Intensified Social Forestry Project

in Semi-arid Areas

Project Document

December 2003

Ministry of Environment, Natural Resources and Wildlife
of the Republic of Kenya

Japan International Cooperation Agency (JICA)

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Annexes

Abbreviation

AD: Assistant Director
ASALs: Arid and Semi-Arid Lands
CCF: Chief Conservator of Forests
CD: Centre Director
DCCF: Deputy Chief Conservator of Forests
DFO: District Forest Office
DFO: District Forest Officer
DFEO: District Forest Extension Officer
DRSRS Department of Resource Surveys and Remote Sensing
FD: Forest Department
FIPU: Forest Inspection and Protection Unit
GDP: Gross Domestic Product
GOK: Government of Kenya
GOJ: Government of JapanICIPE International Centre for Insect Physiology and Ecology
ICRAF World Agroforestry Centre
INRMU Integrated Natural Resources Management in Ukambani
IUCN International Union for Conservation of Nature
JICA: Japan International Cooperation Agency
KARI: Kenya Agriculture Research Institute
KEFRI: Kenya Forestry Research Institute
KFMP: Kenya Forestry Master Plan 1995 - 2020
Kshs: Kenya Shillings
KWS Kenya Wildlife Service
MIS: Management Information System
MENR: Ministry of Environment and Natural Resources
MENRW: Ministry of Environment, Natural Resources and Wildlife
NGOs: Non-Governmental Organizations
NPC: National Programme CoordinatorNWFPs: Non-Wood Forest Products
ODA: Official Development Assistance
PFO: Provincial Forest Office
PFO: Provincial Forest Officer
PLA: Participatory Learning and Action
RAES: Rural Afforestation and Extension Scheme
R/D: Record of Discussions
SDCCF: Senior Deputy Chief Conservator of Forests

SFTP:	Social Forestry Training Project
SOFEM:	Social Forestry Extension Model Development Project
TOR:	Terms of Reference
TBP	Tree Biotechnology Project

Map for the Project Target Areas

(Location Map for Kitui, Mbeere and Tharaka Districts as Implementation Areas of the Project Activities at the Field Level)

Ex-ante Evaluation Document

Name of the Project: Intensified Social Forestry Project in Semi-arid Areas	
Country: Republic of Kenya	**Target area:** Semi-arid areas of Kitui, Mbeere and Tharaka Districts
Project duration: 2nd March 2004 – 1st March 2009 (tentative)	

I. Background

Kenya has a wide diversity of forest cover types. The closed canopy forest cover types include the coastal forests, dry forests, montane forests and the western rain forest all totaling 1.4 million ha or 1.7% of Kenya's land area. Outside this category of closed forests, there are numerous woodlands, bushlands and wooded grasslands totaling 37,600,000 ha which primarily occur in the arid and semiarid areas (ASALs) of Kenya.

ASALs cover about 80% of the total land surface and are home for about 25% of the human population. The numerous woodlands, bushlands and wooded grasslands, have varying potentials in terms of timber and non-wood wood tree products. These forest formations are at different states of conservation depending on land tenure, management interventions and population pressure and are progressively being degraded and reduced in coverage. Under the prevailing low technology production systems, coupled with the unreliable rainfall regimes, the ASALs are characterised with poor agricultural productivity and high incidences of poverty. The threat to the livelihoods of the inhabitants of the ASALs is thus real which calls for practical interventions so as to improve on the livelihood conditions of the people in these areas. Tree-based production systems have more resilience to the vagaries of weather and in conditions of improved technological inputs hold a lot of promise in improving the productivity of the ASALs. If tapped, the semi arid lands have the potential to produce wood biomass for the wood based industries, create employment and wealth and indirectly contribute to conservation of the closed canopy forests.

The involvement of Government of Japan (GOJ) in the forestry sector dates back to the middle 1980's. The initial assistance was through the Social Forestry Training Project (SFTP), which was implemented from 1985 to 1997. SFTP's main focus was on technology development on tree nursery establishment and tree planting in the semi-arid areas and to provide training in social forestry. The Social Forestry Extension Model Development Project (SOFEM) followed SFTP and was implemented for five years ending November 2002. The main output of SOFEM was the development of a model through the establishment of farm forests by the local residents. During the terminal evaluation in 2002, the review mission recommended the necessity to give further support to the extension component so that more impact could be created in the development of farm forestry in the semi-arid areas.

In 1994, the Ministry of Environment and Natural Resources of the Government of Kenya (GOK) completed preparation of the Kenya Forestry Master Plan 1995 – 2020 (KFMP). KFMP as well as the revised draft Kenya Forestry Development Policy identify farm forestry, which is one of the social forestry as an important practice of forestry development in Kenya. However, KFMP envisioned farm forestry as a practice viable in the high and medium potential areas, projects like SOFEM, INRMU and the Tree biotechnology project have clearly demonstrated the viability of farm forestry in the drylands. In addition, the Economic Recovery Strategy for Wealth and Employment Creation (2003 - 2007), which is the current national development plan, identifies the development of the ASALs as a key area for accelerated development to offset pressure from state forests located in high and medium rainfall areas.

In this context, Government of Kenya (GOK) requested a technical cooperation for the sector, and in response to the request, JICA accepted the implementation of the project titled "Intensified Social Forestry Project in Semi-arid Areas" (hereinafter referred to as "the Project") in accordance with the results of discussions with the authorities concerned of GOK.

II. Agencies involved in project implementation

1. Ministry of Environment, Natural Resources and Wildlife will take overall responsibility for project administration and implementation.
2. Forest Department (FD) will be the lead managerial and technical implementation agency.
3. Kenya Forestry Research Institute (KEFRI) will be the collaborating implementation agency.

III. Brief description of project design

1. Objectives

1.1 Project purpose expected to be achieved by the end of the Project:
Individual farmers, farmer groups and other stakeholders intensify social forestry practices in semi-arid areas.

1.2 Overall goal expected to be achieved in the long term:
Living standards of the rural people of semi-arid areas are improved while enhancing sustainable environmental conservation.

2. Outputs and activities

2.1 Institutional and technical capacities for social forestry extension in FD are strengthened at headquarters level.

① Assist institutional strengthening in FD.
② Carry out baseline survey for situation analysis.
③ Prepare practical guidelines for planning, implementation, monitoring and evaluation.
④ Conduct training for FD staff.
⑤ Monitor extent of institutional and technical strengthening.

2.2 Social forestry extension activities among individual farmers and farmer groups are promoted in Kitui, Mbeere and Tharaka districts.

① Carry out baseline survey for situation analysis.
② Improve extension staff' activities.
③ Facilitate planning, implementation and evaluation of social forestry and related activities with individual farmers and farmer group's initiatives.
④ Facilitate farmer to farmer extension.
⑤ Facilitate network among farmer groups.
⑥ Monitor extent of the promotion of social forestry extension activities.

2.3 Farmers and other stakeholders obtain enough practical knowledge and techniques in Kitui, Mbeere and Tharaka districts.

① Carry out baseline survey for situation analysis.
② Develop farmer friendly techniques.
③ Identify useful local forestry related knowledge.
④ Develop technical manuals.
⑤ Provide technical assistance for diverse needs of individual farmers, farmer groups and other stakeholders.
⑥ Maintain and improve Tiva demonstration plot.
⑦ Identify and assess practical field demonstration sites and needs for promotion.
⑧ Undertake cross visits among individual farmers and farmer groups.
⑨ Organize open days of project activities and demonstration plot for farmers and other stakeholders.
⑩ Monitor the extent of adoption of practical knowledge and techniques.

2.4 Information on social forestry extension and related issues is shared among the stakeholders in semi-arid areas.

① Carry out baseline survey for situation analysis.
② Diversify methods for information sharing.
③ Hold workshops and seminars.
④ Identify potential marketing incentives for social forestry products and services.
⑤ Monitor extent of information sharing.

3. Planned inputs

3.1 Japanese inputs:

- Long term Expert: 3 (Chief Advisor / Forest Policy, Coordinator / Monitoring and Evaluation, Social Forestry Extension)
- Short term Expert: Short-term experts will be dispatched upon the necessity.
- Training of Kenyan Project Personnel in Japan and/or third country (1 to 2 counterpart(s) will be provided every year.).
- Machinery, Equipment and Materials.
- Infrastructure.
- Supplementary budget for local expenditure.

3.2 Kenyan inputs:

- Main Personnel: Project Director, Project Co-Director, Project Manager, Project Co-Manager, Assistant Project Manager – Extension, Field Manager in Kitui, Mbeere and Tharaka districts
- Land and Facilities: land and Office facilities in FD headquarters, and Kitui, Mbeere and Tharaka districts, Training facilities in KEFRI headquarters and Kitui Centre, demonstration plot in Tiva Pilot Forest in Kitui district, FD and KEFRI nursery facilities in Kitui,, Mbeere and Tharaka districts .
- Administration and Operational Costs (Counterpart Budget).

4. Organizational Structure

Forest Department, which will play an important role in extension, will be the lead managerial and technical implementation agency for the Project. The Chief Conservator of the Forests (CCF) of FD will manage and coordinate all activities of the Project, as Project Director. The Project Coordinator of FD will conduct the daily management and coordination of the activities, as Project Manager. District Forest Officers in the Kitui, Mbeere and Tharaka Districts of FD will conduct management and coordination of the field activities, as Field Managers.

Kenya Forestry Research Institute, which will support the activities in terms of dissemination of research findings and technical development, will be the collaborating implementation agency for the Project. Japan International Cooperation Agency will take responsibility for the administration and implementation of the Project and will be the managerial and technical implementation agency for the Project in Japanese side.

For the effective and successful implementation of the Project, a joint steering committee will be established to make decisions relevant to the Project.

IV. Risks (Important assumptions) in achieving the Project Purpose

1 Important Assumption for the achievement of the Overall Goal

- No drastic price reduction in social forestry products occur.

2. Important Assumptions for the achievement of the Project Purpose

- Kenyan governmental forestry development policy and plans remain consistently positive.
- No catastrophic climatic condition occur.

3. Important Assumptions for the achievement of Outputs

- Road condition in Kitui, Mbeere and Tharaka districts remains motorable.
- Trained staff remains available.
- No catastrophic climatic condition occurs.

V. ***Ex-ante* assessment**

It is judged that the implementation of the Project is highly relevant for four reasons: 1) in accordance with the needs of Kenyan government, in terms of the Economic Recovery Strategy for

Wealth and Employment Creation (2003-2007) as national policy and KFMP as national forest policy; 2) consistency with Japanese ODA policies, including JICA's Country Assistance Plan for Kenya; 3) meeting the needs of beneficiaries by the participatory formulation of plans through workshops; and 4) eligibility as ODA funded project because the Project can be regarded as support for public good.

The Project is consistently logical because items pointed out in the Objectives Analysis are almost comprehensively reflected in PDM especially in setting the Activities, Outputs and the Important Assumptions toward the Project Purpose. However, since numerical values in the Objectively Verifiable Indicators have not been set yet, the relevance of the level of objective setting has not been verified. It is expected that benefits for farmers and FD extension staff especially in Kitui, Mbeere and Tharaka districts will be sufficiently ensured by the implementation of the Project.

Inputs are controlled as much as possible through procurement within the local area concerned. For example, in the extension of FD offices, minimum necessary space will be secured and a local constructor will build the offices using local materials. With regard to baseline survey and other surveys, reduction in personnel expenditure will be achieved by utilizing local NGOs and consultants, when compared to implementation by direct project staff.

The Overall Goal, or increasing the household income, can be attained as a result of the achievement of the Project Purpose through increase in production of saleable timber and seedlings. However, regarding the Objectively Verifiable Indicator for the Overall Goal, there remains a room for discussion whether the Project will result in the increase in farmers' income in all semi-arid areas. On the other hands, various positive impacts are expected, including 1) institutional impacts resulting from the contribution to the formulation of bills, policies, plans and guidelines such as the action plan on the basis of the Economic Recovery Strategy, 2) social and cultural impacts through extension of social forestry among farmers, 3) technical impacts resulting from farmer acquisition of practical and applicable techniques, and 4) economic impacts through the achievement of the Overall Goal, or increase in income. Since it is expected to enhance environmental conservation, there will be, in principle, no negative impacts on natural environment.

It cannot be said that at present sustainability is highly ensured. However, sustainability will be enhanced, if the following three factors will be achieved: 1) in light of institutional capacity, strengthening of institutional and technical capacities of FD through various activities, 2) in light of the financial situation, development of project activities during the remaining two years as the activities can be handed over to FD after the completion of the Project, and 3) in light of social, environmental and technical acceptance, facilitation of social forestry extension activities on farmers' initiative.

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VII. Plans for future evaluation

1. Main Indicators to be used for evaluating the achievement of the Project Purpose

- By Mar. 2009, xx % of individual farmers and farmer groups, who did not implement social forestry activities in 2004 in Kitui, Mbeere and Tharaka districts, newly implement them.
- By Mar. 2009, number of existing planted trees is increased by xx % in Kitui, Mbeere and Tharaka districts compared to 2004.
- By Mar. 2009, number of seedlings produced is increased by xx % in Kitui, Mbeere and Tharaka districts compared to 2004.

  (Note: xx will be determined base on the results of baseline surveys that will be implemented immediately after the Project will be launched.)

2. Evaluation Schedule

- Mid-term Evaluation (2^{nd} half of the 3^{rd} year).
- Final Evaluation (2^{nd} half of the 5^{th} year).

1 Introduction

Kenya has a wide diversity of forest cover types. The closed canopy forest cover types include the coastal forests, dry forests, montane forests and the western rain forest all totaling 1.4 million ha or 1.7% of Kenya's land area. Outside this category of closed forests, there are numerous woodlands, bushlands and wooded grasslands totaling 37,600,000 ha which primarily occur in the arid and semiarid areas (ASALs) of Kenya.

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In this context, GOK requested a technical cooperation for the sector, and in response to the request, Japan International Cooperation Agency (JICA) accepted the implementation of the project titled "Intensified Social Forestry Project (ISFP) in Semi-arid Areas" (hereinafter referred to as "the Project") in accordance with the results of discussions with the authorities concerned of GOK.

This document provides basic information regarding the Project and consists of this chapter "Introduction", chapter 2 "Background Information", chapter 3 "Problem Analysis for Intensification of Social Forestry", chapter 4 "Project Strategy and Implementation Structure", chapter 5 "Project Design", chapter 6 "Ex-ante Evaluation", chapter 7 "Monitoring and Evaluation" and Annexes. The plans, ideas, schedules or any other contents of this document are subject to change in the course of the implementation of the Project upon mutual consultation and agreement by the both parties.

2. Background Information

2.1 Socio-economic Context[1]

2.1.1 Demography

Kenya is one of countries with a fairly high population growth rate in the world only having dropped slightly in recent times. The 1999 Population and Housing Census was the sixth and enumerated 28,686,607 persons, up from 21,448,774 in 1989. The 50 years spanning 1948 to 1999 have witnessed sustained and rapid population growth that was above 3 % per annum until the 1989-1999 decade when it dropped to 2.9 %. The total fertility rate declined from 7.8 children per woman in the 1970s through 6.6 in the 1980s to 5.0 in the 1990s, and is anticipated to fall further to 3.6 by 2010 and to 3.2 by 2020. On the other hand, both child and adult mortality that fell during the 1970s and the 1980s begun to rise in the 1990s largely due to the HIV/AIDS epidemic and general economic decline.

2.1.2 Economic Growth

The macro-economic performance of Kenya economy since independence is best understood in the context of the external shocks and internal challenges that the economy has had to adjust to. Four phases are clearly identifiable: a rapid growth phase over 1964-73; an era of external shocks over 1974-79 dominated by oil price shocks and a coffee boom; a period of stabilization and structural adjustment in the 1980s and an era of liberalization and declining donor inflows from 1990 to date. The overall effect of these changing circumstances has been a declining trend in economic performance as shown in Table 2.1.

Table 2.1. Average Annual Growth Rates of Real GDP (%)

Sector	1964-73	1974-79	1980-89	1990-95	1996-2000
Agriculture	4.6	3.9	3.3	0.4	1.1
Manufacturing	9.1	10.0	4.8	3.0	1.3
Finance, Real Estate	9.8	12.4	6.7	6.6	3.6
Government Services	16.9	6.5	4.9	2.6	1.0
Household	3.5	14.5	10.0	10.3	5.6
Others	-	8.8	7.7	3.6	2.3
Whole Country	6.6	5.2	4.1	2.5	2.0

Source: Republic of Kenya, *National development Plan 2002-2008*

In the 1990s and even after year 2000, the trend of economic decline continued. However, the economy

[1] Contents of this section are based on Republic of Kenya, *National development Plan 2002-2008* and Central

recorded a slight growth of 1.1 % in 2002 compared to 1.2 % in 2001. This slow growth is mainly attributed to the effects of poor infrastructure, low domestic credit, low output and prices of major agricultural exports, low investor confidence and the uncertainties regarding national politics particularly the 2002 general election. On the other hand, reduced tariffs on raw materials and other intermediate inputs, well-trained human resource, stable macro-economic environment and moderate weather buoyed the economy.

2.1.3 Export and Import

Kenya's exports have fluctuated between 25 and 32 % of the GDP since independence. A few agricultural crops (especially coffee, tea and horticultural products) dominated exports. In terms of imports, crude petroleum, industrial machinery and industrial inputs such as iron and steel continue to be dominant, and this signifies the importance of international price movements on the domestic economy.

Major pointers of international trades and balance of payment in 2002 show apparent divergence from the previous years. Imports fell significantly while exports grew substantially after a sluggish performance in the recent years. As a consequence, the trade deficit narrowed for the first time since 1996. Imports declined primarily due to lower import quantities of crude materials (inedible), mineral fuels, machinery and transport equipment and food and live animals. The weaker growth in imports mirrored the low domestic demand due to reduced economic activities during the year. Strong growths in horticulture and re-exports almost exclusively contributed to the substantial increase in exports.

These developments caused the current account balance to recover from a deficit of Kshs. 43,795 million in 2001 to surplus of Kshs. 4,727 million in 2002, primarily reflecting the narrowing of the trade deficit by Kshs. 54,091 million. The capital and financial account balance fell from a surplus of Kshs. 35,412 million in 2001 to a deficit Kshs. 4,544 million in 2002. The deceleration in the financial inflows was mainly due to reduced private short-term capital inflows and official capital inflows.

2.1.4 Employment

The number of persons employed outside small-scale agriculture and pastoralists activities rose by 7.6 % from 5,086.4 to 6,851.6 thousand persons. Employment in the modern sector expanded by 1.3 % whereas non-wage employment in the form of self employed and unpaid family workers stood at 65.5 thousand persons and accounted for 3.7 % of the total modern sector employment in 2002. Growth in the private sector employment went up form 1.6 % in 2001 to 2.2 % in the same year. The growth arose mainly from the manufacturing activities, which expanded at high rate of 6.3 % compared with 0.1 %

Bureau of Statistics Ministry of Planning and National Development, *Economic Survey 2003*

between 2001 and 2002. Expansion in this sector's employment was mainly in the community, social and personal services, largely in the teaching service in the course of 2002.

Employment in the forestry sector has similarly been on the decline due to policy failure, over-reliance on traditional sources for timber (gazetted forests) and shrinking budgetary provisions for forestry sector development.

2.2 Description of the Forestry Sector

2.2.1 Forest Area

In Kenya, the total forest area under protection currently stands at 1,400,000[2] hectares, about 1.7 % of the total land area (see Fig. 2.1.), which falls mainly in the category of state forests. Forests, including state forests, generate revenue and employment for the economy and provide a wide range of goods, and ecological services. They provide 95% of rural energy and closed canopy forests sustain major water catchments areas. Closed canopy forests found mainly in game reserves, parks and sanctuaries comprise a large percentage of the country's biodiversity. Forests also form habitats for wildlife in addition to supporting rural communities through provision of wood, fuelwood and

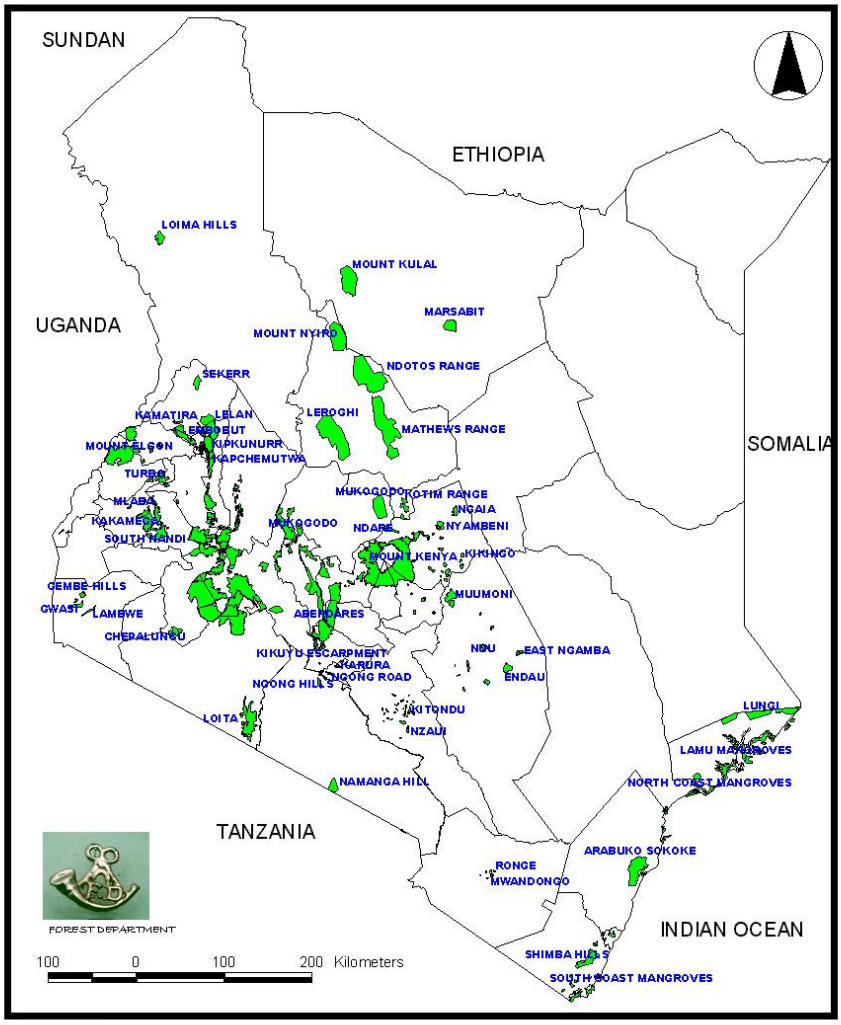


Fig. 2.1. Location Map For Gazetted Forest Areas in

[2] Kenya Forestry MasterPlai

non-wood products. Forest products and services contribute an estimated KShs 7.0 billion to the economy annually[3]. Outside the state forests, there are numerous woodlands, bushlands and wooded grasslands, which primarily exist in the arid and semi-arid areas (ASALs) of the country amounting to about 36.7 million hectares. These forest formations are undeveloped and threatened by poor agricultural practices, unsustainable exploitation, poor animal husbandry and cultural practices. Development of the ASALs is further compounded by inadequate planning and management data.

ASALs cover about 80 % of the total land surface and are home for about 25 % of the human population[4]. The population of Kenya is 30 million as per the 1999 national census. Under the prevailing low technology production systems, coupled with the unreliable rainfall regimes, the ASALs are characterized with low agricultural productivity and high incidences of poverty, which averages about 65 %. The threat to the livelihoods of the inhabitants of the ASALs is thus real which calls for practical interventions so as to improve the livelihood conditions of the people in these areas. However, the ASALs have a high untapped potential which under conditions of improved technologies can turn into productive lands.

2.2.2 Social and Farm Forestry

Social forestry could be looked at as the practice of forestry outside government forests. In its wider application, social forestry encompasses farm forestry, community forestry, as well as urban forestry. The term farm forestry implies the practice of forestry in a farming situation. Farm forestry is one of the social forestry practice that is an important aspect of forestry development in Kenya. Farm forestry activities may include:

- seedling production by farmers and farmer groups;
- tree planting within the farmlands in configurations, such as;
  - woodlots,
  - boundary planting,
  - homestead planting,
  - windbreaks,
  - isolated trees within farms or in pasturelands, and
  - trees planted on degraded farmland areas for rehabilitation, and also;
- production of non-wood forest products (NWFPs).
- soil fertility management using tree biomass

Social and farm forestry are expected to play an important role of increasing the growing stock of trees

[3] MoENRW, (2003) *Strategic Plan for 2003-2008*
[4] GOK, (2003) *Economic Recovery Strategy for Wealth and Employment Creation 2003-2007*

on farms and encouraging participatory forest management. Moreover, encouraging the farmers to grow more trees contributes to a reduction in the supply-and demand deficit of wood and to eases the pressure on forestry resources from gazetted forest areas by expanding forest cover on private lands especially ASALs.

2.2.3 Organizations in Administration and Research

Planning and implementation of forest policy have been undertaken by the Ministry of Environment, Natural Resources and Wildlife (MoENRW), and the Forest Department (FD), an internal department of the Ministry. MoENRW was established in 2003. Its fundamental goal is to protect, conserve and manage the environment and natural resources through sustainable exploitation for socio-economic development aimed at eradication of poverty, improving living standards, and ensuring that a clean environment is sustained now and in the future. The Ministry is composed of four (4) departments and three (3) parastatal bodies as shown in Fig. 2.2, namely:

- General Administration and Planning;
- Forest Department (FD);
- Mines and Geological Department (M&G);
- Department of Resource Survey and Remote Sensing (DRSRS);
- National Environment Management Authority (NEMA);
- Kenya Forestry Research Institute (KEFRI); and
- Kenya Wildlife Services (KWS).

The mandate of FD is to contribute to the growth of the natural resource sector by enhancing development, conservation and management of all forest resource base in the country. This entails ensuring an increasing supply of forestry products and services for meeting the needs of the present and future generations. The functions of FD are:

- To manage the natural forests and water catchments areas;
- To develop and manage industrial forest plantations;
- To promote farm forestry;
- To protect forests;
- To conserve and manage dry-land forests in ASALs; and
- Administration of forest policy and legislation.

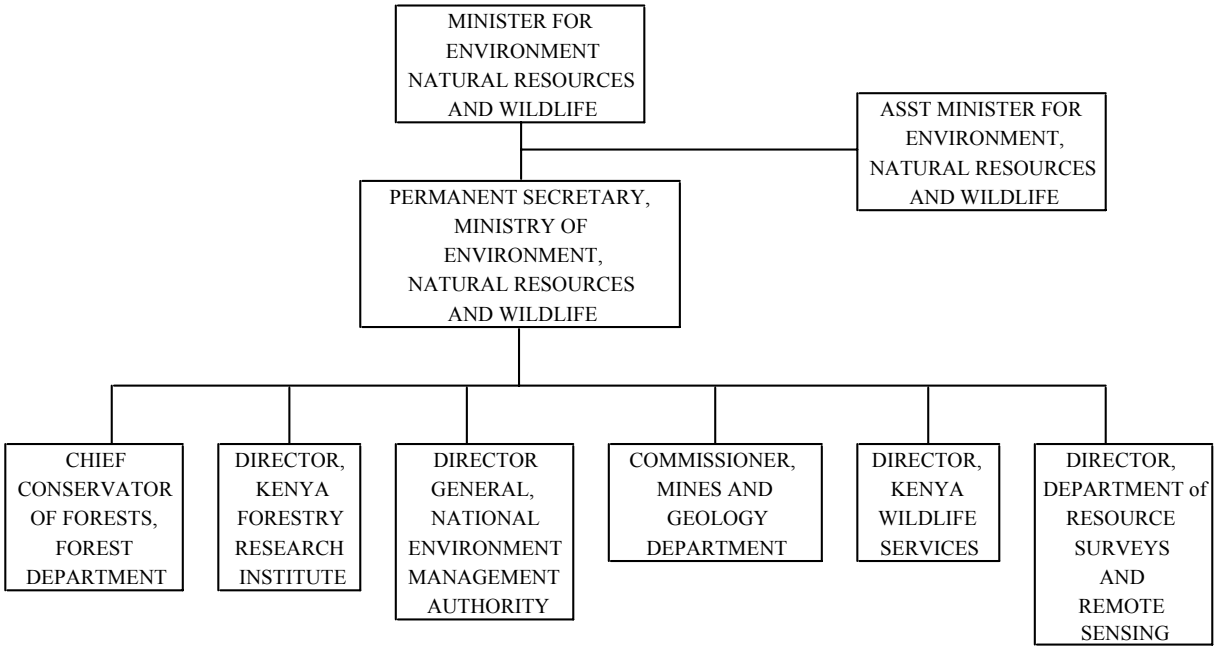


Fig. 2.2. Organization Chart for the Ministry of Environment, Natural Resources and Wildlife

shown in Annex 6. The staff strength is about 6,700 people.

KEFRI, which is a semi autonomous government agency that is currently under the Ministry, also has a role in policy planning and implementation in terms of forestry research. It was established in 1986 under the Science and Technology Act, while becoming independent from the Kenya Agriculture Research Institute (KARI). KEFRI has benefited from the Japanese technical cooperation and Grant Aid since 1985. The mission of KEFRI is to undertake user-oriented research in forestry and allied natural resources to enhance the social-economic welfare of Kenyans and the functions are:

- To conduct research in forestry;
- To disseminate research findings;
- To collect tree seed for on-farm planting and afforestation programmes; and,
- To cooperate with other similar research bodies within and outside Kenya.

KEFRI is composed of two departments: Research and Development, Finance and Administration. It has five (5) research and development Programmes as shown in Fig. 2.4, namely:

- Farm Forestry;
- Natural Forests;
- Forest Plantation; and
- Dryland Forestry, and

- Service Programme and six (6) regional centres at Kitui, Maseno, Muguga, Karura, Gede and Londiani. The Headquarters and the Kitui Regional Centre undertake training in social forestry[5].

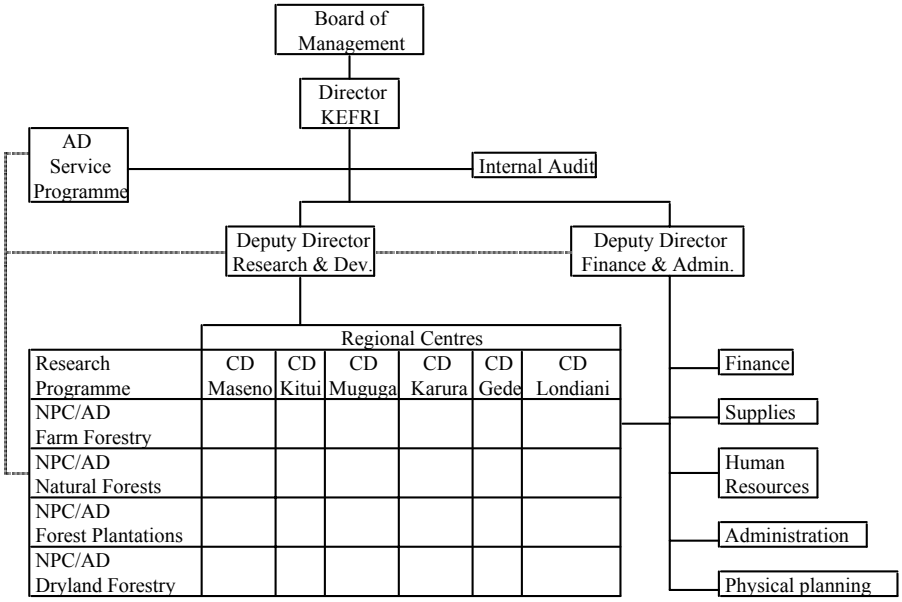


Fig.2.4. KEFRI Organization Structure

2.3 Forestry Sector Strategy and Role of the Sector in National Strategy

2.3.1 National Strategy

Up to the year 2002, the principal national plan of GOK had been the Five-year National Development Plan. In June 2003, the Government issued the Economic Recovery Strategy for Wealth and Employment Creation 2003-2007, which is considered as the current principal national plan of Kenya. The plan aims at empowering Kenyans in their efforts to build a modern and prosperous nation. The highlights of the plan are:

- Achievement of the desired economic growth;
- Strengthening of institutions of governance and the rule of law;
- Improvement of service delivery by the public sector;
- Modernization of the country's physical infrastructure;
- Reviving of the policies and their implementation in the productive sectors including forestry;
- Tapping of the potential of ASALs, and so on.

It is expected that sectoral plans will reflect the national goals.

2.3.2 Forest Sector Strategy

Forest sector development is currently guided by the Kenya Forestry Master Plan. In 1994, the Ministry of Environment and Natural Resources of the Kenya Government completed preparation of KFMP. The

[5] KEFRI (1999) *Strategic Plan 1999-2004*

Master Plan highlights ten (10) programmes namely:

- Indigenous forests;
- Dryland forestry;
- Farm forestry;
- Forest plantations;
- Forest industry;
- Reform of policy and legislation;
- Organizations and human resources;
- Research and development;
- Extension; and
- Planning, monitoring and environmental assessment.

KFMP as well as the revised Kenya Forest Development Policy identifies farm forestry, which is one of the social forestry practices, as an important area of forestry development in Kenya. In addition, the Economic Recovery Strategy for Wealth and Employment Creation 2003-2007, identifies the development of the ASALs as a key area for accelerated development to offset pressure from state forests located in high and medium rainfall areas. While the conservation and management of the indigenous forests, extension, research and planning remains areas of public intervention, farm forestry, dryland forestry, plantation forestry and forest industry development will largely be private sector driven and will require reform of forest policy and legislation. Since tree resources are the greatest endowment in the ASALs, forestry development in these areas is likely to impact positively on rural development.

The current forest legislation does not provide appropriate guidance such as the involvement of stakeholders in sustainable forest conservation and management. In view of the foregoing, the draft Forest Policy and Bill (2004) have been prepared and are at an advanced stage awaiting public debate and parliamentary approval. The main objective of the Forest Bill is to promote wider stakeholder participation in forest management and conservation while the Policy recognises the role of all types of forests in the provision of forest/tree goods and services. To this end, a secretariat to oversee structural reforms in FD has already been created. In addition, FD has prepared a Strategic Plan (2003 – 2008) to guide the sector.

On the other hand, in 1999 KEFRI prepared the Strategic Plan for 1999-2004, which charts research agenda. KEFRI is also in the process of revising its Strategic Plan for the period 2004 – 2009. KEFRI's strategic plan highlights farm forestry, natural forests, dryland forestry and plantation forestry.

2.4 Natural and Socio-economic Condition in Kitui, Mberre and Tharaka Districts

In this section, brief explanation on the natural and socio-economic conditions in Kitui, Mbeere and Tharaka Districts as the target areas of project at the field level is provided.

2.4.1 Kitui District

(1) Administrative Boundaries

Kitui District is one of the 13 districts of Eastern Province. It is located in the southern part of Kenya (see Map for the Project Target Areas shown before the Ex-ante Evaluation Document). It borders Machakos and Makueni Districts to the west, Mwingi District to the north, Tana river District to the east and Taita Tavata District to the south. The district is located between Longitudes 37° 45′ , and 39° 0′ east and latitudes 0° 3.7′ and 3° 0′ south. The district covers an area of approximately 20,402 km^2 including 6290.3 km^2 in Ikutha division occupied by the uninhabited Tsavo National Park. The administrative units by division are shown in Table 2.2 (see Annex 6).

From Table 2.1 it can be observed that Ikutha Division is the largest while Matinyani and Mutonguni Divisions are the smallest. Central Division, which hosts the District Headquarters, has the largest number of locations and sub locations while Mutitu Division has the lowest.

Table 2.1 Administrative Units by Division and Population Density

Division	Area (km^2)	Locations	Sub-Locations	Population Density in 1999 (persons/km^2)
Central	808.6	8	30	153
Chuluni	521.5	6	16	139
Matinyani	308.6	7	19	151
Mutonguni	359.2	8	20	148
Yatta	1,175.0	6	14	35
Mutomo	803.9	4	17	57
Ikutha Including Tsavo East National Park	7,707.8 6,290.3	5	18	6
Mutitu	837.2	3	12	28
Mwitika	3,426.1	4	16	8
Mutha	4,454.1	6	25	9
Total	20,402.0	57	187	27

Source: District Commissioner's Office, Kitui, 2001 and District Planning Unit, Kitui, 2001

(2) Natural Conditions

The altitude of the district ranges between 400m and 1,800m above sea level. The Central pan of the district is characterised by hilly ridges separated by wide, low lying areas and has slightly lower elevation of between 600m and 900m above sea level.

To the eastern side of the district, the main relief feature is the Yatta Plateau, which stretches from the north to the south between rivers Athi and Tana. The plateau is almost plain with wide shallow spaced valleys. The highest areas in the district are Kitui Central Mutitu Hills and Yatta Plateau. Due to their high altitudes, they receive more rainfall than other parts in the district and are the most productive areas.

The climate of the district is arid and semi arid with very erratic and unreliable rainfall. The annual rainfall ranges between 500-1,050mm with a 40 per cent reliability. The long rains come in April/May and short rains in November/December. The short rains are more reliable while long rains are usually unreliable. The periods falling between June to September, and January to March are usually dry.

The district experiences high temperatures throughout the year which range from 16 to 34. The hot months are between June and September and January and February. The minimum mean annual temperatures are 22 in the western parts and 28 in the eastern parts. Maximum mean annual temperatures, on the other hand, are 28 in the western parts and 32 in the eastern parts.

Due to limited rainfall received, surface water sources are very scarce. The major sources of surface water are seasonal rivers that form during the rainy seasons. River Athi is the only perennial river in the district and flows along the border with Machakos District. The district has no lake but has several dams and pans that play a significant role in providing water. Most of the dams dry up during the dry season due to the high evaporation rates of between 1,800 – 2,000mm/year. Underground water sources supplement the scarce surface water sources through drilling boreholes and shallow wells.

(3) Socio-economic Conditions

Table 2.1 also shows population density by division. Central, Matinyani and Mutonguni Divisions had the highest densities of 153, 151 and 148 persons per km^2 respectively in 1999. Ikutha, Mwitika and Mutha Divisions had the lowest population densities of 6, 8 and 9 persons per km^2 respectively. The low population densities, coupled with the vastness of the divisions, make provision of essential services such as water, health and education expensive. Land potential largely determines the population densities between the divisions. Mutonguni, central and Matinyani Divisions have high densities due to high land potentials while the low population densities in Mwitika, Mutha, Yatta and Ikutha Divisions are attributed to low land potentials. Climatic conditions also influences the settlement patterns. Mwitika, Mutha and Ikutha Divisions experience harsh climatic conditions and have very low settlement.

Kitui district being an arid and semi arid district, dry land farming is practiced. Agricultural activities are mainly subsistence in nature and highly constrained by weather conditions. However the poor households draw 77% of their incomes from agriculture while the better ones draw 29% of their incomes

from off-farm employment. The district high and medium potential areas occupy 34%. The rest of the land, 66% is of low potential and comprises mainly the eastern and southern low lands.

Among the tree resources in the district, *Tamarindus indica* (Mkwanjo) and neem tree stands out as an important crop for production of non-wood tree products and conservation. *Melia volkensii* (Mukau) is an important source of timber and fodder and provides an opportunity for farm investment. *Acacia polyacantha* and *A. sayel* are important for charcoal production. *Terminalia brownii, T prunoids* and *Dalbergia melanoxylon* are important for the wood carving industry. Research findings indicate that *Commiphora baluensis* can produce good quality timber for wood flooring and furniture. The abundantly occurring *Commiphora Africana* is a resource whose commercial use should be explored. In addition, there is great potential for *Melicia excelsa* (Mvule) as a high value timber tree. To enhance conservation of indigenous forests, bee-keeping which has proven potential due to ready market for honey should be encouraged. *Hypheane compressa* (Doum palm) plays a significant role in the basketry industry in Tharaka district. Natural stocks of doum palm have virtually been delpleted on the farmlands. *Morus alba* (Mulberry) an important fodder crop for both livestock and silkworms also has great potential in the district.The sale of farm produce and livestock, and employment are the main sources of income in the district. Other sources of income include, honey, bricks and baskets. However these vary from place to place and between seasons. In the district the purchasing of food is the main expenditure among households. This is followed by expenditure on school fees and medical expenses. Severity of food shortage remains a priority area among the local residents.

Regarding land tenure, two land ownership systems are identified as common in Kitui district. The land is either held under free hold especially in the high and medium potential areas of the district. Alternatively as is the case in the lowland, the land is not legally demarcated but the individual owners know their land areas. All neighbours through some traditional arrangement know the prescribed boundaries.

2.4.2 Mbeere District

(1) Administrative Boundaries

Mbeere District was carved out of Embu District in 1996 and is one of the districts that form Eastern Province of Kenya. It shares common borders with Embu District to the northwest, Tharaka to the north, Mwingi district to the east, Machakos district to the south and southeast and Kirinyaga district to the west (see Map for the Project Target Areas shown before the Ex-ante Evaluation Document). The district has a total area of 2092 km^2 and is divided into four administrative divisions as indicated in table 2.3 below (see Annex 6).

Table 2.3 Administrative Units by Division

Division	Area (km^2)	Locations	Sub-location
Gachoka	800.3	8	17
Mwea	514.9	3	7
Evurori	410.0	4	8
Siakago	367.3	4	9
Total	2,092.5	19	41

(2) Natural Conditions

The district slopes in a northwest to southeast direction. Its altitude ranges from around 1,200m above sea level to about 500m in the Tana River Basin. The slope is however broken by the existence of a few hills such as Kiambere, Kiang'ombe and Kianjiru, which rise above this general height. The southern part of the district is covered by the Mwea Plains.

The district has two rainy seasons falling between March and May and also between October to December. The October to December rains have more potential to support agriculture. The rainfall is however not very reliable and it ranges between 640-1100mm per year. Most parts of the district receive less than 550mm of rainfall per year.

The extensive altitudinal range of the district influence the temperature which ranges from 20℃ to 32℃. August is usually the coldest month with average monthly minimum temperature of 15℃. March is the warmest month with average monthly maximum temperature rising to 30℃.

Out of the district's total area of 2,092.5km^2, about 1,690km^2 or 81% is suitable for agricultural and livestock activities. About 95,490 hectare (56%) of the arable land is currently being cultivated. Most of the smallholdings are not being optimally utilized. This is particularly common on the upper eastern zones of the district, the Evurori and Siakago divisions, where large tracts of land are left uncleared due to the marginal nature of the land.

The district has no gazetted forests. There is however 3,771 hectare of natural forest reserves under the Mbeere County Council, and they have been entrusted to FD for management. The forests include Kiang'ombe Forest Reserve in the Evurori Division (2,104 hectare), and Kianjiru (1,004 hectare) and Kiambere (643 hectare) forest reserves both of which are in the Gachoka Division. The river valleys and hill slopes, particularly on the eastern parts of the district, are covered by dense bushes and isolated woodlands where there is little human activity. This is estimated to cover an area of 6200 hectares.

(3) Socio-economic Conditions

According to 1999 census, the district has a population of 170,953 of which 102,327 are people living in absolute poverty accounting for 60 % of the total population. Average population density is 82 persons per km^2 and relatively it of Siakago and Evurori divisions is much than other two divisions.

Among the tree resources in the district, *Tamarindus indica* (Mkwanjo), *Schlerecarya birrea, Trichillia metica (Mutwati)* and neem tree stands out as important crops for production of non-wood tree products and conservation. *Melia volkensii* (Mukau) is an important source of timber and fodder and provides an opportunity for farm investment. In addition *Ficus sycomurus* (Mukuyu) a riverine species and *Cordia sinensis* are important timber species. There is huge demand for woodfuel from the tobacco, tea and brick making industries in the region. To this end, *Acacia polyacantha* and *A. xanthophloea* are important for fuelwood/charcoal production. In addition, hybrid *Eucalyptus* species are reported to have shown impressive performance for fuelwood production. Mvule though currently un-exploited remains a high value timber species with promising potential. *Terminalia brownii and, T prunoids* and are important for the wood carving industry. Research findings indicate that *Commiphora baluensis* can produce good quality timber for wood flooring and furniture. The abundantly occurring *Commiphora Africana* is a resource whose commercial use should be explored. Among the commercial fruit trees, mangoes and avocadoes could be used for conservation. *Morus alba* (Mulberry) has a great potential in fodder production particularly for livestock and silkworms. The technology has already been developed by International Centre for Research in Insect Physiology and Ecology (ICIPE) and this has potential to support cottage industries. As an incentive for the conservation of indigenous forests, bee-keeping is an important strategy. This practice is already institutionalized in the district as market for honey is readily available.

Except the three major forested hills (Kiangombe - 2,104 hectare, Kianjiru - 1004 hectare and Kiambere - 645 hectare), that are held in trust by the Mbeere County Council, all the other land is under individual tenure with the exception of Mwea ranch that is under communal tenure. Even in places, where land adjudication is not yet completed, all households can clearly lay recognised ownership to the land that they presently occupy. In other words, land is in private ownership even when this has not been formalised through the issuance of title deeds. This type of situation is quite common in most of the settled semi arid areas of Kenya.

