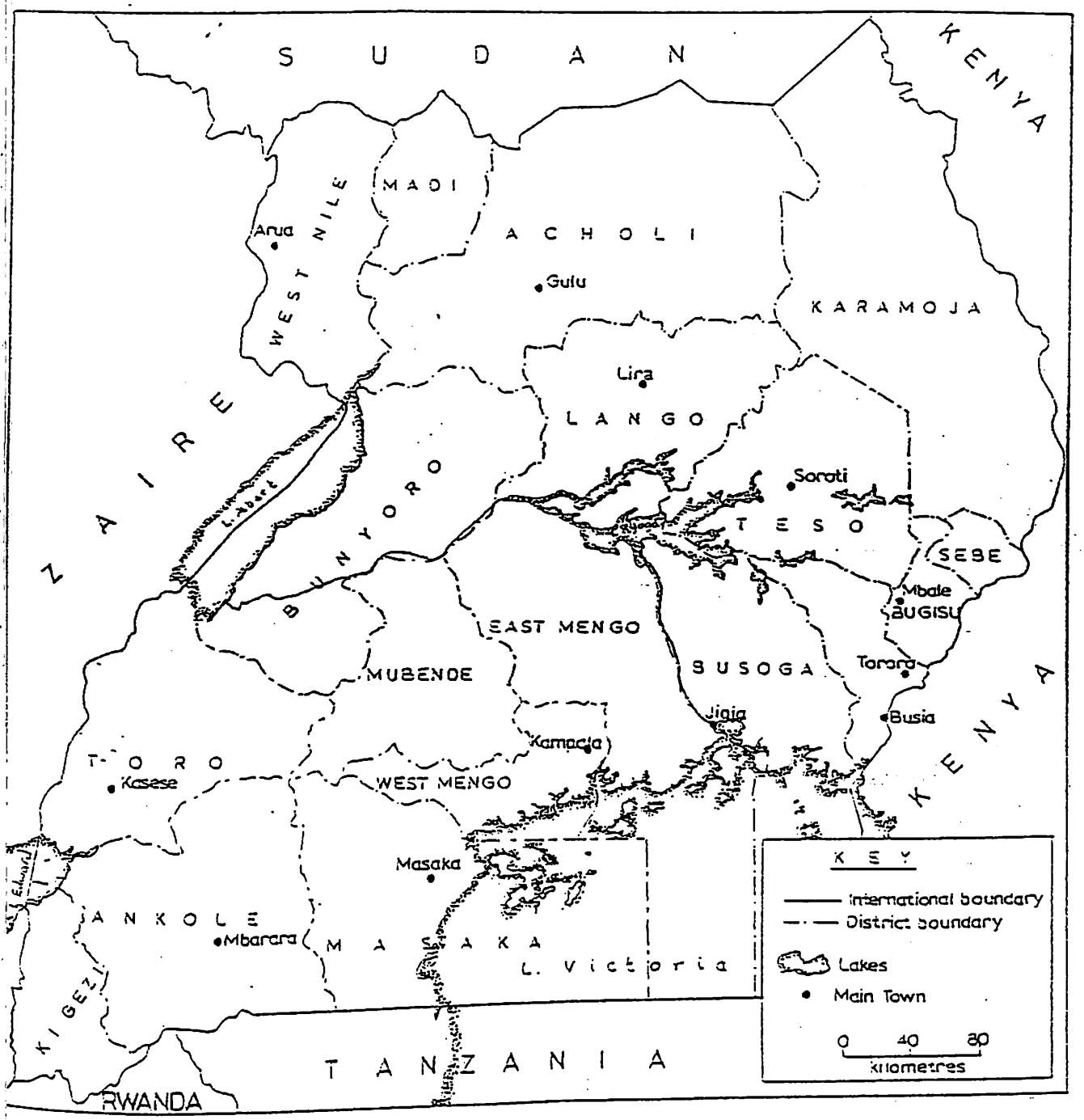
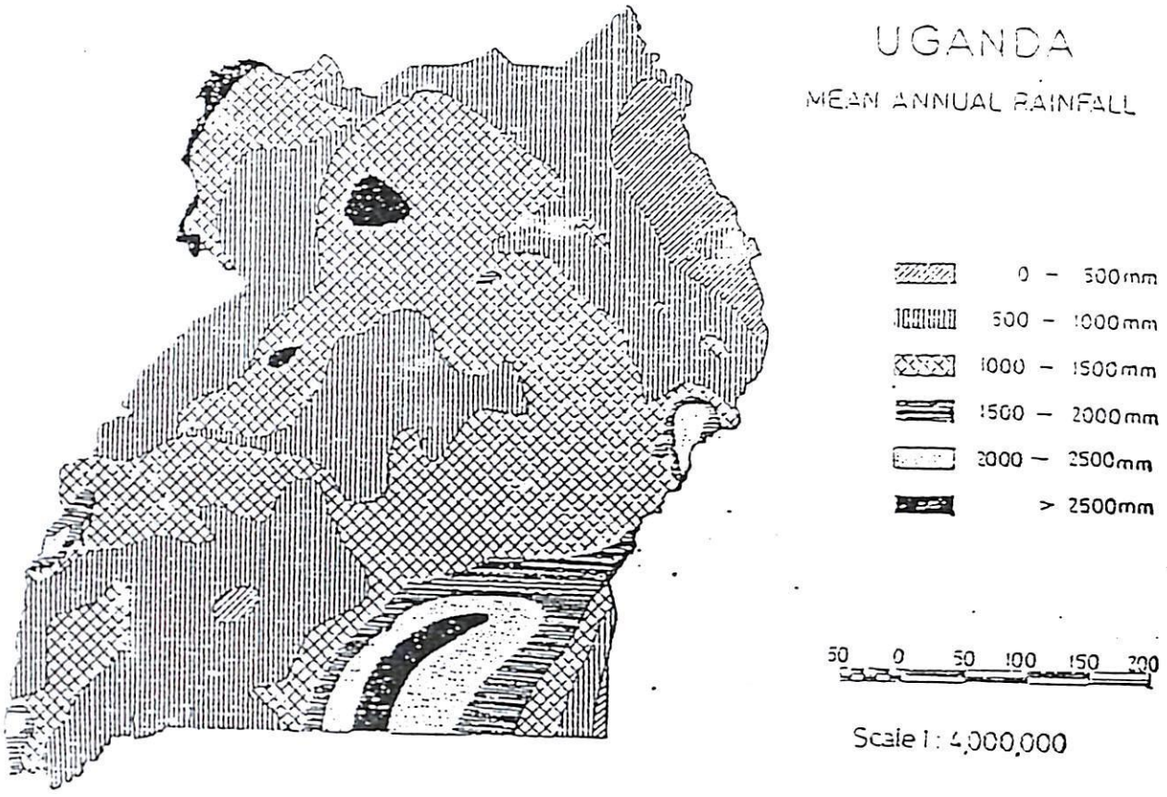