Agriculture employs about 80%; inclusive of the economically inactive persons of the population. Average farm size is 3.5 hectare for small-scale and 20 hectare for large scale.

2.4.3 Tharaka District

(1) Administrative Boundaries

Tharaka district was administratively created in 1999 out of the then larger Meru district and is included in Eastern Province. It covers an area of 1,569.5 km^2 and borders Meru Central District to the north, Meru North District to the north east, Mwingi District to the south east, Mbeere District to the south and Meru South District to the west (see Map for the Project Target Areas shown before the Ex-ante Evaluation Document). The administrative units by division are shown in Table 2.4 (see Annex 6).

Table 2.4 Administrative Units by Division and Population Density

Division	Area (km^2)	Locations	Sub- Locations	Population Density in 1999 (persons/ km^2)
Tharaka South	305.4	5	7	82.4
Tharaka Central	411.2	8	18	94.6
Tharaka North	852.9	7	12	43.2
Total	1,569.5	20	37	64.3

Source: District Statistics Office, Tharaka, 2001

(2) Natural Conditions

Generally Tharaka District comprises the low, hilly and sandy marginal low lands of the Former large Meru District. In most parts of the district, soils are sandy and stony. The predominant hills in Tharaka include Kijege and Ntugi both of which have a fair forest cover and are gazetted and Ikingo which is earmarked for gazettement. Poor methods of farming and soil conservation have left the earth bare and rocky while charcoal burning and overgrazing have contributed greatly to the current state of the landscape. Due to uncontrolled soil erosion, there are a lot of gullies across most of the landscape.

Numerous rivers which originate from both Mt. Kenya and Nyambene Hills transverse the district moving eastwards as tributaries of Tana River. This includes Mutonga, Thingithu, Kathita, Thanatu, Thankatha, Kithinu and Ura rivers. These are the rivers providing water for irrigation in the moderately densely populated locations of Tharaka South Division.

The district has a bimodal rainfall pattern with an annual rainfall averaging between 500-800rrm per year. Crop failure is frequently experienced and this explains why less hectarage are put under crops. March-May is the short rains season while October-December is the period when long rains are received. Generally, rains in Tharaka are fairly erratic. Temperatures range between 29-36 though at certain periods they can go up to 40.

Vegetation in Tharaka is predominantly dry acacia woodland with isolated closed canopy. The main types of woody vegetation are woodland, bush land, and river-line forests. Woodlands are formed by tree vegetation 5 – 20 m high, with Combretum, Terminalia, and Acacia species as predominant. Bush lands are formed of taller tree species with Acacia Cemmiphora and Terminalia as predominant species. River-line forests are ecologically diverse eco-zones of the savannah ecosystem, forming narrow strips in the alluvial flood plains.

(3) Socio-economic Conditions

Tharaka District had a population of 100,992 people during the 1999 Population and Housing Census. This is expected to grow at the rate of 3 per cent. Pockets of high population density are those predominantly found in the higher potential areas of Tharaka Central and South Divisions. According to Table 2.4, Tharaka Central Division has the highest population density and followed by Tharaka South Division and Tharaka north Division. Relatively high population pockets are also found in the divisional headquarters of Chiakariga, Gatunga, Marimanti and Tunyai. The latter boasts of a well-developed and successful irrigation scheme. The least populated locations are those bordering Tana River and Mwingi Districts and these are also the most arid, sometimes going up to six consecutive seasons without harvest..

There are about 25,000 farm holdings in the district with an average size of 4.6 hectares. The main categories of land ownership include freehold, trust lands and public lands. In the trust lands there is extensive practice of shifting cultivation that contributes to environmental degradation.

About 40% of the district population comprise of subsistence farmers. The main food crops grown include millet, sorghum, green grams, cow peas, pigeon peas, maize, beans and cassava. Cash crop farming involves growing of cotton and tobacco. The total acreage for food crop production is 32,161 hectares while that under cash crops is 11,170 hectares.
Among the tree resources in the district, *Tamarindus indica* (Mkwanjo), *Schlerecarya birrea, Trichillia emetica (Mutwati)* and neem tree stands out as important crops for production of non-wood tree products and conservation. *Melia volkensii* (Mukau) is an important source of timber and fodder and provides an opportunity for farm investment. In addition *Ficus sycomurus* (Mukuyu) a riverine species and *Cordia sinensis* are important timber species. There is huge demand for woodfuel from the tobacco, tea and brick making industries in the region. To this end, *Acacia polyacantha, Senna siamea* and *A. xanthophloea* are important for fuelwood/charcoal production. In addition, hybrid *Eucalyptus* species are reported to have shown impressive performance for fuelwood production. Mvule though currently un-exploited remains a high value timber species with promising potential. *Terminalia brownii and, T prunoids* and are important for the wood carving industry. Research findings indicate that *Commiphora baluensis* can produce good quality timber for wood flooring and furniture. The abundantly occurring

Commiphora Africana is a resource whose commercial use should be explored. Among the commercial fruit trees, mangoes and avocadoes could be used for conservation.*Morus alba* (Mulberry) has a great potential in fodder production particularly for livestock and silkworms. The technology has already been developed by ICIPE and this has potential to support cottage industries. As an incentive for the conservation of indigenous forests, bee-keeping is an important strategy. This practice is already institutionalized in the district as market for honey is readily available. There is a well established busketry industry in the whole district which has put a lot of pressure on *Hyphen compressa* (Dhoum palm) which is now only readily available in the game park.

Iron ore mining is practiced next to Ntugi forest while sand mining and quarrying is carried out in the Northern division providing employment particularly for the youth.

2.5 On-going and Past Projects in the Forestry Sector

2.5.1 Projects being currently funded by GOK (FY 2003/04)

Forest Department

GOK has in place a few small scale projects under the development expenditure. These are,

1. Aberdares Forest Ecosystem Conservation Project
2. Mt. Elgon forest conservation and development project. This is part of the sustainability commitment since the expiry of the Netherlands/International Union for Nature Conservation (IUCN) Project in 2001
3. Arabuko Sokoke forest conservation project in Kilifi district, Coast province. This is counterpart budget for the GOK/European Union Community participation project/Biodiversity conservation project.
4. Dryland forest resource conservation and management project operational in sixteen (16) ASAL districts.
5. Development and promotion of demonstration plots in selected districts eleven (11)
6. Rehabilitation of degraded sites in Turkana district

2.5.2 Japanese Cooperation

The history of the involvement of GOJ in the forestry sector dates back to the early 1980's when GOK requested GOJ to provide assistance in supporting forestry activities in Kenya. The initial assistance was through SFTP, which was implemented in two (2) phases totaling twelve (12) years over the period 1985 to 1997. SFTP was implemented by KEFRI and its main focus was on technology development on tree nursery establishment and tree planting in the semi-arid areas and to provide training in social forestry at

the national and regional levels. At the expiry of SFTP in 1997, SOFEM was initiated. The main output of SOFEM was the development of a model through the establishment of farm forests by the local residents. SOFEM was a five year project and its completion date was November 2002. During the terminal evaluation, the review mission recommended the necessity to give further support to the extension component so that more impact could be created in the development of farm forestry in the semi-arid areas.

2.5.3 Ongoing Donor Cooperation

Forest Department

Currently, the donor-assisted projects supporting FD are:

1. Kenya-Belgian Integrated Natural Resources Management Project, which aims at increasing contribution of forestry to the district economy leading to poverty alleviation in the Makueni, Kitui, Machakos and Mwingi Districts.
2. Kenya-USAID Forestry/Range Rehabilitation and Environmental Management Strengthening (FORREMS) Initiative has been initiated to reverse forest and rangeland degradation, to expand forest-based enterprises and empower communities in forest management and conservation.
3. Tree Biotechnology Project (TBP) is a technology transfer project through private sector (Mondi Forests, South Africa; Kenya Gatsby Charitable Trust) initiative in partnership with GOK

Kenya Forestry Research Institute

1. Agroforestry and Integrated Development in Semi Arid Areas of Kenya (ARIDSAK), supported by Belgium Government.
2. Forest/Range Rehabilitation and Environmental Management (Forrems) which is supported by USAID
3. International Forests Research Institutions Project (IFRI), supported by Ford Foundation
4. Rhizorbia Research Projects, supported by European Eunion
5. Desert Margin Program
6. Gums and Resins Project, supported by FAO/Italian Government

2.5.4 Past Donor Cooperation Projects (Since 1990)

Forest Department

The past donor cooperation projects in FD are as shown in the table 2.5 below

Table 2.5: Past Donor Cooperation Project

Project	Project period	Where implemented	Remarks
1. Forest sector support project (FINNIDA/GOK)	1996 to 1998	operations in Kakamega and Vihiga districts, Western Kenya	
2. Integrated Natural Resources Management and Conservation (GTZ/GOK)	1986 to 1999	Shimba Hills ecosystem, Coast province	
3. Mt. Elgon Forest Conservation and Development Project (Netherland-IUCN/GOK)	1998 to 2001	Mt. Elgon forest reserve and National Park	
4. Tata Taveta ASAL programme (DANIDA/GOK)	1983 to 1998	Taita Taveta district, Coast province	Integrated project
5. South Nyanza Afforestation Project (DANIDA/GOK)	1987 to 1996	South Nyanza, Nyanza province	Main objective was to promote hilltop afforestation and farm forestry development
6. Infrastructure improvement and human resources development (GTZ/GOK)	1983 to 1998	Kenya Forest Training College, Londiani	Improvement of manpower development for the forest sector
7. Kenya Forestry Development Project (World Bank/GOK)	1992 to 1998	All districts with industrial forest plantations	Main objective was industrial forest plantations development
8. Miti Mingi Mashambani (FINNIDA/GOK)	1991 to 1995	Nakuru and Nyandarua districts	This was a farm forestry development project
9. Kenya Forestry MasterPlan (FINNIDA/GOK)	1990 to 1994	National project	The objective was to develop a forest sector development masterplan
10. Kenya Indigenous Forest Conservation Project (United Kingdom/GOK)	1990 to 1994)	Indigenous high forests areas	Main objective was conservation and management of indigenous high forest
11. Kitui ASAL programme (DANNIDA/GOK)	1991 to 2001	Kitui district	Integrated project
12. Coast ASAL (IFAD/GOK)	1991 to 2001	Dryland areas of Coast province	
13. West Pokot ASAL (Netherland/GOK)	1992 to 1998	Pokot district, Rift Valley province	
14. Elgeyo Marakwet ASAL (Netherlands/GOK)	1992 to 1998	Elgeyo Marakwet district, Rift Valley province	
15. Laikipia ASAL (Netherlands/GOK)	1992 to 1998	Laikipia district	
16. Kajiado ASAL	1992 to 1998	Kajiado district	

Project	Project period	Where implemented	Remarks
(Netherlands/GOK)			
17. Assistance to Forest Sector Activities (World Food Programme/GOK)			
18. Arabuko Sokoke Forest Conservation and Development (European Union/GOK)	1998 to 2001	Arabuko Sokoke forest reserve, Coast Province	
19. Conservation and Management of Indigenous Forests (European Union/GOK)	1993 to 1998	Mt. Kenya Ecosystem, Central province	Conservation and protection of Mt. Kenya ecosystem
20. Embu Meru Isiolo Project (United Kingdom/GOK)	1986 to 1994	Embu, Meru and Isiolo districts	Farm forestry development in the three districts

Kenya Forestry Research Institute

1. Social Forestry Training Project which was supported by JICA
2. Agroforestry Research Network supported by USAID and European Union (EU)
3. Bamboo Research supported by International Development Research Centre (IDRC)
4. Promotion of Sustainable Forest Management supported by GTZ
5. Tree Seed Project supported by GTZ
6. Forestry Research in the Drylands supported by Australian Centre for International Agricultural Research (ACIAR)
7. Cypress Aphid Project supported by Canadian International Development Agency (CIDA) and the World Bank (WB)

The World Agroforestry Centre (ICRAF) is an internationally-known research institute and has headquarters located in Nairobi, Kenya. ICRAF has conducted worldwide research in agroforestry, produced various types of training materials and held workshops for information sharing. The Centre has good capacity and resources for agroforestry development in the high and medium rainfall areas but has limited experience and capacity for dryland forestry development. The project could collaborate with ICRAF in areas of technology transfer and training.

3 Problem Analysis for Intensification of Social Forestry

3.1 Background

In the intensification of social forestry, production and consumption of farm forestry goods and services in addition to environmental conservation, the main players are Forest Department through policy development and service delivery, KEFRI through technology development and transfer, farmers as resource owners and the industry and local people as consumers of the goods and services.

There has been social dynamics in the genesis and progression in forestry extension services delivery from mass production of tree seedlings in government nurseries, through farmer empowerment in decision making to a market driven approach. Through active participation, farmers and farmer groups have owned the process through production, distribution and marketing of seedlings besides planting on their own farms. This progression has been made possible through technological developments initiated or acquired through KEFRI, ICRAF and NGOs.

Whereas the Farm Forestry and Extension Service was established within FD in 1971 with a focus on tree planting in the private farms in the high and the medium potential areas there was little emphasis on tree growing in the ASALs. Exotic tree species mainly *Grevillea robusta*, Pines, Wattle, Eucalypts and Cypresses were mainly promoted. These areas are now fairly covered with trees on the farms unlike the ASALs which cover about 80% of the country. The objective of the extension programme was to increase the forest/tree cover outside the gazetted forests and reduce pressure on the gazetted forests. Due to the stiff competition for the various forms of land use in the high and medium potential areas, farmers are unlikely to allocate more land for tree growing. On the other hand the ASALs have enormous potential in terms of expansive land, non-wood forests/tree products, availability of suitable indigenous tree species which are important in biodiversity conservation, market for wood and non-wood products and the policy shift in favour of development of the ASALs. In addition, the forestry land use in the ASALs has a stabilizing role to the fragile ecosystem and is the best economic landuse option in the medium and long term.

Strategies to harness potentials in farm forestry as core business will remain a challenge in the foreseeable future remain. It is however, anticipated that involvement of stakeholders, focus on relevant industries, institutional reforms and applied research will provide the necessary environment to hasten the process.

In view of the observed success and potential in tree growing, extension activities should target farmers, farmer groups and other relevant stakeholders

3.2 Institutional Capacity for Forestry Extension

Forestry extension structure exists from the FD headquarter, the provinces, districts and the divisions. However, significant obstacles against effective extension can be found in institutional capacity. These can be cited as follows,

- inadequate staff strength and capacity
- acquisition of planning data, storage and use
- inadequate extension guidelines and operational manuals
- poor linkages between the farmers, extension, research and the industry
- resource planning methods/techniques
- inadequate information documentation and dissemination
- monitoring, evaluation and impact assessment
- logististical support
- lack of a adequate mechanism for institutional appraisal

3.3 Extension Management at District Level

At district level, social/farm forestry activities in the field are organized and managed by FD. Every DFO in Tharaka, Mbeere and Kitui implements annual workplans with the following extension activities farm visits, public barazas, field days, farmer training, seedling production, district tree planting launching, tree resources survey, catchments rehabilitation, rehabilitation of degraded sites, urban forestry, Agriculture Society of Kenya (ASK) shows, promotion of alternative energy, promotion of agroforestry, promotion of commercial forestry, general and seedling survival survey. This format is, however, mainly for budget estimate than structural implementation plan and actual extension activities have been implemented without structural planning, monitoring and evaluation. To make extension responsive to the needs of the farmer and to meet national goals, it should be issue-driven. Extension guidelines developed by SOFEM could contribute to improvement in extension service delivery. This will call for re-orientation of officers in service delivery. Practical extension plan should be prepared based on more detailed target and implementation strategies reflecting environmental, social and economic background of each district.

3.4 Infrastructure, facilities and Equipment

Physical infrastructure in the Districts is far from satisfactory. Additional construction works as well as office equipment are necessary for smooth and effective implementation of the Project activities. Vehicles, motorbikes and other logistical means, which are indispensable for extension work, are also considered insufficient particularly in the Tharaka and Mbeere Districts. Equipments and facilities from earlier technical cooperation will be made use of while additional ones maybe required. Rehabilitation

of field nurseries will be necessary to enhance seedlings production and practical training for farmers and farmer groups.

3.5 Extension Staff and Their Skills

According to farmer interviews, frequency of visits by the extension staff is remarkably low. The number of extension staff in FD is critical, especially in Tharaka and Mbeere. Lack of extension staff in these districts is a great obstacle to service delivery within the project and may cause serious delay in implementation of field activities. Rapid staff allocation by FD is imperative.

Extension methodologies and technical capacity of extension staff in general do not sufficiently address the needs of the targeted farmers such as the propagation and management of some commercial trees including fruit trees, harvesting and processing of wood and non-wood products (value adding). . Also, lacking is the participatory planning skills, communication skill to organize seminars or workshops, that are important for field extension Appropriate technical workshops and seminars should be conducted by the Project as well as training opportunities by other institutions for extension staff. At the same time, significant differences were observed in their potential in terms of motivation, commitment, and self drive. There is need to introduce an award system (such as certificates) to recognize and appreciate the efforts of good extension staff..

3.6 Technical capacity of Farmers

Levels of social forestry related techniques employed by the farmers in these districts vary. This suggests that farmers would benefit from mutual information exchange and study visits . Farmer groups in Kitui, for example, are good at making use of locally available materials in their tree nurseries and their daily experience may astonish a farmer in Tharaka, who has started tree nursery recently. Exchange visit activities between farmers in these three districts are very interesting trial and it may be worth conducting. We also observed that the interests and techniques required by the farmers differ very much according to the areas, where they are located. In addition, the interests and techniques also become more advanced and complicated in relation to the level of development. The Project has to respond to these diverse needs of farmers and provide suitable technical assistances through field visits, seminars and workshop. Considering the recent needs of the farmers, existing technical manuals are not sufficient and more practical manuals should be provided as well.

On the other hand, researchers are, in fact, eager to create or introduce new technologies to resolve farmers' problems. We observed, however, that many techniques provided to the farmers were not adopted because some of them were too sophisticated and others needed a lot of investments. The project has to seriously address the reasons why the techniques were not accepted, and assess

appropriate techniques from the farmer's point of view to determine and provide farmer friendly techniques. Collection and revision of other locally adaptable techniques may also be effective for that purpose.

There is need to introduce an award system to recognize and appreciate the efforts of good extension staff and best practicing farmers within the project.

3.7 Means of Communication in the Field

Difficulties in communication were widely observed in the project area. Appropriate means of communication, such as radio telephones for extension staff to facilitate communication and consultation while they are in field should be taken into account. This may also contribute positively for the farmers' needs of information sharing regarding the availability of seeds, seedlings or other commercial products. Any other means of communication such as radio network, which may contribute to information sharing among the farmers, should be utilized. Office communication by way of telephone, fax and e-mail, radio communication are also important in enhancing information flow.

3.8 Ownership, Responsibility and Self Reliance

In Tharaka, Mbeere and Kitui districts, social forestry activities are promoted and managed by FD. The results of these initiatives have been seen and appreciated by farmers and communities in the three districts. However, it was observed that the long term continuation of donor supported extension activities created some dependency on the external input among the contact farmers of SOFEM as well as farmers in other districts in general. Same tendency of reliance on external aid was also observed in the extension staff in Kitui. The government requires to put in place measures that will ensure that the activities are self sustaining. Budgetary provisions and other mechanisms particularly private sector participation should be put in place to promote sustainability. Toward the next stage, social forestry extension activities should be directed towards more participatory approaches, such as facilitation of farmers planning, implementation and monitoring of their own social forestry related activities. Subsequently, this will enhance acceptance, adoption and ownership of social forestry process.

3.9 Extension Activities by FD in Kitui

In Kitui District, field extension activities have been emphasized by FD and additional Core farmers were selected even after SOFEM. However, the relationship of these new Core farmers and self help groups has not been reported. As SOFEM evaluation reports show, group approach was one of the effective ways for forestry extension because of its influences to the surrounding/cluster farmers and this practice should be employed continuously. Actual extension activities, however, seem to have gone back to the sporadic approach without particular extension strategy. This suggests that the benefit and

disadvantage of SOFEM was not well understood by the extension staff in FD. There is need to review the applicability of the model within the socio-economic setup of the target communities. In addition a review workshop for SOFEM extension model should be conducted to promote a common understanding among extension staff and an appropriate social forestry extension guideline should be compiled in the early stage of the Project.

3.10 Extension Activities by KEFRI in Kitui

After SOFEM, KEFRI continued its farm forestry extension activities in Kitui Centre and Tiva nurseries. The demonstration plot in Tiva, however, needs a series of modifications and rehabilitation for more appropriate techniques and effective display of technologies.meet recent needs of farmers in the area.

3.11 Core Farmers and Their Farmer to Farmer Extension Activities in Kitui

SOFEM was expected to have continuous influences on the surrounding farmers by creating an effective model with core farmers and it succeeded to some extent, especially through group approach. In some cases, negative impacts were created. However, in regard to the relationships between core farmers and surrounding farmers, jealousy or suspicion came about because SOFEM continued giving instruction and incentives to core farmers without involving the surrounding farmers. Some measures, such as follow up seminars, field days and *barazas* involving core and surrounding farmers are necessary to mitigate these negative impact.

In terms of farmer to farmer extension, it was observed these activities did not go very far in many cases. Core farmers would teach their group members and neighbors, and those who were taught by core farmers will teach the members of their family and sometimes their friends but not further than that. We are not sure whether there is the limitation of farmer to farmer extension scheme in this area or there are any effective measures for further extension but the scheme is worth encouraging.

The lack of frequent visits by the extension staff was also reported as one of the reasons to discourage the farmer to farmer extension activities. Even after farmers got enough knowledge and instructions, it seemed that farmers still needed an extension agent to come and visit them to bringing new knowledge and to facilitate their social forestry activities. Visits by the extension staff seem to be very important factor to revitalize farm forestry and its farmer to farmer extension activities. Therefore, the Project should focus on the capacity and facilitation of extension staff. The stakeholders involving the farmers, extension staff, research and the market require an open forum to drive the process. There is need to broaden the concept of the core farmer and to identify appropriate incentives for the continued functioning of the core farmer's role.

3.12 Potential of Group Network

Networking of leading/core farmers was promoted at the final stage of SOFEM in order to share information and consult each other while frequent visits by the project extension assistants were impossible after the completion of the project. It was also expected that independence and self-reliance among the leading/core farmers would be increased. However, it was reported through the interview to FD extension staff that these activities have not been active among the leading/core farmers since the end of the project. Fortunately, we have heard that one of the network groups in SOFEM formed a larger group later and started some micro financial activities. We still consider that the networking of groups is too early to finalize but there is a potential. In other districts, we observed another type of organization, which was formulated by a few representatives selected form several small groups that seem effective for acceptance of external aid. These relevant cases in the area should also be surveyed and collected.

The concept of farmer groups require to be broadened and to identify demand-driven economic activities (eg. seed collection, seed stands, bulking sites etc.) which would make the participation of farmers in farmer groups more attractive.

3.13 Information Linkage

Information on social forestry extension is not appropriately shared among stakeholders. Linkages among research scientists, farmers and extension officers are still poor. In most cases the communication channel between research scientists and farmers is one sided. Farmers receive little or no feedback from research scientists and are often not involved in the formulation of research. Furthermore, scientists also receive little feedback from forest extension officers. There is a need to develop mechanisms for information sharing, such as through development of user-oriented research and study including marketing of forest products, holding workshops, diversifying information sharing methods (e.g. manual and homepage on website) operate project resource centres at the district level and participation in commercial exhibitions.

4 Project Description, and Implementation Structure

4.1 Project Description

The Project aims at improving the living standards of the people in the semi-arid areas while enhancing sustainable environmental conservation, through institutional and technical capacity building for FD, intensification of social forestry extension activities among farmers and farmer groups as well as effective information sharing among the relevant stakeholders for social forestry development. Moreover, the Project is expected to be a social forestry model in the sub-Saharan Africa.

4.1.1 Concept and Title of the Project

The past technical cooperation in forestry between Kenya and Japan has been implemented under the concept of Social Forestry development in semi-arid areas, with a good outcome for seventeen (17) years. Social Forestry development can be a model of forestry development in the countries of sub-Saharan Africa, and indeed, the implementation of Third Country Training which involves trainees from other countries under the Kenyan program assisted by Japan is a good example. On the other hand, Farm Forestry is an important component of Social Forestry practice in Kenya. The national development strategy and the forest policy recognises the role of Farm Forestry in forestry development. ASALs are also identified as a key area for forestry development in the economic recovery strategy for wealth creation and in the forest policy. In this context, therefore the Project focuses on the intensification of social forestry practices including farm forestry model in semi-arid areas and is titled Intensified Social Forestry Project (ISFP) in Semi-arid Areas.

4.1.2 Basic Approach

The overall goal of the Project is to improve the living standards of the people in semi-arid areas while enhancing sustainable environmental conservation. The purpose of the Project is that individual farmers, farmer groups and other stakeholders intensify social forestry practices in semi-arid areas. During the Project period, the degree of the achievement of the goal and purpose will be clearly monitored for further improvement of the activities. The Project makes good use of the results of the past technical cooperation in social forestry between Kenya and Japan. Moreover, the Project will facilitate and initiate project ownership by farmers and extension officers themselves in the activities, in terms of sustainability and self reliance. The project will use various entry points to reach the target groups.

(i) individual Approach

This approach recognizes that individual farmers who are at a high level of awareness about tree growing and related activities are likely to accelerate the rate of adoption of farm forestry activities as they are likely to be good examples that other farmers can emulate. The farmer to farmer and the contact farmer extension approach falls under this category. The project shall work with individual farmers in the implementation of project activities.

(ii) Group Approach

This approach recognizes that groups are an important feature in extension organisation particularly with regard to reaching a larger proportion of farmers in a cost effective manner through the multiplier effect of the participating members. The project will work with organized farmer groups in the

implementation of project activities

(iii) Schools and other institutions

Schools and other institutions will be supported to raise seedlings, establish woodlots and to disseminate extension messages. Due to the close working relationships between schools and parents (parents are also surrounding farmers in the school neighbourhoods) it is highly likely that a reasonable measure of success can be achieved if schools are also involved in project extension activities.

(iv) Forest Department Operations

So as to complement project activities and to ensure that there are gaps in the provision of extension services in the project area, Forest Department will undertake to implement routine FD activities alongside project activities.

4.1.3 Project Period

A certain amount of time will be necessary to grow trees, as well as to further disseminate social forestry practices among farmers. Moreover, the outcome of these activities for the review also requires more time. On the other hand, considering the seventeen (17) years of past cooperation, effective handover of the activities to the Kenyan organizations is required in terms of sustainability and self reliance. Therefore, the Project sets five (5) years as the Project period, efficient input and activities are implemented in the first three (3) years, and handover of project activities will be prepared in the following two (2) years of the Project period.

4.1.4 Kenyan Executing Organization

Past technical cooperation in social forestry had been implemented mainly with KEFRI, in terms of technical development and training. On the other hand, the Project, will implement the activities mainly with FD, which will play an important role in extension to farmers. By strengthening capacity and improving self reliance of FD, which has was not adequately addressed during past cooperation, it is expected that the outcomes of the Project and past cooperation will be effectively disseminated to the entire semi-arid areas.

4.1.5 Project Areas at the Field Level

The result of the past technical cooperation whose activities were based in Kitui will be utilized and applied to the expanded project area which includes Tharaka and Mbeere districts. Based on the field

study which was jointly conducted by Kenya and Japan, these two additional districts which have similar social and economic conditions as Kitui were identified.

4.1.6 Collaboration with NGOs and other Stakeholders

The project will collaborate with relevant stakeholders carrying out forestry-related activities in the project area with a view of enhancing synergies to achieve the project goal. Where personnel resources of executing organizations may be a limitation, due consideration will be made to involve NGOs and other stakeholders to rationalize the use of resources. However, FD personnel will be attached to the consultancy for capacity building. Possible areas of collaboration could be;

- collection of baseline data, monitoring and evaluation
- Project Impact assessment
- Introduction of participatory methods including PLA (Participatory Learning and Action)
- preparation of technical manuals, staff training etc.
- consultation with relevant organizations in the project area.

4.2 Implementation Structure

4.2.1 Executing Organizations

The Project will be executed by MENRW, FD, KEFRI and JICA.

The Ministry will take overall responsibility for the administration and implementation of the Project. The Permanent Secretary of the Ministry will chair the joint steering committee that will formulate annual work plan, review the results of the plan and exchange views and ideas on the major issues of the Project.

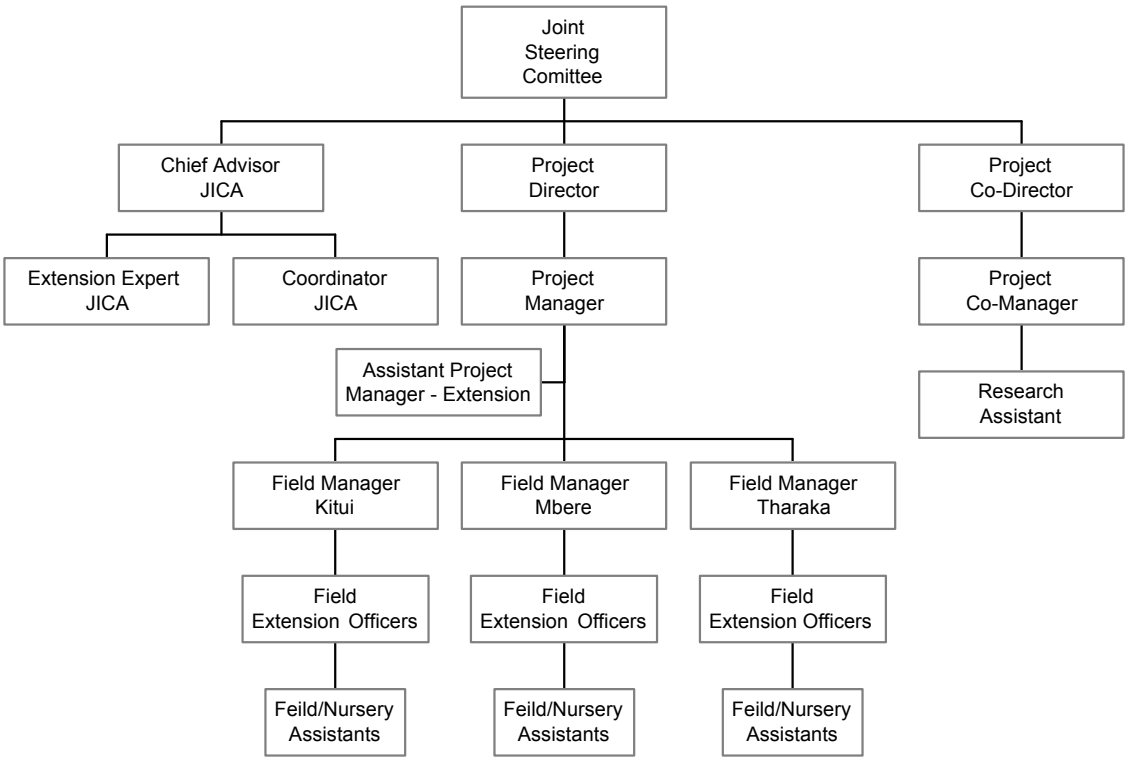
FD, which will play an important role in extension, will be the lead managerial and technical implementation agency for the Project. The Chief Conservator of the Forests (CCF) of FD will manage and coordinate all activities of the Project, as Project Director. The Project Manager FD will conduct the daily management and coordination of the activities,. DFOs in Kitui, Mbeere and Tharaka Districts of FD will conduct management and coordination of the field activities, as Field Managers. The DFEOs will work directly with the target project beneficiaries as field extension officers.

Kenya Forestry Research Institute, which will support the activities in terms of dissemination of research findings and technical development, will be the collaborating implementation agency for the Project. The Director, KEFRI will support the management and coordination of all activities of the Project, as Project Co-Director. The Kitui Centre Director, KEFRI will support the management and

coordination of the field activities in research dissemination and technical development, as Project Co-Manager.

JICA will take responsibility for the administration and implementation of the Project and will be the managerial and technical implementation agency for the Project in Japanese side. An expert of the Agency will support the daily management and coordination of all activities of the Project, as Chief Advisor. An expert of the Agency will assist the Chief Advisor in daily management and coordination of the activities, as Coordinator. Expert(s) of the Agency will provide necessary technical advice to the Kenyan counterpart personnel on technical matters, as Expert(s) in each field.
The organizational structure for the implementation of the Project is shown in Fig. 4.1.

Fig. 4.1. Organizational Structure of the Project



4.2.2 Joint Steering Committee

The Joint Steering Committee will formulate the annual work plan of the Project based on the Plan of Operations within the framework of the Record of Discussions (R/D), review the results of the plan and the progress of the Project, and exchange views and ideas on major issues that arise during the implementation period of the Project, for the effective and successful implementation of the Project. The Permanent Secretary of the Ministry will chair the committee. Composition of the committee is as shown in Annex 5.

5 Project Design

5.1 Project Purpose

Project Purpose is the objective that is expected to be achieved by the time a project is completed. It is set as follows for the Project.

Project Purpose:	Individual farmers, farmer groups and other stakeholders intensify social forestry practices in semi-arid areas.

The intensification of social forestry practices is advocated by the Project Purpose. To date, technical cooperation in Kenya in the forestry field has been focused on projects for technology development including development of extension models as well as nursery and dryland plantation techniques, and training that are preceding stage for the extension and intensification of social forestry. The Project Purpose is, however, to directly deal with the extension and intensification of social forestry practices. In the Project, the social forestry practices include (1) agroforestry practices by individual farmers or communities on their own or common farmland, pasture, fallow land, and residential land, including live fencing on the boundaries between holdings, establishment of windbreak forests and afforestation on terraces, etc., (2) establishment of farm forests and orchards by planting trees, (3) establishment and management of tree nurseries; and (4) production of wood and NWFPs.

The following are the Objectively Verifiable Indicators, which specify the Project Purpose and evaluate the degree of achievement of the Project Purpose. They are cited from PDM Ver.0 (see Annex 1).

1:	By Mar. 2009, xx % of individual farmers and farmer groups, who did not implement social forestry activities in 2004 in Kitui, Mbeere and Tharaka districts, newly implement them.
2:	By Mar. 2009, number of existing planted trees is increased by xx % in Kitui, Mbeere and Tharaka districts compared to 2004.
3:	By Mar. 2009, types of planted tree species are increased by xx % in Kitui, Mbeere and Tharaka districts compared to 2004.
4:	By Mar. 2009, number of seedlings produced is increased by xx % in Kitui, Mbeere and Tharaka districts compared to 2004.
5:	By Mar. 2009, types of seedlings produced are increased by xx % in Kitui, Mbeere and Tharaka districts compared to 2004.

Increase in the area of farm forests was studied as an Objectively Verifiable Indicator to evaluate the degree of the intensification of social forestry practices. However, since the definition of the farm forest has not been established and the increase in the area of farm forest is irrelevant to the quality improvement of farm forests, it was judged that increase in the area was inappropriate as an Objectively Verifiable Indicator.

As will be described in detail in the section, "Outputs and Activities" below, the activities of the Project are divided into two categories: 1) activities to be implemented by the headquarters at the central level, 2) those to be implemented in Kitui, Mbeere and Tharaka districts as the Project target areas for field level activities. Since the fields of activities of the two categories are different, the Project Purpose states that target fields for the intensification of social forestry practices consist of not only the three districts but all semi-arid areas. However, Objectively Verifiable Indicators to evaluate the degree of the intensification are set on condition that the evaluation is limited to only the three districts, because substantial effects for the intensification pointed out in the Project Purpose will appear in the three districts and it is difficult to set Objectively Verifiable Indicators for the intensification in all semi-arid areas with the use of existing statistical data.

Numbers in the Objectively Verifiable Indicators represented by "xx" and/or "x" are to be determined on the basis of the results of baseline survey that is to be conducted immediately after the Project is launched. The same is applied to Objectively Verifiable Indicators related to the Outputs and the Overall Goal.

The Means of Verification for Objectively Verifiable Indicators are the Project report on monitoring and evaluation. Since data for standard shown in the Objectively Verifiable Indicators are unavailable from existing statistical data, baseline values, which are actual values for data-type in the Objectively Verifiable Indicators, will be set on the basis of baseline survey, and the extent of achievement for the Objectively Verifiable Indicators will be evaluated through monitoring survey. Sampling method is employed for the baseline survey and monitoring survey, because it is impossible to conduct survey on all farmers in target areas. The same is applied to the evaluation related to the Objectively Verifiable Indicators for the Outputs.

5.2 Overall Goal

Overall Goal is the development effect expected as a result of the achievement of Project Purpose, and shows a positive impact. The Overall Goal of the Project is described below.

Overall Goal:	Living standards of the rural people of semi-arid areas are improved while enhancing sustainable environmental conservation.

The Project is aimed at both environmental conservation and improvement of living standards as expected development effects after the achievement of the Project Purpose of intensifying social forestry practices.

An Objectively Verifiable Indicator to specify the Overall Goal and to be used to evaluate the degree of the achievement of the Overall Goal is described below.

Objectively Verifiable Indicators 1:	For 2014, household incomes in semi-arid areas are improved by xx % through the use and sale of social forestry products compared to year 2004 level.

Other than the intensification of social forestry activities, improvement in medical care, education and infrastructure, such as water supply, electricity and transportation networks, is also considered to be among the various means for raising the level of living standards. However, it is not logically correct to include such improvement as factors in the Objectively Verifiable Indicators, because the Project will not directly contribute to such improvement. Therefore, the degree of improvement in living standards is evaluated in terms of improvement in income by the sales and use of products generated from social forestry practices.

The Means of Verification of the Objectively Verifiable Indicator is the state statistics based on the proposal by the agency concerned of Kenya. However, apparently the statistics do not provide appropriate data. It is therefore necessary to examine data immediately after the Project is launched and if necessary, to revise the Objectively Verifiable Indicators and change the Means of Verification.

5.3 Outputs and Activities

Outputs are intermediate goals that should be reached in order to achieve Project Purpose and indicate strategies by which a project is attempting to achieve Project Purpose. Activities are specific actions intended to produce Outputs through effective use of Inputs.

The activities of the Project are divided into two categories: 1) activities for Outputs 1 and 4 to be implemented at the headquarters level, 2) those for Outputs 2 and 3 to be implemented at the field level in Kitui, Mbeere and Tharaka districts. Obtaining the Outputs in both categories is to form contribution to the achievement of the Project Purpose.

As activities for each Output of the Project, the baseline survey is to be conducted at the beginning of the Project to set baseline values, which are the actual values for data-type in the Objectively Verifiable Indicators for the Outputs; and the monitoring survey is to be conducted through the Project period to evaluate the degree of achievement of the numerical value in the Objectively Verifiable Indicators for the Outputs. This demonstrates that the baseline and monitoring surveys are very important for project management. Main activities will properly be evaluated in the baseline and monitoring surveys.

Outputs and Activities of the Project are described below in detail.

Output 1:

Institutional and technical capacities for social forestry extension in FD are strengthened at headquarters level.

Objectively Verifiable Indicators for Output 1:

1.1	By Dec 200x4, a strategy plan on social forestry extension in semi-arid area is elaborated developed at the headquarters level.
1.2	By xx 200x, xx % of district FD prepare plan on social forestry extension based on the guideline developed.
1.3	By xx 200x, xx % of FD staff in charge of the extension, who received training course organized by the Project, pass the understanding examination.
1.4	By xx 200x, a functional social forestry planning, monitoring and evaluation unit is established at FD.

See the section "Project Purpose" with regard to the determination of "xx" and the baseline and monitoring surveys for the evaluation of the Objectively Verifiable Indicators. The same is applied to the Outputs 2 to 4.

Activities for Output 1:

1.1	Assist institutional strengthening in FD.
1.2	Carry out baseline survey for situation analysis.
1.3	Prepare practical guidelines for planning, implementation, monitoring and evaluation.
1.4	Conduct training for FD staff.
1.5	Monitor extent of institutional and technical strengthening.

It is estimated that the extension section of FD is weak in terms of its institutional and technical aspects, when compared to other ministries and agencies. Accordingly, Output 1 is essential for ensuring the extension of social forestry practices from some locations to wider areas, that is, from Kitui, Mbeere and Tharaka districts to all semi-arid areas. Output 1 is also important for the promotion of sustainability.

The Activity 1.4 will be conducted for extension staff of FD Headquarters, DFOr's and DFEO's. This training will be provided in the form of not only lectures but also workshops where participants can identify their own problems and seek solutions to them and be promoted to have senses of participation to the training. At the same time, this training is aimed to enable participant to facilitate the capacity buildings of farmers for social forestry practices on their own initiative through practical training for PLA.

Output 2:

Social forestry extension activities among individual farmers and farmer groups are promoted in Kitui, Mbeere and Tharaka districts.

Objectively Verifiable Indicators for Output 2:

2.1	By xx 200x, xx % of individual farmers and farmer groups in Kitui, Mbeere and Tharaka districts manage planning, implementation and evaluation for social forestry activity with their initiative.
2.2	By xx 200x, xx times of networking activities per year are carried out by farmer groups on their initiative in Kitui, Mbeere and Tharaka districts.
2.3	By xx 200x, in Kitui, Mbeere and Tharaka districts, number of extension activities from farmers to other farmers is increased by xx % compared to 2004 level.
2.4	By xx 200x, in Kitui, Mbeere and Tharaka districts, number of individual farmers and farmer groups, which disseminate social forestry to other farmers and farmers group, is increased by xx % compared to 2004 level.
2.5	By xx 200x, xx % of farmers in Kitui, Mbeere and Tharaka districts appreciate the social forestry extension model.
2.6	By xx 200x, xx % of FD extension staff involved in the Project implementation pass practical and written examination on the practice of social forestry.
2.7	By xx 200x, xx numbers of work plans are elaborated and implemented by extension officers in Kitui, Mbeere and Tharaka districts.

Activities for Output 2:

2.1	Carry out baseline survey for situation analysis.
2.2	Improve extension staff activities.
2.3	Facilitate planning, implementation and evaluation of social forestry and related activities with individual farmers and farmer group's initiatives.
2.4	Facilitate farmer to farmer extension.
2.5	Facilitate network among farmer groups.
2.6	Monitor extent of the promotion of social forestry extension activities.

These Activities to obtain Output 2 focus on facilitating farmers' own initiative, excluding the baseline survey (2.1), the monitoring activities (2.6) and the improvement in extension staff activities (2.2). In other words, these Activities for Output 2 are important keys to ensuring the sustainability of the Project, and, in this point, they are differentiated from other Activities for other Outputs. The intentions and matters to direct attention related to these Activities are described below.

Some farmers had response in the field survey that the farmers have failed in providing guidance to other farmers because they could not obtain confidence from other farmers without the help of extension staff. From the point of views to solve the problem, Activity 2.2 is derived to promote the field activities of DFEOs and their subordinate extension staff at the location level for the dissemination of social

forestry from farmers to other farmers. Activity 2.2 is therefore also described as the activities to reinforce Activity 2.4 that is to facilitate farmer to farmer extension activities.

Activity 2.3 is essential from the perspective below. The term "extension activities" is defined in the Project as the activities that disseminate techniques and knowledge related to social forestry from individuals to individuals, from individuals to groups, or from groups to individuals. The understanding of this term is that it does not refer to social forestry practices themselves but refers to activities to transmit techniques and knowledge to other farmers.

However, in order to promote the extension activities, it is important to actually have the individuals and groups practise the techniques and knowledge that have been provided rather than merely limiting the activity to transmission itself. The reason for this is that the practices of the techniques and knowledge are required before farmers provided with techniques and knowledge transmit them to other farmers in turn. In addition, the practice of transmitted techniques and knowledge provide much motivation to farmers who transmit techniques and knowledge to other individuals and groups. The practices of techniques and knowledge stimulate further extension activities and the favorable circulation of extension activities is created. Activity 2.3 is important in this regard.

As indicated in the Objectives Tree (see Annex 9), Activity 2.3 is also categorized into activities to contribute to acquiring techniques and knowledge of Output 3. However, they are regarded as activities for Output 2 because they are considered to provide greater contribution to Output 2.

It is necessary to direct attention to the following points in the facilitation of the extension activities from farmers to farmers of Activity 2.4. The simple description of the extension model developed by SOFEM is that training is provided to core farmers, and then they transmit techniques and knowledge required for social forestry to surrounding farmers. However, evaluation survey related to forest sectors by JICA has revealed that negative impacts have generated from this model, including the envy among surrounding farmers toward core farmers due to excessive input and the increasing expectation of the core farmers for further input. Accordingly, it is problematic to consider this model to be complete and to apply in other areas as it is. Moreover, socio-economic conditions in Mbeere and Tharaka districts are different from those in Kitui district, and further advanced efforts have been promoted in some areas through networking activities between groups. SOFEM model therefore requires improvement for effective application in accordance with circumstances in each area.