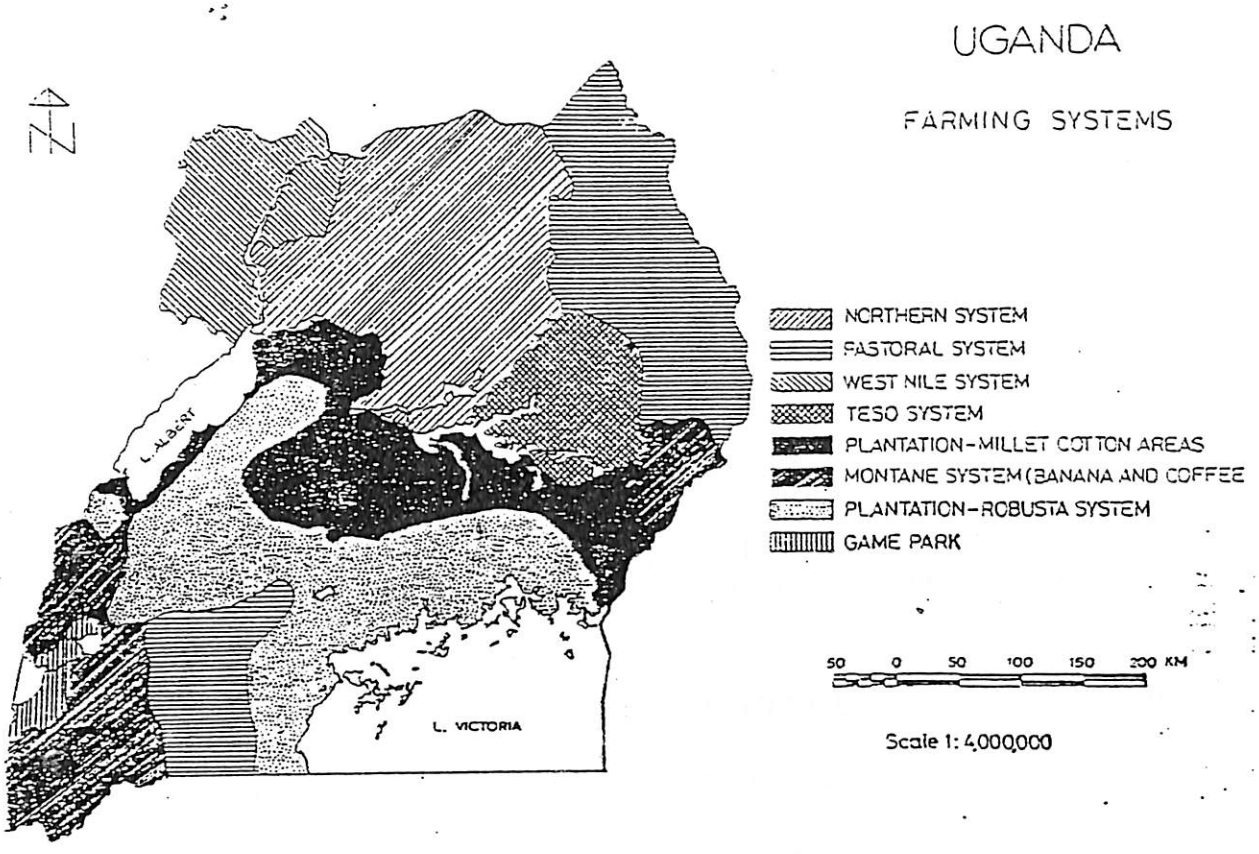
Fig. 2. Rainfall and distribution patterns




## Land Use

According to the National Environment Information Centre (NEIC) [1994], Uganda's land use/land cover is categorized as 11% water/swamps, 14% forests and protected areas, 20% cultivated land and 55% potentially available land for cultivation and pasture. This category includes SAAs (fig. 3). Although 84% of the population lives in rural areas, most farm holdings are less than 1 ha. Traditional herders constitute the largest group of livestock owners and constitute the Bahima of Mbarara and Karamojong of Kotido and Moroto. The herders inhabit the SAAs and exhibit nomadism.

Fig. 3. Landuse categories including SAAs




## Characteristics of Semi-Arid Areas

Baumer (1990), has described SAAs of Uganda like the rest in Africa as having the following distinct characteristics:-

- progressive decline in crop harvests and recurring crop failures,
- pronounced degradation of the top soil resulting from soil and dust storms,
- intensive surface runoff of water, reduced water percolation and a drop in the water table,
- less biological diversity through loss of species
- harsh living conditions for people, animals and plants,
- recurrent droughts,
- difficulty in tree germination and survival,
- overgrazing, and
- bush fires.

## SOME SOCIAL FORESTRY TECHNOLOGIES IN THE SAAS

*Existing practices*

Comprehensive Social forestry technologies have been quite developed in the SAAs of Uganda. However, some forms of agroforestry systems do exist and can be identified.

In the north-east, growing of trees in woodlots was started in the 1940s, but intensified in the 1980s, mainly around religious missions and churches.

In the south-west, the Bahima cattle-keepers have a rich knowledge in the planting of live hedges using *Euphorbia spp.* to enclose cattle kraals. As another form of silvo-pastoralism, isolated trees of *Acacia tortilis* and *Acacia senegal* are left to provide shade to livestock during the normally intense sunshine.

In Karamoja, woody perennials are used as shelter for crops and as windbreaks. In areas occupied by sedentary tribes, bush fallowing to allow the soil to recover fertility is practiced.

In SAAs, there exists potential for other agroforestry technology/interventions including farm forestry, growing of fodder trees all based on modified indigenous knowledge and scientific methodologies.

### Advantages offered by Agroforestry in SAAs

- Use of woody perennials improves and maintains soil fertility by adding organic matter and biological nitrogen fixation,
- Woody perennials improve the physical properties of the soil,
- Deep tree roots bring up otherwise leached nutrients,
- Woody perennials minimize the erosive actions of wind and rain,
- Helps to meet the immediate needs of the peasant farmer (firewood, timber, fruits, etc),
- Agroforestry increases total productivity of the system,
- Stabilizes the production unit making it less vulnerable to variations in the physical and socio-economic environment,

## CURRENT PROGRAMMES, PROJECTS AND ACTIVITIES PROMOTING SOCIAL FORESTRY

1. Forests, Trees and People Programme (FTPP).
2. ICRAF (ANAFE/AFNETA).
3. Butto - Buvuma Joint Forest Management Programme.
4. UNDP - Africa 2000 Network - Sustainable Human Development.
5. Vi - Tree Planting Project.

### The Case of Vi-Tree Planting Project

*Project*

The Vi Project started operating in Masaka and Rakai districts in 1992. This is the second

project in the East African Region (after the first one in West Pokot and Trans Nzoia in Kenya).

The initial concept of the Project was to *"stop the desert"* but has gradually incorporated agroforestry.

The main objectives of the project are:-

- to produce tree seedlings of suitable species to be given out free to small scale farmers,
- to rehabilitate land in the drier parts of the district together with soil and water conservation measures in order to increase productivity of pasture and crop lands,
- to inform and advise farmers about tree planting, soil conservation and agroforestry through extension service, and
- to establish and maintain agroforestry demonstration centres.

*Achievements*

By 1994, the Project was operating 30 tree nurseries producing nearly 2.5 million seedlings comprising of 50 different species, indigenous and exotic. Most are suitable for intercropping, timber trees, fruit trees and ornamental.

Each nursery has an agroforestry demonstration plot showing trees/shrub/crop interactions and simple soil and water conservation measures.

The main Agroforestry Demonstration Centre was established on a 4 ha site, with an arboretum. The Centre is open to the public during all working days and is attracting many visitors, especially farmers and students.

*Land rehabilitation*

The western part of the project area is relatively dry and semi-arid. The landscape is dominated by bare hills and over-grazed vegetation.

The rehabilitation process involves digging trenches of 1.3 m long and 0.3 m deep along the contours and about 140 ditches per ha. Below each trench, two spots are prepared for planting of seedlings or for direct sowing. The latter has proved more viable. Survival rates have been very impressive. Altogether, over 500 ha have been rehabilitated in two districts.

*Project benefits*

- The project has been well received by the communities in the area and many are practicing tree planting particularly agroforestry. Most nurseries are run on self-help basis. The project is giving special support to a few women groups to raise seedlings which are in turn bought by the project.
- The project provides employment to 220 permanent employees.
- The land rehabilitation component has broken new ground in the re-vegetation of the area.

*Project Problems*

- Land ownership tends to be a bottleneck among reluctant owners to rehabilitate their land,

- Unreliable rainfall constraints tree planting,
- Slow growth of trees makes impact of the project difficult to be seen,
- Limited budget.

## CONSTRAINTS/PROBLEMS HINDERING THE PROMOTION OF SOCIAL FORESTRY DEVELOPMENT

Most forestry programmes particularly tree planting are long term. This provides the biggest challenge since most people are not willing to participate in such programmes. The other constraining factors include:-

- poor precipitation coupled with high evapotranspiration rates,
- poverty, since the people mostly in SAAs are pre-occupied with survival which is their priority.
- fragility of the soils to erosion and other forms of degradation,
- remoteness and inaccessibility of SAAs,
- cultural practices inhibit proper Social forestry development, these practices include nomadism, communal grazing, keeping of large herds over the carrying capacity of land and cattle raids,
- invasion of rangelands by unpalatable plant species,
- bush burning,
- land tenure and ownership system,
- political problems and lack of leadership, and
- inadequate technical know-how and exposure.

## CONCLUSION

Although Social forestry technologies in SAAs have not been fully developed, there is need to carry out studies to describe, document and inventory the existing technologies and indigenous knowledge. However, of all the interventions, agroforestry seems to have the biggest potential owing to its simplicity and versatility. It has even a higher potential in fighting aridity and decertification. Finally, it is imperative that conservation of existing tree resources be included in future Social forestry development. The role and benefits of non-wood products from SAAs needs to be highlighted.

## REFERENCE

*Baumer, M. (1990): Agroforestry and Desertification. ICRAF*

*National Environment Information Centre (1994): State of the Environment for Uganda.*

*ZAMBIA*
*BY*
*D. KASARO, L. MUSONDA AND J. MULENGA*

# INTRODUCTION

This paper looks at the general aspects of Forestry in Zambia. It highlights the factors associated with Social forestry development. This includes; climate, agriculture and the major component, forestry and the general overview of the sector.

# BACKGROUND

## Geographical position

Zambia which lies between 8° - 18° S and 22° - 34°E has a total surface area of 752,614 km² and shares borders with eight countries. It is landlocked and has a population of about 9.1 million people, of which 44% live in urban areas.

Most of the country is a plateau with altitude ranging from 1000 m to 1600 m above sea level. The plateau is interrupted by a series of relatively deep rift troughs of below 600 m in the East and South-east; flanked by a faulted escapement zone. Interspersed in the plateau complex are swamps, lakes, flood plains, terraces and temporary water logged depressions (dambos) and valleys.

The climate is subtropical, with three distinct seasons.

- The warm-wet season from November to April
- A cool dry winter from May to August with mean temperature between 15° - 27°C. Temperature sometimes falls to as low as 4°C. Frost occurs in some areas in June and July.
- A hot dry summer from September to October with temperature ranging from 27° - 32°C. Annual rainfall varies from 1200 mm in the north to 700 mm in the south of the country

## Agriculture

Agriculture is a major and very important component of rural development and occupies a crucial position in the national economic development. About 50% of Zambia's population depends directly on agriculture for their livelihood. The sector employs about 67% of labour force in the formal sector. For now, it remains by far the main employment for rural women.

Out of a total of 75 million ha, 41 million ha are estimated to be suitable for agriculture. However, only 2 million ha are cropped annually.

## Forestry

### *Forests*

Forests are estimated to cover between 55 - 60% of the total land area and their distribution is

influenced by the rainfall pattern. The major vegetation types are as follows:

- Dense Miombo woodlands of the plateau, dissected by grass and swamps along dambos. This covers Norther, Luapula, Copperbelt and North-western provinces.
- The Kalahari Chipya, alternating with grasses in the South-west.
- Mopane woodlands of the lower Luangwa and Zambezi Valleys.
- Dry Evergreen woodlands and their Chipya derivatives in the North-west on the Kalahari sands and North-east on the lake basin soils in Luwingu and Kasama.
- Deforestation rate is estimated at 200,000 ha per year.

Main causes are:-

- Clearing land for agriculture purposes (shifting cultivation)
- Charcoal production
- Increased demand due to population increase.

*Forest Policy*

The Government's major policy objectives for the forestry sector can be summarised as follows:-

1. Conservation of indigenous forests through protection, controlled exploitation and tree planting.
2. Protection of water catchment areas to prevent siltation of rivers from soil erosion.
3. Promotion of viable forestry through appropriate training, research, extension, regeneration and wood processing programme.

*Forest Distribution*

Zambia's vegetation is dominated by Miombo woodlands which covers about 58% of the forest area. About 9.2 % of the wooded area is gazetted Forest Reserves (Government Estate) and is under direct control of the Forest Department (FD) through the provisions of the Forest Act, Volume IV, Cap 199 of 1973.

National Parks and Game Reserves cover roughly 8.4% of the land area. Hence, the legally protected areas is about 18.3% of the forest land area.

The aggregated national demand for woodfuel, roundwood and sawntimber by the rural and urban households (based on 1985 population estimates) were estimated at 14 million $m^3$ (14,351,000 $m^3$) or 47% of available standing timber.

## CURRENT PROGRAMMES, PROJECTS AN D ACTIVITIES TO PROMOTE SOCIAL FORESTRY IN ZAMBIA

Zambia's Forestry Department has tried to work with communities and harmonize legislation. The following are programmes helping in the promotion of Social forestry in Zambia.

### Forestry Extension Division

FD created a division to deal with Social forestry and Agroforestry in 1985. This was an indication of the departments seriousness in dealing with forestry work with the communities.

### Zambia Forestry Action Programme (ZPAP)

The main duties of ZFAP is to undertake work at National level to create a favourable policy framework in which FD and local communities can work in harmony (e.g. remove obstacles to meaningful citizen participation in Forest planning and joint Forest Management)

Currently, a Bill has been prepared and will be tabled in the next sitting of Parliament in order to facilitate community participation. A new Forest Policy has equally been drafted and debated on, it is expected to be finalized soon.

### Provincial Forestry Action Programmes (PFAP)

The programme works in three (3) provinces, Central, Luapula and Copperbelt. It is basically a planning process which seeks to increase levels of institutional co-operation, and public participation in forestry stewardship and management.

In broad sense, PFAP seeks to provide solid basis for the rational management and conservation of Zambia's forest resources and enhance the contribution of the Forest Sector towards socio-economic development, poverty alleviation, improved food security and environmental protection.

Participatory approach is the basis of the programme. The programme involves carrying out PRA's (Participatory Rural Appraisal) and development of Village Resource Management Plans (VRMPs). In addition, Strategic Plans and Project Profiles are to be prepared to enhance forestry development in Zambia.

### Soil Conservation and Agroforestry Extension Programme (SCAFE)

This is a programme working in Eastern, Southern, and Central Provinces of Zambia. The programmes works to improve crop production through soil conservation and agroforestry practices. It is based on community participation.

### National Tree Planting Programme

National Tree Planting Period is between 15th December and 15th January of each year, while 15th December, is National Planting Day. During the period people are encouraged to plant trees and use of Radio, leaflets and meetings has been common. The communities (NGO's, Schools, Churches, Institutions) are encouraged to participate.

### Agroforestry and Natural Resources Programme

The programme is being undertaken in Masaiti, in Ndola Rural area and Funding came from JICA and British High Commission.

It is aimed at reducing deforestation and help improve crop yields. Basically, it works with local communities including Traditional rulers. Participatory approach is the basis of the programme.

## TRAINING COURSES ON SOCIAL FORESTRY AND/OR AGROFORESTRY IN ZAMBIA

The Social Forestry Training Programmes are not yet well developed in Zambia. However, there are institution's that offer general Forestry Training in Zambia. The courses include Social forestry and agroforestry. The institutions are:-

### The Copperbelt University - Kitwe

The School of forestry at Copperbelt University was started in 1995. The courses offered include Social forestry and Agroforestry. The school is still developing.

### Zambia Forestry College - Kitwe

The college offers Diploma and certificate courses in general forestry.

The development of these institution will depend on ZFAP's objective of improving personnel at the two institutions and the development of the curriculum. ZFAP has offered to assist in the improvement of the institutions.

## CONSTRAINTS/PROBLEMS HINDERING THE PROMOTION OF SOCIAL FORESTRY IN ZAMBIA

Forestry Extension Division (FED) in the FD was established in 1985 in order to improve and encourage community participation. This was found important after realizing the need for a systematic Forestry extension programme in Zambia.

However, the creation of FED on its own was not enough as many other problems have hindered the promotion of Social forestry in Zambia. The following are among them:-

### Policy and Legislation

Inadequate Policy and Legislation to enhance community participation in natural resources management has contributed to the slow developmental process of Social forestry in Zambia.

The participation of the community in resource management must be supported by law which is not the case at the moment.

### Value of Forests

Inadequate data on socio-economic status of people in relation to the value of forests has had an impact. For natural resources to be appreciated there is need to clearly spell out the values or importance of forests. People need results immediately, to participate.

### Forestry Extension Staff

There is inadequate Forestry Extension staff to meet current requirements in ensuring effective

and efficient extension delivery system.

### Financial Resources

Environmental programmes require a lot of investment since it was ignored in the past world wide. However, the Government has not got such funds to implement programmes as required. There is need for more support.