When extension activities are developed from farmers to farmers within a farmer group, a matter to be especially noted is the avoidance of the excessive input to particular individuals, including opportunity to participate in training. In addition, it is essential to make individuals recognize that they are provided with training as the representatives of their group, so that they are obliged to provide techniques and

knowledge obtained through the training to other group members. It is also important to establish definite criteria for the selection of groups supported by the Project and for requirements for participating in training. Equally important is to formulate guidelines for the input of minimum incentives to be required for the promotion of extension activities. Furthermore, it is essential to inform all the farmers of these criteria and guidelines so as to ensure transparency related to these. As a result, there would be no or less disputes or envy among farmers. These criteria and guidelines are also indispensable for Activity 2.3.

Activity 2.5 reinforces the extension activities from farmers to farmers of Activity 2.4. In actuality, the extension activities from farmers to farmers are limited to extension from individual farmers to their group members, relatives and friends. In order to promote further extension, networking among farmer groups to exchange information on techniques and knowledge is required. This is main objective of Activity 2.5.

Output 3:

Farmers and other stakeholders obtain enough practical knowledge and techniques in Kitui, Mbeere and Tharaka districts.

Objectively Verifiable Indicators for Output 3:

3.1	By xx 200x, in average of xx numbers of new techniques are employed by farmers and other stakeholders in Kitui, Mbeere and Tharaka districts trained and/or instructed.
3.2	By xx 200x, xx% of farmers and other stakeholders in Kitui, Mbeere and Tharaka districts appreciate knowledge and techniques provided by the Project.

Activities for Output 3:

3.1	Carry out baseline survey for situation analysis.
3.2	Develop farmers friendly techniques.
3.3	Identify useful local forestry related knowledge.
3.4	Develop technical manuals.
3.5	Provide technical assistance for diverse needs of individual farmers, farmer groups and other stakeholders.
3.6	Maintain and improve Tiva demonstration plot.
3.7	Identify and assess practical field demonstration sites and needs for promotion.
3.8	Undertake cross visits among individual farmers and farmer groups.
3.9	Organize open days of project activities and demonstration plot for farmers and other stakeholders.
3.10	Monitor the extent of adoption of practical knowledge and techniques.

Output 3 is aimed to obtain knowledge and techniques required for intensifying social forestry practices. Outputs 2 and 3 are closely related to each other. For example, Activities 3.2 and 3.3 are useful for

Output 2, which is aimed at promotion of extension activities, in identifying and developing the techniques and knowledge to be disseminated when Activities for Outputs 2 will be conducted. In addition, technical assistance in Activity 3.5 can be regarded as the extension activities related to Output 2. On the other hands, as described under Output 2, practical techniques and knowledge can be obtained through Activity 2.3. In the close relation between Outputs 2 and 3, the underlying concept is that it is important to identify and develop useful techniques and knowledge, to transmit or provide them to farmers, and to practice them on the farmers' initiative.

The difference between Outputs 2 and 3 is described below. In order to achieve Output 2, activities are focused on extension from farmers to farmers based on farmers' initiative, and the Project and extension staff support and facilitate such extension activities. On the other hand, in order to achieve Output 3, the Project and extension staff contribute to the acquisition of techniques and knowledge by farmers through identifying and developing useful techniques and knowledge (Activities 3.2 and 3.3), preparing materials and facilities for the provision of such techniques and knowledge (Activities 3.4, 3.6 and 3.7), and providing such techniques and knowledge through training and so on (Activities 3.5, 3.8 and 3.9). The following are the intention or matters to direct attention related to these activities.

Activities 3.2 and 3.3 are, from the viewpoint of farmers, aimed at developing farmer friendly techniques and at identifying useful local forestry related techniques and knowledge only a few farmers have already known and used. With regard to the germination of *Melia Volkensii*, for example, a technique, which is available on project level, has been developed. However, the condition, which requires special apparatus, makes it impossible for farmers to use the technique. The identification and development of useful techniques and knowledge available to farmers are coped with in these activities. For the sake, taking points mentioned in 3.13 into the account, linkages among research scientists, farmers and FD should be closely established, so that it is important that the communication among research scientists, FD and farmers should be actively made.

Activity 3.7 is aimed to secure sites for the demonstration of techniques so that farmers obtain the techniques. To achieve this, studies are conducted to identify farmland where some useful techniques are applied. The assessment of needs for promotion in Activity 3.7 means that assessment is conducted in order to judge whether it is appropriate to provide inputs to sites secured for demonstration to improve them. In this assessment, attention must be directed to the ownership of farmers or farmer groups. The ownership must not be impaired by the input. However, if farmlands, on which social forestry activities will be practiced through mainly Activities 2.3, can be utilized as the demonstration sites, it is better than the improvement of sites by providing inputs in consideration of reducing risk that the ownership may be impaired as mentioned above. In addition, if it is judged that sites for demonstration should be improved, change in PDM is required.

Activity 3.8 states that farmers and farmer groups in the three districts are to undertake cross visits. It is important to understand the advantages and disadvantages of the techniques, knowledge and extension methods of the both parties, and to introduce or adopt good practices from each other through this activity. Farmers not only obtain techniques and knowledge but also incite each other to raise their senses of social forestry activities. It is expected accordingly that this activity facilitate the extension activities for Output 2.

Output 4:

Information on social forestry extension and related issues is shared among the stakeholders in semi-arid areas.

Objectively Verifiable Indicators for Output 4:

4.1	By xx 200x, in semi-arid areas, number of stakeholders, who are aware of information on social forestry extension, is increased by xx % compared to 2004 level.

Activities for Output 4:

4.1	Carry out baseline survey for situation analysis.
4.2	Diversify methods for information sharing.
4.3	Hold workshops and seminars.
4.4	Identify potential marketing incentives for social forestry products and services.
4.5	Monitor extent of information sharing.

Output 4 is aimed at information sharing, which, as it is for Output 1, intended to extend the social forestry activities from the three districts to wider semi-arid areas. The headquarters is responsible for information sharing activities, and information is to be shared among stakeholders in semi-arid areas in Kenya such as farmers, scientists and extension officers. In addition, it is expected that people other than the stakeholders can obtain such information. One of the reasons for this is that a web site is to be set up as a means for Activity 4.2. Anyone who can access the site as well as the stakeholders in semi-arid areas will obtain information. This will be evaluated as a positive impact.

Activity 4.4 is aimed to provide information on the results of marketing survey on products and services generated from social forestry activities. The headquarters is to provide such information, and marketing survey is to be conducted at various districts.

Originally, this activity is a means for “Market incentives for social forestry products and services are promoted”, which is one of the direct means to achieve the core objectives in the Objectives Tree (see Annex 9). This approach of promoting market incentives was set in consideration of the formation of

market and the establishment of enterprises. However, since it is difficult to forecast the future of the market and the participation of the government in this field is inappropriate, it was judged that the Project would exclude such approach. However, part of activities for such approach was included in order to reduce risks for the achievement of the Project Purpose, that is, Activity 4.4.

Activities indirectly connected to Outputs:

0.1	Hold joint steering committee meetings.
0.2	Carry out baseline survey for project purpose.
0.3	Monitor project purpose.

See Annex 5 in relation to the composition of the steering committee and its roles.

5.4 Inputs

Inputs include personnel, facilities, equipment and funding necessary for pursuing the activities of project. Table 5.1 summarizes the inputs required for the Project. Terms of Reference (TOR) in Annexes 3 and 4 describes the personnel in detail. The plan for the quantity and specifications of equipment will be formulated on the basis of a list provided by GOK to JICA before signing of the R/D.

The number and fields of Japanese long-term experts are to be reviewed at the midterm evaluation of the Project, which will be conducted in the third year. The reason for this is the effective hand-over of the project management to Kenyan side is focused on in the latter two years of the Project in consideration of the sustainability after the completion of the Project.

The Project is positioned at the final stage of Japanese cooperation in the field of social forestry in Kenya over the past 17 years. From the viewpoint of sustainability, securing budget for project management is highly expected of Kenyan side. Japanese supplementary budget for local expenditure is to be minimized.

Infrastructure related to local sites such as DFO is quite poor, although the offices are expected to assume responsibility for extension activities. Improvement in infrastructure, such as improvement in office spaces for Japanese experts and Kenyan personnel, is required in each of Kitui, Mbeere and Tharaka districts. Expenditure from Japanese side for improvement in infrastructure is to be curtailed with the use of local materials. It is also appropriate from the viewpoint of sustainability.

Table 5.1 Inputs for implementing the Project

<Kenya Side>	<Japanese Side>
■ Main Personnel 1. Project Director: CCF, FD 2. Project Co-Director: Director, KEFRI 3. Project Manager: Project Coordinator, FD 4. Project Co-Manager: Kitui Centre Director, KEFRI 5. Assistant Project Manager–Extension: an official, FD 6. Research Assistant, Research officer, Kitui Centre, KEFRI 7. Kitui District Field Manager: DFO, FD 8. Mbeere District Field Manager: DFO, FD 9. Tharaka District Field Manager: DFO, FD	■ Personnel 1. Long-term experts 1.1 Chief Advisor/Forest Policy 1.2 Coordinator/Extension Implementation Management 1.3 Social Forestry Extension 2. Short-term Experts Short-term experts will be dispatched upon the necessity.
	■ Training opportunities in Japan and/or the third countries
	■ Machinery, Equipment and Materials 1. Equipment for social forestry extension 2. Equipment for social forestry training 3. Equipment for social forestry research 4. Equipment for information sharing 5. Vehicles 6. Other necessary machinery, equipment and materials for the implementation of the Project
■ Land and Facilities 1. Project Offices (project head office in FD headquarters, project field offices in DFO of Kitui, Mbeere and Tharaka districts) 2. Training facilities (KEFRI headquarters and KEFRI Kitui Centre) 3. Demonstration plot in Tiva Pilot Forest, Kitui 4. Nursery facilities in KEFRI Tiva Pilot Forest and Kitui Centre 5. FD field nurseries in Kitui, Mbeere and Tharaka districts.	■ Infrastructures 1. Renovation of project head office space in FD headquarters 2. Expansion of project field office in Kitui, Mbeere and Tharaka districts 3. Rehabilitation of field nurseries in Kitui, Mbeere and Tharaka districts
■ Administrative and Operational Cost	■ Supplementary budget for local expenditure

5.5 Important Assumptions and Risk Analysis

Important Assumptions are conditions that: 1) are required for the success of a project; 2) exist outside the control of a project; and 3) cannot be positively determined to have been fulfilled, or not. Important Assumptions are found on each level of the Activities, Outputs, Project Purpose, and Overall Goal in the PDM. With regard to the relationship between the Activities, Outputs, Project Purpose, and Overall Goal and the Important Assumptions on each level, for example, if activities are conducted and the important assumptions on the activities level are satisfied, outputs will be achieved. (In this case, the Important Assumptions are considered to be those for achieving the outputs.) This relationship continues to apply at every level moving up the PDM. Consequently, if these Important Assumptions are not satisfied, there will arise hindrance to the successfulness of the Project. The Important Assumptions are described in positive expression. If these assumptions are not fulfilled, risks occur in project management. In order to avoid or reduce such risks, it is necessary to conduct careful monitoring, if possible, to study measures to avoid or reduce risks in advance, and to implement such measures in the

course of project activities. From these viewpoints above, the Important Assumptions on each level are described below.

(1) Important Assumption Required to Ensure the Sustainability of the Project Effects after the Completion of the Project with the Achievement of the Overall Goal (Important Assumption on the Overall Goal level)

(a) No drastic negative changes in Kenya's socio-economic condition occur.

It is essential to monitor socio-economic conditions in Kenya in order to judge the drastic negative changes. The study of measures to avoid or reduce risks is also required.

(2) Important Assumption for the Achievement of the Overall Goal (Important Assumption on the Project Purpose Level)

(a) No drastic price reduction in social forestry products occur.

As in (1) (a), it is necessary to judge the drastic price reduction. The ranges of the drastic price reduction differ according to the contents of project. If the Overall Goal is achieved despite the price reduction, the price reduction is not regarded as drastic. Therefore, it is desirable in the course of the implementation of the Project to study the ranges of price reduction in which the achievement of the Overall Goal is possible.

It is essential to study measures to avoid or reduce risks on the supposition that price reduction proceeds beyond the ranges in which the achievement of the Overall Goal is possible. For example, the production of products with high value added, such as improved fruits (Technical advice on the production can be provided through Activity 3.5.), and the diversification of products will help compensate the price reduction.

(3) Important Assumptions for the Achievement of the Project Purpose (Important Assumption on the Outputs Level)

(a) Kenyan governmental forestry development policy and plans remain consistently positive.

It is necessary to monitor the enactment of the new Forests Bill of Kenya, which is under deliberations at present, and the formulation of an action plan by FD on the basis of the Economic Recovery Strategy for Wealth and Employment Creation (2003-2007). It is possible to work upon FD in order to fulfill this Important Assumption. (Advice can be provided through Activity 1.1.)

(b) No catastrophic climatic condition occur.

This Important Assumption has been established in relation to securing the supply of water as well as securing rainfall and other favorable climate conditions. The improvement in water supply is pointed out as one of the direct means for the core objectives in the Objectives Analysis, which states that "Water supply is improved" (see Annex 9). However, it could not be included as a project component, in terms of budget and target sector in the framework of project. It is important to monitor the state of water supply for the achievement of the Project Purpose.

NGOs and donor organizations have frequently tackled well drilling and reservoir creation in order to improve water supply. It is therefore necessary to monitor the state of water supply including these projects if such project will be implemented in the three districts. Moreover, the establishment of small-scale water supply systems at each household, such as the establishment of roof catchments system, can be promoted as counter measures. (Technical advice can be provided through Activity 3.5.)

(4) Important Assumptions for the Achievement of Outputs (Important Assumption on the Activities Level)

(a) Road condition in Kitui, Mbeere and Tharaka districts remains motorable.

Although it is difficult to construct, repair and maintain roads by the Project, it is possible to submit opinions related to roads to authorities concerned.

(b) Trained staff remain available.

In order to satisfy this Important Assumption, it is necessary to incorporate elements in the training courses curriculums that highly motivate the staff to promote social forestry activities and increase their loyalty to FD.

(c) No catastrophic climatic condition occur.

Compared with (3) (b), this Important Assumption places more importance on securing climatic conditions necessary for the growth of farm products and planted trees, such as rainfall. Although it is difficult to formulate measures so that catastrophic climatic conditions cannot occur, it is possible to reduce damages by introducing crop and tree species with drought resistance, by digging trenches, and by utilizing micro-catchments methods. (Technical advice can be provided through Activity 3.5.)

5.6 Pre-condition

The pre-conditions are requirements that should be fulfilled before a project begins. The following is the pre-condition of the Project.

Pre-condition: Farmers in Kitui, Mbeere and Tharaka districts are willing to participate in social forestry activities.

The Project is aimed at intensifying social forestry activities through the extension of its activities. It goes without saying that the entities to assume the implementation of social forestry activities are the rural people who live in areas where social forestry will be promoted. Most of such rural people in Kitui, Mbeere and Tharaka districts where the Project is to be implemented at the ground level are farmers. Accordingly, the Project cannot be launched without the positive will of the farmers in these three districts to participate in social forestry activities. Therefore, this is the most important pre-condition.

The socio-economic survey conducted as part of the ex-ante evaluation study indicates that there are large needs and great expectation for afforestation and nursing activities, although the number of samples was not large (see Annex 7). As a result, it is judged that there is high possibility for this pre-condition to be fulfilled.

6 Ex-ante Evaluation

In this chapter, the comprehensive relevance of the Project is verified on the basis of evaluation in terms of relevance, effectiveness, efficiency, impact and sustainability. While the Project is evaluated on the basis of the current circumstances in terms of the first criterion "relevance", it is evaluated on the basis of the prospects for the future in terms of the other four criteria.

6.1 Relevance

It is concluded that the Project has a great deal of relevance in terms of four aspects: (1) accordance with the needs of Kenya, including the national policies and forest policies of GOK, (2) consistency with Japanese ODA policies, including JICA's Country Assistance Plan for Kenya, (3) the participatory formulation of the Project, and (4) the Project's eligibility as an ODA funded project

6.1.1 Accordance with the Needs of Kenya

The following is described in the Economic Recovery Strategy for Wealth and Employment Creation (2003-2007), on which the first priority is placed among various national policies of Kenya.

There is a section for "Forestry and Mining" in the chapter of "Productive Sector". The section states that it is important to promote the development of agroforestry and it is also important to encourage community participation in efficient management of forest. With regard to social forestry activities in the Project Purpose and the Overall Goal, agroforestry is the most powerful tool for the promotion of social forestry activities and the participation of rural people is placed at the base of social forestry.

In addition, the entire chapter is dedicated to the description related to the importance of the development of ASALs. The target areas for the Project are semi-arid areas. Moreover, in a section for "Environment and Natural Resources" in the chapter of "Cross Cutting Issues", a comprehensive afforestation programme is required for environmental conservation and restoration. One of the objectives of social forestry is environmental conservation through afforestation in areas where rural people reside. The Overall Goal states "enhancing sustainable environmental conservation".

All of these indicate that the Project Purpose and the Overall Goal of the Project are completely consistent with the Economic Recovery Strategy as the national policy.

The development program of KFMP, one of the national policies in relation to forests and forestry in Kenya, points out the promotion of farm forestry, which is social forestry practice by individual farmers and/or farmer groups but not by communities. This also indicates the consistency between the Project

Purpose and the Overall Goal and the state forest policy.

6.1.2 Consistency with Japanese ODA Policies

There are five priority items for future assistance in JICA's Country Assistance Plan for Kenya. One of the items, which is related to environmental conservation, states the protection of forests and establishment of afforestation areas. JICA provides two approaches for future assistance related to this item: (a) increase in sustainable farm forest and increase in areas where the extension model is applied, while utilizing the results of projects that have been implemented in Kitui district and demonstrating the visible effects in farm forest to farmers, and (b) support for the formulation of extension programs for semi-arid areas and intensification of institutional capacity of FD. These are almost completely consistent with the aim of the Project.

As described in the introduction, Japan had consistently been implementing projects to promote social forestry in semi-arid areas over the past 17 years since 1985. Japan has been positioned as a leading donor in this field in Kenya, and its assistance has been highly valued by the Kenyan government. Since Japan is being expected to continue playing a leading role in future, as in the past, the implementation of the Project is of great significance.

6.1.3 Participatory Formulation of Plans

The Project has been formulated through workshops with farmers in Kitui district, interviews with farmers in Mbeere and Tharaka districts, workshops with the government officials, and consultation with the World Agroforestry Center (WAC), USAID and other donors, and government officials concerned in headquarters, district and divisional level. Accordingly, the perspectives and needs of the stakeholders are reflected in the Project to the maximum, and the needs of beneficiaries will be met.

6.1.4 Eligibility As an ODA Funded Project

Lastly, the relevance of the Project in terms of eligibility as an ODA funded project is verified. There is much need for the promotion of social forestry because generally farmers are poor and social forestry serves as one of the poverty reduction measures. However, it is difficult for farmers or beneficiaries to assume all the costs required for the project implementation to promote social forestry. In other words, the Project is not a project based on market mechanisms in which beneficiaries input initial capital to obtain economic benefit, and recover the initial costs. Accordingly, the Project can be regarded as one supporting public goods. Consequently, it can be said that the Project is eligible for an ODA funded project.

6.2 Effectiveness

It is estimated that there is high possibility of the achievement of the Project Purpose, in terms of the logic of the plan, the level set for the Project Purpose, and the Important Assumptions set on various stages toward the Project Purpose. Accordingly, it is also estimated that the implementation of the Project can ensure benefits for farmers and extension officials of FD especially in Kitui, Mbeere and Tharaka districts, who are the direct target group of the Project.

6.2.1 Logic of the Plan

Since the Activities, Outputs, Project Purpose, and Overall Goal have been formulated in accordance with the Objectives Tree (see Annex 9) that was formulated based on the Objectives Analysis, the logic between objectives means and ends is ensured.

One of the two approaches not adopted as project components in the Objectives Tree is the improvement in water supply. Monitoring of water supply condition is involved in the monitoring of an Important Assumption (see 5.5 (3) (b)).

The other approach is the promotion of market incentives for social forestry products and services. At present, there is no Important Assumptions related to this for the achievement of the Project Purpose. It is expected that there is a change in the Important Assumptions in the next revision of PDM, taking this issue into consideration. However, the drastic price reduction in social forestry products is dealt with in the Important Assumption for the achievement of the Overall Goal (see 5.5 (2) (a)). For this Assumption, market monitoring is to be conducted, and it will also ensure the consideration of the promotion of the incentives mentioned above to some extent. In addition, measures to fulfill this Assumption are prepared, including survey on market information, provision of survey results, and technical advice related to improved fruits with high value added. All of these will ensure higher possibility to achieve the Project Purpose.

6.2.2 Level Set for the Project Purpose

The degree of achievement of the Project Purpose is to be evaluated using the Objectively Verifiable Indicators. The Objectively Verifiable Indicators consist of increase in the rate of new participants in social forestry activities, increase in the number and the type of planted trees, and increase in the number and the type of seedlings produced. As described in 5.1, numerical values for data-type in the Objectively Verifiable Indicators have not been set yet. However, the figures are to be set based on the result of baseline survey to make the Project Purpose definite. This Objectively Verifiable Indicators that the level that is to be set for the Project Purpose will be appropriate.

6.2.3 Important Assumptions toward the Project Purpose

Whether the Important Assumptions on various levels toward the Project Purpose will be satisfied or not is unforeseeable. Although there are no killer assumptions at present, if these Important Assumptions are not satisfied, there will arise serious difficulties that hinder the achievement of the Project Purpose. Accordingly, a proposal is submitted for the fulfillment of these Important Assumptions. The recommendation states that project activities include measures to deal with the difficulties based on the result of monitoring of the Important Assumptions, as described in 5.5.

6.3 Efficiency

Since the Project advocates social forestry, basically, inputs depend on local procurement and are controlled as much as possible. For example, in the extension of the offices of FD, a minimum necessary space will be secured and a local constructor will build the offices using local materials, so quite low expenditure is expected. In addition, personnel expenditure will also be reduced in comparison with management by direct project staff. Specifically, this reduction will be achieved by minimizing the number of Japanese experts, and, instead, utilizing local NGOs and consultants in baseline survey, monitoring survey, and other surveys, as well as facilitation of social forestry extension activities through PLA.

With regard to cost-effectiveness, good results can be expected. The reason for this is that efforts will be exerted to minimize expenditure as described above, and with regard to effects, high effects will be expected because the Project is aimed at various outputs, for instance, social forestry extension activities will be promoted on the basis of the intensification of FD in institutional and technical aspects as well as farmers' acquisition of knowledge and techniques. Furthermore, the Project is aimed at information sharing in all semi-arid areas.

6.4 Impact

It can be expected that the Overall Goal will be achieved through the achievement of the Project Purpose. It is also expected that positive impacts will be generated in institutional, social, cultural, technical and economic fields. There is little expectation that negative impacts will be generated.

6.4.1 Likelihood of the Achievement of the Overall Goal

Since social forestry itself has the methodology based on the concept with the improvement in the living standards of the rural people, if the intensification of social forestry activities or the Project Purpose is achieved, it can be expected that the improvement in the living standards or the Overall Goal will be

achieved.

The Objectively Verifiable Indicator for the Overall Goal, which specifies the Goal, states the increase in household income through the use and sale of social forestry products. In response to this, Objectively Verifiable Indicators for the Project Purpose include increase in the number and the types of planted trees and seedlings produced. If these Objectively Verifiable Indicators are achieved, salable timber and seedlings will increase. In conclusion, the achievement of the Project Purpose can lead to the achievement of the Overall Goal.

The Objectively Verifiable Indicator for the Overall Goal states the increase in farmers' income in all semi-arid areas. However, the Project will be implemented mainly in Kitui, Mbeere and Tharaka districts. Accordingly, there remains a room for discussion whether the Project outputs contributing to the social forestry intensification for all semi-arid areas, including strengthening of FD in institutional and technical aspects as well as information sharing, will result in the increase in farmers' income in all semi-arid areas.

It is desirable that the Objectively Verifiable Indicator for the Overall Goal be reviewed upon revising PDM. It is proposed that two indicators be set: (a) an Objectively Verifiable Indicator that will cover only the three districts, such as increase in household income of farmers in the three districts through the sales and use of social forestry products, and (b) an Objectively Verifiable Indicator that will cover all semi-arid areas.

6.4.2 Socio-economic Impacts

(1) Institutional Impacts

At present, GOK is striving to establish the new Forests Bill and to formulate an action plan on the basis of the Economic Recovery Strategy. On the other hand, one of the Outputs in the Project is the strengthening of FD in institutional and technical aspects. Accordingly, if the Project contributes to the success of FD in the enactment of the Bill and the formulation of the action plan, the contribution can be regarded as a positive impact.

(2) Social and Cultural Impacts

The beneficiaries of the Project include farmer groups, and most of these groups consist of female groups. Therefore, taking women into consideration is indispensable for implementing projects to promote social forestry in Kenya. Consequently, from the viewpoint of the consideration for gender, the stance of the Project, that is, placing importance on approaches to women, will have a

great impact on Kenyan society.

The promotion of the extension activities from farmers to farmers is the key success factor for the Project. More specifically, a farmer who has learned some technique passes it on to another farmer, and then the second farmer passes it on to the third farmer. Thus, this method is aimed to disseminate techniques in a chain reaction. Since there is a limit to the number of farmers who can obtain techniques and knowledge directly by the Project, if this method is established, it will create a strong ripple effect.

(3) Technical Impacts

Output 3 suggests that farmers and other stakeholders obtain practical knowledge and techniques in relation to social forestry. Output 2 is aimed to promote activities for the dissemination of such knowledge and techniques through a farmer-to-farmer extension method. Accordingly, the implementation of the Project will generate technical impact on a large number of farmers.

Thorough training is to be provided to FD staff through seminars and other opportunities. This training will improve the techniques of the staff who actually play role of FD of being responsible for supporting participatory social forestry. There will be a great technical impact in this respect.

(4) Economic Impacts

The Objectively Verifiable Indicator for the Overall Goal states the increase in the income of farmers. This is an economic impact. It is expected that the income of farmers will increase over the five years after the achievement of the Project Purpose.

6.4.3 Confirmation of Negative Impacts

In principle, environmental conservation is to be promoted in the Project. It is therefore difficult to foresee negative impacts on natural environment. In socio-economic aspects, however, if inputs, including training, are provided in favor of some farmers or inputs are determined without securing transparency due to undisclosed information, negative impacts may result, such as envy and growing disparity between the rich and poor. Taking this into consideration, the Project will establish criteria and guidelines for inputs in order to prevent negative impacts from arising.

6.5 Sustainability

It is difficult to admit that there is sufficient sustainability in the Project. The sustainability can be cultivated through the implementation of the Project.

6.5.1 Institutional Capacity

It is difficult to admit that FD has sufficient capacity for effective implementation of the Project at the inauguration of the Project. The local agencies are weak, in particular, and the numbers of posts and staff are insufficient, as described in the chapters 3.2 and 3.5. Output 1, "Institutional and technical capacities for social forestry extension in FD are strengthened", is important in terms of ensuring the sustainability. Consequently, the achievement of Output 1 is a key for the sustainability related to institutional capacity.

6.5.2 Financial Situation

It is estimated that the financial conditions of FD are unfavorable, and it cannot be said that FD has completely secured financial budget for the continuation of the Project by FD's own initiative after the Project period will end because the supplementary budget is set in Japanese side Input. As described in the chapter 4.1.3, substantial inputs are to be provided and main activities are to be developed in the first three years of the five years of the Project period. In the remaining two years, importance is to be placed on ensuring that FD will take over activities so that FD alone will be able to continue the activities after the completion of the Project. In other words, FD will be required to take financial measures for the Project particularly for the last two years. Success in activities during the last two years will also ensure financial sustainability.

6.5.3 Social, Environmental and Technical Acceptance

As described in 5.3, a key to the sustainable development is the achievement of Output 2, "Social forestry extension activities among individual farmers and farmer groups are promoted in Kitui, Mbeere and Tharaka districts". It goes without saying that rural people play leading roles in social forestry, and that the participation of rural people in social forestry is a prerequisite. Since Output 2 places importance on facilitating the activities by farmers themselves, success in the activities for Output 2 will lead to the sustainability of the Project.

One of the objectives of social forestry is that farmers think for themselves, select techniques on their own accord, and use such techniques, knowledge and means in order to practice social forestry on their own initiative. Farmers are highly motivated to acquire new knowledge and techniques, and the Project is to provide assistances on diverse techniques that can be adopted by farmers through training and other

opportunities. Since there is much need for farmers to participate in social forestry, and they are motivated to engage in social forestry activities for improvement in living standard, they will probably accept the approaches employed by the Project. In addition, to date some farmers have been practicing various forms of agroforestry, planting grafted fruit trees, and positively introducing measures to prevent soil from the erosion, including the construction of terraces and digging trenches. All of these indicate that farmers are fully qualified to accept knowledge and techniques through the Project.

6.6 Comprehensive Relevance for the Project Implementation

It is concluded on the basis of the study of the above five criteria that it is relevant for the Project to be implemented. The comprehensive relevance for the Project implementation is summarized in Table 6.1.

Table 6.1 Comprehensive relevance for the Project implementation

Evaluation criteria	Evaluation results	Reasons
Relevance	5	It is judged that the implementation of the Project is highly relevant for four reasons: 1) accordance with the needs of Kenyan government, in terms of the Economic Recovery Strategy for Wealth and Employment Creation (2003-2007) as national policy and KFMP as national forest policy; 2) consistency with Japanese ODA policies, including JICA's Country Assistance Plan for Kenya; 3) meeting the needs of beneficiaries by the participatory formulation of plans through workshops; and 4) eligibility as ODA funded project because the Project can be regarded as support for public goods.
Effectiveness	4 – 5	The Project is consistently logical because items pointed out in the Objectives Analysis are almost comprehensively reflected in PDM especially in setting the Activities, Outputs and the Important Assumptions toward the Project Purpose. However, since numerical values in the Objectively Verifiable Indicators have not been set yet, the relevance of the level of objective setting has not been verified. It is expected that benefits for farmers and FD extension staff especially in Kitui, Mbeere and Tharaka districts will be sufficiently ensured by the implementation of the Project.
Efficiency	4 – 5	Inputs are controlled as much as possible through procurement within the local area concerned. For example, in the extension of FD offices, minimum necessary space will be secured and a local constructor will build the offices using local materials. With regard to baseline survey and other surveys, reduction in personnel expenditure will be achieved by utilizing local NGOs and consultants, when compared to implementation by direct project staff.
Impact	3 – 5	The Overall Goal, or increasing the household income, can be attained as a result of the achievement of the Project Purpose through increase in production of saleable timber and seedlings. However, regarding the Objectively Verifiable Indicator for the Overall Goal, there remains a room for discussion whether the Project will result in the increase in farmers' income in all semi-arid areas. On the other hands, various positive impacts are expected, including 1) institutional impacts resulting from the contribution to the formulation of bills, policies, plans and guidelines such as the action plan on the basis of the Economic Recovery Strategy, 2) social and cultural impacts through extension of social forestry from farmers to farmers in a chain reaction, 3) technical impacts resulting from farmer acquisition of practical and applicable techniques, and 4) economic impacts through the achievement of the Overall Goal, or increase in income. Since it is expected to enhance environmental conservation, there will be, in principle, no negative impacts on natural environment.
Sustainability	3 – 5	It cannot be said that at present sustainability is highly ensured. However, sustainability will be enhanced, if the following three factors will be achieved: 1) in light of institutional capacity, strengthening of institutional and technical capacities of FD through various activities, 2) in light of the financial situation, development of project activities during the remaining two years as the activities can be handed over to FD after the completion of the Project, and 3) in light of social, environmental and technical acceptance, facilitation of social forestry extension activities on farmers' initiative.

Evaluation result is indicated in five grades. As described at the beginning of this chapter, evaluation by the criteria other than "relevance" is based on prospects. Since the evaluation results will change in accordance with the achievement of the Outputs, the evaluation results are indicated in ranges. Accordingly, utmost efforts in project management are required in order to attain the largest figures.

7 Monitoring and Evaluation

7.1 Monitoring

There are three types of monitoring: monitoring in relation to (1) the self-reliance of FD especially in terms of financial and organizational aspect, (2) the degree of achievement of Objectively Verifiable Indicators for the Project Purpose and the Outputs, and (3) the Important Assumptions.

Firstly, with regard to monitoring in relation to the self-reliance of FD, the Project will be evaluated at the midterm review for activities during the remaining two years as the activities can be handed over to FD after the completion of the Project, as described in 4.1., 6.5 and 7.2. Therefore, it is necessary to monitor the self-reliance of FD with the focus on the financial and organizational aspect. Meanwhile, monitoring related to achievement of strengthening of institutional and technical capacities of FD at the headquarters and local level will be secured with the monitoring in relation to Objectively Verifiable Indicators for the Outputs mentioned below

Secondly, monitoring in relation to Objectively Verifiable Indicators for the Project Purpose and the Outputs is described. As described in 5.1 and 5.3, baseline survey is to be conducted in order to identify the current values of data-type in the Objectively Verifiable Indicators immediately after the Project is launched. Subsequently, monitoring is to be conducted in order to identify the degree of achievement of target values set in the Objectively Verifiable Indicators. As described in PO of Annex 2, this monitoring is to be conducted every year. The time of planning, practice and analysis of monitoring is to be determined so that reports on the monitoring results can be submitted by the end of the fiscal year of the Project, in principle. However, since evaluation is to be conducted in the third and fifth years, the reports for these years are to be submitted by the time the evaluation begins. Accordingly, monitoring begins approximately three months earlier in these years than in other years.

Lastly, it is important that monitoring related to the Important Assumptions is practiced in accordance with the contents described in 5.5. If the Important Assumptions are not satisfied, some difficulties may arise in the operation of the Project. Since measures must immediately be taken to deal with such difficulties, it is desirable that monitoring of this type is practiced in daily operations. With regard to the "drastic price reduction" in the Important Assumptions for the achievement of the Overall Goal, it is necessary to study in advance the extent of price reduction regarded as "drastic". Such study is to be

conducted, utilizing baseline survey for the Objectively Verifiable Indicators, subsequent monitoring survey, and study for the Activities 4.4. to identify potential marketing incentives for social forestry products and services.

7.2 Evaluation

Evaluation is conducted twice, consisting of midterm evaluation and evaluation upon completion of the Project. The midterm evaluation is to be conducted in the second half of the third year, and the evaluation upon completion of the Project in the second half of the fifth year.

As described in 4.1 and 7.1, the degree of sustainability and self-reliance of FD in terms of financial, organizational, institutional and technical capacities is evaluated in the midterm evaluation. This evaluation focuses on inputs and activities during the last two years as handing over activities to FD after the completion of the Project can be prepared. In the evaluation upon completion of the Project, attention should be directed to sustainability, in particular.

Annex 1

Project Design Matrix (PDM)

Project Design Matrix (PDM)

Project Title: Intensified Social Forestry Project in Semi-arid Areas
Ver. No. 0
Target Groups: FD extension staff, Farmers in Kitui, Mbeere and Tharaka districts.
Date: 6th November 2003
Target Area: Semi-arid areas of Kitui, Mbeere and Tharaka districts.
Duration: xx March 2004 xx March 2009

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal	For 2014		
Living standards of the people in semi-arid areas are improved while enhancing sustainable environmental conservation.	1. Household income in semi-arid areas are improved by xx % through the use and sale of social forestry products compared to year 2004 level.	National Bureau Statistics Reports	- No drastic negative changes in Kenya's socio-economic condition occur.
Project Purpose	By Mar. 2009		
Individual farmers, farmer groups and other stakeholders intensify social forestry practices in semi-arid areas.	1. xx % of individual farmers and farmer groups, who did not implement social forestry activities in 2004 in Kitui, Mbeere and Tharaka districts, newly implement them. 2. Number of existing planted trees is increased by xx % in Kitui, Mbeere and Tharaka districts compared to 2004. 3. Types of planted tree species are increased by xx % in Kitui, Mbeere and Tharaka districts compared to 2004. 4. Number of seedlings produced is increased by xx % in Kitui, Mbeere and Tharaka districts compared to 2004. 5. Types of seedlings produced are increased by xx % in Kitui, Mbeere and Tharaka districts compared to 2004.	1. Project Monitoring and Evaluation Report 2. Project Monitoring and Evaluation Report 3. Project Monitoring and Evaluation Report 4. Project Monitoring and Evaluation Report 5. Project Monitoring and Evaluation Report	- No drastic price reduction in social forestry products occur.
Outputs			
At the headquarters level	At the headquarters level		- No catastrophic climatic condition occur. - Kenyan governmental forestry development policy and plans remain consistently positive.
1. Institutional and technical capacities for social forestry extension in Forest Department are strengthened.	1.1. By xx 200x, a strategy plan on social forestry extension in semi-arid area is elaborated. 1.2. By xx 200x, xx % of district FD prepare plan on social forestry extension based on the guideline developed. 1.3. By xx 200x, xx % of FD staff in charge of the extension, who received training course organized by the project, pass the understanding examination. 1.4. By xx 200x, a functional social forestry planning, monitoring and evaluation unit is established at FD.	1.1. Project Monitoring Report 1.2. Project Monitoring Report 1.3. Project Monitoring Report 1.4. Project Monitoring Report	
In Kitui, Mbeere and Tharaka districts	In Kitui, Mbeere and Tharaka districts		
2. Social forestry extension activities among individual farmers and farmer groups are promoted.	2.1. By xx 200x, xx % of individual farmers and farmer groups manage planning, implementation and evaluation for social forestry activity with their initiative. 2.2. By xx 200x, xx times of networking activities per year are carried out by farmer groups on their initiative. 2.3. By xx 200x, number of extension activities from farmers to other farmers is increased by xx % compared to 2004 level. 2.4. By xx 200x, number of individual farmers and farmer groups, which disseminate social forestry to other farmers and farmers group, is increased by xx % compared to 2004 level. 2.5. By xx 200x, xx % of farmers appreciate the social forestry extension model. 2.6. By xx 200x, xx % of FD extension staff involved in the project implementation pass practical and written examination on the practice of social forestry. 2.7. By xx 200x, xx numbers of work plans are elaborated and implemented by extension officers.	2.1. Project Monitoring Report 2.2. Project Monitoring Report 2.3. Project Monitoring Report 2.4. Project Monitoring Report 2.5. Project Monitoring Report 2.6. Project Monitoring Report 2.7. Project Monitoring Report	
3. Farmers and other stakeholders obtain enough practical knowledge and techniques.	3.1. By xx 200x, in average of xx numbers of new techniques are employed by farmers and other stakeholders trained and/or instructed. 3.2. By xx 200x, xx% of farmers and other stakeholders appreciate knowledge and techniques provided by the project.	3.1. Project Monitoring Report 3.2. Project Monitoring Report	
In semi-arid areas	In semi-arid areas		
4. Information on social forestry extension and related issues is shared among the stakeholders.	4. By xx 200x, number of stakeholders, who are aware of information on social forestry extension, is increased by xx % compared to 2004 level.	4. Project Monitoring Report	

Activities	**Inputs**		
0.1 Hold joint steering committee meetings. 0.2 Carry out baseline survey for project purpose. 0.3 Monitor project purpose. At the headquarters level 1.1. Assist institutional strengthening in FD 1.2. Carry out baseline survey for situation analysis. 1.3. Prepare practical guidelines for planning, implementation, monitoring and evaluation. 1.4. Conduct training for FD staff 1.5. Monitor extent of institutional and technical strengthening. In Kitui, Mbeere and Tharaka districts 2.1. Carry out baseline survey for situation analysis. 2.2. Improve extension staff's activities. 2.3. Facilitate planning, implementation and evaluation of social forestry and related activities with individual farmers and farmer groups initiatives. 2.4. Facilitate farmer to farmer extension. 2.5. Facilitate network among farmer groups. 2.6. Monitor extent of the promotion of social forestry extension activities. 3.1. Carry out baseline survey for situation analysis. 3.2. Develop farmers friendly techniques. 3.3. Identify useful local forestry related knowledge. 3.4. Develop the technical manuals. 3.5. Provide technical assistance for diverse needs of individual farmers, farmer groups and other stakeholders. 3.6. Maintain and improve Tiva demonstration plot. 3.7. Identify and assess practical field demonstration sites and the needs for promotion. 3.8. Undertake cross visits among individual farmers and farmer groups. 3.9. Organize open days of project activities and demonstration plots for farmers and other stakeholders. 3.10. Monitor the extent of adoption of practical knowledge and techniques. In semi-arid areas 4.1. Carry out baseline survey for situation analysis. 4.2. Diversify methods for information sharing. 4.3. Hold workshops and seminars. 4.4. Identify potential marketing incentives for social forestry products and services. 4.5. Monitor extent of information sharing.	<Kenya Side> 1. Personnel 1.1. Project Director: Chief Conservator of Forests, FD 1.2. Project Co-Director: Director, KEFRI 1.3. Project Manager: Project Coordinator, FD 1.4. Project Co-Manager: Kitui Centre Director, KEFRI 1.5. Counterparts 1.5.1 FD headquarters 1.5.1.1 Assistant Project Manager-Extension: an official, FD 1.5.2. Kitui District 1.5.2.1. Field Manager: District Forest Officer (DFO), FD 1.5.2.2. Field Extension Officers: District Forest Extension Officers (DFEOs), FD 1.5.2.3. Field/Nursery Assistants, FD 1.5.2.4. Project Research Assistant: Research officer, Kitui Centre, KEFRI 1.5.3. Mbeere District 1.5.3.1. Field Manager: DFO, FD 1.5.3.2. Field Extension Officers: DFEOs, FD 1.5.3.3. Field/Nursery Assistants, FD 1.5.4. Tharaka District 1.5.4.1. Field Manager: DFO, FD 1.5.4.2. Field Extension Officers: DFEOs, FD 1.5.4.3. Field/Nursery Assistants, FD 1.6. Supporting Staff: 1.6.1. Administrative Staff 1.6.2. Secretaries 1.6.3. Drivers 2. Land and Facilities 2.1. Land and office facilities for project head office in FD headquarters 2.2. Land and office facilities for project field office in Kitui 2.3. Land and office facilities for project field office in Mbeere 2.4. Land and office facilities for project field office in Tharaka 2.5. Training facilities in KEFRI headquarters 2.6. Training facilities in KEFRI Kitui Centre 2.7. Land for demonstration plot in Tiva Pilot Forest, Kitui 2.8. Nursery facilities in KEFRI Tiva Pilot Forest and Kitui Centre 2.9. FD field nurseries in Kitui, Mbeere and Tharaka districts. 3. Administrative and Operational Cost	<Japanese Side> 1. Personnel 1.1. Long-term experts 1.1.1. Chief Advisor/Forest Policy 1.1.2. Coordinator/Monitoring &Evaluation 1.1.3. Social Forestry Extension Number and fields of the long-term experts may be reviced after the Mid-term Review. 1.2. Short-term Experts Short-term experts will be dispatched upon the necessity. 2. Counterpart Training Training opportunities in Japan and/or the third countries for 1 to 2 counterpart(s) will be provided every year. 3. Machinery, Equipment and Materials 3.1. Equipment for social forestry extension 3.2. Equipment for social forestry training 3.3. Equipment for social forestry research 3.4. Equipment for information sharing 3.5. Vehicles 3.6. Other necessary machinery, equipment and materials for the implementation of the project 4. Infrastructures 4.1. Renovation of project head office space in FD headquarters 4.2. Expansion of project field office in Kitui 4.3. Expansion of project field office in Mbeere 4.4. Expansion of project field office in Tharaka 4.5. Rehabilitation of field nurseries in Kitui, Mbeere, Tharaka districts 5. Supplementary budget for local expenditure	- Road condition in Kitui, Mbeere and Tharaka districts remains motorable. - Trained staff remain available. - No catastrophic climatic condition occur. Pre-Condition - Farmers in Kitui, Mbeere and Tharaka districts are willing to participate in social forestry activities.

Note: xx will be determined after baseline surveys for situation analysis according to the plan of operation.