### Control of Land

Government responsibility over land, where management of forest resources were take from the communities initially in order to allow only the central government to control has resulted into open access and consequently over-use of these resources. This is so because of the fact that *"What belongs to the government (everyone) belongs to no one"*, hence the environmental degradation.

### Land Tenure

Land tenure in relation to mobile communities who move and settle anywhere they find land because there are no regulations on the control of movements and settlements, has created a difficult task for sustainable natural resource management. In such a case, it is difficult to introduce development in a meaningful manner.

### Local Knowledge

Inadequate data on peoples' (local communities) knowledge on sustainable management has led to designing of programmes that are almost parallel to peoples perception of natural resources management. Traditionally people have had their own ways of controlling the use of forest resources, e.g. the attachment of spiritual beliefs to certain trees, (*Swartzia madagascariensis*).

### Inadequate Training

Forestry Extension staff require adequate knowledge in Social forestry which is currently not readily available. Social forestry requires the understanding of people's behaviour which was not initially part of forestry training. Very few institutions have come to assist (funding) in Social forestry.

## AREAS OF PARTICULAR TRAINING NEEDS

The following are the possible areas requiring training:-

1. Forestry Extension and Participatory Approach.
2. Designing Social Forestry Programmes.
3. Development of Social Forestry Extension materials.
4. Forestry Project Planning and Management.
5. Environmental Impact Assessment for sustainable Forestry Management.

## CONCLUSION

Social forestry in Zambia is still developing. The strengthening of the legal and legislation framework is the basis for future improvement. It is expected that joint forestry management with local communities will not only ensure sustainable forest management, but also create awareness among the communities of the need to conserve and manage forest reserve.

The promotion of participatory approach in forestry extension require an efficient extension delivery system, which the Forestry Department is working towards achieving.

*TANZANIA*
*BY*
*BRUNO S. MALLYA*

## BACKGROUND

The United Republic of Tanzania is among the East African Countries which lies between 1°S and 12°S latitude and 29°E and 41°E longitude. It covers an area of 945,087 km² with a population of about 24 million people (1988 census).The Island of Zanzibar which is made up of two islands, Unguja and Pembas, covers an area of about 2,643 km².

### Forest resources

Tanzania's forests are categorised into two areas:-

- Reserve/protected forests, and
- Public/unprotected forests

The protected forests area (declared forest reserves) covers a total of 13.4 million ha., of which 1.6 million ha (12%) has been reserved as a catchment forests for watershed management. The forested public and lease hold lands covers 13.1 million ha. Generally, the forests in Tanzania covers approximately 44 million ha., which is distributed as follows:-

| | |
|---|---|
| . Closed forests - | 1,400,000 ha, including about 80,000 ha of man-made forests. |
| . Woodlands - | 42,891,000 ha. |
| . Mangrove - | 115, 000 ha |
| Total (forest cover)- | 44, 406, 000 ha |

There are 540 Forest Reserves and 18 Forest Plantations in Tanzania. The main species planted include *Pinus patula, P. caribaea, Cupressus lusitanica, Tectona grandis* and some Eucalypts and *Grevillea spp.* In the past, forested land outside the forest reserves has been considered as inexhaustible resources, and efforts were made to clear such land for agriculture and/or cattle raising where appropriate. Forest has been used as a source of fuelwood and industrial timber without respective management inputs.

Current land use practices and rapid growth of rural population are contributing to advancing the deforestation. There is growing awareness of the threat of deforestation of catchment areas which endangers potential water sources and biological diversity.

The Tropical Forestry Action Plan (TFAP) for Tanzania aims at converting this raised awareness into effective action. For example, by designing development projects such as soil and water conservation water catchment management and conservation of unique ecosystem would lead concrete actions on the ground.

Some existing soil and water conservation projects such as SECAP, SCAPA, HADO, HASHI EUCADEP etc are still progressing. There are also women involving projects such DOVAP,

MWAP and SOAP.

In Tanzania 97% of energy used domestically comes from the natural forests and furthermore the same forests provide poles, timber, medicine, etc., which in all exceeds the supply potential.

Currently, the existing forests can supply 25 million $m^3$ of roundwood per annum without detrimental effects on the environment.

The analysis done in 1985 showed that 43 million $m^3$ of wood was extracted from the natural forests which is an over supply, thus indicating a significant level of destruction to the environment.

In order to balance the supply of wood, the Government planned to plant trees in 200,000 ha per annum in the villages, but implementation has been poor, while the average tree planting per annum is about 7,700 ha.

## CURRENT PROGRAMMES, PROJECTS AND ACTIVITIES TO PROMOTE SOCIAL FORESTRY

Tanzania forest policy has realized a danger on irreversible depletion of natural resources. The government has now given unprecedented emphasis on ensuring that the natural resources are protected sustainably for the present and future generations.

The government is aiming to encourage and assist local governments, various companies, organisations and institutions with forestry knowledge in order to reach the above mentioned goals.

Various programmes activities and methods have been used to disseminate such knowledge. These include the programmes in:-

- Television, Radio, Newspaper and Newsletters (Forest is wealth, *"Mali Hai"*; Miombo, journals (Eastern Arc); etc. Other programme messages are conducted through calenders, posters, cinema, video etc.

Some projects have managed to promote Social forestry by involving farmers in various ways including:-

- Seminars.
- Workshops.
- Short courses (particularly on soil erosion control).
- Study tours.
- Farmer to farmer extension.

Other groups of people or projects/organisations (e.g. NGOs, Directors of private companies), have organised a competition trophy for individuals, organizations, churches, schools, etc., for tree planting and tending.

## EAST USAMBARA CATCHMENT FOREST PROJECT (EUCFP)

My organisation in particular have successfully managed to promote Social forestry in various ways. In brief EUCFP was established in 1990 and is working in East Usambara mountains. Its mission is to protect the natural forests. The project aims at establishing the Amani Nature Reserve (ANR), protecting water sources; establishing and protecting forest reserves; sustaining villager's benefit from the forest and rehabilitating the Amani Botanical Garden.

The forest cover in the East usambara area is about 45,000 ha or about 50% of the land area. Some of these forests have been protected within the Forest reserves since the turn of the century and many go back to the 1930s and 1950s. Commercial harvesting and pitsawing has been banned and the project has been successful in containing encroachment and other illegal activities in the area.

Local people in East Usambara depend on the forests for their livelihood. The major challenge for EUCFP is participatory management of these forest. Management means mainly discussing and agreeing with the local communities on their needs and how these needs should be met, whether from the public land forests or from the forest reserves. The project has made efforts to strengthen villagers rights to manage their own forest (two village forest reserves are now on the pipeline to be gazetted. Already the area has been surveyed and mapped. By-laws for control of human activities in the forests are still being processed. These village forest reserves are Handei, in Amani division and Mpanga in Maramba division.

Farm forestry activities have been in a number of Pilot villages as a strategy to improve local land husbandry. The EUCFP has also started to work on environmental education in primary schools by involving elders and 'forest specialists' in the villages. More emphasis has been given to farm forestry and extension activities since 1995. The organizational chart of the EUCFP is presented in Appendix 1.

## TRAINING COURSES

The training courses on Social forestry and/or Agroforestry in Tanzania can be acquired in various places as partial or full time training, these include:-

1. Workers Training Institutes /Vocational training institute (VET)
2. Forestry Training Institute at Olmotonyi, and
3. Sokoine University of Agriculture (SUA) are among institutions which teach Social forestry among other subjects.

Special courses are offered to a limited number of participants in few regions like course prepared and conducted at SUA in the Faculty of forestry, Department of Further training/extension. Also NGOs (Ruaha Rural Training Centre) offers such Further special courses to Forest assistant and Attendants, which is mainly summarized in illustrative books.

## CONSTRAINTS/PROBLEMS HINDERING THE PROMOTION OF SOCIAL FORESTRY

### Poverty illiteracy and economic issues

Poverty is a major hindering factor to promotion of Social forestry. The government provides very limited fund to the Ministry and its departments which limits some development activities, social forestry being among. Farmers on the other hand seems to depend too much on external assistance rather than utilising the available resources.

### Lack of Knowledge

The technical know how is inevitable in the promotion of Social forestry. Since the country's economy is not good enough to provide working gears to extension agents including RFO, DFO Division and Ward extensionist; the knowledge of Social forestry will take long time to reach the target group/person.