Annex 2

Overall Plan of Operation (PO)

Plan of Operation (PO)

Outputs		Activities		Year 1				Year 2				Year 3				Year 4				Year 5				Staff in charge			
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	FD	KEFRI	JICA	Others
0		0.1	Hold joint steering committee meetings.																					CCF	Director	CA	
		0.2	Carry out baseline survey for project purpose.																								
			0.2.1 Prepare TOR for survey and contract a consultant.																					EMO,CCF,PM,		CO (CA)	
			0.2.2 Supervise implementation of baseline survey.																					PM, DFO,EMO		CO (CA)	
			0.2.3 Receive and assess submitted baseline report.																					CCF,PM,EMO		CO (CA)	
		0.3	Monitor project purpose.																								
			0.3.1 Prepare TOR for survey and contract a consultant.																					CCF, PM,EMO		CO (CA)	
			0.3.2 Supervise implementation of monitoring survey.																					CCF, PM,EMO		CO (CA)	
			0.3.3 Receive ~~Inspect~~ and assess submitted monitoring reports.																					CCF, PM,EMO		CO (CA)	
1	Institutional and technical capacities for social forestry extension in Forest Department are strengthened.	1.1	Assist institutional strengthening in FD.																								
			1.1.1 Prepare and revise a strategic plan on the institutional strengthening (include legislation and coordination among development partners).																					CCF		CA	
			1.1.2 Assist the implementation of the strategic plan on the institutional strengthening.																					HFF, HDL, PM		CA	
			1.1.3 Develop a strategic plan on social forestry extension activities for semi-arid areas.																					HFF, HDL, PM		CA	
			1.1.4 Assist the implementation of the strategic plan on social forestry extension activities for semi-arid areas.																					CCF, HFF, HDL,PM		CA	
		1.2	Carry out baseline survey for situation analysis.																								
			1.2.1 Prepare TOR for survey ~~and contract a consultant~~.																					~~CCF, PM, HFF, HDL~~		CO (CA)	
			1.2.2 Supervise implementation of baseline survey.																					CCF, PM, HFF, HDL		CO (CA)	
			1.2.3 Receive ~~Inspect~~ and assess submitted baseline report.																					CCF,PM, HFF, HDL		CO (CA)	
		1.3	Prepare practical guidelines for planning, implementation, monitoring and evaluation.																								
			1.3.1 scrutinize and review ~~current~~ existing guidelines ~~related to target guideline to be prepared.~~																					HFF, HDL, PM		CA	
			1.3.2 Prepare the draft guideline.																					HFF, HDL, PM		CA	

Outputs	Activities		Year 1				Year 2				Year 3				Year 4				Year 5				Staff in charge			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	FD	KEFRI	JICA	Others
	1.3.3	Implement trials in accordance with the draft guideline.																					DFOs, PM, PM		CA	
	1.3.4	Finalize the guideline based on the results of trial.																					HFF, HDL, PM		CA	
	1.4	Conduct training for FD staff																								
	1.4.1	Carryout a training needs assess																					PM, APM, HT		CA	
	1.4.2	Draw up training plans for FD staff.																					CCF		CA	
	1.4.3	procure and prepare necessary materials for the implementation of the training (include textbook).																					PM		CA	
	1.4.4	Implement training course (include evaluation of the training course and application of recommendations/lessons learned to next course).																					PM,HFF,HDL		CA	
	1.5	Monitor extent of institutional and technical strengthening.																								
	1.5.1	Prepare TOR for survey and contract a consultant.																					CCF,PM		CO	
	1.5.2	Supervise implementation of monitoring survey.																					EMO, PM		CO	
	1.5.3	Receive ~~Inspect~~ and assess submitted monitoring reports.																					CCF, PM		CO	
2 Social forestry extension activities among individual farmers and farmer groups are promoted.	2.1	Carry out baseline survey for situation analysis.																								
	2.1.1	Prepare TOR for survey and contract a consultant.																					CCF, HFF,HDL Manager		CO (CA, SE)	A consultant
	2.1.2	Supervise implementation of baseline survey.																					DFO,Manager		CO (CA)	A consultant
	2.1.3	Receive ~~Inspect~~ and assess submitted baseline report.																					HDL,HFF, Manager		CO (SE)	A consultant
	2.2	Improve extension staff's activities.																								
	2.2.1	Review and analyze FD/SOFEM extension system to identify the problems for more involvement of farmers/farmer groups activities (Study & Workshop)																					Manager Ass. Manager DFOs DFEOs	Co-Manager	SE	~~A consultant~~
	2.2.2	Collect other organizations' extension system and guidelines, and study their extension cases in positive and negative impact.																					Manager Ass. Manager		SE (CO)	~~A consultant~~
	2.2.3	Conduct workshop with FD extension staff for problem analysis.																					Ass. Manager DFOs DFEOs Field Ass.	Co-Manager	SE	~~A consultant~~
	2.2.4	Prepare and review a guideline for field extension activities.																					Manager Ass. Manager	Co-Manager	CA (SE)	
	2.2.5	Plan programmes for seminars and workshops for field level extension staff (DFEO, Field Assistants, etc.) and prepare the implementation.																					Manager Ass. Manager	Co-Manager	SE (CO)	
	2.2.6	Conduct seminars and field workshops for extension staff in PLA and extension method.																					Manager Ass. Manager	Co-Manager Research Ass.	SE (CO)	A consultant

Outputs	Activities		Year 1				Year 2				Year 3				Year 4				Year 5				Staff in charge			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	FD	KEFRI	JICA	Others
	2.2.7	Conduct seminars and field visits for extension staff in various needs on social forestry techniques.																					Ass. Manager DFOs DFEOs Field Ass.	Co-Manager Research Ass.	SE (CO)	Relevant Technical Organizations
	2.2.8	Facilitate field extension staff to attend in house seminar and/or other organizations' training in necessary techniques..																					Manager Ass. Manager DFOs		SE (CO)	Relevant Technical Organizations
	2.2.9	P																					Manager Ass. Manager		CA (SE, CO)	
	2.2.10	Conduct seminar, workshop and OJT for extension staff on activity planning, implementation and evaluation																					Ass. Manager DFOs	Co-Manager	SE (CO)	
	2.2.11	Conduct surveys on the contact farmers/farmer groups details as for the improvement of field extension activity management. *Coordinate with baseline survey 2.1.*																					Ass. Manager DFOs, DFEO		SE (CO)	
	2.2.12	Compile database and analyze approach methods to farmers/farmer groups for further planning of field extension activities.																					Ass. Manager DFOs, DFEO		SE (CO)	
	2.2.13	Train FD staff on practical equipment management method to facilitate field activities with well maintained means and equipments.																					Manager Ass. Manager DFOs		SE (CO)	
	2.2.14	Diversify method of communication for mutual exchange of information.																					Manager Ass. Manager DFOs		SE (CO)	
	2.2.15	P																					Manager Ass. Manager DFOs		SE (CO)	
	2.3	Facilitate planning, implementation and evaluation of social forestry and related activities with individual farmers and farmer groups initiatives.																								
	2.3.1	P																					DFOs DFEOs		SE (CO)	
	2.3.3	P																					Ass. Manager DFOs DFEOs		SE (CO)	
	2.3.4	P																					Ass. Manager DFOs		SE (CO)	
	2.3.5	P																					Ass. Manager DFOs DFEOs		SE (CO)	
	2.3.6	P																					DFOs DFEOs		SE (CO)	
	2.3.7	P																					DFOs DFEOs		SE (CO)	
	2.3.8	P																					Ass. Manager DFOs DFEOs		SE (CO)	A consultant

Outputs	Activities	Year 1				Year 2				Year 3				Year 4				Year 5				Staff in charge			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	FD	KEFRI	JICA	Others
	2.3.9 P								■				■				■				■	DFOs DFEOs		CO (SE)	A consultant
	2.4 Facilitate farmer to farmer extension.																								
	2.4.1 P		■				■				■				■				■			Ass. Manager DFOs DFEOs		SE (CO)	DIC
	2.4.3 P			■				■				■				■				■		DFOs DFEOs		SE (CO)	
	2.4.4 P			■				■				■				■				■		Ass. Manager DFOs DFEOs	Co-Manager	SE (CO)	
	2.4.5 P			■	■			■	■			■	■			■	■			■	■	DFOs DFEOs		SE (CO)	
	2.4.6 P							┈	┈	┈	┈	┈	┈	┈	┈	┈	┈	┈	┈	┈	┈	Ass. Manager DFOs DFEOs		SE (CO)	
	2.4.7 P	■																				Manager Ass. Manager DFOs DFEOs	Co-Manager	SE (CO)	
	2.4.8 P		┈	┈	┈	┈	┈	┈	┈	┈	┈	┈	┈									DFOs DFEOs			
	2.4.9 P		┈	┈		┈	┈	┈		┈	┈	┈										Ass. Manager DFOs DFEOs		SE (CO)	
	2.4.10 P		┈	┈		┈	┈	┈		┈	┈	┈										Ass. Manager DFOs DFEOs		SE (CO)	
	2.4.11 P																					Ass. Manager DFOs DFEOs		CO (SE)	A consultant
	2.4.12 P							■	■			■	■			■	■			■	■	Ass. Manager DFOs DFEOs		CO (SE)	

Outputs	Activities		Year 1				Year 2				Year 3				Year 4				Year 5				Staff in charge			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	FD	KEFRI	JICA	Others
		2.5 Facilitate network among farmer groups.																	CO□(SE)							
		2.5.1 Review activities, conduct surveys and collect information for need analysis. *Coordinate with Baseline 2.1.*																					Manager Ass. Manager DFOs		SE (CO)	DIC
		2.5.2 Facilitate organization for Farmers Group Networks on social forestry.																					Ass. Manager DFOs DFEOs		SE (CO)	A consultant
		2.5.3 Facilitate workshop for problem analysis among the farmer groups and action planning.																					Ass. Manager DFOs DFEOs		SE (CO)	A consultant
		2.5.4 Assist field working groups under the Networks for information shearing and other social forestry related projects.																					Ass. Manager DFOs DFEOs		SE (CO)	A consultant
		2.5.5 Facilitate the field working groups in monitoring and evaluation of their activities.																					Ass. Manager DFOs DFEOs		SE (CO)	A consultant
		2.5.6 Re-assist the field working groups organization and facilitate workshop for problem analysis and determine the target projects.																					DFOs DFEOs		CO	A consultant
		2.6 Monitor extent of the promotion of social forestry extension activities.																								
		2.6.1 Prepare TOR for survey and contract a consultant.																					Manager Ass. Manager		CO (CA)	A consultant
		2.6.2 Supervise implementation of monitoring survey.																					Ass. Manager		CO (CA)	A consultant
		2.6.3 Inspect and assess submitted monitoring reports.																					Manager Ass. Manager		CO (SE)	A consultant
3	Farmers and other stakeholders obtain enough practical knowledge and techniques.	3.1 Carry out baseline survey for situation analysis.																								
		3.1.1 Prepare TOR for survey and contract a consultant.																					Manager Ass. Manager		CO (CA, SE)	
		3.1.2 Supervise implementation of baseline survey.																					Ass. Manager		CO (CA)	
		3.1.3 Receive ~~inspect~~ and assess submitted baseline report.																					Manager Ass. Manager		CO (SE)	

Outputs	Activities	Year 1				Year 2				Year 3				Year 4				Year 5				Staff in charge			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	FD	KEFRI	JICA	Others
	3.2 Develop farmers friendly techniques.																								
	3.2.1 Organize working group for farmers friendly techniques.																					Director Manager Ass. Manager	Co-Director Co-Manager Research Ass.	CA (SE)	
	3.2.2 Assess existing social forestry techniques by the point of view of the farmers and identify the target techniques to be improved.																					Manager Ass. Manager	Co-Manager Research Ass.	CA (SE)	ICRAF
	3.2.3 Elaborate plan for the technical improvement.																					Manager Ass. Manager	Co-Manager Research Ass.	SE	ICRAF
	3.2.4 Implement the plan.																						Co-Manager Research Ass.		ICRAF
	3.2.5 Monitor and analyze results of development.																					Manager Ass. Manager	Co-Manager Research Ass.	SE	ICRAF
	3.2.6 Assess submitted technical reports for manuals preparation.																					Director Manager Ass. Manager	Co-Director Co-Manager Research Ass.	CA (SE)	ICRAF
	3.3 Identify useful local forestry related knowledge.																								
	3.3.1 Organize working group for useful local forestry related knowledge to identify the target.																					Director Manager Ass. Manager	Co-Director Co-Manager Research Ass.	CA (SE)	
	3.3.2 Collect the existing bibliographical information and knowledge.																					Manager Ass. Manager	Co-Manager Research Asiss.		ICRAF
	3.3.3 Elaborate the plan for filed survey.																					Manager Ass. Manager	Co-Manager Research Ass.	SE	ICRAF
	3.3.4 Implement the survey.																						Co-Manager Research Ass.		ICRAF
	3.3.5 Monitor and analyze results of development.																					Manager Ass. Manager	Co-Manager Research Ass.	CA (SE)	ICRAF
	3.3.6 Assess submitted technical reports for manuals preparation.																					Director Manager Ass. Manager	Co-Director Co-Manager Research Ass.	CA (SE, CO)	ICRAF
	3.4 Develop the technical manuals.																								
	3.4.1 Organize working group for publications.																					Director Manager Ass. Manager	Co-Director Co-Manager Research Ass.	CA (SE)	
	3.4.2 Identify necessary manuals to be developed.																					Manager Ass. Manager	Co-Manager Research Ass.	CA (SE)	ICRAF
	3.4.3 Collect the related information for manuals preparation.																						Co-Manager Research Ass.		ICRAF
	3.4.4 Compile and edit manuals through consultation to relevant institutions and specialists.																					Director Manager Ass. Manager	Co-Director Co-Manager Research Ass.	CA (SE)	ICRAF
	3.4.5 Publish and distribute manuals to relevant stakeholders.																					Manager Ass. Manager	Co-Manager Research Ass.	CO	ICRAF

Outputs	Activities		Year 1				Year 2				Year 3				Year 4				Year 5				Staff in charge			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	FD	KEFRI	JICA	Others
	3.5	Provide technical assistance for diverse needs of individual farmers, farmer groups and other stakeholders.																								
	3.5.1	Collect the needs of technical assistance for farmers/farmer group/other stakeholders through interviews and workshops. (Also utilize 3.1 & 3.10.)																					Manager Ass. Manager DFOs	Co-Manager Research Ass.	SE (CO)	A consultant
	3.5.2	Identify target techniques to be promoted, analyze neCOssary resources and coordinate with other offices and organizations.																					Manager Ass. Manager DFOs	Co-Manager Research Ass.	SE	
	3.5.3	Conduct technical assistances through daily visits.																					DFOs DFEOs			
	3.5.4	Facilitate extension staff to plan and prepare seminars and workshop for farmers/farmer groups/other stakeholders																					Ass. Manager DFOs		SE (CO)	
	3.5.5	Implement seminars and workshops for farmers/farmer group/other stakeholders.																					DFOs DFEOs		SE (CO)	
	3.5.6	Assess impact to the recipients. *Coordinate with Monitoring 3.10.*																					Ass. Manager DFOs		CO	A consultant
	3.6	Maintain and improve Tiva demonstration plot.																								
	3.6.1	Collect the needs of farmers/farmer groups/other stakeholders through the interviews and workshops. *Also utilize 3.1.*																						Co-Manager Research Ass.	CO	A consultant
	3.6.2	Identify needs and elaborate plan for revision and maintenances .																						Co-Manager Research Ass.	SE	
	3.6.3	Implement the plan.																						Co-Manager Research Ass.		
	3.6.4	Assess impact to the visitors. *Coordinate with Monitoring 3.10.*																						Co-Manager Research Ass.	CO	A consultant
	3.7	Identify and assess practical field demonstration sites and the needs for promotion.																								
	3.7.1	Collect needs of demonstration from farmers/farmer group/other stakeholders through interviews and workshops. *Also utilize 3.1.*																					Ass. Manager DFOs DFEOs		SE	A consultant
	3.7.2	Identify existing farm lands for practical field demonstration and coordinate with land owners.																					Ass. Manager DFOs DFEOs			
	3.7.3	Assess the needs and impact of demonstration to farmers in the surrounding area. *Coordinate with Monitoring 3.10.*																					Manager Ass. Manager DFOs		SE (CO)	A consultant

Outputs	Activities		Year 1				Year 2				Year 3				Year 4				Year 5				Staff in charge			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	FD	KEFRI	JICA	Others
	3.8	Undertake cross visits among individual farmers and farmer groups.																								
	3.8.1	Survey leading fields of the farmers/farmer groups through field observation and interviews. *Also utilize 3.1, 3.10.*																					Manager Ass. Manager DFOs		CO (SE)	A consultant
	3.8.2	Identify target farmers/farmer groups, and plan cross visit programme based on their needs.																					Manager Ass. Manager DFOs		SE (CO)	
	3.8.3	Prepare cross visits among farmers/farmer groups																					Ass. Manager DFOs DFEOs		CO	
	3.8.4	Implement cross visit.																					Ass. Manager DFOs DFEOs		CO	
	3.8.5	Follow up the target farmers/farmer groups and assess the impact. *Coordinate with Monitoring 3.10.*																					Manager Ass. Manager DFOs		CO (SE)	A consultant
	3.9	Organize open days of project activities and demonstration plots for farmers and other stakeholders.																								
	3.9.1	Plan and prepare open day identifying target people and techniques to be shown.																					Ass. Manager DFOs		SE (CO)	
	3.9.2	Implement open day.																					DFOs DFEOs			
	3.9.3	Assess impacts to attendances. Coordinate with Monitoring 3.10.																					Manager Ass. Manager DFOs		CO	A consultant
	3.10	Monitor the extent of adoption of practical knowledge and techniques.																								
	3.10.1	Prepare TOR for survey and contract a consultant.																					Manager Ass. Manager		CO (CA)	A consultant
	3.10.2	Supervise implementation of monitoring survey.																					Ass. Manager		CO (CA)	A consultant
	3.10.3	Inspect and assess submitted monitoring reports.																					Manager Ass. Manager		CO (SE)	A consultant
4	Information on social forestry extension and related issues is shared among the stakeholders.	4.1 Carry out baseline survey for situation analysis.																								
		4.1.1 Prepare TOR for survey and contract a consultant.																							CO (CA)	
		4.1.2 Supervise implementation of baseline survey.																							CO (CA)	
		4.1.3 Receive ~~Inspect~~ and assess submitted baseline report.																							CO (CA)	
		4.2 Diversify methods for information sharing.																								
		4.2.1 Set up the homepage on website.																							CA	
		4.2.2 Maintain the homepage.																							CA	

Outputs	Activities		Year 1				Year 2				Year 3				Year 4				Year 5				Staff in charge			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	FD	KEFRI	JICA	Others
	4.3	Hold workshops and seminars.																								
	4.3.1	Draw up plans for the workshops and seminars.																							CA	
	4.3.2	Prepare the workshops and seminars.																							CA	
	4.3.3	Implement the workshops and seminars.																							CA	
	4.4	Identify potential marketing incentives for social forestry products and services.																								
	4.4.1	Draw up plans for marketing study.																							CA	
	4.4.2	Implement the study.																							CA	A consultant
	4.4.3	Analyze the results of study.																							CA	A consultant
	4.4.4	Provide farmers and other stakeholders with information collected.																							CA	
	4.5	Monitor extent of information sharing.																								
	4.5.1	Prepare TOR for survey and contract a consultant.																							CO	
Input		Equipment and Machinery																							(SF) CO	
		Infrastructure																							CO	
		Prepare designs for infrastructures.																							(SF) CO	
		Construct the infrastructures in accordance with the designs.																							CO	
Review																									CO	

Legends

Activities that must take place at given time

Sporadic activities

Annex 3

Terms of Reference for Japanese Long-term Experts

Terms of Reference for Japanese Long-term Experts

1) Chief Advisor / Forest Policy

1	Position	
1)	Post	Chief advisor / Forest policy expert
2)	Office	Project head office in FD headquarters
3)	Required qualification	B.Sc. in forestry or related field. Minimum 10 years experience in forest management with over 5 years dealing at policy level (preferable at a level of head or deputy head of division in the public sector), Good managerial and supervisory skills
2	Counterpart Personnel	
1)	Project Director	
2)	Project Co-director	
3)	Project Manager	
4)	Project Co-manager	
3	Expected activities	
1)	Location of the activities	FD Headquarters
2)	Term of activities	Approximately from Feb. 2004 for five years,
3)	Responsible activities	1. Support the management and coordination of all activities of the Project. 2. Provide necessary technical advices to the Kenyan counterpart personnel on forest policy.

2) Social Forestry Extension

1	Position	
1)	Post	Social forestry extension expert
2)	Office	Project head office in FD headquarters, Project field offices in Tharaka, Mbeere and Kitui
3)	Required qualification	B.Sc. in forestry or related field. Minimum 10 years experience in project implementation with over 5 years dealing social forestry extension
2	Counterpart Personnel	
1)	Project Manager	
2)	Project Co-manager	
3)	Assistant Project Manager	
4)	Field Managers	
3	Expected activities	
1)	Location of the activities	FD Headquarters, Tharaka, Mbeere and Kitui Districts
2)	Term of activities	Approximately from Feb. 2004 for three years
3)	Responsible activities	1. Provide necessary technical advices to the Kenyan counterpart personnel on social forestry extension.

3) Coordinator/Extension Implementation Management

1	Position	
1)	Post	Coordinator / Extension implementation management expert
2)	Office	Project head office in FD headquarters, Project field offices in Tharaka, Mbeere and Kitui
3)	Required qualification	B.Sc. Minimum 5 years experience in project implementation.
2	Counterpart Personnel	
1)	Project Manager	
2)	Project Co-manager	
3)	Assistant Project Manager	
3	Expected activities	
1)	Location of the activities	FD Headquarters, Tharaka, Mbeere and Kitui Districts
2)	Term of activities	Approximately from Feb. 2004 for five years
3)	Responsible activities	1. Assist Chief advisor in the management and coordination of all activities of the Project. 2. Provide necessary technical advices to the Kenyan counterpart personnel on extension implementation management.

Annex 4

Terms of Reference for Counterparts of Japanese Experts

Terms of Reference for Counterparts of Japanese Experts

1) Project Director

1	Position	
1)	Post	Project director
2)	Office	FD headquarters
3)	Required qualification	Sufficient experience in forest policy and administration. Good managerial and supervisory skills
2	Counterpart Personnel	
1)	Chief advisor	
3	Expected activities	
1)	Location of the activities	FD Headquarters
2)	Responsible activities	Overall execution of the Project in cooperation with chief advisor

2) Project Co-director

1	Position	
1)	Post	Project co-director
2)	Office	KEFRI headquarters
3)	Required qualification	Sufficient experience in forest research and training. Good managerial and supervisory skills
2	Counterpart Personnel	
1)	Chief advisor	
3	Expected activities	
1)	Location of the activities	KEFRI headquarters
2)	Responsible activities	Support the Project director for overall execution of the Project in cooperation with chief advisor

3) Project Manager

1	Position	
1)	Post	Project manager
2)	Office	FD headquarters
3)	Required qualification	Sufficient experience in social forestry extension and technical cooperation with external aid agencies.
2	Counterpart Personnel	
1)	Chief advisor	
2)	Extension expert	
3)	Coordinator	
3	Expected activities	
1)	Location of the activities	FD headquarters
2)	Responsible activities	Management of overall project implementation in cooperation with the Project director, Chief advisor, Extension expert and Coordinator

4) Project Co-manager

1	Position	
1)	Post	Project co-manager
2)	Office	KEFRI Kitui Centre
3)	Required qualification	Sufficient experience in social forestry research and training.
2	Counterpart Personnel	
1)	Chief advisor	
2)	Extension expert	
3)	Coordinator	
3	Expected activities	
1)	Location of the activities	Semi-arid areas in Tharaka, Mbeere and Kitui district
2)	Responsible activities	Support to the Project manager for the management of project implementation in cooperation with the Project co-director, Chief advisor, Extension expert and Coordinator

5) Assistant Project Manager

1	Position	
1)	Post	Assistant project manager
2)	Office	FD headquarters
3)	Required qualification	Sufficient field experience in social forestry extension.
2	Counterpart Personnel	
1)	Extension expert	
2)	Coordinator	
3	Expected activities	
1)	Location of the activities	FD headquarters Semi-arid areas in Tharaka, Mbeere and Kitui district
2)	Responsible activities	Assistance to project manager and coordinate with field managers for implementation of the project activities in cooperation with Extension expert and Coordinator

6) Field Managers

1	Position	
1)	Post	Project field managers
2)	Office	District forest office in Tharaka, Mbeere and Kitui
3)	Required qualification	Sufficient field experience in social forestry extension.
2	Counterpart Personnel	
1)	Extension expert	
2)	Coordinator	
3	Expected activities	
1)	Location of the activities	Semi-arid areas in Tharaka, Mbeere and Kitui district
2)	Responsible activities	Implementation of project activities in field in cooperation with Extension expert and Coordinator

Annex 5

The Joint Steering Committee

Joint Steering Committee

1. Function

For the effective and successful implementation of the Project, a joint steering committee will be established to make decisions relevant to the Project. The Joint Steering Committee will meet when necessity arises and at least once a year in order to fulfil the following functions:

1. To formulate annual work plan of the Project based on the Plan of Operations within the framework of the R/D.
2. To review the results of the annual work plan and the progress of the Project.
3. To exchange views and ideas on major issues those arise during the implementation period of the Project.

2. Committee members

The committee will be composed of the chair, the members and the observers. The chair may declare closed sessions against the observers. The rules and guidelines for the management of the committee will be determined at the initial stage of the Project. The possible composition might be as follows:

1. Chair:
   Permanent Secretary, Ministry of Environment, Natural Resources and Wildlife
2. Members:
   (1) Kenyan Side:
   - ① Desk Officer responsible for JICA, Ministry of Finance
   - ② Chief Conservator of Forests, FD as Project Director
   - ③ Director, KEFRI as Project Co-Director
   - ④ Project Coordinator, FD as Project Manager
   - ⑤ Kitui Centre Director, KEFRI as Project Co-Manager
   - ⑥ Provincial Forest Officer, Eastern Province, FD
   - ⑦ Head, Farm Forestry and Extension Branch
   - ⑧ Head Dryland Forestry Branch
   - ⑨ DFO, Kitui district, FD
   - ⑩ DFO, Mbeere district, FD
   - ⑪ DFO, Tharaka district, FD
   - ⑫ Relevant personnel accepted by Chairperson, if necessary

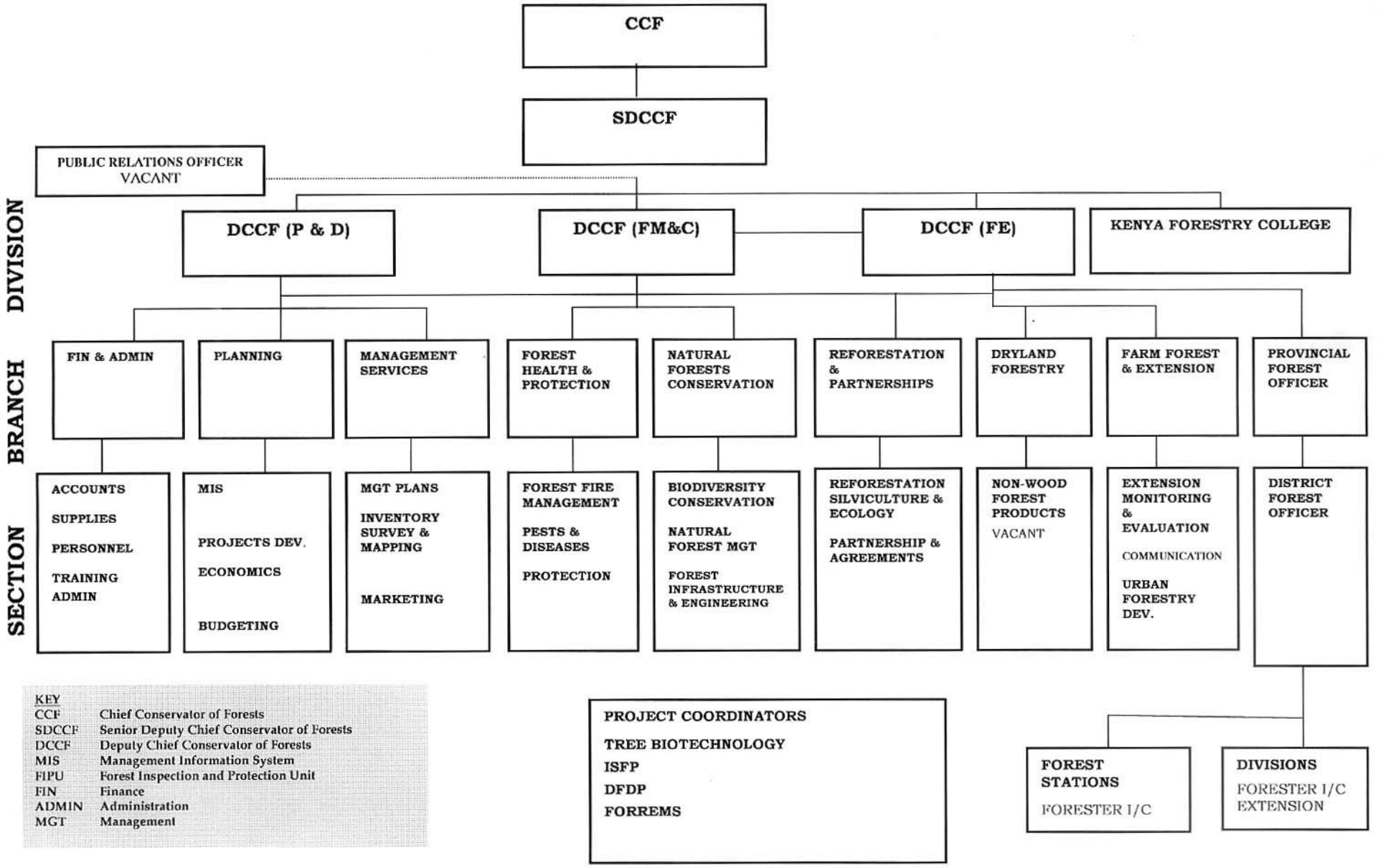
   (2) Japanese side:
   - ① Chief Advisor
   - ② Project Coordinator
   - ③ Expert(s)
   - ④ Resident Representative of Kenya Office, JICA
   - ⑤ Relevant Expert(s) and staff member(s) accepted by Chairperson, if necessary

NOTE: Official(s) of Embassy of Japan in Kenya may attend the Committee meetings as observer(s)

Annex 6

Forest Department Organization Chart

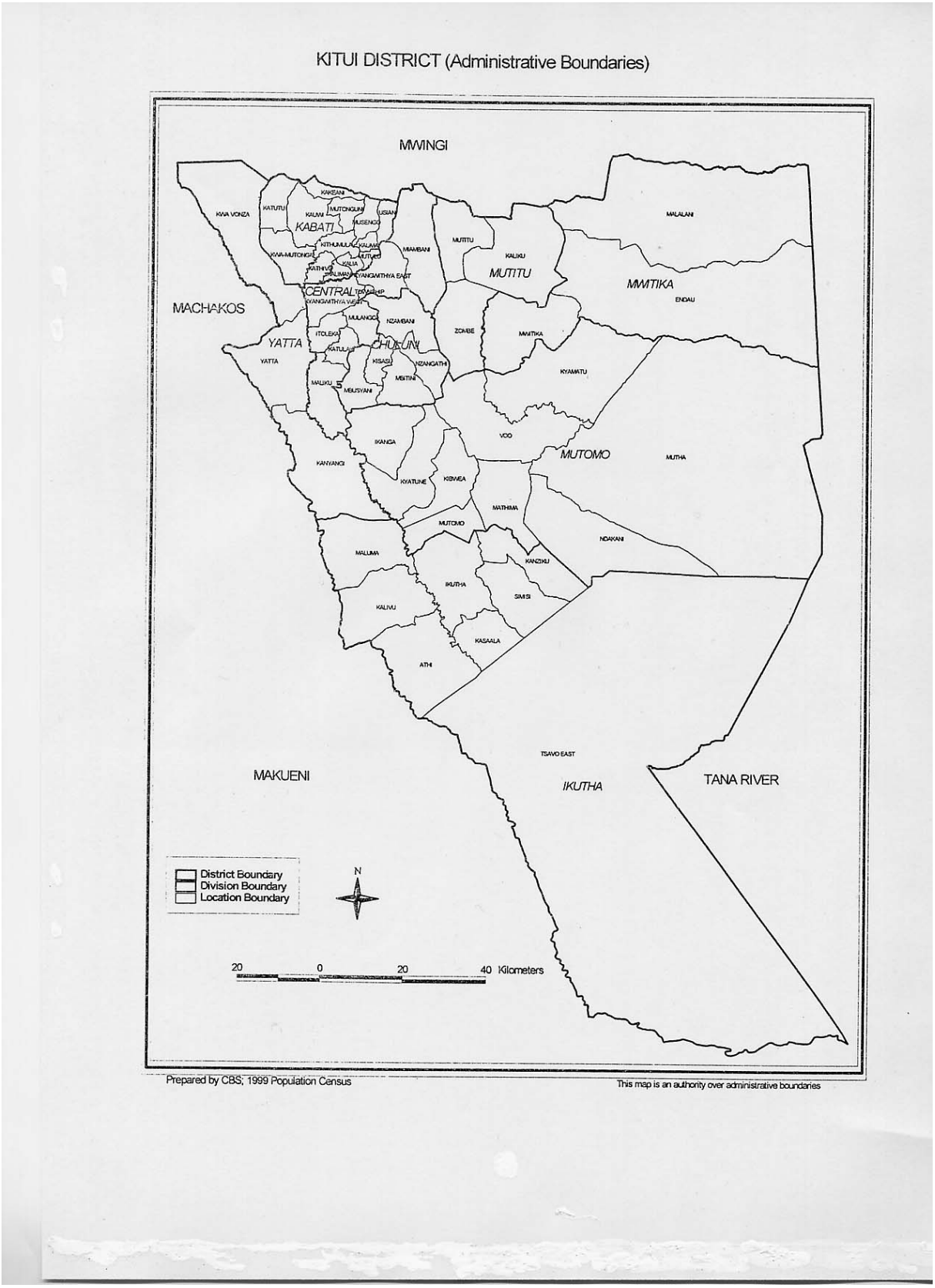
FOREST DEPARTMENT ORGANIZATION STRUCTURE - FEBRUARY 2004



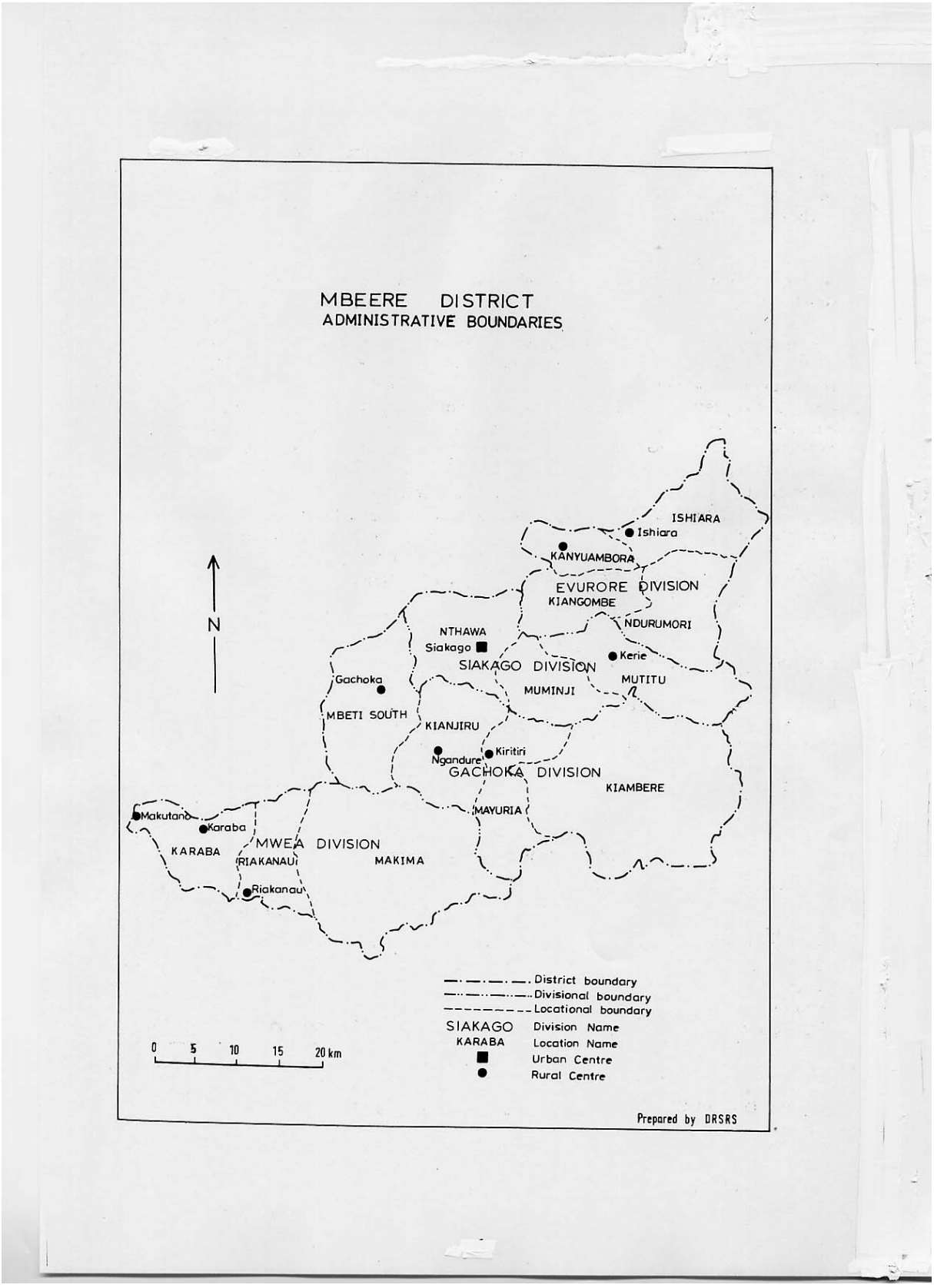
Annex 7

Administrative Boundaries Maps for Kitui, Mbeere And Tharaka Districts

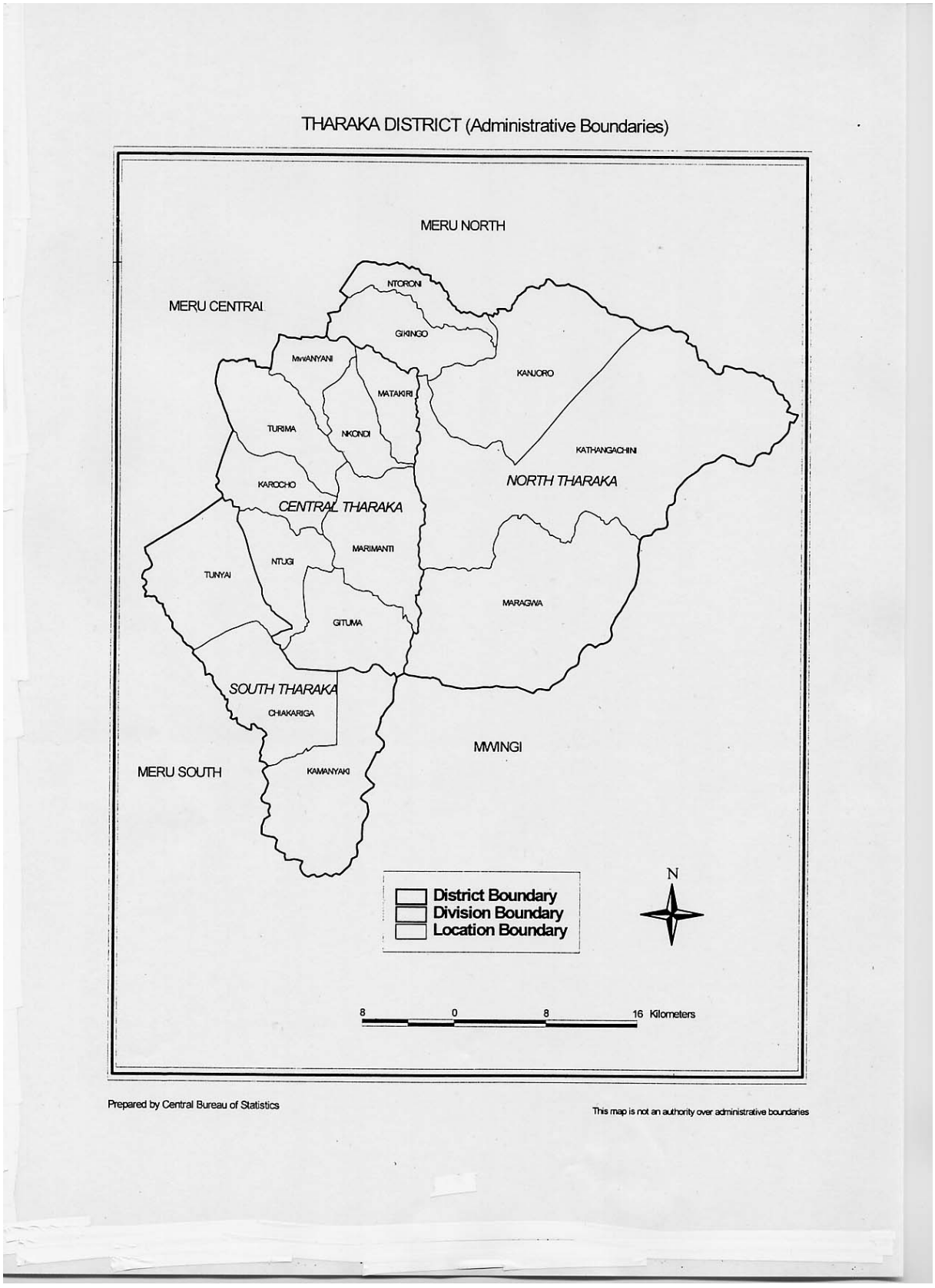
Administrative Boundaries Map for Kitui District



Administrative Boundaries Map for Mbeere District



Administrative Boundaries Map for Tharaka District



Annex 8

Social Forestry Extension Situation and Socio-economic Condition in Mbeere and Tharaka

Survey Results and Analysis for Social Forestry Extension Situation and Socio-economic Condition in Mbeere and Tharaka Districts

This section presents the results of the socio-economic condition survey in Mbeere and Tharaka. A total of 40 farmers were interviewed during the survey, 20 in Mbeere and 20 in Tharaka. The results are presented in the following sections for both districts.

1 Information on the Family

Family size

Fig. 1a: Family size, Mbeere

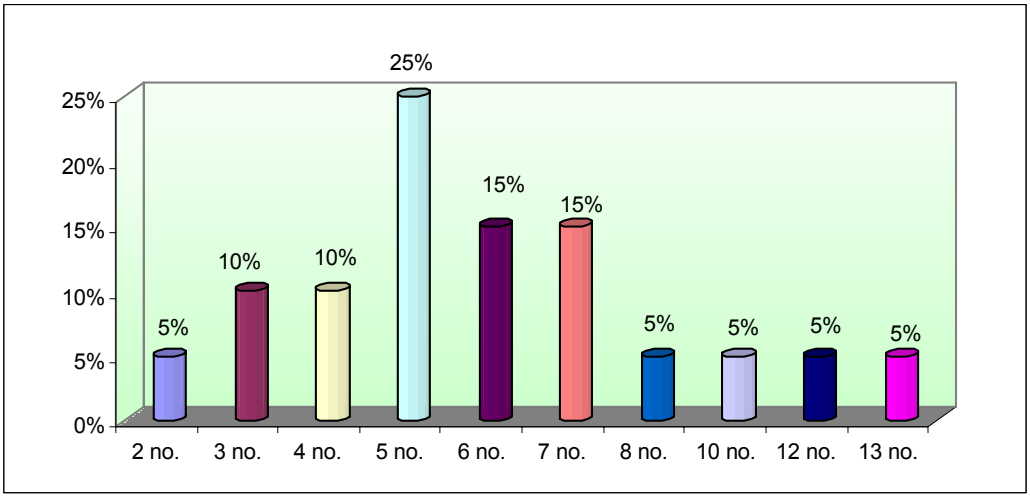


Fig. 1b: Family size, Tharaka

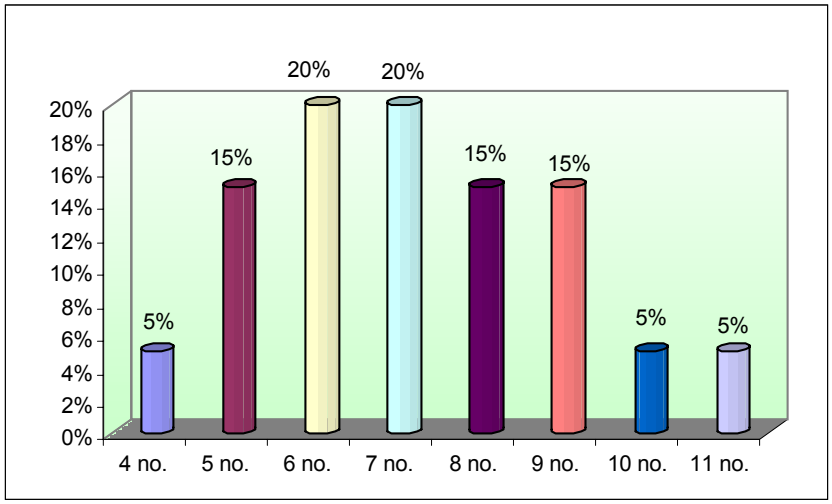


Fig. 1 gives the family sizes for those interviewed. In Mbeere (Fig. 1a), 50% of the families surveyed have 5 members and below, with 25% falling in the 5-member category. The largest household size is 13, with 11 children and their parents. The smallest size is 2, where the couple does not have any children yet.

In Tharaka on the other hand (Fig 1b), the most common family size among those interviewed is 6 and 7, with each constituting 20%. 5, 8 and 9 members each constitute 15%, while 4, 10 and 11 each constitute 5%. The smallest family size is 4 and the largest is 11. This appears to be a fairly normal distribution.

It is important to note here that the family sizes considered in this survey do not include those offspring who are already married and living away from home. However, it includes all those who still depend on their parents for their upkeep, e.g. unmarried sons, daughters and grandchildren still living with the parents/grandparents.

2 Income and expenditure

Sale of farm products

Fig. 2a:Sale of farm products, Mbeere

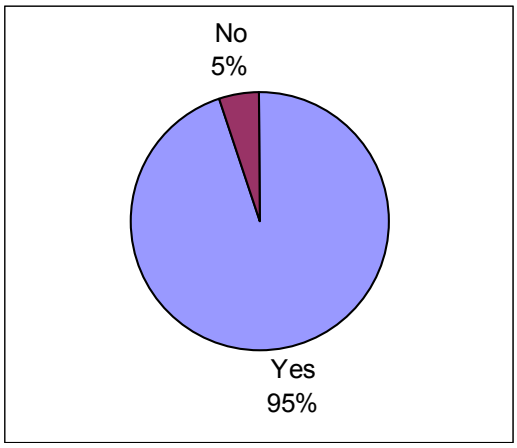
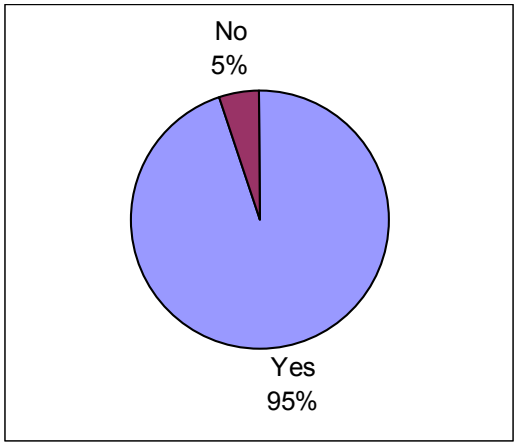


Fig. 2b:Sale of farm products, Tharaka



In both cases of Mbeere and Tharaka, only one respondent in each district (5%) said they do not sell farm products. The remaining 19 respondents (95%) sold products from their farms (Fig. 2a,b).

Types of products sold

Fig. 3(i)a: First priority products sold, Mbeere

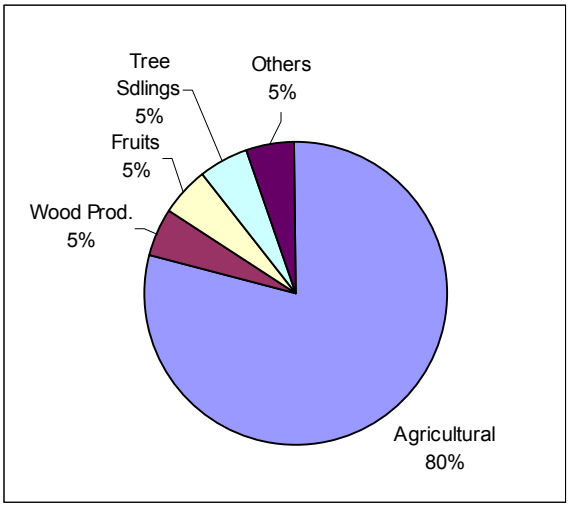


Fig. 3(i)b: First priority products sold, Tharaka

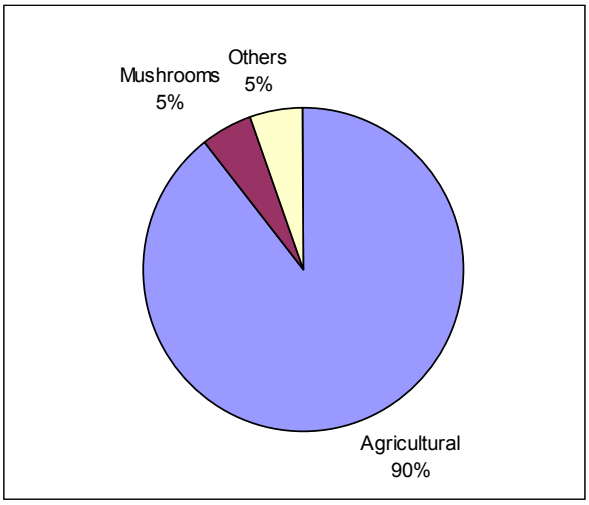


Fig. 3(ii)a: All Products sold, Mbeere

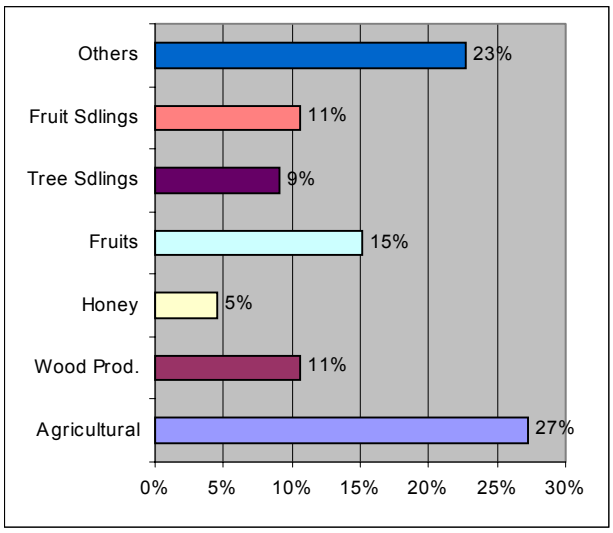
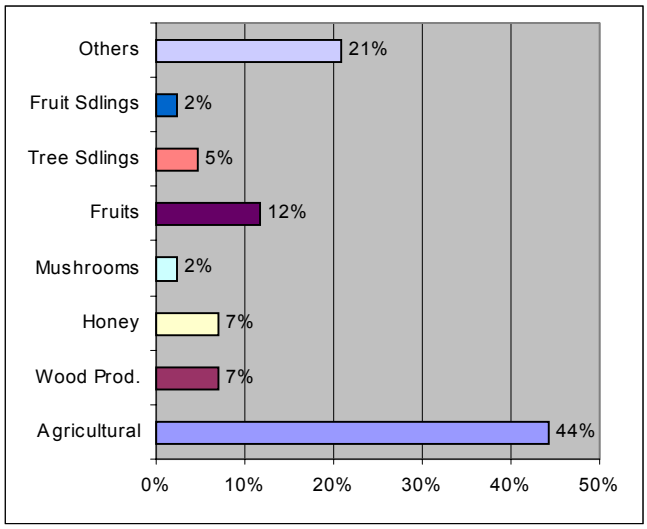


Fig. 3(ii)b: All Products sold, Tharaka



In order of first priority products to be sold, agricultural products score the highest at 80%, mainly grains and cereals. The other 20% is shared equally between fruits, tree seedlings, wood products and "others" at 5% each. Others include mainly honey (Fig. 3(i)a). When all products are considered, agricultural products still scored the highest at 27%. Seedlings are next at 20% (both tree and fruit seedlings), followed by fruits (15%) and wood products (11%). The "others", which constitute 23%, include tomatoes, pumpkins, cotton, etc (Fig. 3(ii)a).

Fig. 3(i)b is a representation of the order of importance of products sold in Tharaka, and it shows a similar trend as in Mbeere, with agricultural products topping the scale with 90%. Only 10% goes to others such as mushrooms and animals. Fig. 3(ii)b represents a total of all products sold, and agricultural products are still rated first at 44%. "Others", which includes mainly animals such as chicken, goats and cattle, scored 21% at second position. Fruits scored 12% at third place, and wood products tied with honey at fourth place with 7% each. Seedlings also total 7%, (5% tree seedling, 2% fruit seedlings). Mushrooms scored 2%.

Decision-making in sale of products

Fig. 4a: Decision-making, Mbeere

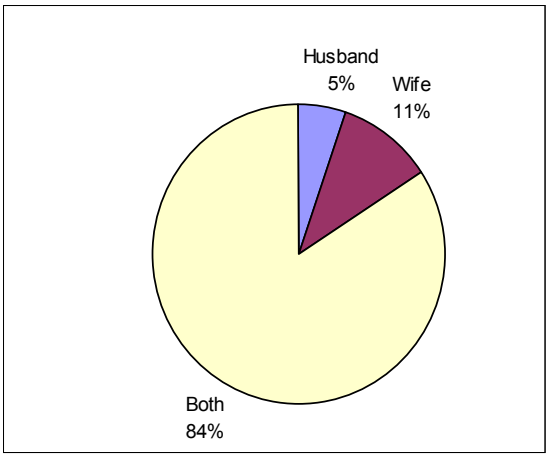
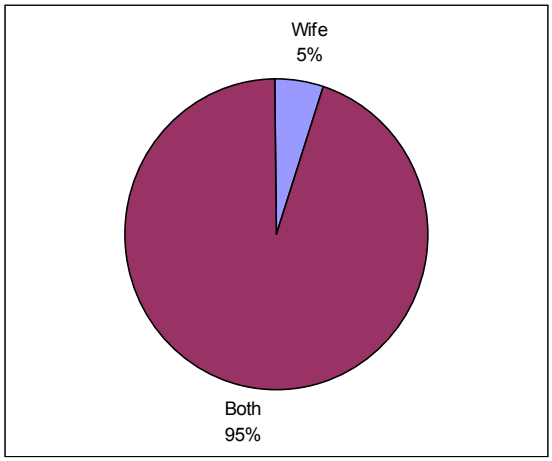


Fig. 4b: Decision-making, Tharaka



Decision-making in sale of products is mostly made by both husband and wife as shown by the score of 84%, whereas decision making by wife alone is 11% and husband alone is only 5% (Fig. 4a).

In Tharaka, only in 1 case out of the 19 who sell their farm products, is the decision to sell made by the wife alone. In all the other 18 cases, decision-making is done by both the husband and the wife together (Fig. 4b).

Decision-making is in most cases a joint undertaking for husbands and wives in both districts. It appears that the wives make more decisions when it comes to sale of food crops, and the men more so when bigger items like goats and cows, or honey, are sold.

Household income per year

Fig. 5a: Household income per year, Mbeere

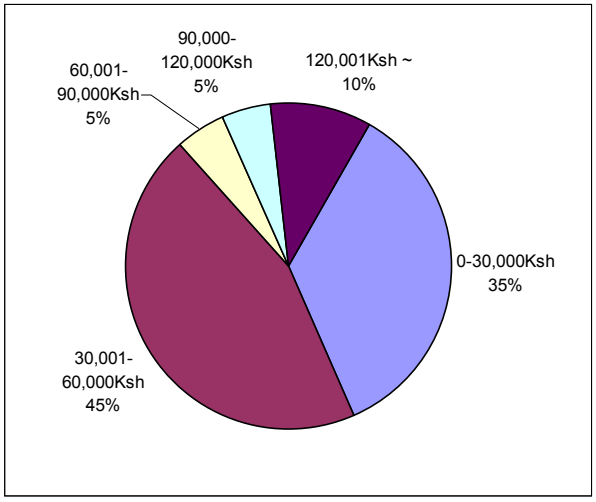
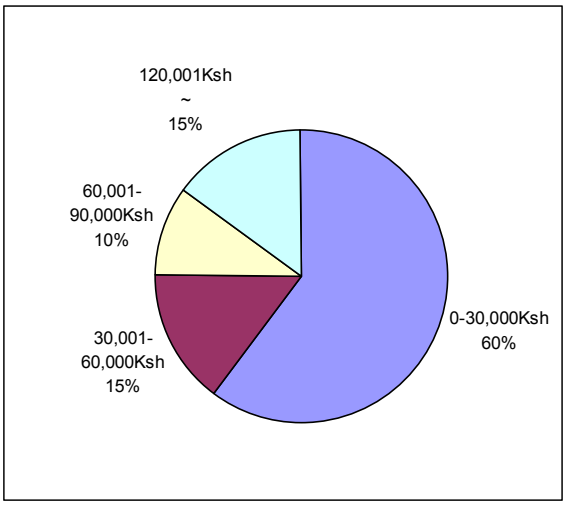


Fig. 5b: Household income per year,



Tharaka

Out of the 20 respondents interviewed in Mbeere, 7 are in the Kshs 0-30,000 income per year category, 9 in the Kshs 30,000-60,000 category, 1 each in the Kshs 60,000-90,000 and 90,000-120,000 categories and two in the over Kshs 120,000 category. This constitutes 35%, 45%, 5%, 5% and 10% of total respondents respectively (Fig. 5a).

In comparison, Fig. 5b represents household income for Tharaka respondents, and shows that majority are in the Kshs 0-30,000 income bracket (60%). In terms of numbers, this category has 12 respondents, Kshs 30,000-60,000 has 3, Kshs 60,000-90,000 has 2 and the over Kshs 120,000 has 3. There is no respondent in the Kshs 90,000-120,000 category.

According to these figures, there are more poor people in Tharaka than in Mbeere as 60% of Tharaka respondents fall in the lowest bracket of Kshs 0-30,000 compared to 35% in Mbeere in the same category.

3 Land tenure

Possession of land title

Fig. 6a: Possession of land title by income, Mbeere

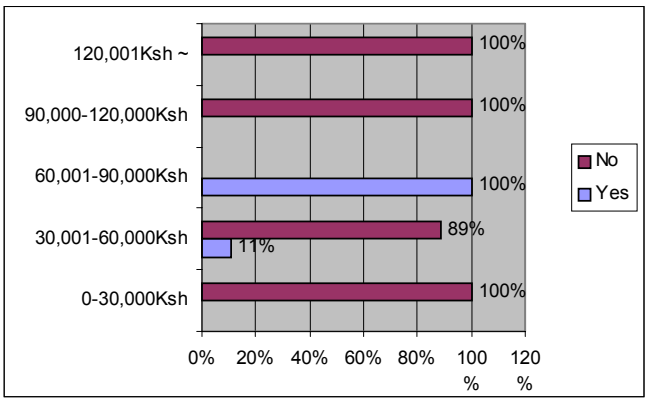
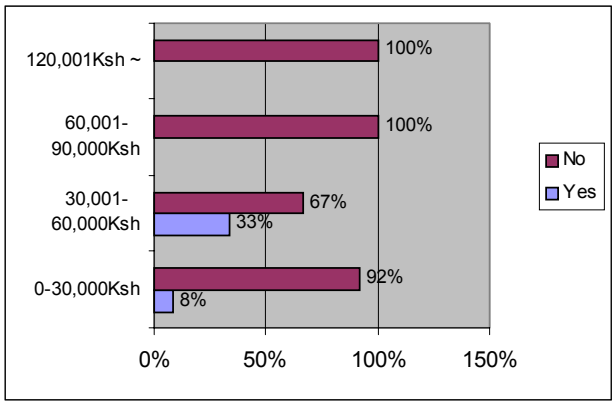


Fig. 6b: Possession of land title by income, Tharaka



Only two people in Mbeere, one in the Kshs 30,000-60,000 and the other in the Kshs 60,000-90,000 categories, had title deeds to their land. The following table and Fig. 6a give this representation.

Category	Yes	No	Total
0-30,000Ksh	0	7	7
30,001-60,000Ksh	1	8	9
60,001-90,000Ksh	1	0	1
90,000-120,000Ksh	0	1	1
120,001Ksh ~	0	2	2
Total	2	18	20

Similarly in Tharaka, only 2 respondents in Tharaka possess title deeds for the land they occupy: one in the Kshs 0-30,000 and the other in the Kshs 30,000-60,000 income categories. A graphical representation is given in Fig. 6b.

Application for land title

Fig. 7a: Application for land title, Mbeere

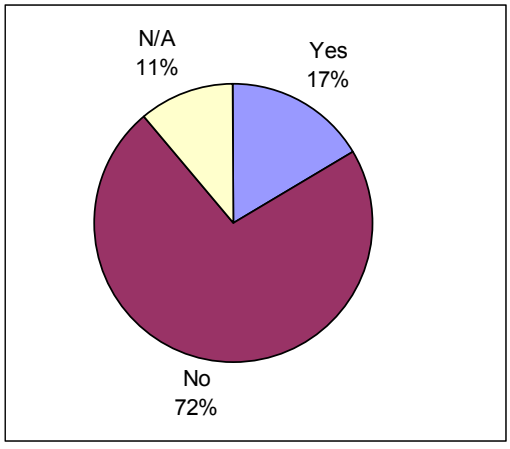
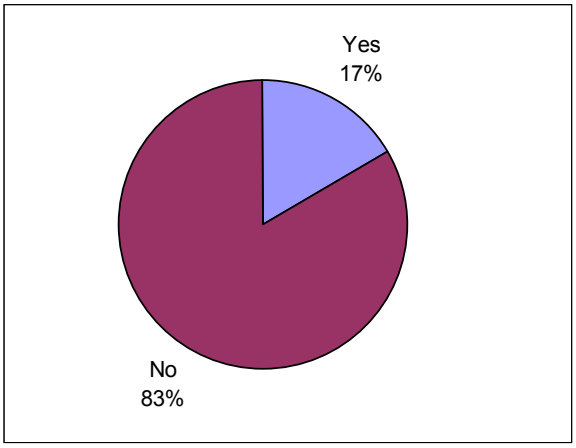


Fig. 7b: Application for land title, Tharaka



Of the 18 people in Mbeere who did not have title deeds, only 3 had applied for title deeds, while 13 had not. 2 were non-categorical (Fig. 7a). It was however observed that the majority of the respondents who had not applied expected the processing of the title deeds to be automatic as they said that their land had already been surveyed.

Likewise in Tharaka, 3 people out of the 18 who do not possess land titles had applied for them (17%). The other 18 had not (83%) – (Fig. 7b). It appears from these figures that having a title deed in both districts is not considered to be a matter of urgency.

Land ownership (in case of no land title)

Fig. 8a: Land ownership, Mbeere

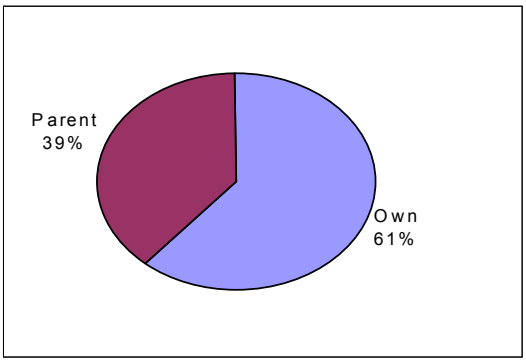
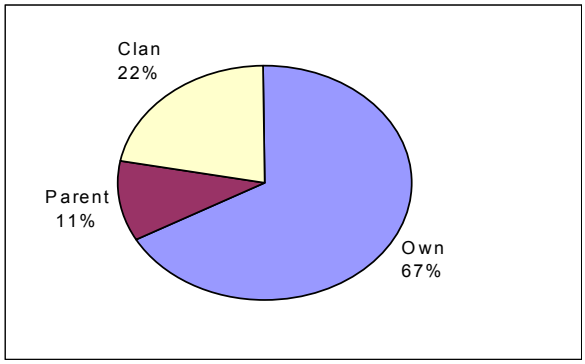


Fig. 8b: Land ownership, Tharaka



Of those who did not have title deeds for the land in Mbeere, 61% claimed the land belonged to them. The rest said it belonged to their parents, who in some cases did not have title deeds either (Fig. 8a). A similar proportion of those who did not have title deeds actually owned the land (67%) and many said it had already been subdivided. 22% had inherited the land from their parents and 22% said the land belonged to the clan (Fig. 8b).

Size of land

Fig. 9a: Land size by income, Mbeere

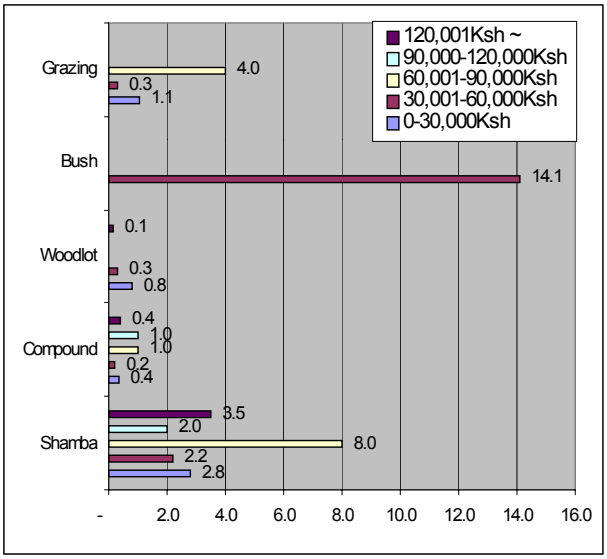
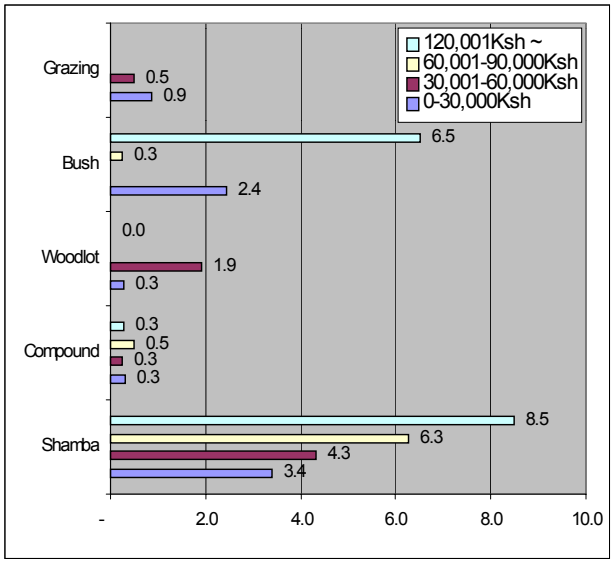


Fig. 9b: Land size by income, Tharaka



Tharaka respondents' largest average acreage of 8 for shamba is in the Kshs 60,000-90,000 category, followed by an average of 3.5 in the over Kshs 120,000 category. For the compound, the highest average is 1 acre for both the KShs 90,000-120,000 and Kshs 60,000-90,000 categories. The over Kshs 120,000 follows with an average of 0.4 acres, which ties with the Kshs 0-30,000 category. Most people do not have a separate woodlot from the grazing land, and what is referred to as bush is actually indigenous woodland which doubles up as grazing land as well. Highest average acreage for woodland is 14.1 for the Kshs 30,000-60,000 category. Highest acreage of grazing land of 4 is found in the Kshs 60,000-90,000 category.

Fig. 9b gives the average land distribution per income category for shamba, compound, woodlot, bush and grazing area in Tharaka. The averages are as tabulated below. Like in Mbeere, it was observed that most farmers did not have a separate woodlot, bush and grazing area, as the bushland or woodlots with mature trees was frequently used as grazing area.

Category	Shamba	Compound	Woodlot	Bush	Grazing
0-30,000Ksh	3.4	0.3	0.3	2.4	0.9
30,001-60,000Ksh	4.3	0.3	1.9	-	0.5
60,001-90,000Ksh	6.3	0.5	-	0.3	-
120,001Ksh ~	8.5	0.3	0.0	6.5	-

Generally, land size among Tharaka respondents is bigger than in Mbeere.

4 Housing

Number of houses

Fig. 10a: Number of houses, Mbeere

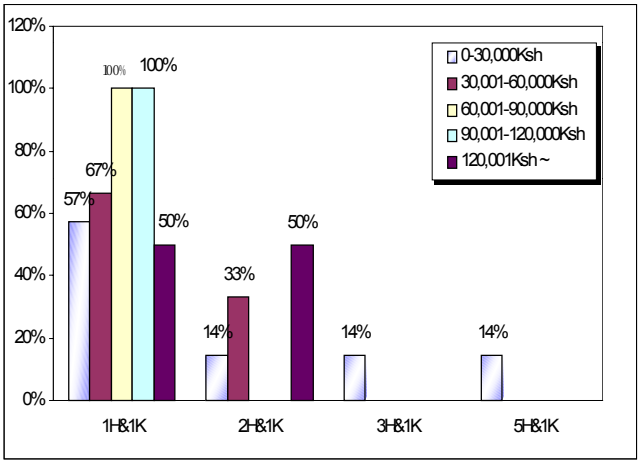
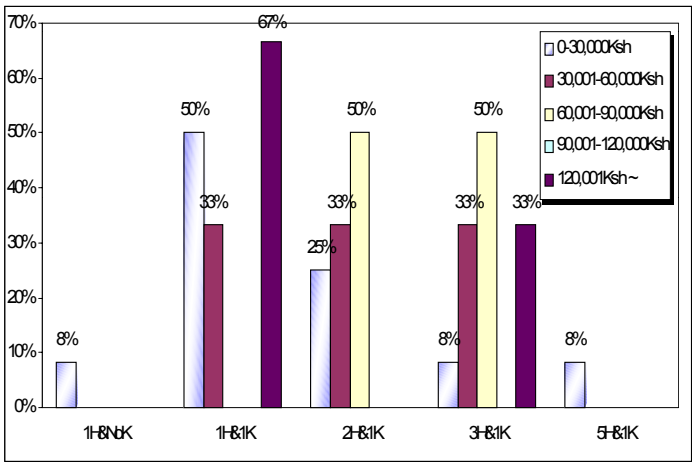


Fig. 10b: Number of houses, Tharaka



At least everybody in Mbeere has a main house and a kitchen (Fig. 10a). The maximum number of main houses is 5, and maximum number of kitchens is two. In the Kshs 0-30,000 income category, 57% have one house and one kitchen, 14%

have two houses and one kitchen, 14% three houses and one kitchen, and 14% five houses and one kitchen. This may appear interesting, but it was noted that majority of the houses for this income category were all small, probably for use by the older sons who were still sharing the same pot their mother cooked. This is unlike the higher income categories who were able to afford one or two big main houses with several bedrooms for use by the whole family. For instance, the Kshs 30,001-60,000 category had 67% and 33% with one house and one kitchen, and two houses and one kitchen respectively. The Kshs 60,001-90,000 and Kshs 90,001-120,000 categories all had one house and one kitchen. The Kshs 120,001 ~ category had 50% with one house and one kitchen, and 50% with two houses and one kitchen.

There is one case in Tharaka (Fig. 10b) in the Kshs 0-30,000 income category where the farmer has no kitchen i.e. the main house doubles up as the kitchen. Everyone else has at least one main house and one kitchen. 50% of this lowest income bracket has one main house and one kitchen too. Interestingly, the maximum number of main houses, 5, is also in the Kshs 0-30,000 category. As was the case in Mbeere, such houses are small mud houses usually occupied by the older sons. For the Kshs 30,000-60,000 income category, the proportion of households with one house one kitchen, two houses one kitchen and 3 houses one kitchen is equal at 33%. In the Kshs 60,000-90,000 category, one person has two houses one kitchen, and the other has three houses one kitchen. For the over Kshs 120,000 category, 67% have one house one kitchen while the remaining 33% has three houses 1 kitchen.

Material of the main house in the income

Fig. 11a: Material of the main house, Mbeere

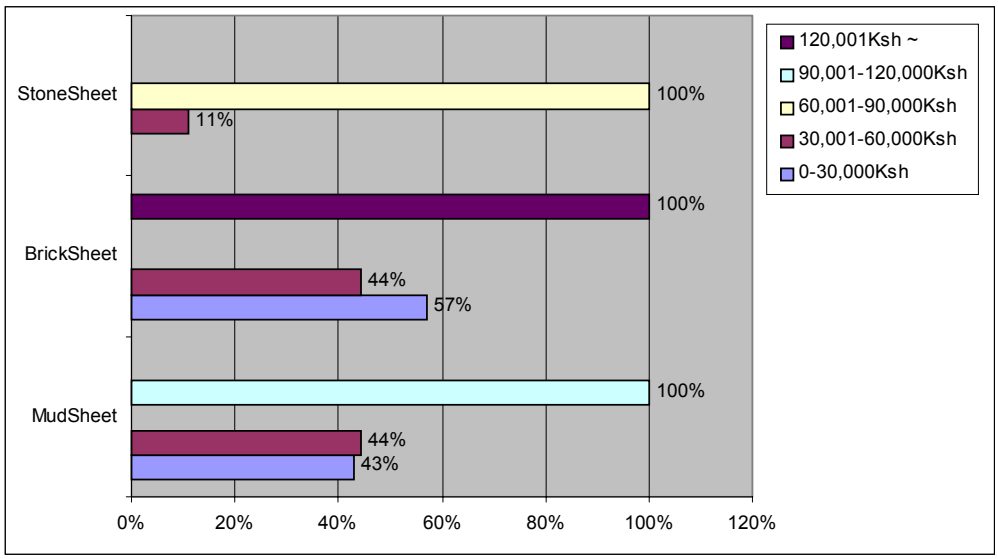
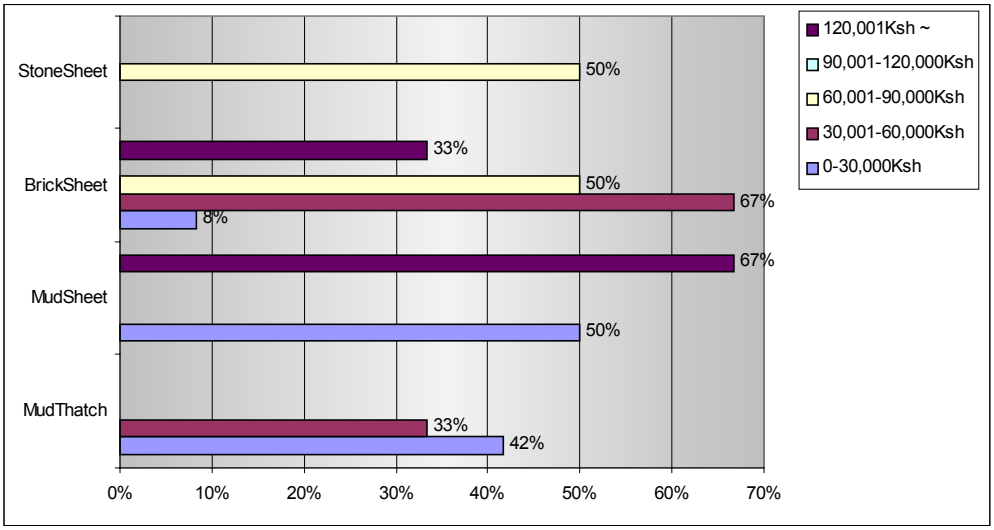


Fig. 11b: Material of the main house, Tharaka



The materials of the main house for Mbeere are either mud, brick or stone walls, and iron-sheet roofs. The distribution per income category is as summarized below, and represented in Fig. 11a.

Category	Mud/ IronSheet	Brick/ IronSheet	Stone/IronSheet
0-30,000Ksh	43%	57%	-
30,001-60,000Ksh	44%	44%	11%
60,001-90,000Ksh	-	-	100%
90,001-120,000Ksh	100%	-	-
120,001Ksh ~	-	100%	-

For Tharaka, the material of the walls of the main houses is either mud, bricks or stone (Fig. 11b). In addition to iron sheets as roofing materials, a certain proportion of the houses for the Kshs 0-30,000 category are also roofed with grass thatch. This group makes up 42% of the houses in this category, 50% being mud and iron sheets. Only 8% (one person) in this category possesses a brick and iron sheet house. For the Kshs 30,000-60,000 income category, 67% have brick and iron sheet houses and 33% mud and thatch. The Kshs 60,000-90,000 has 50% with brick and iron sheet and 50% with stone and iron sheet i.e. one person in each group. The highest income category with over Kshs 120,000 has 67% of the respondents living in mud and iron sheet houses and 33% in bricks and iron sheet houses.

From the foregoing information on materials of the main house and also from observation, housing in Mbeere is generally better than in Tharaka. There are no grass thatched houses in Mbeere among those interviewed, whereas in Tharaka, especially in the more remote division of Tharaka North, majority of the houses have mud walls and many are thatched with grass. This conforms with the income levels: 60% of the respondents in Tharaka are in the lowest income category of Kshs 0-30,000 as compared to only 35% in Mbeere in the same category.

Woody materials used for house construction

Fig 12a: Woody materials, Mbeere

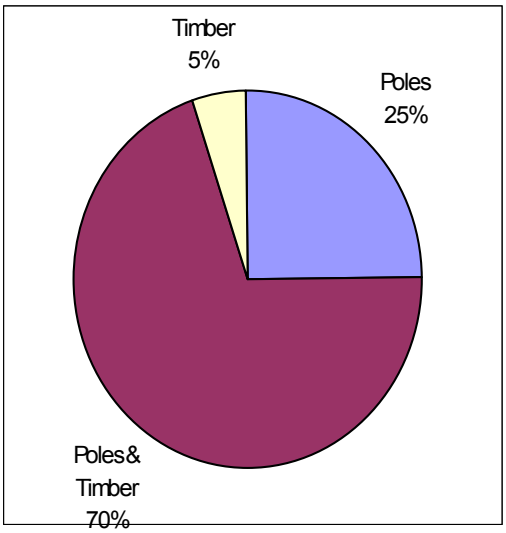
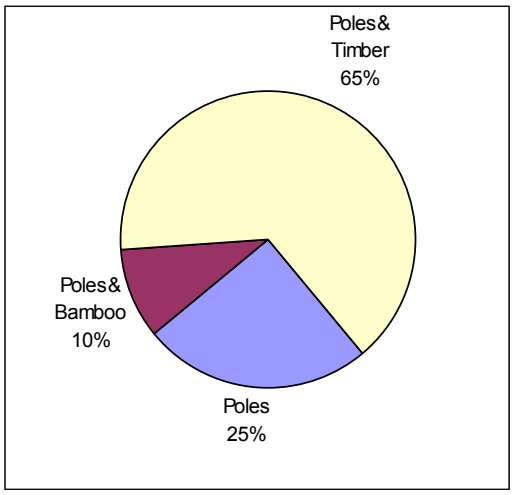


Fig 12b: Woody materials, Tharaka



Woody materials used to construct houses in Mbeere are either timber or poles or both (Fig.12a). Those who used poles only make up 25% of all respondents, while those who used sawn timber only make 5% i.e. only one person from Siakago. Combination of both sawn timber and poles forms the majority of 70%. In most such cases, the poles were used in the kitchen and the sawn timber in the main house, specifically for roofing.

The scenario is similar in Tharaka as in Mbeere, although in addition to poles and timber, bamboo is also used. As in Mbeere, those who have used both poles and timber are the majority at 65%, while those using poles only are 25%. Those who use poles and bamboo are 10% (Fig. 12b).

Sources of woody materials used in house construction

Fig. 13a: Source of woody materials, Mbeere

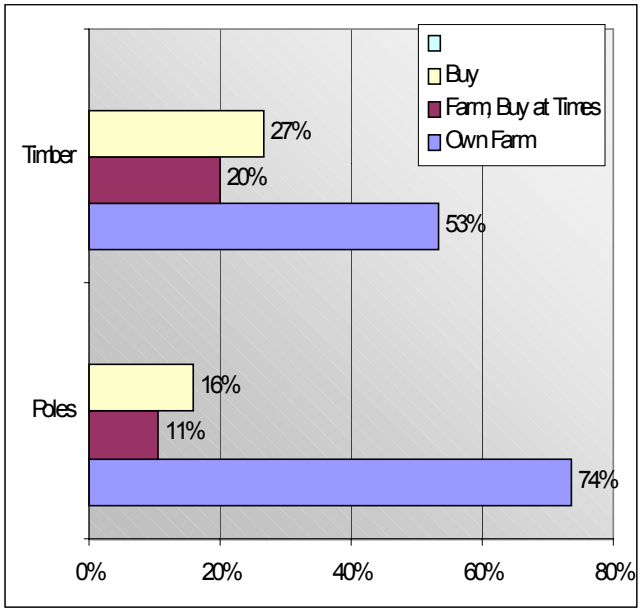
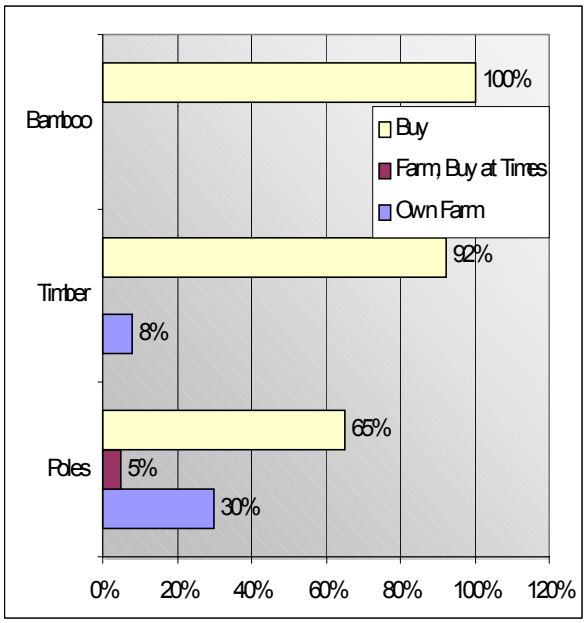


Fig. 13b: Source of woody materials, Tharaka



Majority of the respondents in Mbeere obtain poles from their own farms, in most cases from indigenous trees. These constitute 74%, while those who buy constitute about 16%. Those who get some from their own farm and buy the rest make up about 11%. The situation with sawn timber is slightly different, with 53% of those who use it getting it from own farms, 27% buying and 20% both buying and from own farms (Fig. 13a).

As shown in Fig. 13b, all the bamboo used in house construction in Tharaka (100%) is bought, as is 92 % of the timber and 65% of the poles. Only 30% of the poles and 8% of the timber are obtained from own farm. One person combines buying poles and getting it from his own farm.

Again the situation in Mbeere is converse to that in Tharaka: while majority of Mbeere respondents obtain woody materials from their own farm, majority of Tharaka respondents buy them.

5 Firewood and water

Frequency of firewood collection

Fig. 14a: Freq. of firewood collection, Mbeere

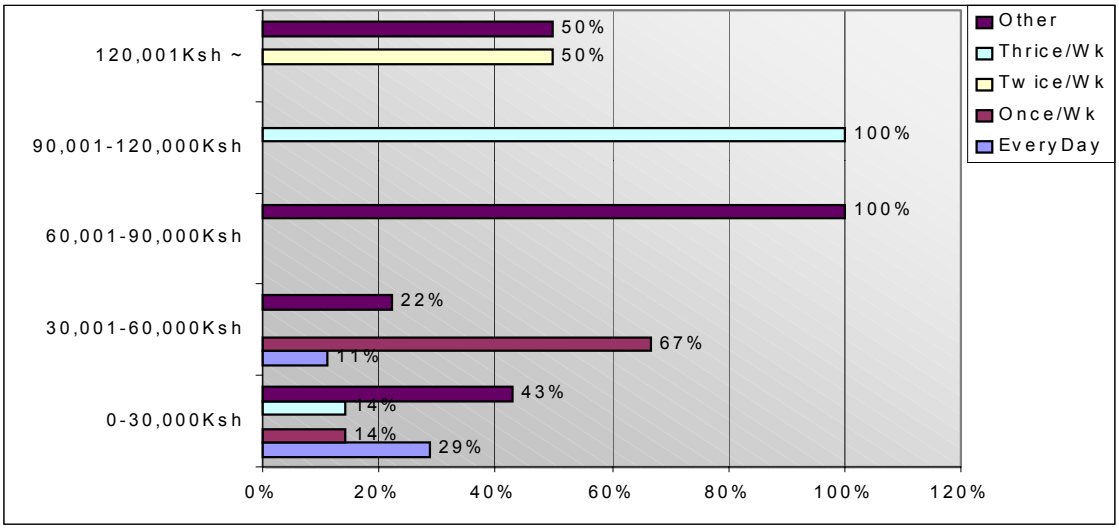
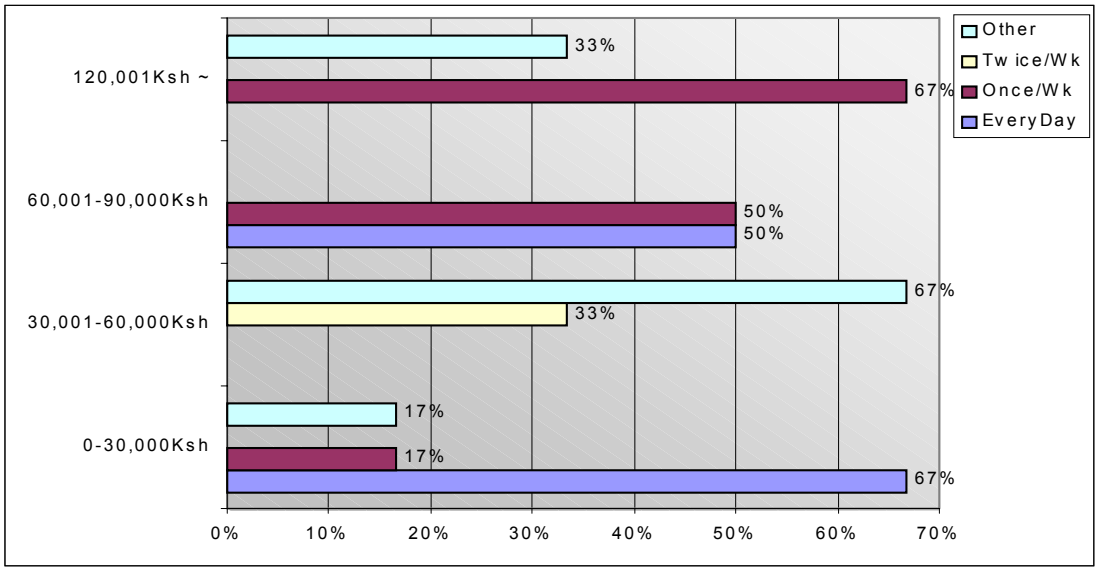


Fig. 14b: Freq. of firewood collection, Tharaka



The trend for firewood collection in Mbeere is such that the highest percentage of those who collect on a daily basis is in the Kshs 0-30,000 income category at 29%, while for the Kshs 30,000-60,000 it is 11%. None of the other 3 categories collect firewood on a daily basis, since the one respondent in the Kshs 60,000-90,000 category collects twice a month and the other one in the Kshs 90,000-120,000 category collects three times a week. One of the two respondents in the over Kshs 120,000 category collects firewood twice a week, the other one once a year (Fig. 14a).

In Tharaka, 67% of the respondents in the Kshs 0-30,000 income bracket collect firewood on a daily basis. The only other

bracket that collects firewood on a daily basis is the Kshs 60,000-90,000 category (50%), which has an equal proportion (50%) collecting firewood once a week. 67% of the over Kshs 120,000 category collect once a week, with "other", in most cases standing for once every six months or twice a year, making up 33%. "Other" in the Kshs 30,000-60,000 category stands for once every six months and once every three months. The other 33% in this category (one person) collects firewood twice per week (see Fig. 14b).

Time spent in collecting firewood

Time spent by Mbeere respondents to collect firewood ranges from 1 hour (collecting daily) to 144 hours (2 weeks, collecting once a year). If considering the average time for firewood collection by those who collect on a daily basis, the average time is 1.3 hours per day. The mode and the median are both 1 hour per day.

In Tharaka, the minimum time taken to collect firewood is 0.33 hours for a respondent who collects on a daily basis, and the maximum is 96 hours for a respondent who collects once every six months. The mode and median are 2 hours, and the average is 2 hours for those respondents who collect firewood on a daily basis.

Sources of firewood

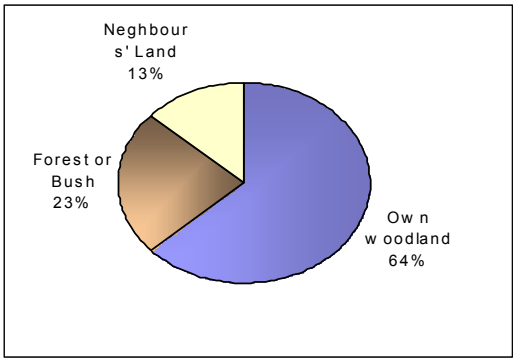


Fig. 15a: Firewood sources, Mbeere

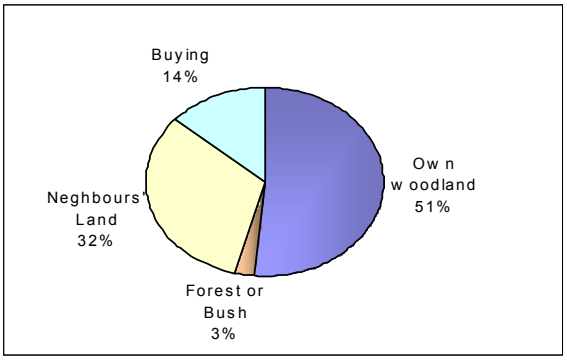


Fig. 15b: Firewood sources, Tharaka

64% of Mbeere respondents collect firewood from their own land, either from indigenous species or from prunings of planted trees (Fig. 15a). 23% said they collect firewood from forests or bushes nearby, and the remaining 13% get firewood from neighbours' land. From discussions with the respondents, indigenous trees in communal land are available to community members as long as they are dry and no trees are cut. Neighbours with a lot of trees also have no problem sharing their firewood.