### Land and Tree Tenure

Some of target groups particularly women, are very much troubled by land and tree tenure. Some people have small land which cater for food and/or cash crop cultivation and other are given the land for perennial crop cultivation only. In such a situation people seem to be reluctant in accepting the idea of Social forestry.

### Land Use Management

This is among the constraints which hinder the promotion of Social forestry since many people use to practice of shifting cultivation (Singida, Shinyanga, Handeni) and others used to cultivate big area with low output yields, the idea of intercropping remains at a stand still, this results into degradation of soil fertility.

### Others

The other important constraints include adverse climatic factors, population growth, over-exploitation and cultural/ traditions in participatory and decision making processes.

## RECOMMENDED/ SOLUTIONS

In order to reduce and/or alleviate the above constraints the Government should play a big role in considering the forestry sector as important as other sectors which can enhance the national economy at large, hence the budget should be more than what is allocated today. Retention scheme should allow the FBD to keep 50% of its revenue and 20% to Ministry (total 70%). The other 30% could go to the Treasury (HAZINA.

**The following are emphasized:-**

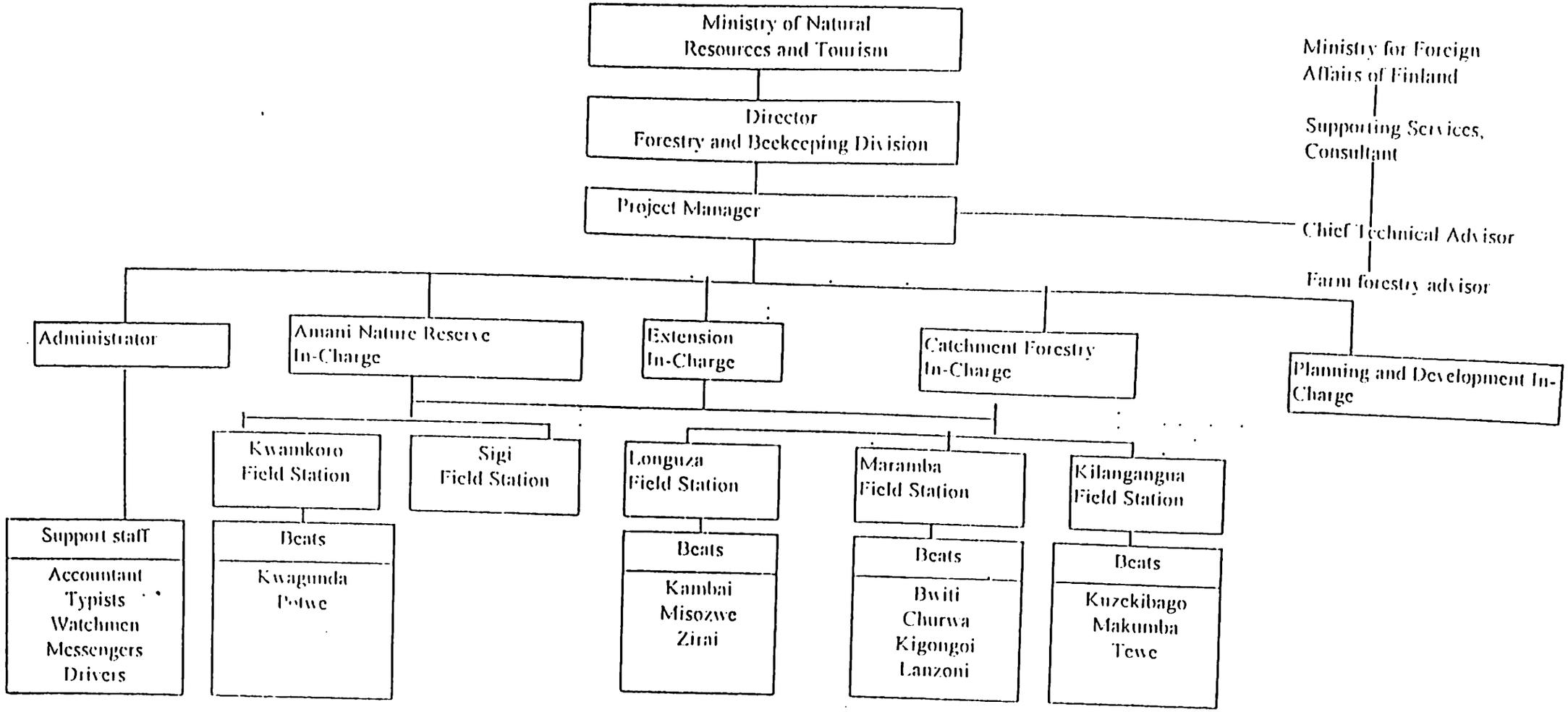
1. Intensification of extension work to create local people's awareness of Social forestry
2. Assist farmers in wise use of land aiming at obtaining short and long term profits.

AREAS OF PARTICULAR TRAINING NEEDS

1. Integrating forest activities with other sectors
2. Live/Natural soil erosion control skills
3 Policy formulation to promote Social forestry
4. Improved/modern energy conservation stoves.

## Appendix I

*Organisational chart of the East Usambara Catchment Forest Project*



*TANZANIA*
*BY*
*H.C.F. KESSY*

# GENERAL INFORMATION ON THE PRESENT STATUS OF FORESTRY AND FOREST RESOURCES IN TANZANIA

## National Context

Tanzania is the largest country in East Africa occupying an area of about 940,000 $km^2$, with a population of 22.5 million people, growing at a rate of 2.8% per annum. About 80% of the country's population live in rural areas. Agriculture is the mainstay of the economy providing about 40-50% of GNP, which is estimated to be US$ 250.

Most of the country is located on the Central African Plateau at an altitude of 1000 m - 1500 m above sea level. Rainfall varies from 1000 mm - 1500 mm per annum in coastal and lake area, to 500 mm - 1000 mm per annum for much of the plateau areas. Only about half of the country receives more than 750 mm per annual.

Tanzania has a wide range of natural resources. Apart from vast areas of arable land she has the following natural resources:-

- Wildlife resources.
- Abundant fishing potential.
- Minerals such as diamond, gold, salt, gypsumphosphates and coal. Uranium and petroleum explorations are underway.

## Forest Resources

Out of 88.6 million ha. that make up the mainland Tanzania, about, 39.5 million ha. are arable. However only 6 million ha (16%) is under cultivation. Irrigable land amount to 44 million ha, most of which is used for pasture with Miombo and Savanna Woodlands.

Forests and woodlands occupy about 44 million ha, which is about 45% of the total land area of Tanzania. The woodlands include some 150,000 ha plantation forests. Most forest reserves are managed for production and catchment purposes.

## Deforestation and land use trends

The rate of deforestation ranges from 300,000 ha to 400,000 ha per year. This leads to depletion of soil fertility and water supply in such areas. The main reasons for deforestation are clearing for agriculture, overgrazing, charcoal burning and woodfuel harvesting, bush fires for various reasons and harvesting for industrial wood. In many areas land is burned for the eradication of tsetse fly.

Tanzania's agricultural production is aimed at meeting domestic and cash crops production. It

**Biomass energy supply and demand management**

This aims at enhancing forestry's contribution to solving the country's energy supply in the long run. The following measures for sustainable energy supply are applied:-

1. Tree growing and woodland management by small holders and villages in order to provide fuel wood, for sale of poles and tried as cash crop.
2. Harvesting branches, fallen wood and trees in natural forests and woodlands.
3. Improved management and control of village woodlands for greater productivity including woodfuel.
4. Use of crop residues and animal dung to generate biogas or producer gas.
5. Use of logging and mill residues for fuel, both as fuelwood and charcoal production.

## ON-GOING PROJECTS FOUND IN TANZANIA

### SECAP

Soil erosion control and Agroforestry Project found in mountainous West Usambara area which has suffered for deforestation and overgrazing. This project is funded by GTZ (Germany Agency for Technical Assistance).

### Village Afforestation Programme

The programme was formerly aimed at reforestation for fuelwood production, but nowadays includes production of poles and timber. The project is planned and implemented by the Forest division of the Ministry of Natural Resources and Tourism (MNRT). Support has been provided by agencies such as SIDA, FAO, ILO, etc.