In comparison, a smaller percentage of Tharaka respondents obtain firewood from their own land (51%). 32% collect from neighbours' land, 14% buy firewood and 3% fetch from forest or bush nearby (Fig. 15b). Most of those who have sufficient wood from their own farms are relying on indigenous trees, particularly in the lower areas of the district. In the higher potential areas, farmers have planted exotic trees to supplement their tree sources. Actually, 55% of Tharaka respondents said the firewood is not sufficient now, and 75% added that they think the firewood will not be sufficient in the future.

Awareness on improved cooking stove

Fig. 16a: Awareness on stove, Mbeere

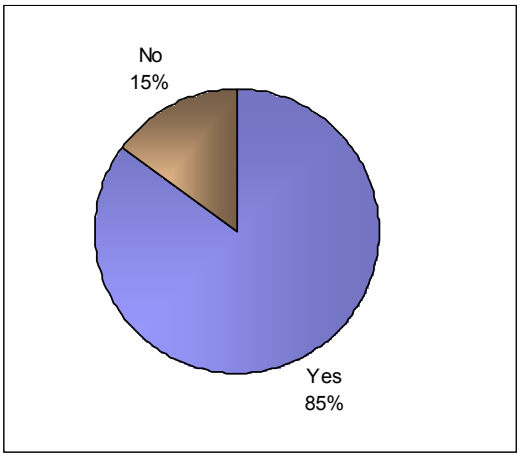
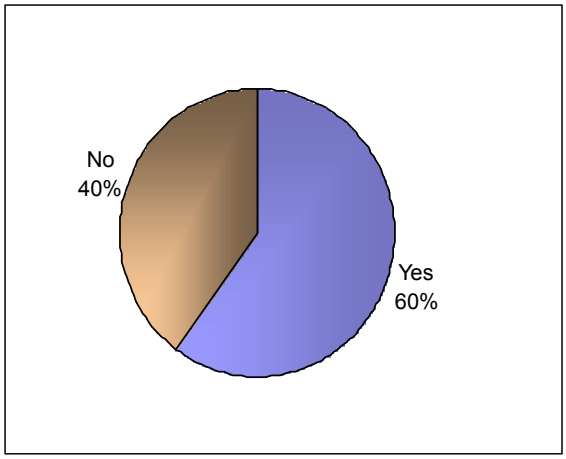


Fig. 16b: Awareness on stove, Tharaka



Only 15% of Mbeere respondents had no knowledge of the improved stove (Fig. 16a). Of the 3 respondents constituting this percentage, 1 came from Gachoka and 2 from Evurori, which is the more remote of the divisions surveyed.

In comparison, 40% of Tharaka respondents had no idea about it (Fig. 16b).

Utilization of the improved cooking stove

Fig. 17a: Utilization of Stove, Mbeere

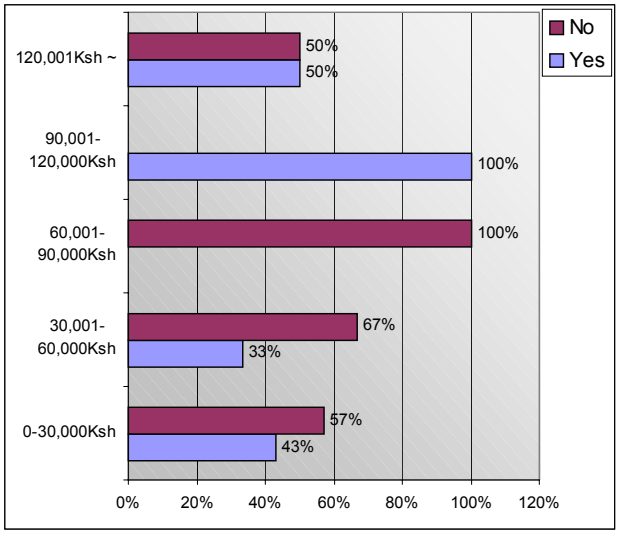
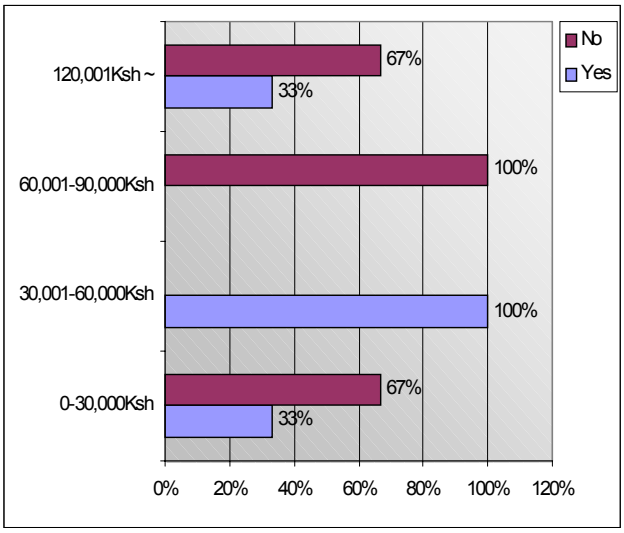


Fig. 17b: Utilization of Stove, Tharaka



43% of respondents from Mbeere in the Kshs 0-30,000 income category use the improved stove, as compared to 33% in the Kshs 30,000-60,000 category. The respondent in the Kshs 60,000-90,000 does not, while that in the Kshs 90,000-120,000 does. In the over Kshs 120,000 category, one respondent uses the improved stove while the other one does not, as shown below.

Category:	Yes	No
0-30,000Ksh	43%	57%
30,001-60,000Ksh	33%	67%
60,001-90,000Ksh	-	100%
90,001-120,000Ksh	100%	-
120,001Ksh ~	50%	50%

Utilization of the improved stove does not seem to follow the trend of the income categories in Tharaka, as seen in Fig. 17b. For example, 100% of the Kshs 30,000-60,000 uses it, while 100% of the Kshs 60,000-90,000 does not. 67% uses and 33% does not for both of the categories Kshs 0-30,000 and over Kshs 120,000.

Savings on firewood with the improved cooking stove

Fig. 18a: Savings on firewood, Mbeere

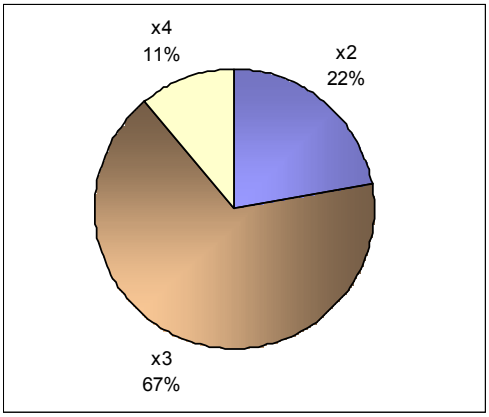
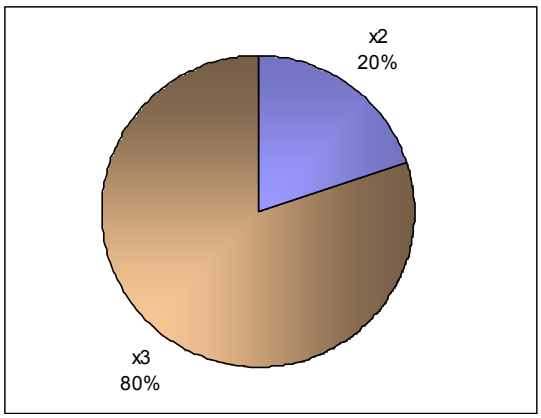


Fig. 18b: Savings on firewood, Tharaka



All those who use the improved stove in both Mbeere and Tharaka realize a saving on the amount of firewood they would otherwise have used with the traditional three-stone jiko. In Mbeere, 67% realize a saving of upto three times, 22% upto 2 times and 11% upto 4 times (Fig. 18a).

In Tharaka, 80% of those respondents who use the improved stove make a saving of 3 times, while 20% make a saving of 2 times the amount of firewood they would otherwise use with the traditional three-stone jiko.

Reasons for not constructing improved jiko

Fig. 19a: Reasons no stove, Mbeere

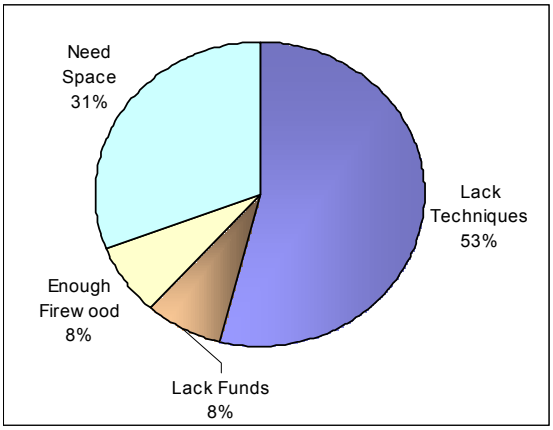
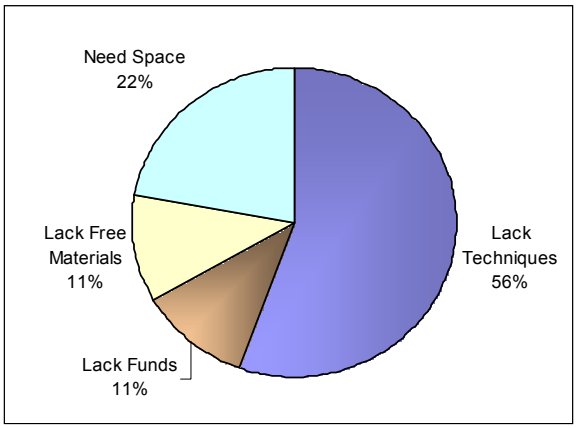


Fig. 19b: Reasons no stove, Tharaka



Several reasons were given as to why those who knew about the improved jiko and had not constructed any. In Mbeere, these include lack of techniques (53%), lack of spacious kitchen (31%), lack of funds (8%) and an interesting one that the farmer has sufficient wood (8%) (Fig. 19a). In Tharaka the reasons given include lack of techniques (56%); lack of sufficient space (22%); lack of funds (11%) and lack of free materials (11%) (Fig. 19b).

Possession of water well/Alternative sources of water for those without water well

Fig. 20a: Water sources, Mbeere

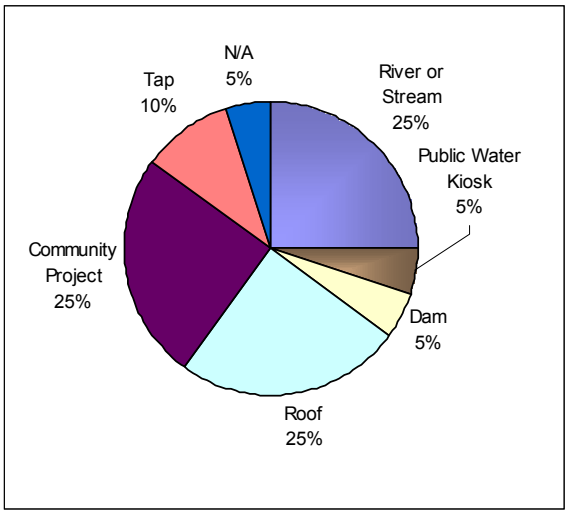
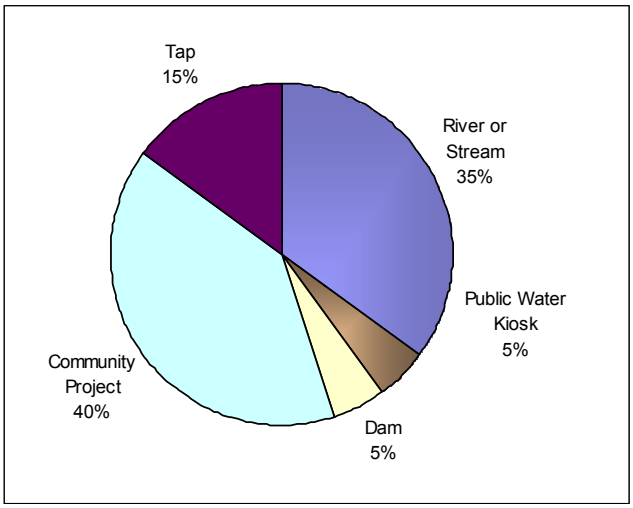


Fig. 20b: Water sources, Tharaka



Only one person in Mbeere, from Gachoka division, owns his own well. This farmer is in the over Kshs 120,000 category, and most of his income comes from selling seedlings and fruits. The reason for making the well is for watering the seedlings. For those without own well, alternative sources of water mentioned in the first position, and therefore the most important, include river or stream (27%), roof catchments (26%), community water projects (26%), tap water (11%), public water kiosk (5%) and dam (5%). When all water sources are considered, however, roof catchments take 25%, community projects 23%, river or stream 20%, tap water 9%, buying 6% and public water kiosk 3% (Fig. 20a).

None of the respondents in Tharaka has own well. Their two major sources of water are community projects (mostly SIDA-funded water wells with hand-pumps) – 40%, and rivers and streams (35%). Between them, these two sources constitute 75 % of the water consumed in Tharaka. There are 15% of the responds who use tap water, the remaining 10% is shared equally by public water kiosks and dams (Fig. 20b).

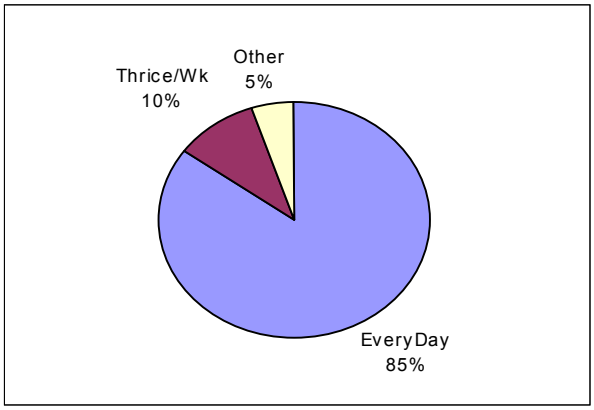
Time spent to fetch water

Average time taken by Mbeere respondents to fetch water is 1.5 hours per day. Shortest time is 0.02 hours for an individual piped water supply, while the longest time is 6 hours from a distant river during the dry season.

In Tharaka, the average time spent fetching water is 1.65 hours. The minimum time is taken by those who have storage tanks for water harvesting and those who have tap water within the compound: 0.08 hours; while the maximum time taken is 6 hours, presumably to distant rivers during drought as is the case in Mbeere.

Frequency of water fetching

Fig. 21a: Frequency of fetching water, Mbeere



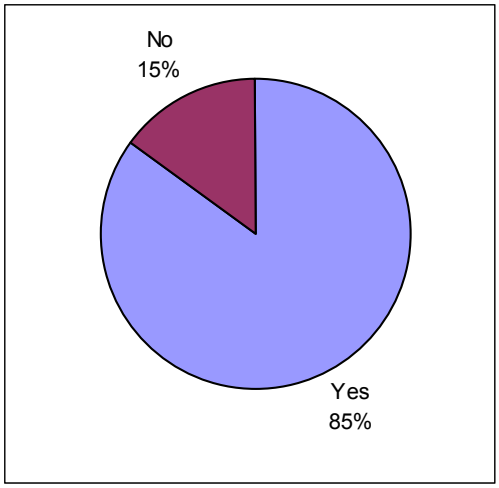
85% of Mbeere respondents fetch water on a daily basis, in most cases more than once daily as only three people said they have cattle or donkeys to fetch water. Of the 10% who draw water thrice a week one person is in the Kshs 0-30,000 category and the other is in the Kshs 30,001 - 60,000. The one person constituting 5% with "other" is in the over Kshs 120,000, has sufficient rain-water storage, and only buys water with a tanker once a year to supplement the rainwater. For Tharaka, all 20 respondents interviewed (100%) said they fetch water on a daily basis.

As a general note, more wealthy people who can afford storage and rain water harvesting facilities draw water less often. This is the scenario in Mbeere, whereas in Tharaka it is the opposite.

6 Tree planting

Tree planting by farmers

Fig. 22b: Tree planting, Tharaka



All farmers in Mbeere (100%) have planted trees at one time or another.

In contrast, some farmers in Tharaka have never planted any trees in their lifetime. These 3 farmers constitute 15 % of the respondents. The remaining 85% have planted at least one tree at one time or another (Fig 22b).

The above shows that awareness on importance of tree planting is higher in Mbeere than in Tharaka.

Places where trees are planted

Fig. 23a: Where trees are planted, Mbeere

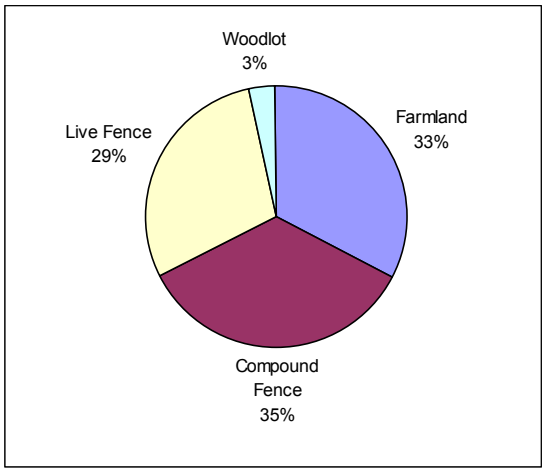
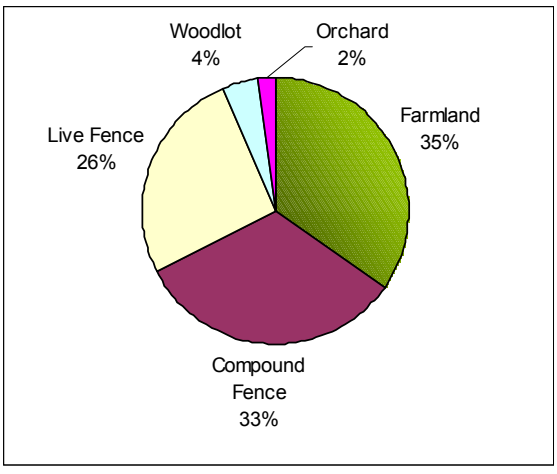


Fig. 23b: Where trees are planted, Tharaka



As shown in Fig. 23a, the most common planting in Mbeere is compound planting (35%), followed by planting in the farmland (33%) and live fence (29%). It appears less common to plant in separate woodlots (3%).

Farmland and compound planting of trees take the first two notches of where trees are planted in Tharaka, with 35% and 33% respectively. Live fence comes third with 26%, woodlot and orchard only occupying 4% and 2% respectively (Fig. 23b).

Types of planted trees

Fig. 24a: Types of planted trees, Mbeere

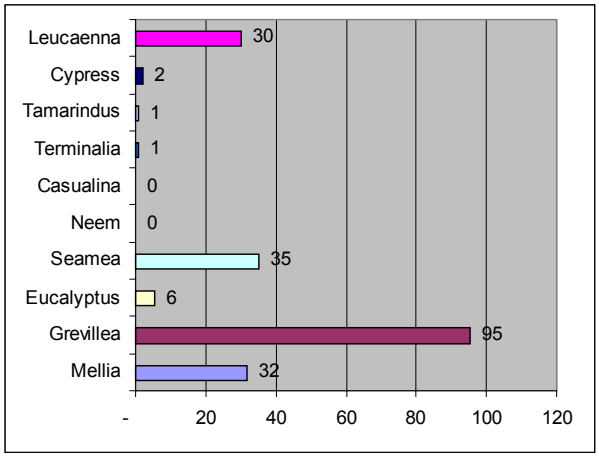
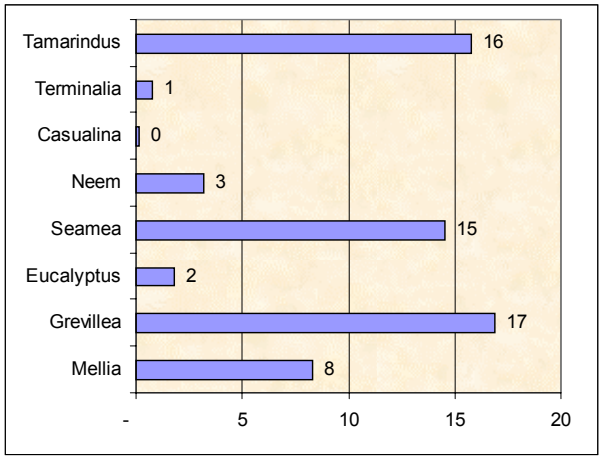


Fig. 24b: Types of planted trees, Tharaka



In general, tree planting is much more in Mbeere than in Tharaka, especially for the more common tree species such as Grevillea, seamea, Melia and Leucaenna (Fig. 24a,b). The most common tree species planted by Mbeere respondents is Grevillea, which has an average of 95 for the 20 farmers interviewed. This is followed by seamea at 35, Melia at 32, Leucaenna at 30 and Eucalyptus at 6 (Fig. 24a). Grevillea is much preferred as it is fast growing, while seamea was said to be resistant to drought and pests. Leucaenna is useful for fodder, and Melia is now being grown widely for its high-value timber. The highest total Grevillea (1281), Melia (465),Tamarindus (13), Cypress (31) and Neem (5) was in the Kshs 30,001-60,000 income category. The highest total for seamea (300), on the other hand, was in the Kshs 90,001-120,000. Terminalia was highest (8) in the Kshs 60,001-90,000, while Leucaenna (500) was highest in the > Kshs 120,000 category. The highest totals for planted trees were as follows:

Category:	
Kshs 60,001-90,000	2514
Kshs 30,001-60,000	2120
Kshs 90,001-120,000	506
>Kshs 120,001	799
Kshs 0-30,000	394

The average planted trees by species for all respondents in Tharaka are given in Fig. 24b, which shows Grevillea, Tamarindus and seamea to be the highest scorers at an average of 17, 16 and 15 respectively. Melia is fourth with an average of 8, then Neem at 3, Eucalyptus at 2 and Terminalia at 1.

The table below relates the average trees per species to the income categories of the respondents in Tharaka. It shows the highest averages for majority of the species, except Neem and Terminalia, to be planted by farmers in the Kshs 0-30,000 category. They therefore also have the maximum total number of trees.

Category (KShs)	Melia	Grevillea	Eucalyptus	Seamea	Neem	Casuarina	Terminalia	Tamarindus
0-30,000	19	220	32	137	16	3	1	308
30,001-60,000	2	23	3	30		-	6	6
60,001-90,000	18	-	1	2		-	5	1
120,001~	-	95	-	121	47	-	3	-

Number of fruit trees

Fig. 25a: Number of fruit trees, Mbeere

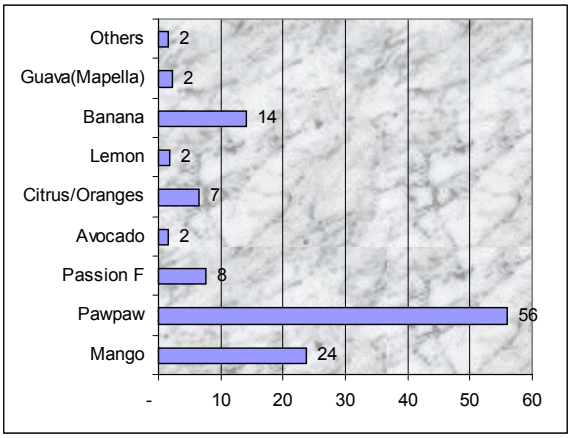
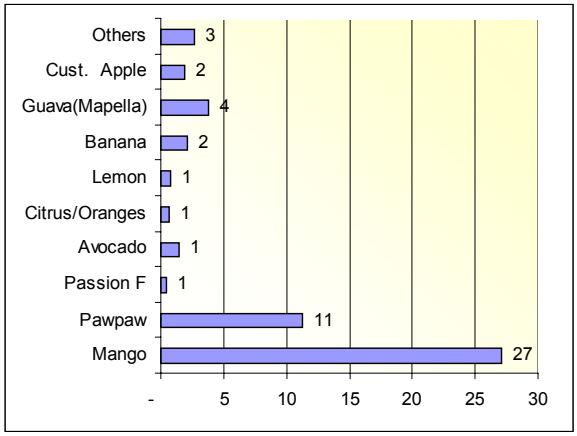


Fig. 25b: Number of fruit trees, Tharaka



The highest average for fruit trees planted in Mbeere is for pawpaw (56). Next is mango with 24, banana with 14, citrus and passion fruit with 3, and lemon and guava with 2. The total number of fruit trees in the district is 2,304. The highest number of fruit trees (824) is in the > Kshs 120,000 category, as shown below:

Kshs 0-30,000	-	182
Kshs 30,001-60,000	-	535
Kshs 60,001-90,000	-	500
Kshs 90,001-120,000	-	263
> Kshs 120,000	-	824

The fact that there is a greater number of fruit trees in the >Kshs 120,000 could be because fruit orchard establishment requires a lot of money and expertise in tree planting and management, especially for the grafted mangoes and pawpaws.

In the case of Tharaka (Fig. 25b), mangoes are the most common fruit trees, with an average of 27, pawpaws are next with an average of 11, followed by guava (4), banana (2), custard apple (2), passion fruit (1), citrus (1), lemon (1) and avocado (1).

The table below gives an average of each species in relation to the various income categories.

Category	Mango	Pawpaw	Passion F	Avocado	Citrus	Lemon	Banana	Guava	C. Apple	Others
0-30,000Ksh	151	150	10	24	11	10	42	24	14	36
30,001-60,000Ksh	302	16	-	2	2	6	-	11	-	15
60,001-90,000Ksh	3	20	-	-	-	-	-	-	-	-
120,001Ksh ~	86	39	-	2	1	-	-	40	25	3
Total	542	225	10	28	14	16	42	75	39	54
Average (n =20) (To the nearest whole number)	27	11	1	1	1	1	2	4	2	3

As is the case with other types of trees, the number of fruit trees planted by Mbeere respondents is higher than for Tharaka. This confirms the observation that awareness on importance of tree planting is higher in Mbeere as stated earlier.

Benefits expected from tree planting

Fig. 26(i)a: No. 1 tree benefits, Mbeere

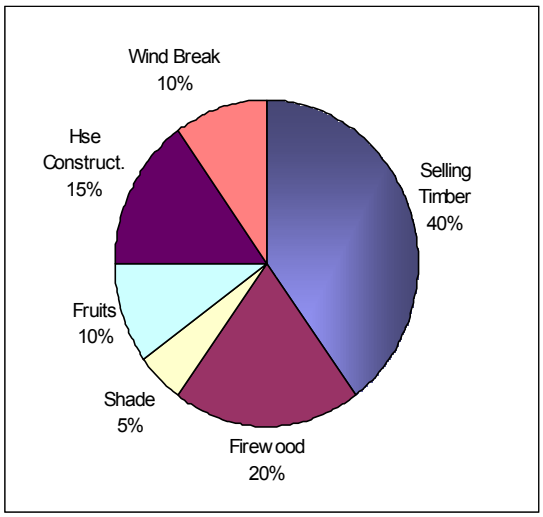


Fig. 26(i)b: No. 1 tree benefits, Tharaka

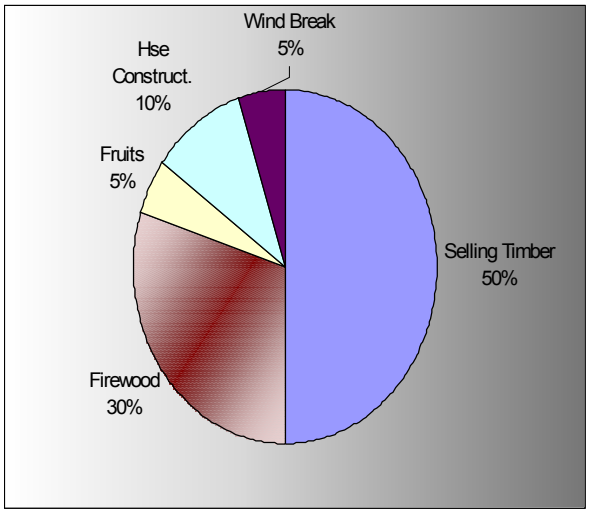


Fig. 26(ii)a: All tree benefits, Mbeere

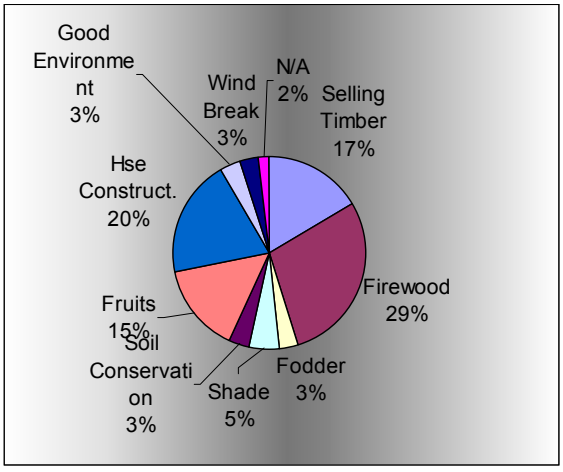
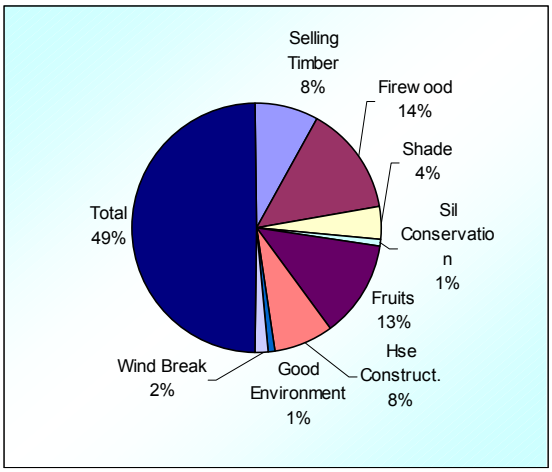


Fig. 26(ii)b: All tree benefits, Tharaka



As shown in Fig. 26(i)a, the benefits given first priority by Mbeere respondents' are timber selling (40%), followed by firewood (20%), house construction (15%), wind-breaking (10%), fruits (10%) and shade (5%).

Scores of all the benefits together are given in Fig. 26(ii)a. In this figure, firewood scores the highest (29%) and timber selling only comes third with 17%, after house construction which scored 20% to take second place. Others are fruits (15%), shade (5%), fodder (3%), good environment (3%) and wind-breaking (3%).

The benefits mentioned in the first position by Tharaka farmers (Fig. 26(i)b) are timber selling (50%), firewood (30%), house construction (10%), fruits (5%), and wind-breaking (5%).

When all benefits mentioned are combined in Fig. 26(ii)b, the order changes, with firewood leading at 28%, followed by fruits at 25%. Timber selling now takes third position with 17%, and house construction follows at 15%. Shade scored 8%, wind-breaking 3% and good environment 2%. Soil conservation also scored 2 percent. Needless to say, the inhabitants are well aware of the benefits of tree planting, but due to various constraints, some have not been much involved in tree planting activities.

Main constraints to tree growing

Fig. 27(i)a: No. 1 tree constraints, Mbeere

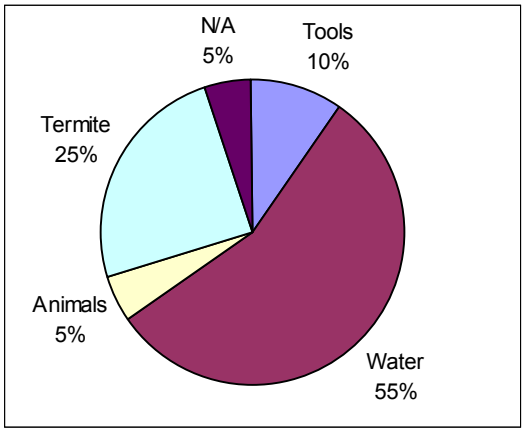


Fig. 27(i)b: No. 1 tree constraints, Tharaka

The most important constraints mentioned as constraint number one in Mbeere are water (55%), followed by termites (25 %). Also mentioned in first position by some farmers are tools (10%) and animals (5%) as seen in Fig. 27(i)a. When asked to prioritize the main constraint to tree growing in Tharaka (Fig. 26(i)b), the farmers gave the number one constraint as:

i) water (50)
ii) animals (35%)
iii) tools (10%)
iv) labour (5%).

Fig. 27(ii)a, on the other hand, gives a summary of all constraints mentioned by Mbeere respondents. Here, when all the constraints are added up, water still takes the highest portion with 32%, the trend remaining the same with termites scoring second with 27%. This then changes, with lack of knowledge become third at 11%, browsing by animals following with 9%, then labour (7%) and tools (5 %). Surprisingly, some people (5%) said they were too busy, and the last constraint was lack of seedlings at 4%.

On combining the major constraints (Fig. 26(ii)b), the order changes to become similar to that of Mbeere such that water and termites come out as the two most serious constraints to tree growing (28%). As in Mbeere, constraint of knowledge comes third (14%). This is followed by animals and tools with an equal rating of 7%.

Fig. 27(ii)a: All tree constraints, Mbeere

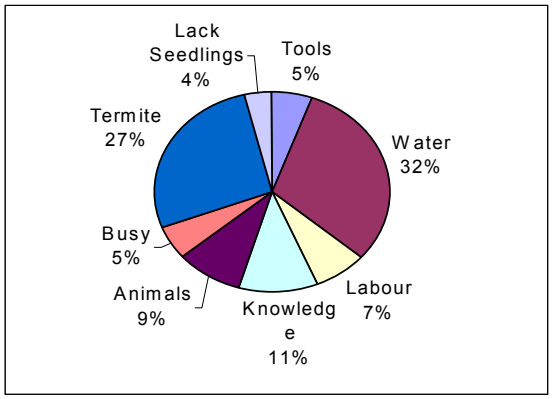
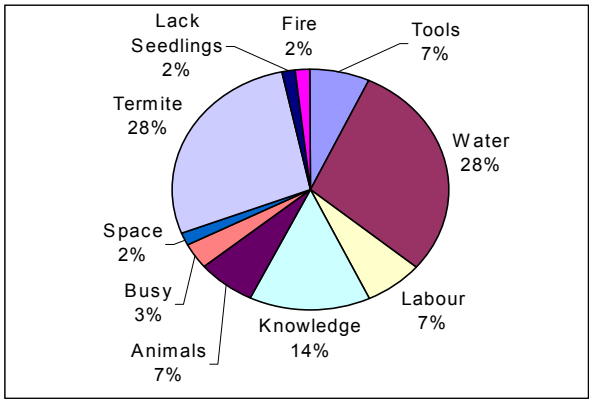


Fig. 27(ii)b: All tree constraints, Tharaka



7 Nursery

Possession of nursery

Fig. 28(i)a: Possession of nursery, Mbeere

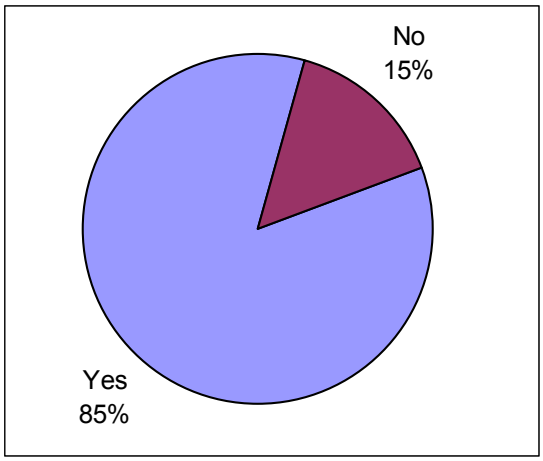
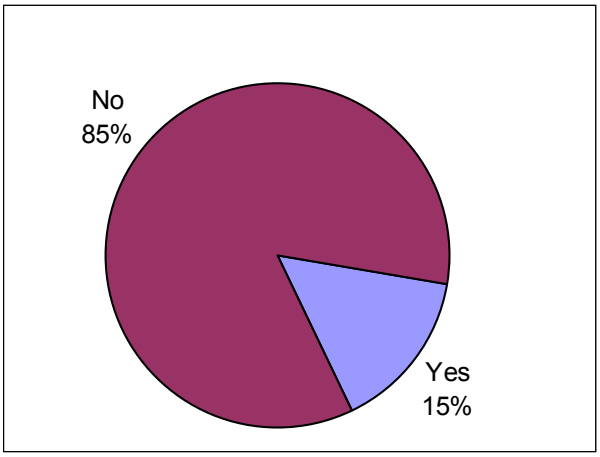
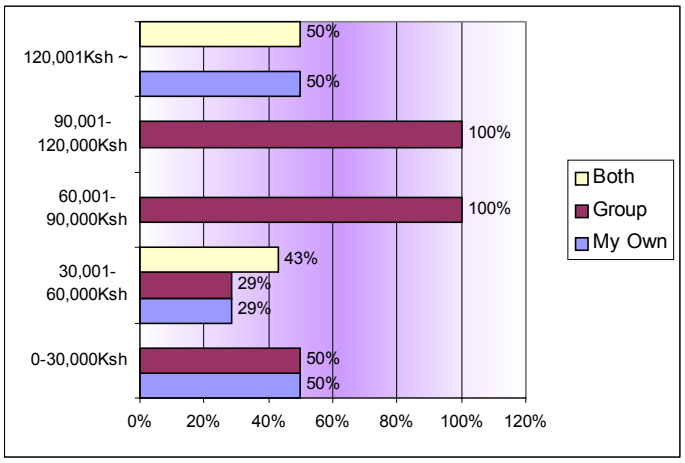


Fig. 28(i)b: Possession of nursery, Tharaka



As seen in Fig. 28(i)a, 17 people have a nursery in Mbeere (85%). Of these, the Kshs 0-30,000 have 50% group and 50% individual nursery (total 6 people). In the over Kshs 120,000 category, one person has own nursery, the other one has both group and own nursery (total 2 people).

Fig. 28(ii)a: Group/individual nursery, Mbeere



One person each in the Kshs 60,000-90,000 and Kshs 90,000-120,000 categories have group nurseries. The remaining category of Kshs 30,000-60,000 has 2 people with own nursery, 2 with group nursery and 3 with both (Fig. 28(ii)a).

Conversely to the Mbeere case, only three people in Tharaka own nurseries as shown in Fig. 28(i)b, while 17 do not. All those with nurseries are in the Kshs 0-30,000 income category, and all the nurseries are individually owned.

Sources of water for raising seedlings

Fig. 29a: Sources of water for nursery, Mbeere

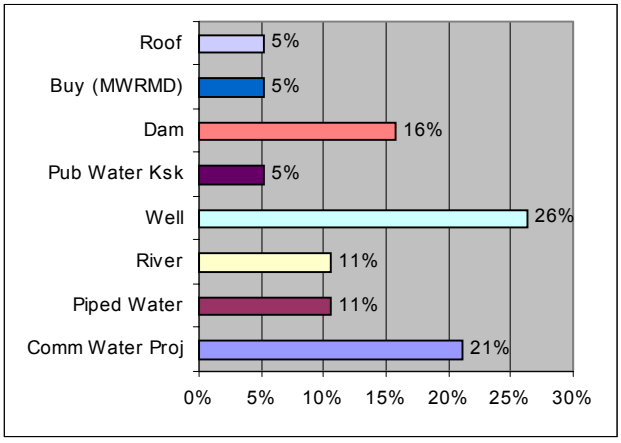
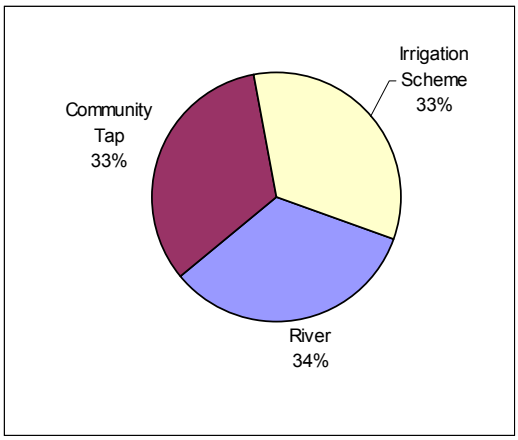


Fig. 29b:Sources of water for nursery, Tharaka



Sources of water for raising seedlings in Mbeere are summarized in Fig. 29a, with the major ones being community water projects (47% assuming that those who said well belong to this category except the one case in Gachoka where the well is private), dam (16%), river (11%) and piped water (11%).

In Tharaka on the other hand, approximately an equal proportion (33%) between river water, community water tap and irrigation scheme water constitute the three major sources of water for raising seedlings (Fig. 29b).

Sale of seedlings/Number of seedlings sold

Out of the 17 people in Mbeere who said they own nurseries, 16 said they have sold seedlings, one did not. The total number of seedlings they sold last year was 13,115, the minimum being 41 (25 trees and 16 fruits) from an individual nursery in Gachoka, and the maximum being 4,500 (2,500 trees and 2000 fruits) also from an individual nursery in Gachoka. (This farmer with maximum sales is the same one who has constructed a well to water his seedlings, and he gained knowledge from FD as he was previously an employee of the FD).

In Tharaka 2 of the 3 people who owned nurseries had sold seedlings as follows:

Case 1 = 15 trees;

Case 2 = 10 trees, 20 fruits.

Benefits expected from nursery

Fig. 30(i) a: No. 1 benefits of nursery, Mbeere

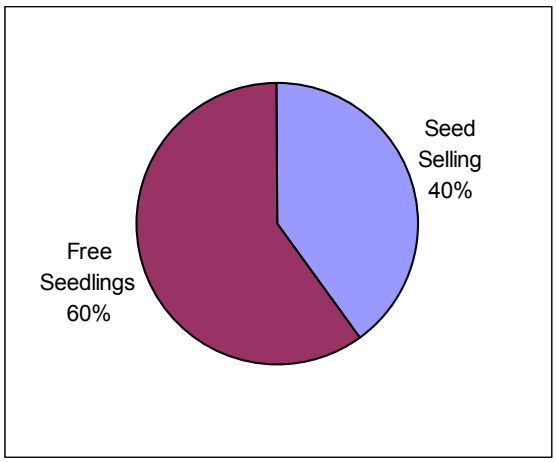
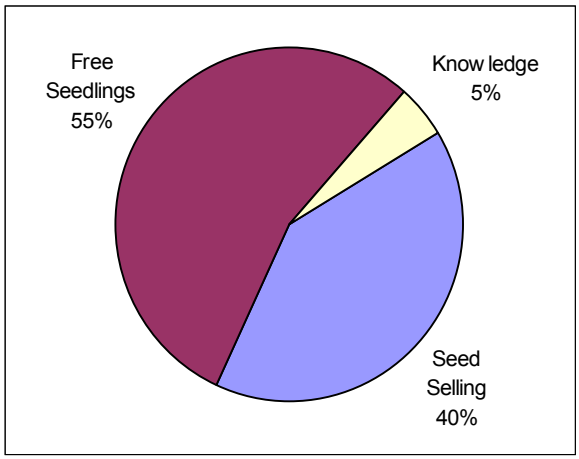


Fig. 30(i) b: No. 1 benefits of nursery, Tharaka



In the first position for benefits of nursery given by Mbeere respondents, there were only two answers as shown in Fig. 30(i)a: free seedlings for own planting (60%) and income from sale of seedlings (40%). When all benefits are considered in Fig. 30(ii)a, free seedlings is still considered the most beneficial aspect of nursery at 36%, followed by seedling selling (32%) and fruit seedlings 16%. Other benefits mentioned are good environment(7%), donating to friends and relatives (5%) and gaining knowledge in nursery establishment (4%).

Fig. 30(ii)a: All nursery benefits, Mbeere **Fig. 30(ii)b: All nursery benefits, Tharaka**

In Tharaka first position benefits, free seedlings scored the highest with 55%, income from sale of seedlings scored second with 40%, and a third benefit of knowledge(5%) cropped up which was not given priority in Mbeere (Fig. 30(i)b). When all benefits are considered in Fig. 30(ii)b, the first two benefits of free seedlings and seedlings for sale retain their positions with 34% and 32 % respectively. The third ranked now becomes availability of fruit seedlings scoring 27%. Others are good environment (3%), gain of knowledge (2%) and for pleasure (2%).