### HADO

Hifadhi Ardhi Dodoma Project is found in central part of Tanzania where the climate is hot and semi-arid, with an annual rainfall of 600 mm - 800 mm. The aim of the project is soil conservation and rehabilitation of degraded land, the main activity being tree planting.

HASHI Hifadhi Ardhi Shinyanga.

SCAPA Soil Conservation and Agroforestry Arusha.

LAMP Land Management Programme in Babati, Arusha.

## TRAINING COURSES ON SOCIAL FORESTRY AND/OR AGROFORESTRY AVAILABLE IN TANZANIA

1. Professional and Technical Training
   - Sokoine University of Agriculture - Morogoro
   - Forestry Training Institute, Olmotonyi - Arusha

has been estimated that subsistence production would double over the next 20 years needing about 13 million ha of land.

Cattle population is estimated to be 12. 8 million, while goats and sheep are estimated to be about 9.8 million (1988 census). The annual growth rates for these livestock is estimated to be 0.8% and 1.0% respectively. The carrying capacity of potential grazing land (60 million ha) is assumed to be 20 million stock units. The concentration of livestock in tsetse free areas with watering facilities has resulted in serious over-stocking, a lot of land degradation and declining productivity. Efforts of de-stocking have remained ineffective as there are no viable options. Savings, investment, food security, traditions and social status have encouraged them to increase stock. Pressure on grazing land has no significant impact on changing behaviour of individuals.

Possible remedies to this situation tends to take time as it is a question of changing attitudes and lifestyles than changing production technology.

## CURRENT PROGRAMMES, PROJECT AND ACTIVITIES TO PROMOTE SOCIAL FORESTRY IN TANZANIA

### Sustainable land Husbandry

The objective of the land husbandry action programme is to increase production through improved productivity from land related activities on a long term sustainable basis.

### Community and farm forestry

The guidelines of the implementation strategy in community and farm forestry is summarized as following:-

1. The design of projects and programmes are based on the identified needs of communities and farmers.
2. Application of a wider view of target groups and methods of organizing participation.
3. A wider range of techniques is adopted including natural woodland management, decentralized nurseries, soil and water conservation methods, intercropping, shelterbelts, windbreaks utilization, small scale forest industries, etc.
4. Research activities are carried out with regard to agroforestry and soil conservation, with emphasis on action research and on-project testing various concepts.

### Forest Management

This involves improvements in several areas of action including management of natural forests on reserved and unreserved land, industrial plantations, forest protection, regeneration and replanting, seed supply, logging operations, concession and license agreements and institutional strengthening.

. Forest Industrial Training Institute - Moshi

2. Vocational training
   . Rongai - Rombo
   . Sao Hill - Iringa

## CONSTRAINTS/PROBLEMS HINDERING PROMOTION OF SOCIAL FORESTRY IN TANZANIA AND RECOMMENDATIONS

1. High Population pressure on land for farming and on woodfuel with subsequent deforestation.
2. Forest depletion due to charcoal burning, commercial fuelwood, harvesting and shifting cultivation.
3. Forest Fires in scarcely populated parts of the country.
4. Forest depletion due to overgrazing, shifting cultivation and charcoal burning.
5. Tenure system, many people grow trees in an area which is not known to whom it belongs (village/individuals).
   Solution: Land ownership to be given to groups/individuals rather than tree access.
6. Availability of planting materials:-
   - seedlings are not enough,
   - preferences - people may not get what they want.

   Solution: Promotion of individual/village nurseries, nowadays the government provides the seedlings. Farmers should dictate their own needs of species rather than foresters (bottom-up approach)
7. Timing of planting trees goes together with that of crops, so people go for crop rather than tree planting.
   Solution: Farmers to be advised to used short rains/irrigation methods in tree planting. Farmers to be advised to practice agroforestry.
8. Tree planting is capital intensive, while farmers do not have enough money for purchasing items like polythene materials, seeds, etc.
   Solution: People to be advised to use local materials, e.g. banana sheath, bamboo stems.
9. Poor technical know-how: Farmers do not have knowledge and skills on forest management, especially during nursery management.
   Solution: Capacity building
   - To train technical staff at field level.
   - On-farm training of farmer.
10. Pests and disease problems to trees.
    Solution: - Research Institutions to breed for resistance.
    - Diversification - growing different tree species.

*TANZANIA*
*BY*
*A.L. DANDA*

## INTRODUCTION

Tanzania has an area of 945,000 $km^2$ , of which 883,578.5 $km^2$ is land and 59,052 $km^2$ is water. Tanzania is the largest country in Central and East Africa. It is bordered in the North by Kenya and Uganda, on the West by Rwanda, Zaire, and Burundi, and on the South-west by Zambia. It is bordered on the South by Malawi and Mozambique and on the East by the Indian Ocean. It is located South of the equator between $1^0$ and $12^0$S of latitude and $29^0$E and $41^0$C longitude and lies at an altitude of 0 to 5000 m above sea level.

The rainfall is highly variable and unpredictable in some areas. The central part receives 400-800 mm per annum, while the wet highlands receives 2000 - 2500 mm per annum. Due to variations in altitude and temperature, Tanzania is divided in different regions agro-ecological zones.

## GENERAL INFORMATION ON THE PRESENT STATUS OF FORESTRY AND FOREST RESOURCES IN THE COUNTRY

Tanzania has got a wide range of agro-ecological regions, these include;-

### The highland areas

This part is the most important ecological zone for agricultural production and also forest resources, this area receives a very good amount of rainfall 2000 - 2500 mm per annum. Temperate forest trees, crops and sub-tropical forest trees and crops are dominant in this areas. These areas include:-Usambara mountains, Uluguru, Moshi, Arusha and Southern highlands.

### The Central Plateau

This embraces areas of Dodoma, Tabora and Singida. Agricultural production is seasonal due to low rainfall distribution. Over half of the land area consists of miombo woodland, bush and thicket consisting 25% of the total land area. 10-12% is estimated to be under cultivation. The savanna and miombo woodland found in this area are subjected to uncontrolled fire outbreaks and deforestation due to firewood, charcoal and tobacco curing. In some areas planted forests are of mango trees which extends along the regions where the former slaves route was passing normally from Dar es Salaam to Kigoma.

### The Coastal Areas

This includes Tanga, Dar es Salaam, Lindi, Mtwara and Zanzibar Island. Production is based on bimodal agriculture. The area is occupied by natural forests in some areas but due to human activities, a large portion is planted forests which include fruit trees such as mangoes, cashew nuts, coconuts, citrus, etc.

### The Lake Zone

This zone includes Ukerewe Island, Kagera, Kigoma, Mara and Mwanza. It has high and better distribution of rainfall 800 - 1500 mm per annum, and high population density. Large parts of the forests are destroyed due to agriculture and livestock keeping activities. Most of this area had been made semi-desert e.g. most parts of Shinyanga and Mwanza regions, due to intensive cultivation and overgrazing. However, agroforestry projects are trying all alleviate the problem through fencing out livestock and allowing natural trees to regenerate.

## CURRENT PROGRAMME, PROJECTS AND ACTIVITIES TO PROMOTE SOCIAL FORESTRY IN THE COUNTRY

Preservation of the existing natural forests has been a core function of the government through the Ministry of Natural Resources, Forestry and Tourism and Non-Governmental Organisations (NGO's) through projects, campaigns and seminars. Farmers and peasants are taught how to harvest the existing natural forests without much destruction, new techniques of agroforestry whereby multipurpose trees such as *Leucaena, Gliricidia, Sesbania* and *Acacia spp.* are introduced to control soil erosion, increase soil fertility and to be used as source of fuel. Success has been observed in projects whereby peasants are involved in establishing trees in their own plots. The established plots are nursed by peasants up to the time of harvesting, whereby each peasant is allowed to use his/her own trees. Apart from trees which are used to increase soil fertility, fruit trees like cashew nuts, mangoes, coconut, avocado and citrus play an important role, while the providing cash to the peasant, they also control soil erosion as wind breakers and the bunch of branches obtained during pruning are used as a source of fuelwood. There are several agroforestry projects located in different parts of our country, some of these projects are as follows:-

### Handeni Integrated Agroforestry Project (HIAP) in Tanga region

This deals with production of different fruits trees like jack fruits, pineapples, avocados, peaches, kei apple, citrus, mangoes, sour sop and apples. The main purpose of the project is resource saving, land management practices and planning, implemented and sustained by the villagers are increasingly adopted.

### Soil erosion control Agriculture Programme (SECAP) found in Tanga region

The purpose is to control soil erosion through planting of different fruits and forestry trees like *Leuceana*, mangoes, citrus, etc.

### Agroforestry Project in Tabora region

In Tabora region the Agroforestry project deals with the production of cereal crops and at the same time planting of multipurpose trees such as *Leucaena spp* and also used as livestock feeds.

**Rukwa Development Project at Rukwa region**

This project deals with planting of forestry and fruit trees.

**Hima Project at Mwanza region**

This project deals with planting of different forestry trees such as *Eucalyptus spp*, Christmas trees, *Leucaena*, etc. in dry areas to enhance the distribution of rainfall and to increase soil fertility.

**Mufindi Project at Iringa region**

The project deals with planting of forestry trees such as cypress. These trees are very useful, particularly for pulp and paper making.

## ORGANIZATION

The main activities which are done by the Ministry of Agriculture and Cooperatives (MAC) is to strengthen the linkage between Research and Extension Services. Through this role the MAC have various extension staff who work in different Agroforestry projects. My work as the Subject Matter Specialist (SMS) of the MAC is to coordinate and disseminate new technology to the extension staff working in the project. The organisation chart is as shown in appendix 1.

## TRAINING COURSES ON SOCIAL FORESTRY

There are two Institutes under the Ministry of Natural Resources and Tourism which offers training courses in forestry. These are the Olmotonyi Forestry Institute in Arusha and Beekeeping Institute in Tabora. Other institutes include those managed by MAC like the Tengeru Horticultural Institute in Arusha, which provides training in fruit trees. However, due to lack of government funds most of the Institutes are operating under capacity.

## CONSTRAINTS/PROBLEMS HINDERING THE PROMOTION OF SOCIAL FORESTRY

1. High population growth rate and the immigration of livestock keepers causing destruction to the existing forestry resources through such activities as expanded farming and settlement with consequences of changes in watershed and rainfall patterns.
2. Frequent forest fires which disturb the ecosystem sometimes the fires burn crops in the fields especially tree crops.
3. Lack of know-how for the integration of fruit crops into the existing farming systems.
4. Lack of funds to run the training institute

## RECOMMENDATION FOR SOLUTIONS

1. To educate livestock keepers and farmers to follow the appropriate technology in order to avoid destruction of forestry

2. To educate peasants on the importance of fire control in Social forestry
3. To educate farmers on the importance of Agroforestry farming systems.

## AREAS OF PARTICULAR TRAINING NEEDS

Training of peasant and farmers through seminars, campaigns and producing simple booklets/leaflets which can be easily understandable by farmers and peasant to create the awareness of the importance of Social forestry in the community. Further training of the field staff engaged in training farmers and peasants in new methods and approaches of maintaining and developing social forests in the community is required.

*ZIMBABWE*

*BY*

*S. MAWONOKE. ENVIRONMENTALIST- ENDA*

## GENERAL INFORMATION ON THE STATUS OF FORESTRY AND FORESTRY RESOURCES

Forests (both natural and plantations) and woodlands in Zimbabwe cover about 65% of the total land area of the country (39 million ha). Most of the forest cover lies over the gazetted state forests, commercial farming areas and the Eastern Highlands of the country. About 12% is classified as bush land. The vegetation cover in the country is estimated as shown in table 1, below:-

Table 1: Land and Vegetation cover estimated for Zimbabwe

| Cover class | Area (ha) | % Area |
|---|---|---|
| Natural forest | 11,554 | 0.03 |
| Plantation | 155,853 | 0.4 |
| Woodland | 20,797,405 | 53.2 |
| Bushland | 4,974,130 | 12.72 |
| Wooded grassland | 1,204,762 | 3.08 |
| Grassland | 689,208 | 1.76 |
| Cultivation | 10,738,077 | 27.47 |
| Rock outcrop | 78,481 | 0.2 |
| Water bodies | 300,900 | 0.77 |
| Settlements | 139,205 | 0.36 |
| Total | 39,089, 575 | 100 |

### Plantation forests and their production potential

Zimbabwe has a well established plantation forest resource base covering 155,853 ha. About 93% of the plantations are in the Eastern Highlands. The major roundwood producers in the country are vertically integrated to include the manufacturing and production of doors, blockboards, veneer, plywood and poles. Pine species *(P. patula, P. elliotii and P. kesiya)* are the widely grown species to meet the country's demand for saw logs and pulp.

Eucalyptus species, mainly *E. grandis* and *E. cloeziana* are grown for pole production (electricity, telephone and fencing and these take 16% of the plantation land use. The area under wattle *(Acacia mearnsii)* is approximately 13% and it is grown for its bark. The bark is used for tannin and charcoal.

During the 1995/96 year, Zimbabwe produced 1.3 million $m^3$ of roundwood. A study to look at long term trends in the supply of timber shows that the age/class structure of the pine species is not balanced, with most trees in the over mature class (25 years or more), (Forestry Commission, Research and Development Annual Report 1995/96). The unbalanced age/structure was caused by limited markets, low milling capacity, remoteness of some growing stocks and war problems before 1980.

### Indigenous woodlands in Communal Areas and Gazetted State Forests

Indigenous woodlands which are quite extensive in the country can be divided into communal areas (CA), Resettlement Areas (RA), and Large Scale Commercial Farming Areas (LSCFA) woodlands. The CA woodlands provide rural households with firewood, timber, browse, fruits, medicine, mushroom, bark and many other non-timber products. The woodlands are severely degraded due to over-exploitation. Over-exploitation has been a result of over population, insecurity of tenure resulting from communal ownership, agricultural expansion and conflicting land use policies. The RA's were once commercial farms endowed with tree resources. Because of population into these areas, the RA woodlands are now experiencing high rates of deforestation as land is cleared for farming. The woodlands found on the LSCF's are intact as the demand for forest resources e.g. firewood, is low when compared to the CA and RA woodlands. The official deforestation rate in Zimbabwe is 70,000 ha per year or 0.5% translating into about 7 million $m^3$ of woody biomass.

The gazetted forests are divided into two categories. The first are the woodlots found on the Kalahari sand formation, containing commercially productive species such as *Pterocarpus angolensis* (mukwa) and *Baikiaea plurijuga* (red mahogany). The woodlands are also an important habitat for wildlife and have recently become vital for the tourism industry of the country. They are now protected for the biodiversity, cultural and scientific values.

Indigenous woodland description is based on the dominant species. Four dominant types of woodlands are recognised and these are *Miombo, Mopane, Teak* and *Acacia/Terminalia.*

## ENDA - ZIMBABWE'S PROGRAMMES TO PROMOTE SOCIAL FORESTRY

### Chivi/Zvishavane Indigenous Woodland Management: A Demonstration Project

The project has its origins in an 18 month anthropological and ecological study in Mototi Wars, Zvishavane. This study focussed on both physical and socio-economic research. Armed with the results of this study, Environment and Development Agency ( ENDA - ZW) embarked on the "Chivi/Zvishavane indigenous Woodland Management" Project. The broad objective was to improve the quality of life for CA peasants through assistance with and encouragement of participatory planning and management of indigenous woodland resources. This was done as part of the total ecological and economic system.

During the lifespan of the project, the existing pilot project was extended/replicated to other areas of Chivi and Zvishavane where the necessary infrastructure were established. Nursery establishment was done in keeping with participation oriented planning of woodland management for communal areas.

Training was conducted for the Government of Zimbabwe personnel, for example, Forestry Commission and Agricultural, Technical and Extension Services to new approach in Social forestry. Non-formal education materials, i.e. the Trees Book listing local and botanical names of trees was developed and published.

Achievements of the project included a decrease in depletion of sources of fuelwood and an increase in the availability of fodder for livestock. The communities also learnt, among other things, fruit tree production and using trees as windbreaks.