Main constraints of establishing nursery

Fig. 31(i)a: No. 1 nursery constraints, Mbeere

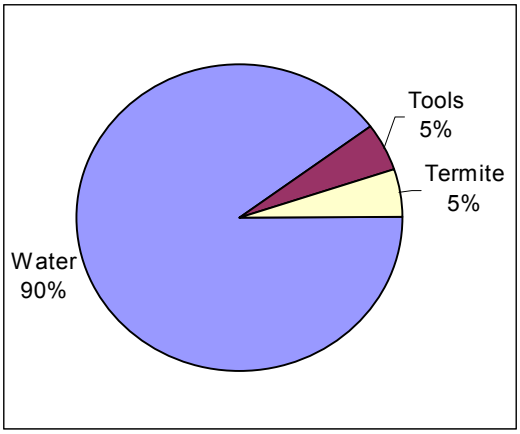
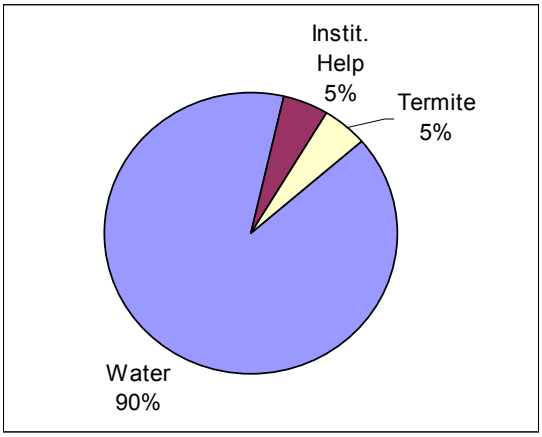


Fig. 31(i)b: No. 1 nursery constraints, Tharaka



When the first choice constraint to nursery establishment is considered, lack of water takes takes highest consideration in both Mbeere and Tharaka at 90% (Fig. 31(i)a,b). In Mbeere, termites and lack of tools take up the remaining 10%. In Tharaka the other two constraints sharing the remaining 10% equally are termite and again, a difference with Mbeere because now in Tharaka the problem of lack of institutional help was considered important enough to be in mentioned in first position.

Fig. 31(ii)a: All nursery constraints, Mbeere

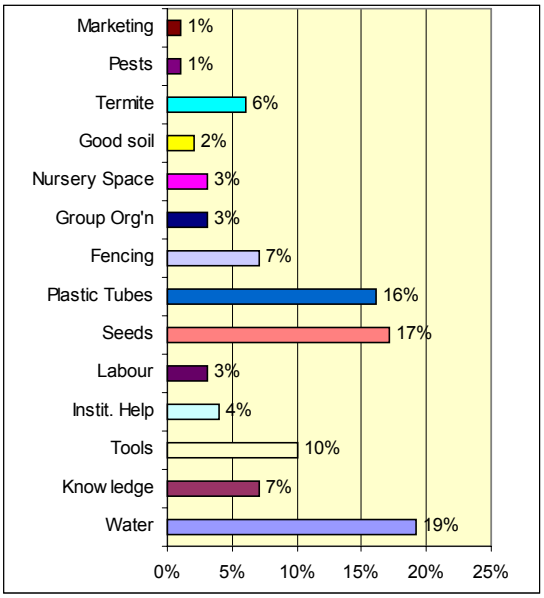
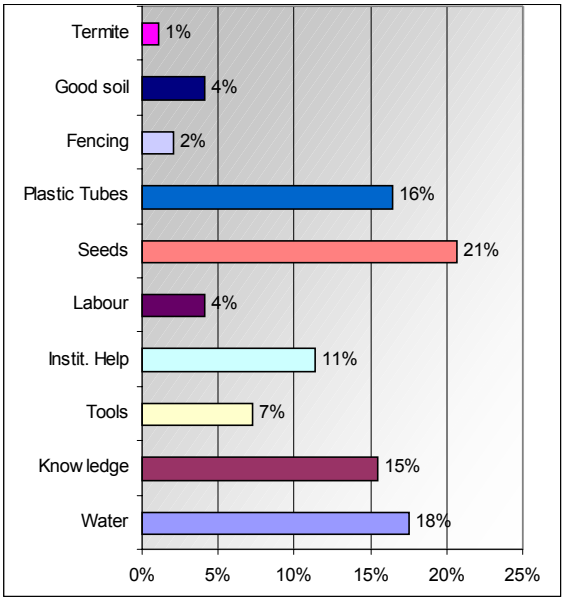


Fig. 31(ii)b: All nursery constraints, Tharaka



Not surprisingly, water still comes out as the most serious constraint in Mbeere when all constraints are considered (19%) in Fig. 31(ii)a. It is followed by lack of seeds and plastic tubes (17% and 16% respectively), then lack of tools (10%), lack of knowledge and fencing (7% each), and termites (6%). Lack of institutional help is also considered a constraint as it scored 4% . Other constraints are labour, poor group organization, lack of nursery space (3% each), poor soil for potting (2%), pests and marketing (1% each).

When all constraints are considered collectively for Tharaka, water (18%) was overtaken in position one by lack of seeds (21%). The third most common constraint was lack of plastic tubes (16%), fourth was knowledge (15%) and fifth was institutional help (11%). Lack of nursery tools was sixth (7%). Others were labour (4%), lack of good soil (4%) and fencing (2%). Termites came last with 1%.

It is worthy to note that although the obvious major constraints such as water are common to both Mbeere and Tharaka, lack of knowledge and institutional help are given more prominence in Tharaka than in Mbeere.

8 Crop production

Crops grown in the last rainy season

Fig. 32a: Crops grown, Mbeere

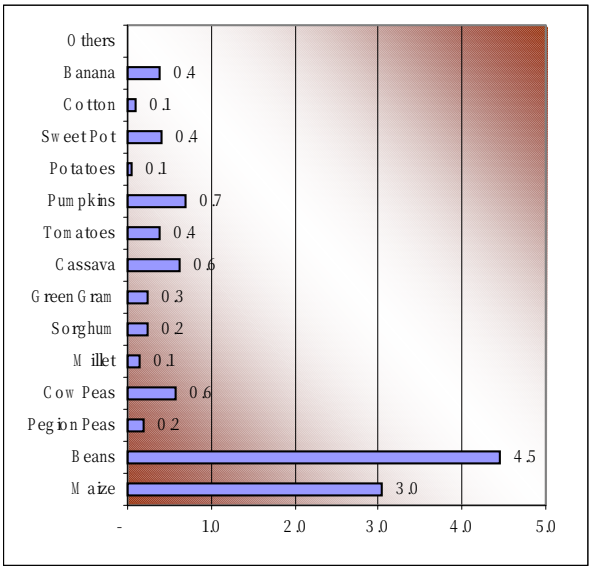
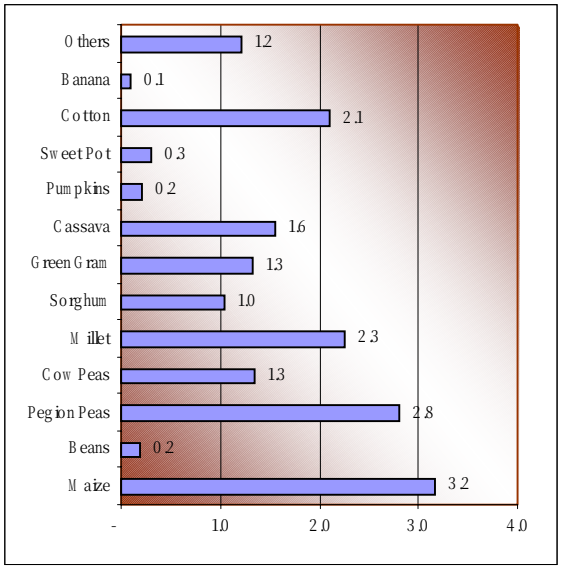


Fig. 32b: Crops grown, Tharaka



Average crop production in Mbeere for the last rainy season per crop is given in Fig. 32a. Highest average production is beans with 4.5 bags, followed by maize with 3 bags. All the other products such as cowpeas, pumpkins, bananas, cassava, millet, sorghum etc. average only less than 1 bag each.

Similarly, Fig. 32b gives the average crop production in Tharaka for the last rainy season. Maize had the highest at an average of 3.2 bags, followed by pigeon peas with 2.8 bags, millet with 2.3 bags, cotton with 2.1 bags, and cassava and cowpeas with 1.3 bags average per farmer.

A summarized table of average crop production per income category for the main food crops is given below:

Category	Maize	Beans	Pigeon Peas	Cow Peas	Millet	Sorghum	Green Gram	Cassava
0-30,000	0.8	0.1	3.7	1.9	1.7	0.9	0.9	0.5
30,001-60,000	11.9	0.6	1.1	0.4	2.0	2.0	2.0	8.3
60,001-90,000	5.1		0.8	0.3	2.0	0.8	1.1	
120,001 ~	2.8	0.2	2.1	0.7	5.0	1.0	2.3	

It appears from the above that average crop production is generally higher among Tharaka respondents than Mbeere, with an exception of beans whose average is higher in Mbeere than in Tharaka. This is not surprising as the size of shambas among Tharaka respondents is bigger than in Mbeere (Fig. 9a,b). Notably, a considerable proportion of millet, sorghum, green gram, maize and pigeon peas in Tharaka are grown through shifting cultivation in far-away places from the homestead farms, thereby increasing the harvests.

Crops sold in the last harvest

Fig. 33a: Crops sold, Mbeere

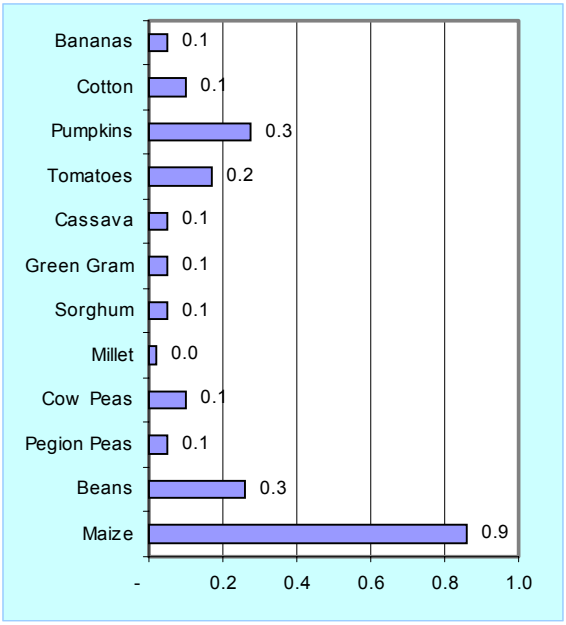
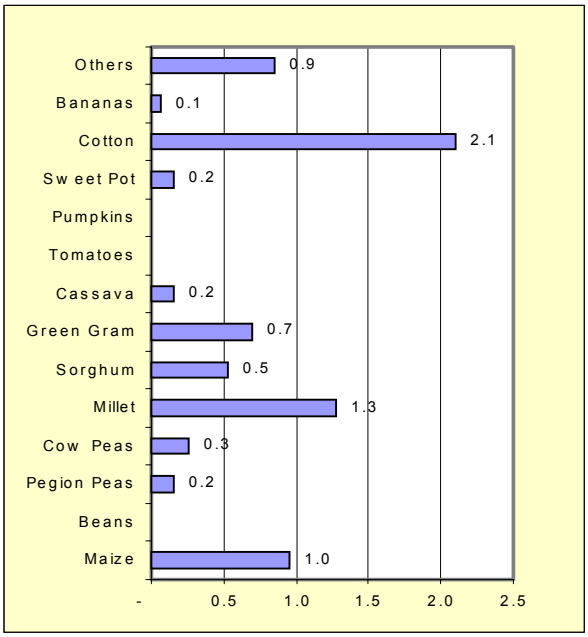


Fig. 33b: Crops sold, Tharaka



Maize was sold most in Mbeere, with an average 0.9 bags sold. This is followed by beans at an average of 0.3 bags, and pumpkins at a similar average of 0.3 bags. Tomatoes follow at an average of 0.2 bags. Others are cotton, pigeon peas, millet, sorghum, green grams, cassava and bananas (Fig. 33a).

In Tharaka, some farmers complained that last season's harvest was poor, so they did not sell much. The averages for those interviewed shows in Fig. 33b that all the cotton was sold, an average of 1.3 bags of millet were sold, average of 1.0 bags of maize, 0.7 bags of green grams and 0.5 bags of sorghum. The other crops sold were negligible at an average of less than 0.5 bags. Average sale of products per income category is given in the table below:

Category	Maize	Pigeon Peas	Cow Peas	Millet	Sorghum	Green Gram	Cassava
0-30,000	0.2	-	0.1	0.6	0.1	0.3	0.3
30,001-60,000	4.0	-	0.3	1.7	2.0	1.7	-
60,001-90,000	2.5	0.1	0.3	0.3	-	0.8	-
120,001~	-	1.0	0.7	4.3	1.0	1.3	-

9 Animal production

Types of animals owned

Fig. 34a: Animals owned, Mbeere

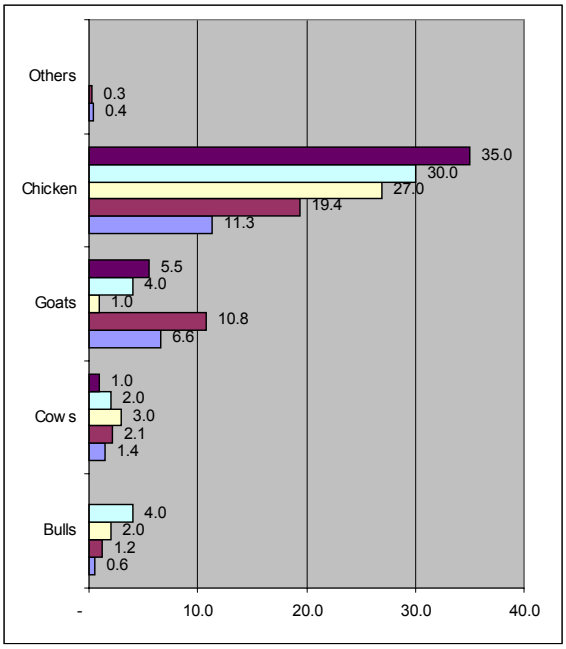
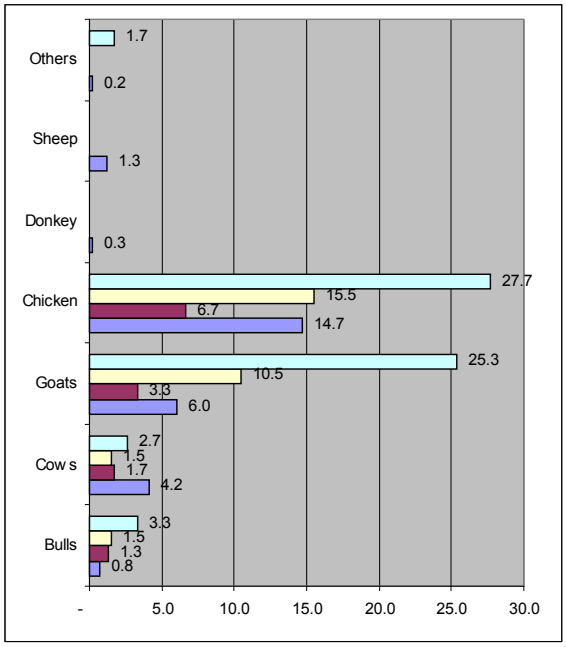


Fig. 34b: Animals owned, Tharaka



There is no marked difference in the total numbers of commonly owned animals like cows, bulls, goats and chicken in Mbeere and Tharaka. However, there does not appear to be an obvious relationship between number of animals and income in majority of the cases.

In Mbeere as shown in Fig. 34a, the only animals which seem to follow the order of income are the chicken, with the highest average falling within the over Kshs120,000 income category (35), Kshs 90,000-120,000 (30), Kshs 60,000-90,000 (27), Kshs 30,000-60,000 (19) and Kshs 0-30,000 (11.3). For the goats, the highest average is 10.8 in the Kshs 30,000-60,000 category. An average of 3 cows is the highest, in the Kshs 60,000-90,000 category, while the bulls appear to follow the trend of income distribution except that there was none in the over Kshs 120,000 category.

Average numbers of animals owned by Tharaka respondents is summarized in Fig. 34b. For chicken, goats and bulls, the over Kshs 120,000 category has the highest averages at 27.7, 25.3 and 3.3 respectively. They are followed by the Kshs 60,000-90,000 category with average 15.5 chicken, 10.5 goats and 1.5 bulls. Only the Kshs 0-30,000 category own sheep and donkeys.

Sale of animals during drought

Fig. 35a: Sale of animals, Mbeere

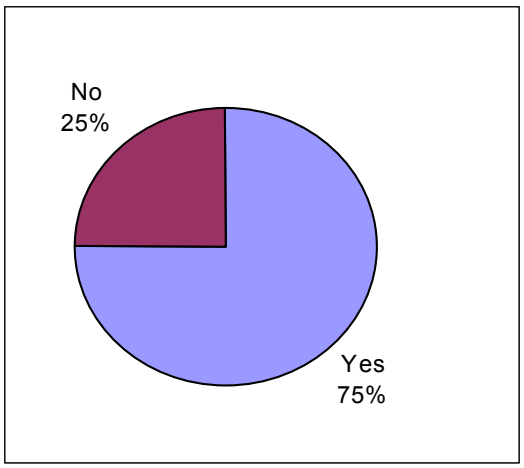
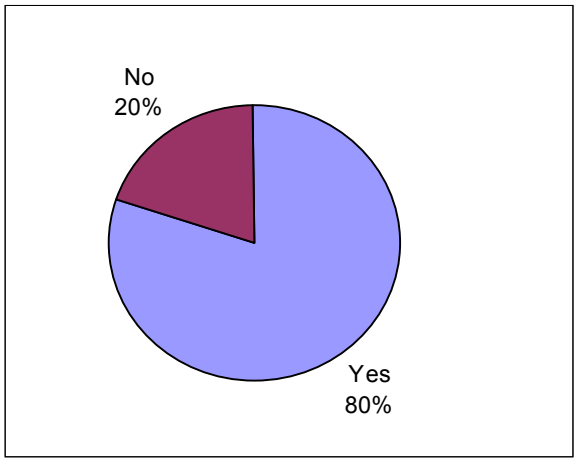


Fig. 35b: Sale of animals, Tharaka



75% of Mbeere respondents said they sell their animals during drought, as shown in Fig. 35a.

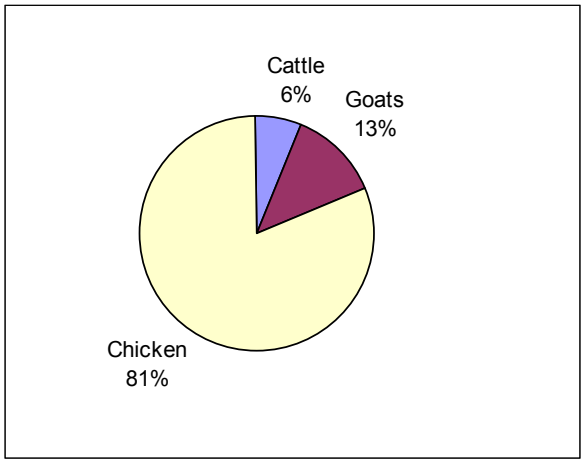
When asked whether they sell their animals during drought, 80% of Tharaka respondents said "Yes" while 20% said "No", as shown in Fig. 35b.

Order of selling the animals

In Mbeere as in Tharaka, chicken are the first animals to be sold. In Mbeere, this is so in all the cases (100%), while in Tharaka it is so in 81% of the cases. Second position is goats in both districts, this being the case 100% in Mbeere and 13% in Tharaka. In Mbeere, only 11 people have cows, and all of them (100%) sell them as a last resort in third position.

In Tharaka as well, cattle are sold first in only 6% of the cases (Fig. 36(i)b).

Fig. 36(i)b: Order of selling animals, Tharaka



When all choices are considered for Tharaka, chicken are still sold most (37%), followed by goats and cattle each with 30% score. Pigs were also sold and scored 3% (Fig. 36(ii)b).

10 Extension activities

Assistance from FD

Fig. 37a: FD extension, Mbeere

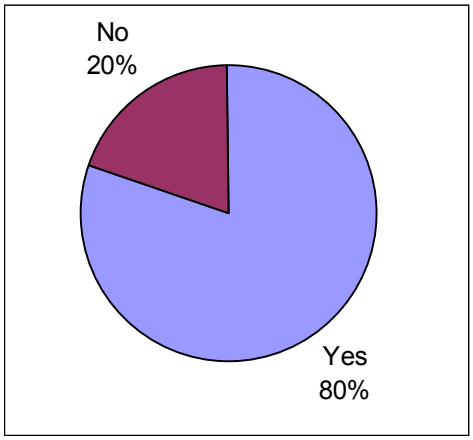
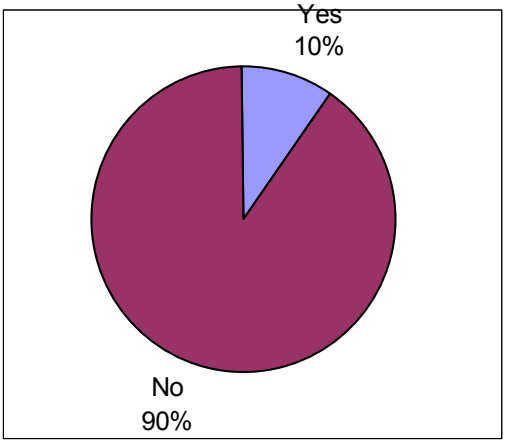


Fig. 37b: FD extension, Tharaka



80% of Mbeere respondents reported that they had received assistance from FD (Fig. 37a).

On the contrary, only 10% of Tharaka respondents i.e. only two farmers, have ever received assistance from FD (Fig. 37b). This supports the constraint of lack of institutional help mentioned earlier.

Types of assistance from FD

Fig. Fig. 38(i)a: No. 1 FD assist., Mbeere

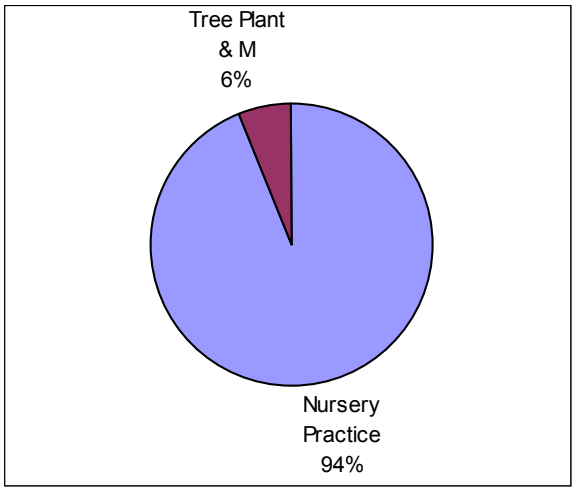
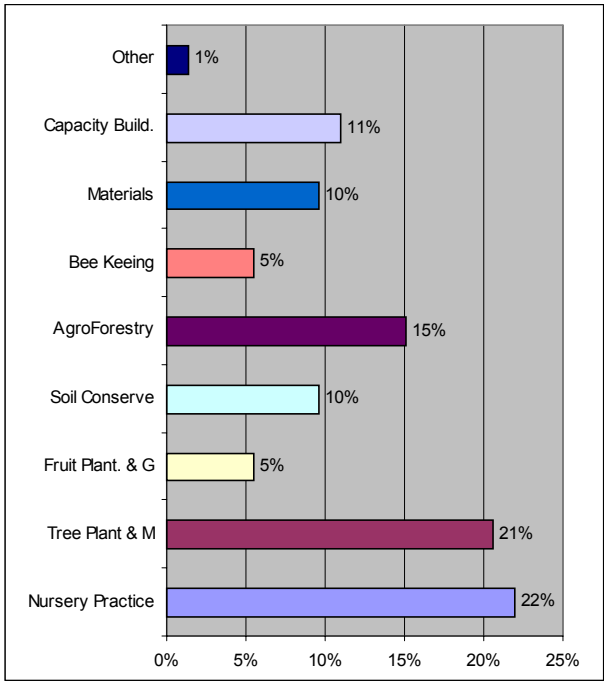


Fig. Fig. 38(ii)a: All types of FD assist., Mbeere



The types of assistance from FD that were mentioned by Mbeere respondents in the first position were

topped by nursery practice, which was given by 15 people (94%), mostly in groups. Tree planting and management was mentioned as number one by only one person (Fig. 38(i)a). In relation to all types of assistance mentioned, nursery practice still scored the highest rating with 22%, followed by tree planting and management with 21%. Third is agroforestry with 15%, followed by group capacity building with 11%, soil conservation and provision of materials such as plastic tubes with 10% each. Others include fruit planting and beekeeping (Fig. 38(ii)a).

In Tharaka, one of the two farmers said he got assistance from FD in nursery practice and tree planting and management. The other farmer said he got assistance in the form of free tree seedlings.

Frequency of FD assistance

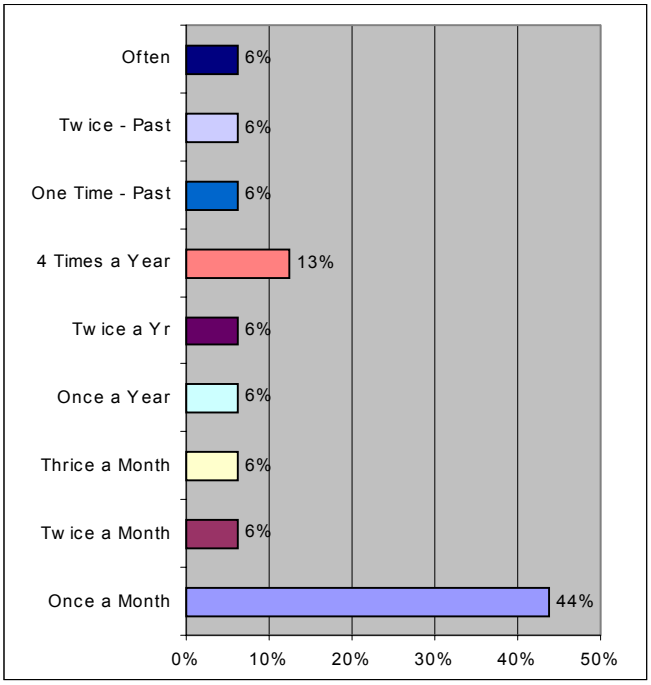


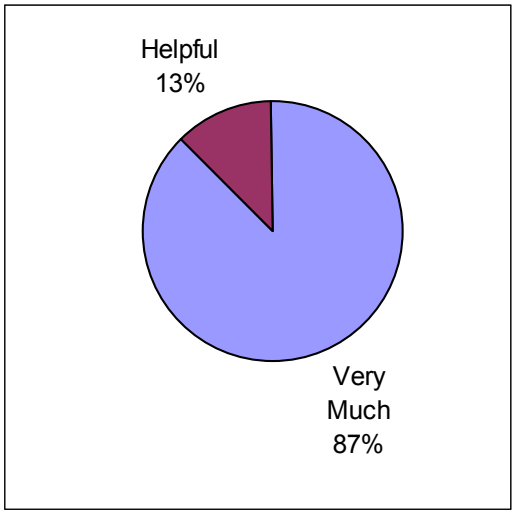
Fig. 39a: Frequency of Fd assistance, Mbeere

44% of farmers interviewed in Mbeere said they were visited once a month by FD. 13% were visited once in about three months. Other responses ranging from once a year to only once in the past scored 6% each as shown in Fig. 39a.

In Tharaka, one farmer said he got assistance from FD only once in the past, while the other one said he got assistance once a month.

Usefulness of FD assistance

Fig. 40a: Usefulness of FD assistance, Mbeere



Of those who had received assistance from FD in Mbeere, 87% considered that the assistance was very much helpful, with only 13% saying the assistance was just helpful (Fig. 40a).

One farmer in Tharaka said he found the assistance from FD to be very much helpful, while the other one said he found it just helpful.

Assistance from others

Fig. 41(i)a: Any other assistance, Mbeere

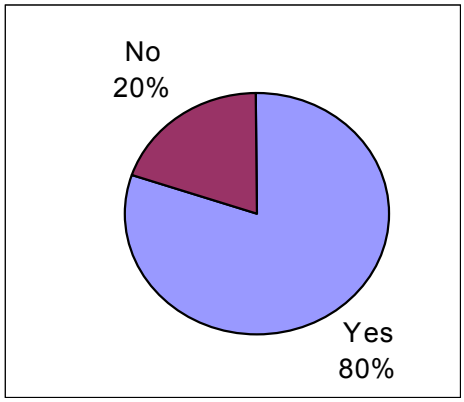


Fig. 41(i)b: Any other assistance, Tharaka

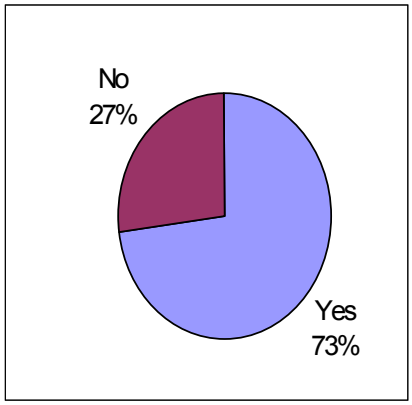


Fig. 41(ii)a: Sources other assistance, Mbeere

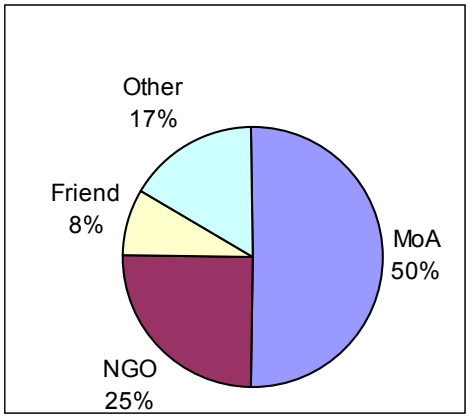


Fig. 41(ii)b: Sources other assistance, Tharaka

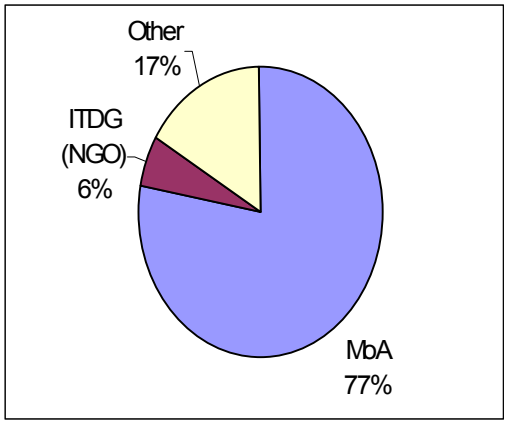


Fig. 41(i)a shows that 80% of the respondents had received assistance from others other than FD, mostly Ministry of Agriculture (50%, Fig. 41(ii)a). Also assisting farmers are NGOs (25%) and friends (8%). The "others" option includes CBOs such as Kamurugu and churches such as the Catholic Church.

Fortunately for Tharaka farmers, at least some assistance was forthcoming from other areas, even for those not visited by FD. 73% of those interviewed said they had received assistance from others, and only 27% had not received any assistance from others as seen in Fig. 41(i)b. Fig. 41(ii)b shows that this assistance was forthcoming largely from Ministry of Agriculture, which scored 77%, while the others such as religious organizations and local administration form 17%. Specifically, an NGO called ITDG was also mentioned and it scored 6%.

Types of assistance received from others

Fig. 42(i) a: No. 1 types other assistance, Mbeere

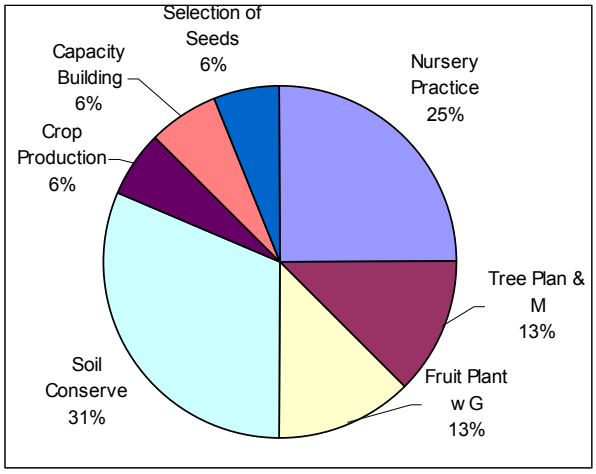


Fig.42(i)b: No.1 types other assistance, Tharaka

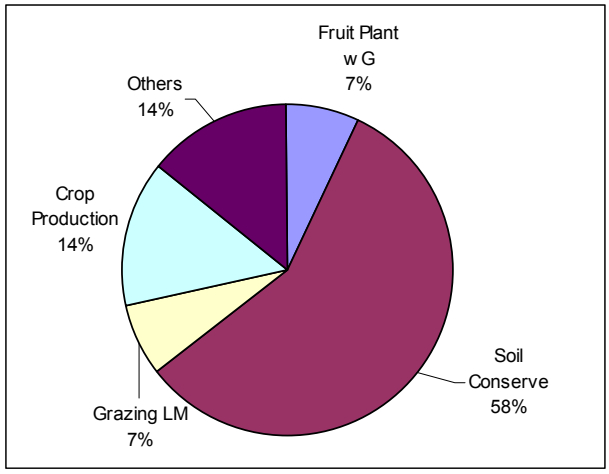


Fig. 42(ii)a: All types of other assistance, Mbeere

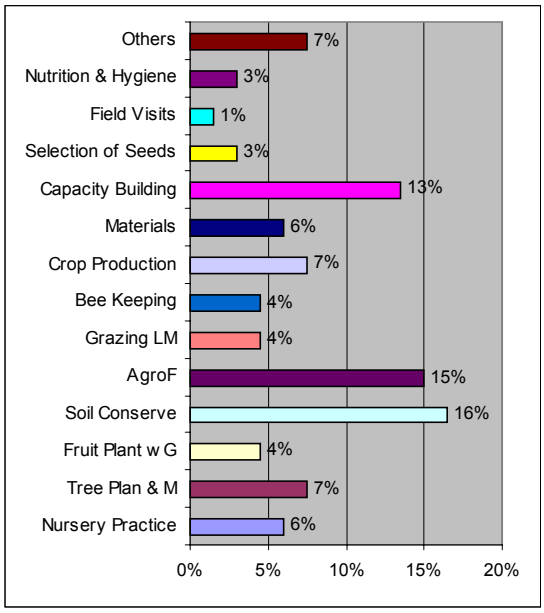
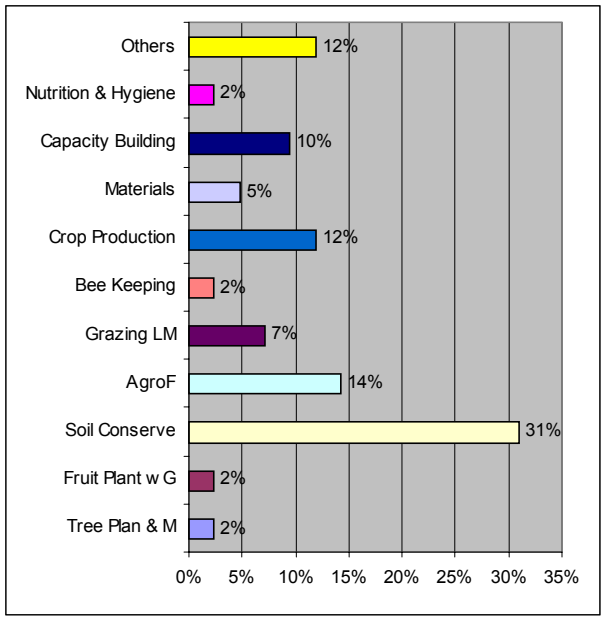


Fig. 42(ii)b: All types of other assistance, Tharaka



In Mbeere, the no.1 choices for types of assistance in terms of usefulness are topped by soil conservation (31%), followed by nursery practice (25%), tree planting and management (13%) and fruit planting (13%). Others are crop production, group capacity building and selection of certified seeds (Fig. 42(i)a). When all types of assistance are pooled, as shown in Fig. 42(ii)a, soil conservation is mentioned most (16%, presumably by MoA), followed by agroforestry (15%) and group capacity building (13%). Tree planting and crop production each scored 7%, provision of materials such as plastic tubes scored 6%, livestock management and bee-keeping each scored 4%, while selection of certified seeds and hygiene each scored 2%. Field visits by Kamurugu were also mentioned 1%.

Tharaka's first rank types of assistance given by other institutions include soil conservation (58%), crop production (14%), fruit planting (7%) and grazing land management (7%). "Others" scored 14% and include hygiene, crop farming and certified seeds selection (Fig. 42(i)b).

When considered in totality in Fig. 42(ii)b, soil conservation still scores highest at 31% of total responses, as does agroforestry at 14% and crop farming at 12%. These three are mainly associated with MoA, who also advise on group capacity building (10%) and grazing land management (7%). Materials such as seedlings and plastic tubes scored 5%, while fruit planting, tree planting and management, beekeeping and nutrition & hygiene each scored 2%.

Frequency of "other" assistance

Fig. 43a: Freq. Other assistance, Mbeere

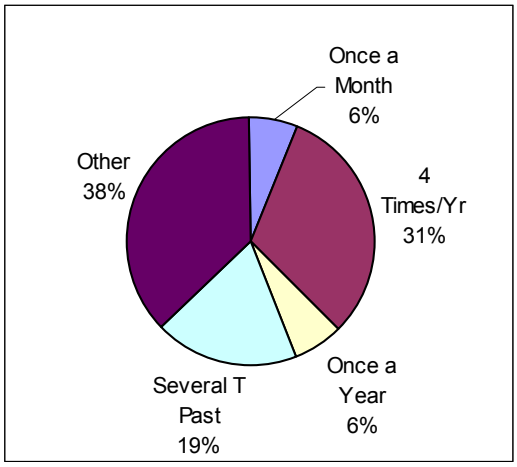
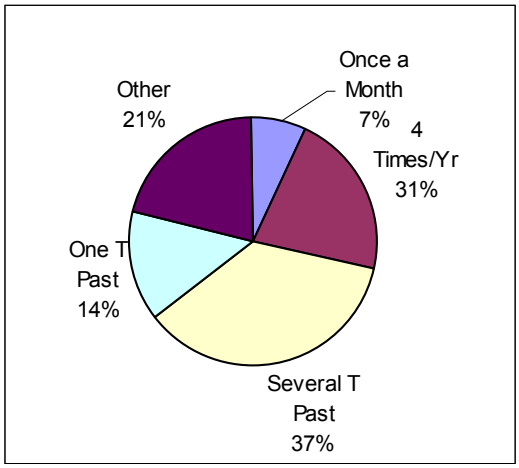


Fig. 43b: Freq. Other assistance, Tharaka



The assistance from others is not as regular as the assistance from FD. In Mbeere, 4 times a year appears most frequently (31%), followed by several times in the past (19%) and once a year (6%). The most regular assistance at once a month appears only at 6%. The "others" combination at 38% is an indication of irregularity and includes once a year, twice a year, four times a year, five times a year, etc (Fig. 43a).

More so in Tharaka than in Mbeere, the other institutions offering assistance are not doing so regularly, as shown by the responses in Fig. 43b. Once a month had the lowest score (7), one time in the past scored 14%, 4 times a year 31%, and a mix of responses labeled under "others" takes up the remaining 21%.

Usefulness of "other" assistance

Fig.44a: Usefulness of other assist., Mbeere

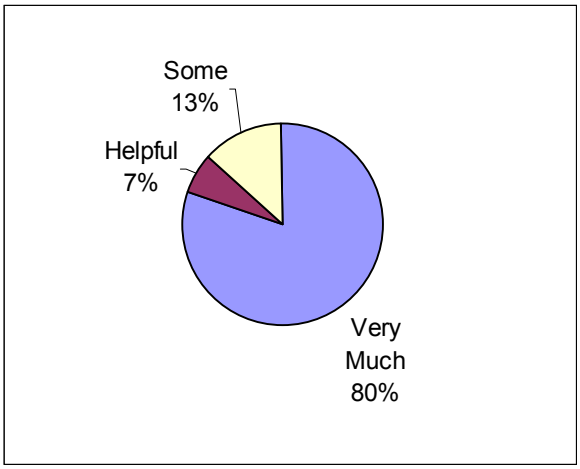
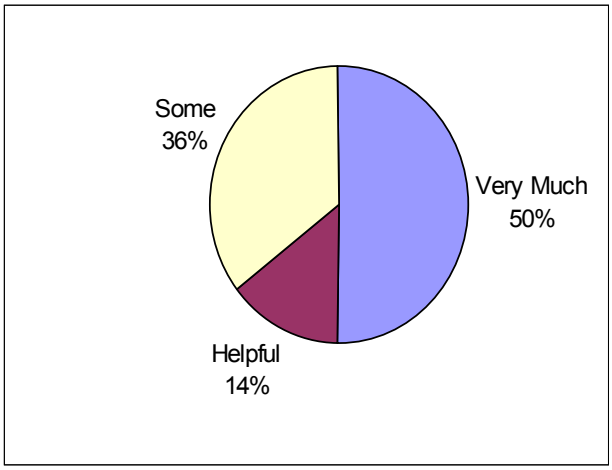


Fig.44b: Usefulness of other assist., Tharaka



80% of Tharaka respondents who were getting assistance from other institutions found the assistance very useful. 7% found it just helpful, and 13 % found it just a little bit useful (Fig. 44a).

As shown in Fig. 44b, 50% of Tharaka respondents found it very much helpful. 14% found it just helpful, while 36% found it not so much useful (some).

Assistance from neighbours/Institutions

All respondents in both Mbeere and Tharaka said they would like to receive assistance from their neighbours, and also from institutions.

Preferred institutions

Fig. 45a: Preferred institutions, Mbeere

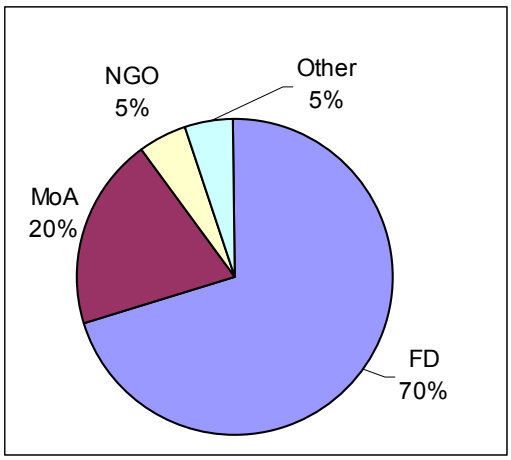
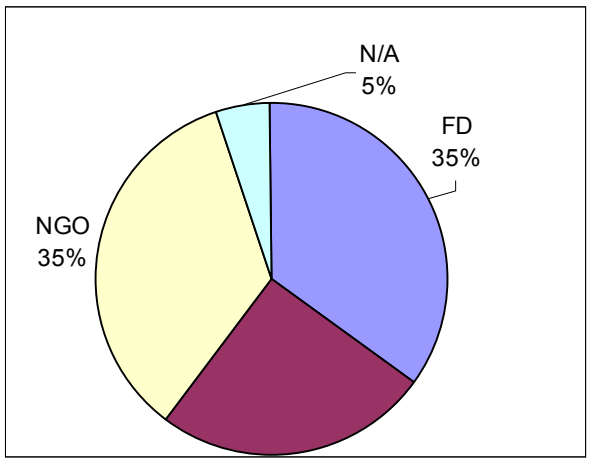


Fig. 45b: Preferred institutions, Tharaka



The most preferred institution by both Mbeere and Tharaka respondents was FD as shown in Fig. 45a and b. In Mbeere, FD scored 70%, followed by MoA at 20%. NGOs scored 5%, the remaining 5% was put at "any".

In Tharaka, FD scored the highest with 35%, mainly because of nursery, tree planting and fruit orchard. Second was MoA with 25%, mainly because of food production. The 35% scored by NGO is not specific, therefore it could mean one or several NGOs whichever is available. Those who said "any" organization comprise 5%.

Preferred types of assistance

Fig. 45(i)a: 1st choice preferred assist., Mbeere

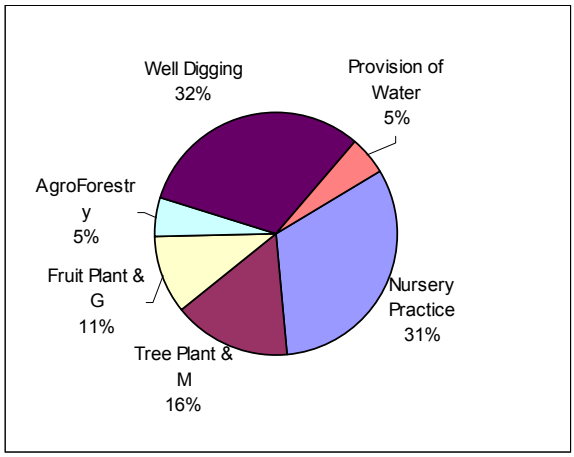
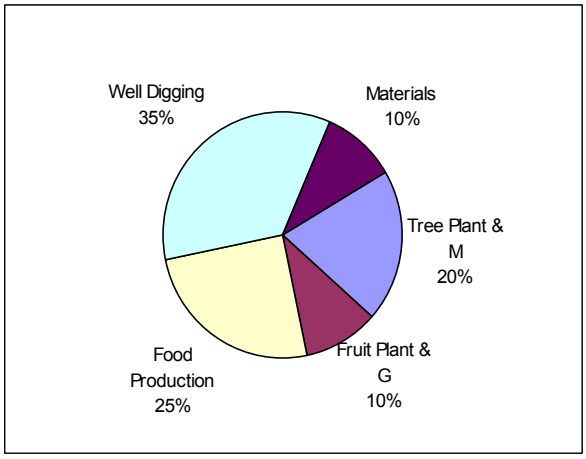


Fig. 45(i)b: 1st choice preferred assist., Tharaka



In terms of priority, the no.1 type of assistance preferred by Mbeere respondents is nursery practice (31%). Second in place is well-digging (32 %, but takes first position with 37% when coupled with provision of water in general (Fig. 46(i)a)), third is tree planting and management (16%), fourth is fruit planting (11%). Agroforestry takes the remaining 5%.