### Forestry Education and Training

The Forestry Commission runs both the Zimbabwe College of Forestry and the Forest industries Training Centre. However, no college in Zimbabwe offers degree training in any aspect of forestry. As forestry continues to encompass other disciplines, more niches have been created, combining forestry with other disciplines. Capacity to handle international conventions demands need to be strengthened through training and multi-skills at diploma, degree and post graduate levels.

## CONSTRAINTS/PROBLEMS HINDERING THE PROMOTION OF SOCIAL FORESTRY IN ZIMBABWE AND RECOMMENDATIONS

Deforestation is a major problem in Zimbabwe. Halting is key to sustained natural woodland productivity. Tree planting and encouragement of natural regeneration that promoted resource growth need to be researched and developed. It is recommended that an integrated approach take cognisance of other ecosystems such as soil and water. Policies and institutional reforms need to be researched and advocacy of natural woodland management promoted. Implementation frameworks still remain a major drawback because most woodlands are in communal areas, therefore there is no tenurial security.

### Resource Assessment

Previous resource assessments have focused on forest cover rather than biomass. In order to recommend effective policies on natural woodlands management and utilization, it is necessary to provide data on biological capital from natural woodlands and forests. Such information can be generated using G 15 and remote sensing technologies, and can be related to levels of exploitation on a district basis.

### Conservation of biodiversity

Conservation of forest based resources is key to the rural economy in Zimbabwe. In their quest for survival, people clear woodlands for agriculture, resulting in degraded lands, and loss of certain species. Strategies to ensure the conservation and utilization of biodiversity need to be developed and implemented.

### Tree Culture and Access to Benefits

Access to products in the communal areas is open. The recent increase in forest products trade for fruit, mushrooms and Mopane worms has altered the rights and ownership of locals. This has put pressure on the forest ecosystem and there has been an increasing attempt by locals to internalise resources, hence benefits. To become operational, these new strategies require modification of the Communal Forest Produce Act of 1987 to change rules of access and

utilisation.

### Development of forest resource - Based on Small Scale Industries

Switching to woodland management has been difficult because local ownership of forests and decision making is unclear and capacity weak. Programmes need to be developed to provide incentives for broad based management. Debt for nature swops are examples of such incentives.

### Investment in Afforestation, Reforestation and Agroforestry

Statistics suggest that the rate of deforestation in Zimbabwe lies between 75,000 ha and 100,000 ha per year. As a result of this, aggressive programmes have to be put in place. The Rural Afforestation Programme has had some success, but emphasis now needs to shift to include agroforestry and indigenous woodland management. This shift in strategy needs to be supported by strong technological capacity, a favourable tenure system, tree planting incentives and efficient monitoring and evaluation systems.

## AREAS OF PARTICULAR NEEDS

For rural communities to gain confidence and skills needed to competently carry out work in Social forestry, they need training in the following subjects:-

- Tree identification (indigenous and exotic)
- Seed collection
- Seed treatment
- Seed germination and growth
- Vegetative propagation
- Home nursery construction
- Soil fertility
- Water requirements
- Pests and diseases
- Planting and planting management

Each of these topics needs to be addressed and the trainee given first hand practical experience.

*ZIMBABWE*

*BY*

*G. MAPEZA AND C. MOYO - AGRITEX*

## INTRODUCTION

The role of the Department of Agriculture, Technical and Extension Services (AGRITEX) is to implement the agricultural policy of government through the provision of agricultural, technical and extension services, which stimulated the adoption of proven agricultural practices leading to increased, sustained and profitable production. The aim of the Agroforestry section within AGRITEX is to contribute towards poverty alleviation in the rural communities and improve environmental conservation. The Agroforestry/Social forestry programme has helped in the following:-

a) provision of food security
b) soil conservation
c) soil fertility enhancement
d) provision of live fences for crops and fruit trees
e) reclamation of degraded lands

### Present Forestry Status in Zimbabwe

Most of Zimbabwe's forestry activities are concentrated in the cooler Eastern Highlands. However, the reduction rate of areas under forests is 1.5% per year with 70,000-100,000 ha of woodland cleared for agricultural purposes.

### Current Programmes/Activities

In some districts conservation working groups have been set. Membership would include for example, the Local district council, Department of Natural Resources (DNR), Forestry Commission, Agritex and some Donor organisations, e.g. Integrated Rural Development Programme, CARE International and Ms. Agritex department chairs the meetings. The donor organisations help with resources and at times technical backup. Some projects being undertaken include gully reclamation using tree species like gums and *Leucaena spp* in the catchment areas. The catchment area is then fenced off and trees are allowed to grow without being disturbed by wild animals and cattle. Conservation competitions take place with the winning communities individuals and schools hosting a field day where all those who would have participated are invited including other farmers and schools. Promotion of fruit and indigenous trees is also being encouraged.

In Zvimba district individual farmers were supplied with seedlings of various indigenous fruit trees to grow around their homesteads or in small orchards. The species supplied include *Uapaca kirkiana, Sclerocarya birrea* (Marula), *Strychnosa spinosa* (Monkey orange), *Syzigium cordatum*, and *Ziziphus mauritania*. In Seke a 0.4 ha firewood plot which is commonly owned by a group of women was established with *Leucaena* species.

### Training

Extension officers are offered a one week training course in Agroforestry at national level all in the eight provinces. The Extension officers in turn train Extension workers at district level. Armed with this training Extension workers now go on to train farmers who then use knowledge gained to implement projects.

## CONSTRAINTS/PROBLEMS AND RECOMMENDATIONS

### Constraints/Problems

1. Land pressure; all the good land is being put under cultivation, hence projects which deal with forestry are put on marginal land.
2. Insufficient resources; most of the projects need some form of protection like fencing materials which is not usually readily available. In addition, it is not easy to get materials like seeds in some areas.
3. Some tree species being promoted are easily attacked by pests and diseases.
4. Most of the land being used is communally owned, hence the issue of responsibility comes in as no one would like to take direct responsibility, especially when problems arise.
5. Some tree species are susceptible to damage by frost and water shortage such that when planted where these prevail, some of the project activities tend to fail.

### Recommendations

1. Use of participatory methods in project identification, implementation, monitoring and evaluation. This will help to ensure that communities become part of the projects, hence they become sustainable and when successful other communities join in.
2. Look for tree species which have a multipurpose function, grow fast, relatively pest and disease resistant and are suitable to the areas which one is dealing with.
3. Need for more training in Social forestry/Agroforestry especially for Extension staff.

## DIVISIONS OF AGRITEX

AGRITEX falls within the Ministry of Land, Agriculture and Water Development. Its organisational chart is as presented in Appendix I. AGRITEX has three technical Divisions, namely, Engineering, Field and Technical whose roles are as described below:-

### Engineering Division

Has three branches covering agricultural engineering components:-

*Irrigation*

Assists with planning, designing, construction and management of irrigation projects

*Engineering*

Advances agricultural engineering research, testing and development of farm machinery and other equipment through the institute of Agricultural Engineering.

*Soil and water Conservation*
Provides extension support, technical back-up and advisory services to the farming community.

Field Division

Functions in all eight provinces, each headed by a Provincial Agricultural Extension Officer. Extension advice is delivered to farmers through a network of five to eight districts per province.

Technical Division

Training of subject matter specialists and other officers is provided by five branches:-

*Agricultural Management services*
Focuses on f arm management, monitoring and evaluation and computer management.

***Animal Production***
Responsible for various animal species, including aquaculture.

***Crop Production***
Includes both agronomic and horticulture crops .

***Land Use Planning***
Data are collected manually as well as with remote sensing for community and land utilisation planning.

*Training*
With responsibilities in curriculum development, in-service training, and media use such as radio, video and publication.

AGRITEX OBJECTIVES

**"To implement the agricultural policy of government through the provision of Agricultural Technical and Extension Services, which stimulates the adoption of proven agricultural practices leading to increased, sustained and profitable production."**

AGRITEX SERVICES

*Extension*
Advise to farmers and other target groups

*Technical Services*
Such as surveying and designing conservation layouts and Irrigation Schemes

*Regulatory Services*

Such as services required by the watercourt in assessing the water requirements of a crop, or erosion control, stream bank cultivation, subdivision reports or drought relief.

The implementation of sponsored development projects in all AGRITEX divisions is increasing.

*Appendix 1*

## *Agritex Organisational Chart*