In contrast, when all preferred types of assistance are considered in Fig. 46(ii)a, animal production and fruit planting and grafting overtake all others to become the most preferred at 13% each. Tree planting and well digging also tie at second position with 12%, then nursery practice ties with food production with 10%. Following closely is soil conservation with 9% and bee-keeping with 8%. Agroforestry scored 5%.

Fig. 46(ii)a: Preferred assist. (all), Mbeere

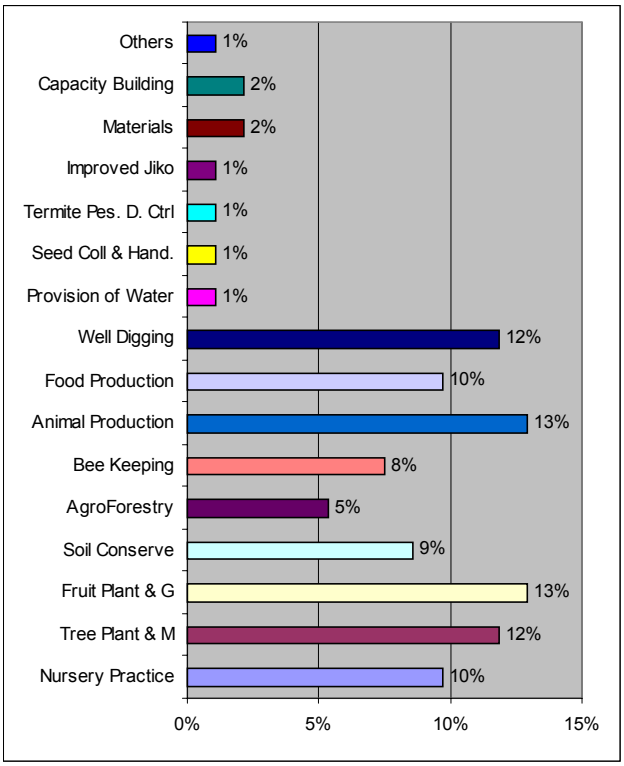
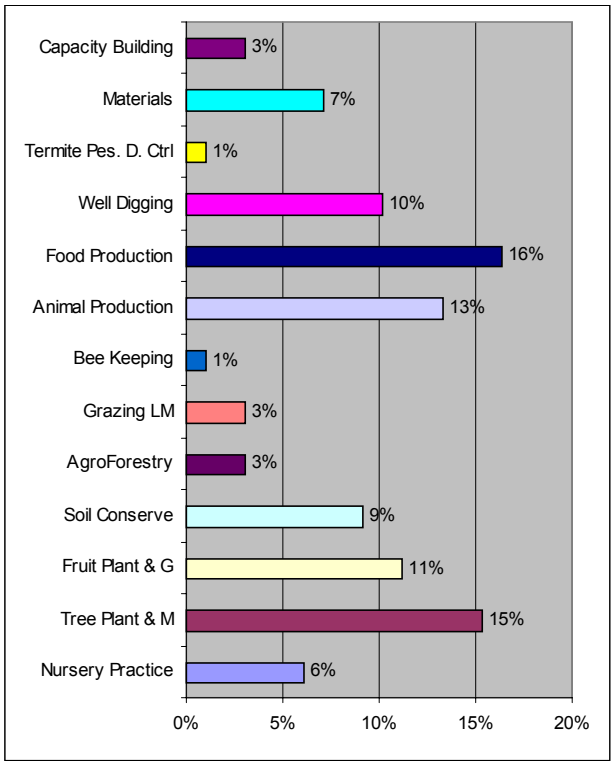


Fig. 46(ii)b: Preferred assist. (all), Tharaka



Tharaka's no. 1 ranked types of assistance are topped by well digging (35%), food production (25%), tree planting and management (20%), fruit planting and grafting and (10) and materials (10%) as shown in Fig. 46(i)b.

When all responses are considered (Fig. 46(ii)b), food production tops with 16%, second is tree planting and management (15%), third is animal production (13%), fourth is fruit planting and management (11%) and fifth is soil conservation (9%). These are followed by materials (7%), nursery practice (6%), agroforestry (3%), grazing land management (3%), group capacity building (3%), pests and diseases control e.g. termites (1%) and beekeeping (1%) (Fig. T30b).

Willingness to pay for extension services

All respondents in all income categories in Mbeere were willing to pay for help.

In Tharaka, 19 people out of the 20 interviewed were willing to pay for extension services. There was, however, one person in the Kshs 0-30,000 category who was unwilling to pay. A summary per income category is given below:

Category	Yes	No
0-30,000Ksh	11	1
30,001-60,000Ksh	3	
60,001-90,000Ksh	2	
120,001Ksh ~	3	
Total	19	1

Payment for extension services

50% of all Mbeere respondents said they would be willing to pay Kshs 200. The minimum amount cited was Kshs 50 (5% i.e. 1 person only), and the maximum Kshs 300 (10% two person).

In Tharaka, the average amount that the 19 respondents are willing to pay is Kshs 85. The minimum is Kshs 50 and the maximum is Kshs 150. The most common response is Kshs 100.

Willingness and ability to pay for extension services are higher in Mbeere than in Tharaka. This willingness to pay is an indication that the level of awareness on the importance of tree planting and extension is greater in Mbeere. At the same time, the higher amounts that Mbeere respondents are able to pay are reflective of the higher income levels in Mbeere, but also indicate willingness to pay.

Knowledge transfer on nursery and tree planting

Fig. 47a: Teaching others, Mbeere

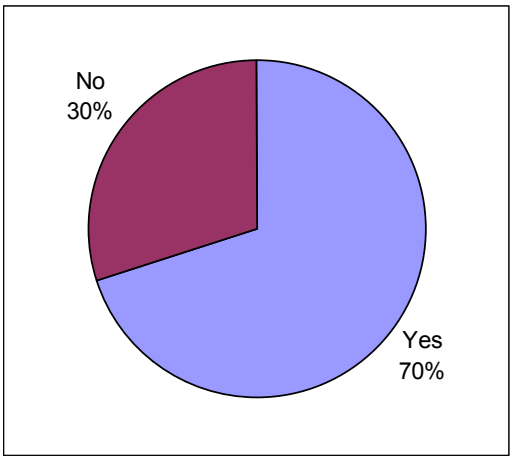


Fig. 47b: Teaching others, Tharaka

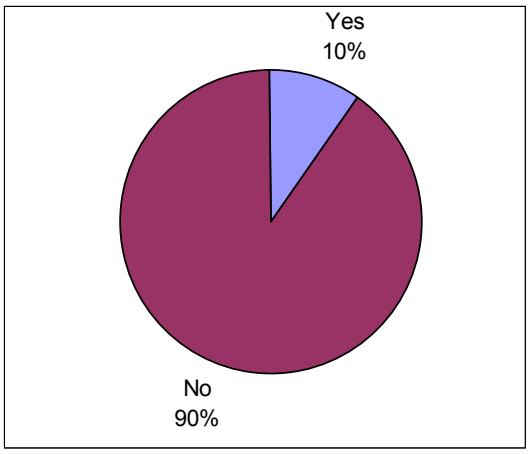


Fig. 47a shows that out of all Mbeere respondents, 70% had taught others on nursery and tree planting. The average number of people taught is 6, minimum is 2, and maximum is 30. Most people were exchanging knowledge within their groups, however, thus the high figures.

In Tharaka on the other hand, only 2 respondents had ever taught anyone nursery and tree planting techniques Fig. 47b. One farmer taught 20 people, the other taught more than 5. However, not all who were taught have established nurseries, reportedly due to constraints of water.

Willingness to share knowledge with other farmers

95% of Mbeere respondents were willing to share knowledge with others (with one respondent from Evurori being non-commital), while 100% in Tharaka were willing to share with other farmers any technical assistance that may be bestowed on them.

11 Group activities

Group membership/Group activities

Fig. 48a: Group activities, Mbeere

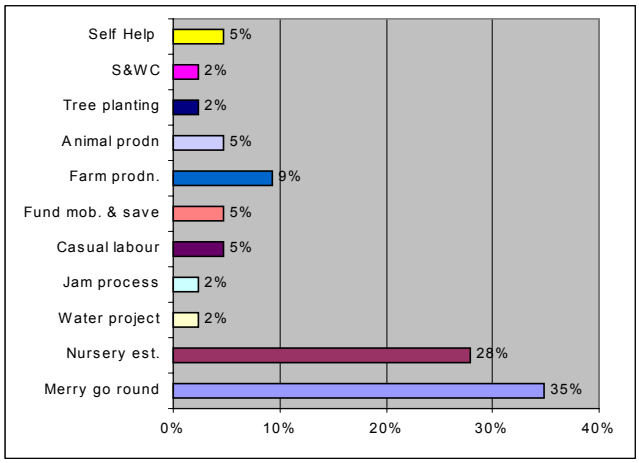
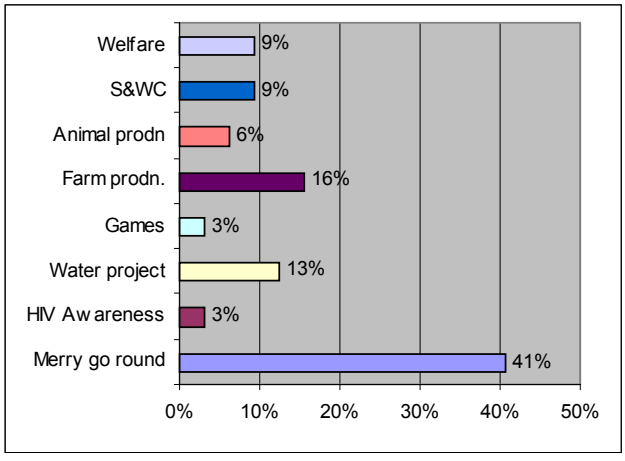


Fig. 48b: Group activities,



Tharaka

In Mbeere, group activities are very popular. 90% of the respondents are members of groups of one type or another, 50% being members of at least three types of groups. Fig. 48a shows that the most common type of group activity is merry-go-round, which scored 31% of all group activities put together. This is followed by nursery management with 28%. The third most common type of activity is farm production, with 9 %. Funds mobilizations and savings ties with welfare (self help) and casual labour at 5%. Other less common activities are soil and water conservation, water projects, jam processing and tree planting at 2% each.

In Tharaka, 18 out of the 20 respondents belonged to some group or other. As is the case in Mbeere, the merry-go-round is the most common activity with a score of 41%. Second in line is farm production with a score of 16%, third is water projects with 13%, fourth is a tie of welfare and soil conservation with 9% each. Other activities mentioned include games and HIV awareness creation.

The merry-go-round acts as a form of community welfare among families and friends, and also as a source of informal credit to take care of financial needs. Occasionally, the merry-go-round group members assist each other on the farm as well.

Women leaders in groups

All groups in both Mbeere and Tharaka have women leaders.

12 Work

Hours spent on the farm

Time spent on the farm for both Mbeere and Tharaka respondents is summarized in the table below. Apparently, there is not much difference in time spent on the farm for these two districts.

	Dry season (Hrs)		Rainy season (Hrs)	
	Mbeere	Tharaka	Mbeere	Tharaka
Average	2.8	2.6	7.6	7.4
Mode	3	2	8	8
Minimum	0	0	4	5
Maximum	5	6	9	8

Hours spent on the farm by spouse

Unlike the case for the respondents, the spouses generally spend less time on the farm than the respondents. Those spouses not spending any time on the farm were said to be men who are otherwise engaged in employment away from home.

	Dry season (Hrs)		Rainy season (Hrs)	
	Mbeere	Tharaka	Mbeere	Tharaka
Average	1.2	1.7	4.15	5.9
Mode	0	2	0	8
Minimum	0	0	0	0
Maximum	3	4	8	8

Generally, more time is spent on the farm during the wet season than in the dry season, particularly during planting and weeding. Though some farmers do not go to the farm during the dry season, several spend quite some time on the farm even during the dry season, preparing land for planting, harvesting crops and repairing soil conservation structures.

13 Accessibility to major social services

Location centre

As can be seen from the table below, accessibility to the location centers for both Mbeere and Tharaka are not much different.

	Dist(Km)		**Foot (Hrs)**		**Bicycle (Hrs)**		**Bus/Truck (Hrs)**	
	Mbeere	Tharaka	Mbeere	Tharaka	Mbeere	Tharaka	Mbeere	Tharaka
Average	4.5	4.0	0.9	1.1	-	0.2	0.1	0.1
Minimum	0.5	0.4	0.03	0.08	-	0.42	0.05	0.08
Maximum	12	10	3	3	-	1.5	0.7	0.58

Nearest agricultural market

The table below shows that accessibility to the nearest agricultural market is better for Tharaka respondents than for Mbeere.

	Dist(Km)		**Foot (Hrs)**		**Bicycle (Hrs)**		**Bus/Truck (Hrs)**	
	Mbeere	Tharaka	Mbeere	Tharaka	Mbeere	Tharaka	Mbeere	Tharaka
Average	5.3	2.6	0.6	0.7	-	0.1	0.2	0.1
Minimum	1	0.1	0.03	0.03	-	0.17	0.05	0.08
Maximum	16	7	3	2.5	-	1.5	1	0.5

14 Relationship with JICA project

Participation in Kitui training

Fig. 49a: Jica training, Mbeere

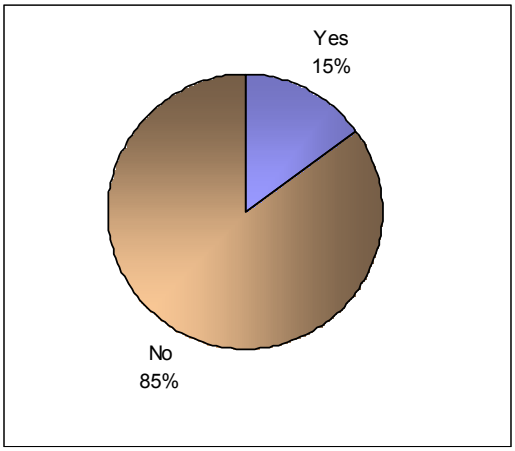
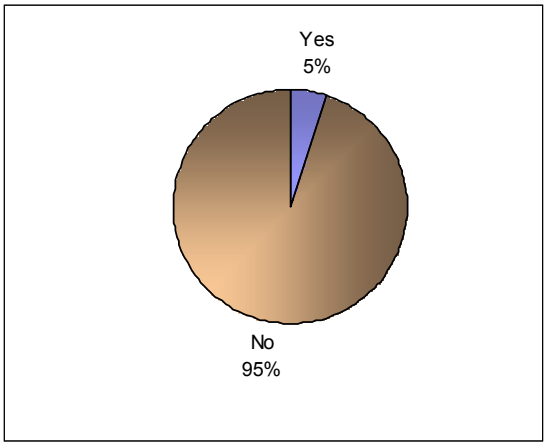


Fig. 49b: Jica training, Tharaka



Only 3 farmers in Mbeere have ever participated in a training course of the Social Forestry Training Project in Kitui, 2 in Gachoka and one in Siakago. The training was in 1988, 1996 and 1997. These three farmers represent 15%, while those who have never participated in this training constitute 85% (Fig. 49a). They also reported that among the techniques they learnt, they are still practicing nursery management, tree planting and management, fruit orchard establishment and agroforestry, among others.

Tharaka Participation in Kitui training

Only one farmer in Tharaka South, out of the 20 farmers interviewed in Tharaka, has attended JICA training in Kitui in 1991. Out of the techniques he learnt while there, he is still practicing nursery establishment, tree planting and maintaining, agroforestry and grafting and budding. The others, who represent 95 %, have not (Fig. 49b).

15 Slash and burn cultivation

Out of the 40 farmers interviewed in Mbeere and Tharaka in the socio-economic survey, 5 practice shifting cultivation: 4 in Tharaka and 1 in Mbeere. From these interviews, the following observations were made:

15.1 Reasons for shifting cultivation

All 4 farmers in Tharaka North gave Reason 1 as soil infertility and said that they practiced shifting cultivation to cope with declining soil fertility. On the other hand, the farmer in Mbeere Evurori gave Reason 1 as plentifulness of land. Plentifulness of land was also given as Reason 2 by 2 farmers in Tharaka North. Other reasons mentioned include rockiness of the land which makes it difficult to till (Mbeere Evurori), labour shortage for land preparation (mentioned twice as Reason 3 in Tharaka North), escape from pests (also mentioned twice as Reason 3 in Tharaka North), and lack of

tools (mentioned once as Reason 2 in Tharaka North).

District	Reason 1	Reason 2	Reason 3
Tharaka (North)	Cope with Soil Infertility	Availability of land	Labour shortage
	Cope with Soil Infertility	Lack of knowledge	Escape from pests
	Cope with Soil Infertility	Availability of land	Labour shortage
	Cope with Soil Infertility	Lack of tools e.g. plough	Escape from pests
Mbeere (Evurori)	Plentiful land	Rockiness	

15.2 Crops frown with shifting cultivation

The following are the responses for crops grown with shifting cultivation:

District	Crop 1	Crop 2	Crop 3	Crop 4	Crop 5	Crop 6
Tharaka (North)	Millet	Green Grams	Sorghum	Cow Peas	Pigeon Peas	Maize
	Millet	Green Grams	Sorghum	Cow Peas	Pigeon Peas	Maize
	Millet	Green Grams	Sorghum	Cow Peas		
	Millet	Green Grams	Sorghum	Cow Peas	Pigeon Peas	Maize
Mbeere (Evurori)	Maize	Green grams	Cowpeas	sorghum		

Green grams, sorghum and cowpeas are the most common, followed by maize, millet and pigeon peas.

15.3 Period of usage before shifting

Between 2 and 5 years, depending on productivity.

15.4 Fallow period before re-cultivation

Between 2 and 10 years, depending on availability of alternative land.

15.5 Ownership of land

3 out of 4 respondents in Tharaka owned the land on which they practiced shifting cultivation, while the remaining one used land belonging to the parents. In this case, the farmer had to obtain permission from the parents. In Evurori, the farmer was using clan land and needed permission from clan elders to practice shifting cultivation.

15.6 Shifting cultivation rights

In the case of own land, the owner, his friends and relatives (with his permission) could use the land. In the case of family land, any family member could use the land, while any clan member had a right to use clan land as long as he could obtain permission from the clan elders.

Annex 9

Market Survey Results in Kitui District

Market Survey in Kitui

The market survey was conducted for a total of five (5) markets and several stores in the four (4) divisions of Central, Chuluni, Kabati and Mutomo.

1 Markets

Details of the market areas, the dates they were visited and opening hours are as follows:

Table 1.1 Market survey in Kitui district

Division	Market	Location	Sub-Location	Village	Date Visited	Open Hours
Central	Kalundu	Kyangwithya	Township (Kitui)	Township (Kitui)	Thursday 16th Oct. 2003	6am - 6pm
Kabati	Kabati	Kaui	Kaui	Kabati Centre	Thursday 16th Oct. 2003	6am - 6pm
Chuluni	Kisasi	Kisasi	Kisasi	Kisasi	Friday 17th Oct. 2003	6am - 6pm
	Mbitini	Mbitini	Mbitini	Mbitini	Saturday 18th Oct. 2003	6am - 6pm
Mutomo	Mutomo	Kivwea	Kivwea	Mutomo	Saturday 18th Oct. 2003	6am - 6pm

Following is a product by product discussion of the products being sold in the various markets:

1.1 Wood Products

(1) Poles

The most common type of poles found in the markets was Eucalyptus, which is grown locally within Kitui district. The channel in all the cases was F-R (farmer – Retailer), with the retailers buying from the farms where the trees are being grown and transporting them to the markets. In Kabati the price was Kshs 80-100 for the ordinary Eucalyptus species, with E. paniculeata fetching a higher price of Kshs 150. Kalundu was selling at Kshs 70 on average per pole. There were no poles in the remaining 3 markets, but there were some in the stores and hardware shops.

(2) Sawn timber

Sawn timber was rare in the markets, being sold much more in the hardware shops and stores. Only in Kabati market was it being sold through the F-R channel of marketing. Two species were found, with Eucalyptus going for Kshs 7 per ft and Grevillea for Kshs 12-15 per ft.

(3) Tree seedlings

There was only one farmer selling seedlings in Kabati market, a SOFEM core farmer of 1999. He had the following species: Grevillea, Cypress and Senna seamea at Kshs 10 each; Jacaranda at Kshs 12 each ; Casuarina, Pine, Bamboo and Z. Cordutum at Kshs 20 each, fruit seedlings such as mango, pawpaw, passion, white supporter, lemon and guava for Kshs 20 each. Flowers such as bougainvillea were Kshs 30 each, and Terminalia was also going for Kshs 30 each.

According to reports from one of the retailers selling poles, there is also a farmer who usually sells seedlings at Kalundu market for Kshs 10 per seedling for such species as Grevillea, Cypress, Casuarina and Pine. However, he was not in the market to be interviewed.

(4) Firewood

None.

(5) Charcoal

None.

1.2 Other Forest Products

(1) Fibre

Sisal fibre was being sold at Kalundu market directly by the farmer at about Kshs 50 per kg. Elsewhere in Kabati, the sisal had been made into ropes which were going for Kshs 5-30 through F-M-R (Farmer – Middlemen – Retailer), and in Mutomo at an average of Kshs 20 each through F-R, having been bought from traders in Kitui.

(2) Fruits

1) Avocado

Avocados were found in all the markets through the F-M-R channel. In Kabati the price was Kshs 20 per kg and sourcing was from Thika. In Mutomo, the price was Kshs 10 per piece, retailers buying from Machakos, Thika and Kitui. In Kalundu, the price was Kshs 10, also sourcing from Thika, while in Kisasi it was Kshs 7 from Kitui, and in Mbitini Kshs 5-8, also from Kitui.

2) Pawpaws

Pawpaws in Kabati were going for Kshs 5-15 through F-R channel, while in Kalundu market the price was about Kshs 10 with the farmer himself selling in the market.

3) Lemon

These were found only in Kabati and Kalundu, where they were going for Kshs 10 per kg and Kshs 1 each respectively. In both markets the lemons were being grown locally and were being channeled through F-R.

4) Bananas

Ripe bananas as fruits were being sold in all the markets. The price was Kshs 40 per kg in Kabati, Mutomo, Kisasi and Mbitini and Kshs 50 in Kalundu. The channel of marketing was F-M-R in all the markets except Kisasi where the channel was F-R. Kalundu had a mix of F, F-R and F-M-R. Where not grown locally, the bananas were being brought in from Thika, and for Mbitini through a longer route via Kitui.

5) Pineapples

Pineapples were coming from Thika and Nairobi through F-M-R, and were found in Kabati at Kshs 10-15, Mutomo at Kshs 30 and Mbitini at Kshs 25 each.

6) Oranges

These were only found at Mutomo market at Kshs 5 each. They were brought in from Kibwezi through the F-M-R channel.

7) Tamarindus indica

This is an indigenous fruit used widely mostly for fermenting porridge and as a source of vitamin C. Farmers were selling directly in the markets in Kabati (Kshs 10 per kg), Mutomo (Kshs 5 for a bunch) and Kalundu (KShs 5 per kg).

(3) Leaves (Tobacco)

Dried tobacco leaves were being sold in the markets. The leaves were either being grown locally within Kitui district where the channel was F-R, or was being brought in from Meru where the channel was F-R or F-M-R. Prices varied from Kshs 150 per kg in Kabati (locally grown, F-R), Kshs 300 per kg in Mutomo (locally grown, F-R) and Kshs 120 per kg in Kalundu (Meru, F-R). In Kisasi the price was Kshs 180 per kg (Meru, F-M-R).

(4) Reeds

The only reeds being sold were in the form of mats going for Kshs 60 each at Mutomo and Kshs 75 at Kalundu. The channel was F-R.

(5) Spices

Spices were found in Kalundu market, including garlic, ginger and pepper. They were however processed and were going for between Kshs 100 (ginger), Kshs 150 (pepper) and 200 per kg (garlic). The channel is F-M-R and coming from Nairobi and Tanzania.

(6) Stones and Minerals

Only in Kabati were there stones and minerals being sold. They included pumice at Kshs 10 per piece (stones, F-M-R, from Nairobi and the Rift Valley), and also soda ash at Kshs 60 per kg (minerals, F-M-R, from Nairobi and Magadi).

1.3 Agricultural products

(1) Maize

Green maize was being sold in all the markets visited, except Kisasi in Chuluni. In each market, it was observed that the pricing was at an average of Kshs 7 per cob. The channel of distribution is F-M-R (Farmer – Middleman – Retailer) in all the cases observed, with the retailers buying their wares directly from markets in Nairobi and Thika or from middlemen who transport the products in lorries to the respective markets.

(2) Beans

The only market which was selling beans was Kalundu. Here the price was Kshs 30 per kg, with the retailers either buying locally from the farmers (F-R) or from middlemen in Busia, Western Kenya (F-M-R).

(3) Pigeon peas

These were found being sold at Kalundu and Kisasi markets. In Kalundu, the price was Kshs 25 per kg, with the retailers either buying locally from the farmers (F-R) or from middlemen in Busia, Western Kenya (F-M-R). In Kisasi the farmer was selling directly in the market at Kshs 20 per kg.

(4) Cowpeas

Cowpeas were found at Kalundu market at Kshs 25 per kg, with the retailer either buying locally from the farmers (F-R) or buying from middlemen in Busia, Western Kenya (F-M-R).

(5) Peas

Green peas were being sold at Kalundu market at Kshs 50 per kg and also at Mutomo at Kshs 30 per kg. The channel of distribution was F-M-R, the retailers buying mainly from Wakulima market in Nairobi.

(6) Sorghum

The price of sorghum at Kalundu market was Kshs 15 per kg, being bought locally from farmer to retailer (F-R).

(7) Cassava

This was being sold either directly by the farmers in the market, or by retailers who go to the farms and buy from the farmers. This was the case in Kabati market, where they were going for between Kshs 10 and 15 depending on size. In Kalundu and Mutomo markets the farmers were selling directly in the market at Kshs 5-20 depending on size. In Kisasi also, the farmers were selling directly at between Kshs 10-20 depending on size, as in Mbitini where the larger sizes were going for Kshs 20 per piece, being sold directly by the farmers.

(8) Tomatoes

In Kabati tomatoes were going for Kshs 35 per kg through F-M-R mainly coming from middlemen in Thika. In Mutomo the price was lower at Kshs 25 per kg, either by F-R or F-M-R, main source being Kibwezi area to the south. Kalundu was selling even cheaper at Kshs 20 per kg through the F-R-M channel but mainly getting the produce from Embu. Kisasi was the most expensive at Kshs 40 per kg as they had a longer sourcing route, getting from middlemen in Kitui, who were getting the tomatoes from further afield in Thika. Mbitini also got their tomatoes from Kitui, but were selling at the same price as Kitui i.e. Kshs 35 per kg (F-M-R).

(9) Pumpkins

At Mutomo, a number of farmers were selling pumpkins grown locally, at a price of Kshs 15 each.

(10) Potatoes

Potatoes were everywhere and were channeled through F-M-R. The prices varied in each market: Kshs 10 per kg in Kalundu (sourcing from Nairobi), Kshs 15 in Kabati (sourcing from Thika), Kshs 20 in Kisasi and Mutomo (sourcing from Thika and Nairobi respectively), and Kshs 25 in Mbitini (sourcing from Kitui). The higher price at Mbitini could be explained by the longer route through Kitui.

(11) Cabbages

All the markets were selling cabbages through the channel of F-M-R, major sources being Thika, Nairobi and Meru. Prices ranged from Kshs 10-25 each, averaging Kshs 10 per kg.

(12) Carrots

No carrots were seen at Kisasi and Mbitini, but elsewhere in Kabati the price was Kshs 20 per kilo (F-M-R, from Thika); in Mutomo Kshs 30 per kilo (F-M-R, from Nairobi); in Kalundu Kshs 20 per Kg (F-M-R, from Nairobi).

(13) Onions

The price of onions was uniform in all the markets visited, and the channel of marketing was F-M-R except

in Mutomo where it was F-R, with retailers buying from farmers in Loitokitok. In Mbitini, Kabati and Kisasi the retailers bought from Thika; in Kalundu they bought from Thika, Taveta and Loitoktok.

(14) Dania

Some is grown locally and is channeled through F-R (Kalundu), the rest is brought in from Thika and Meru (Kabati and Kalundu respectively). The price was approximately Kshs 100 in Kabati and Kshs 40 in Kalundu. These were the only two markets selling dania.

(15) Capsicum

These were going for Kshs 5 each in both Kalundu and Kabati. In Kabati the channel was F-M-R with the produce being bought in Thika, while in Kalundu it was the farmer selling directly in the market.

(16) Green Bananas

Green bananas are used as vegetables for cooking. They were found in Kabati, Mutomo and Mbitini markets. The channel of marketing was F-M-R in all the cases. The price varied, going for about Kshs 12 per kg in Kabati (bought from Thika), Kshs 30 per kg in Mutomo (bought from Nairobi), while in Mbitini it was Kshs 10 for 3 bananas (bought from Kitui).

(17) Sweet Potatoes

Channel of marketing was F-M-R. Kabati was selling at Kshs 20 per kg and was getting from Thika, while both Mutomo and Kalundu were getting from Nairobi and selling at Kshs 30 and 50 per kg at Mutomo and Kalundu respectively.

(18) Arrow Roots

There was a special type of arrowroot being sold at Kabati market at Kshs 80 each, and the marketing channel was reported to be F-R though it was not clear where it was bought from. In Mutomo and Kalundu, arrowroots were bought from Nairobi through the F-M-R channel and were being sold at Kshs 40 per kg, while in Kisasi the price was lower at Kshs 30 per kg through the same channel and source.

(19) Kales

Kales were Kshs 20 per kg in Kabati, Mutomo and Mbitini and Kshs 25 in Kalundu. Most of them are grown locally and are either sold by the farmers directly in the market, or through F-R channel. However, in Kalundu, more is brought in from Meru through the F-M-R channel.

(20) Spinach

Spinach was Kshs 40 per kg in Kabati through F-R and growing locally, Kshs 30 per kg in Mutomo (farmer selling in market from Kisasi in Chuluni) and Kshs 25 in Kalundu with F-R growing locally and F-M-R from Meru.

(21) Sugar Cane

Sugarcane was being sold at between Kshs 5 and Kshs 15 in Kabati, Kalundu, Kisasi and Mbitini markets. The channel was F-R in all cases, as well as F-M-R at Mbitini where they get from Kitui.

A summary table of the market situation in Kitui gives an insight of the products being sold in the market, the unit price for each product and the channel of marketing for the markets visited in Central, Kabati, Chuluni and Mutomo divisions of the district. A similar table is given for the stores.

2 Stores

In order to obtain complete data on marketing information in stores, the survey team visited several stores in each market as none of the stores were dealing with all kinds of products – for example, there were different stores dealing with cereals, others dealing with poles and timber, others with charcoal and yet others with honey. As such, one form was used to compile all the information on the various stores visited in each market center. A total of five (5) forms were filled, one each for Kalundu, Kabati, Kisasi, Mutomo and Mbitini.

The products being sold in the stores are discussed here below.

2.1 Wood Products

Wood products were being sold in hardware shops together with other building materials.

(1) Poles

The only poles found in the stores were of Eucalyptus species, and these were being sold in Kalundu and Kisasi markets. In Kalundu they were channeled through F-R and F-M-R, and all were grown locally. The price varied between Kshs 40 and Kshs 70, depending on the size. In Kisasi, the channel was F-M-R, though they were being sourced locally from different parts of the district. The price was an average of Kshs 70 each.

(2) Sawn timber

Sawn timber was found in all the markets, and the pricing was dependent on the measurements and the species. In Kabati, the stores visited were selling pine at KShs 10-20 per foot. Mutomo stores were selling pine and grevillea timber at Kshs 13-20 per foot through F-M-R channel. Melia was going for Kshs 30 through
F-R.

Kalundu market in Kitui township had the widest variety in the different stores visited. Eucalyptus was going for Kshs 10-35, while Pine was going for Kshs 12-20. For both species, the retailer was sourcing from Embu, Nakuru and Eldoret, with some being imported from Zambia through Tanzania. The channel was F-M-R. Grevillea was grown locally and was going for Kshs 9-35 through both F-R and F-M-R. Melia was brought in from Mutomo division and was selling at Kshs 30 per foot through F-R and F-M-R channels.

One hardware shop in Kisasi was selling pine and grevillea timber at Kshs 15 and Kshs 12 respectively, both through F-M-R. Melia timber was going for about Kshs 25 per ft, through F-R. Source of the

timber was within Kitui district. At Mbitini, the timber being sold was in door-frame sets which were going for Kshs 300 for Grevillea and Kshs 350 for melia and "kyoa". All were sourced from the district through the F-R channel.

(3) Firewood

Firewood was found at Kalundu and Mbitini markets. The price at Kalundu was Kshs 5-10 per piece for medium to large firewood. Species were Terminalia brownii and Acacia which were grown locally and were channeled through F-R. In Mbitini the price was Kshs 1-5 for smaller pieces of firewood of Terminalia brownii, acacia and grevillea. The firewood was bought from Mutomo division through F-R channel.

(4) Charcoal

Charcoal was being made from indigenous acacia and other species such as Terminalia brownii and Azanza. At Kalundu the retailers were selling per bag at Kshs 200, while at Mbitini it was Kshs 10 per kg. The channel was F-M-R in Kalundu and F-R in Mbitini.

(5) Others (wooden spoons)

These were made from Azanza wood and were being sold at Kisasi market at Kshs 15-30 through F-R.

2.2 Other Forest Products

(1) Bark

One store in Kisasi was selling bark of "mukungula" which was said to be medicinal. The price was per small packet, and the channel was both F-R and F-M-R. The retailer was buying from Kibwezi.

(2) Fibre

Farmers brought the fibre to the stores (F-R) and were paid on delivery. In Kabati, the price was Kshs 25 per kg; in Kisasi the retailers were selling sisal ropes at Kshs 10 each (F-R).

(3) Seeds (Baobab, Dania)

There was one store in Kalundu (Ali Jumbe Stores) which was selling baobab and dania seeds along with the cereals. The price was Kshs 20 for baobab and Kshs 80 for dania. Channel was F-R.

(4) Spices (Cloves)

One store in Kisasi centre was selling cloves for spicing food at Kshs 10 for a small packet of about 50 grams. The channel was F-M-R, mainly from Mombasa through Kibwezi.

(5) Grass

Brooms made from grass were being sold in Kisasi market at Kshs 15 each. The grass was locally grown and was channeled through F-R.

(6) Fruit

The only fruit being sold in the stores was coconut, which was selling at Kshs 10 through F-R, with the retailer buying from farmers growing the coconut locally at Kisasi village.

(7) Honey

All the market centres had stores selling honey at between Kshs 120 and Kshs 140 for both refined and unrefined honey. Except for Kalundu which was also sourcing from outside the district in Mwingi, the rest of the stores were getting the honey from within Kitui, through both the F-R and the F-M-R channels.

2.3 Agricultural products

Agricultural products being sold in the stores were mainly grains and cereals, which were sold to the retailers by the farmers. The farmers brought them to the stores and were paid according to the arrangement with the store-keeper, in most cases cash on delivery. Only in the bigger stores were the retailers getting the products from outside Kitui to supplement the local products, e.g. from Busia.

(1) Maize

Maize was selling at Kshs 16-17 per kg. It was channeled through F-R in most cases, except in Mutomo, Kalundu and Mbitini. Other than that being grown locally, extra reserves were bought from Nairobi e.g. in Kalundu and Mbitini.

(2) Beans

The price of beans was ranging from Kshs 15 –35 per kg, depending on type. The channel is mostly F-R. F-M-R channel was less common, and was seen at Mbitini where some retailers were buying the beans from Busia, and also Kalundu and Mutomo where some retailers were also buying from Nairobi.

(3) Pigeon peas

These were being sold at Kshs 20-30 per kg. Channel of market is F-R and F-M-R. Source is local, though some retailers in Kalundu said they supplement their stocks by buying from Nairobi.

(4) Cow peas

Same as pigeon peas, except that there was none being sold at Kisasi market.

(5) Millet

Millet was being sold at Kabati (Kshs 30, F-R), Mutomo (Kshs 16, F-R) and Kalundu (Kshs 35, F-R and

F-M-R) stores. Most of it was grown locally, but some retailers in Kalundu bought from traders in Nairobi.

(6) Sorghum

Sorghum was only found in Kabati and Kalundu stores. Kabati was selling at Kshs 12 per kg through F-R channel for locally grown sorghum, while Kalundu was buying locally (F-R) and also from Nairobi (F-M-R), to sell at Kshs 14 per kg.

(7) Green gram

Only Mutomo was not selling green grams. Those selling included Kabati (Kshs 25, F-R) Kalundu (Kshs 40, F-R and F-M-R (Nairobi)), Kisasi (Kshs 35, F-R) and Mbitini (Kshs 30, F-R). Most of it is grown locally and the farmers bring to the stores directly and sell to the retailers.

(8) Cassava

Only one store in Kisasi was selling cassava at Kshs 10-20 through F-R channel.

(9) Others

Kalundu stores (Ali Jumbe Stores) had more products than other market centres and were also selling the following products:

Product	Price (Kshs)	Channel	Source
Potatoes	20 per Kg	F-M-R	Nairobi
Peas	50 per kg	F-R, F-M-R	Nairobi
Pop Corn	30 per Kg	F-R, F-M-R	Nairobi
Sun Flower	40 per Kg	F-R, F-M-R	Nairobi
Ground Nuts	60 per Kg	F-R, F-M-R	Nairobi

3 To which other districts are forest and agricultural products that are produced in Kitui district sold?

Kitui district produces surpluses which are sold outside the district. The main ones include:

(1) Carving wood

Kitui is renowned for wood carvings. Not only do they produce their own wood for making the carvings, but they also sell the wood outside the district mainly to Nairobi and Machakos, and even export outside the country. Major species mentioned during the survey are Terminalia brownii and Dalbagia melanoxilon. The channels for marketing are either F-R or F-M-R.

(2) Charcoal

Charcoal made from indigenous trees such as various Acacia species, Balanites aegyptica, Terminalia brownii and Newtonia hildabradii are sold outside the district. Destinations include Nairobi, Mombasa, Central Province and Machakos.

The channel is F-R and F-M-R. Farmers may also sell directly on the roadsides to travelers heading outside the district.

(3) Honey

A lot of good quality honey is produced in Kitui and surpluses are sold outside the district through F-R and F-M-R channels. Destination districts are Nairobi, Central and Coast.

(4) Fruits

Improved mangoes and pawpaws are among the fruits which are produced in large quantities in Kitui. Destination areas where these fruits are sold include Nairobi and Mombasa, among others. The channel of distribution is F-M-R

(5) Grains and cereals

A lot of grains and cereals are produced in Kitui district especially when the rains are good. Among those destined for markets outside the district are maize, beans, cow peas, pigeon peas, green grams, sorghum and millet, which are sold in Nairobi, Mombasa, Central. The channel of marketing is F-M-R.

Table 3.1 gives a summary of these products.

Table 3.1 Forest and agricultural products produced in Kitui district that are sold outside the district

	Species	Destinations	Brokerage System
		Nairobi, Machakos, Export	F-R, F-M-R
	Terminalia brownii		
	Dalbagia melanoxilon		
Charcoal	Acacia melifera	Nairobi, Mombasa, Central, Machakos	Farmer, F-R, F-M-R
	Acacia tortilis		
	Product List		
	Tree products		
	Other Timber (For carvings)		
	Newtonia hildabradii		
Honey		Nairobi, Central, Coast	F-R, F-M-R
Fruits	Mangoes Pawpaw	Nairobi, Mombasa	F-M-R
Agricultural	Maize	Nairobi, Mombasa, Central	F-M-R
	Beans		
	Cow Peas		
	Pigeon Peas		
	Green Grams		
	Sorghum		
	Millet		

4 List of trading products between themselves not through markets and/or stores and the system

Through discussions with the retailers, ex-SOFEM TAs in Kabati, Central and Chuluni divisions and FD staff in Mutomo division, the survey team was able to establish that a lot of trading goes on between farmers without passing through the markets or stores. Products such as tree seedlings are either sold for cash, or are given as gifts to friends and relatives in order to encourage them plant trees. All other products are sold for cash directly from farmer to farmer (F-F). These include poles, sawn timber, firewood, fruits, grains and cereals, vegetables and livestock. In most cases, the products are exchanged on the farm i.e. the farmer in need goes to buy the product from the farm of the farmer who is selling the product.

A summary table of this kind of trading is given as Table 4.1.

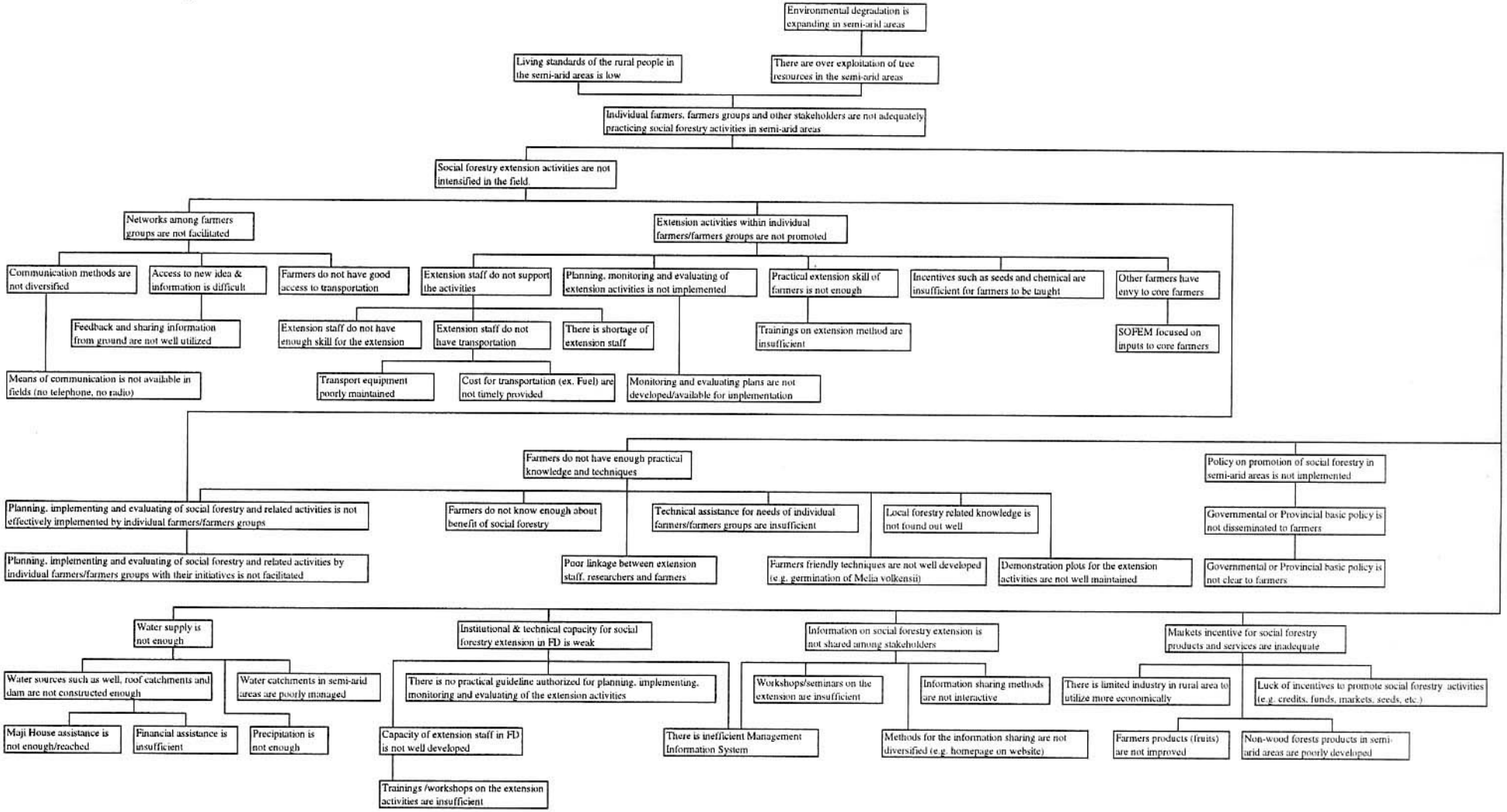
Table 4.1 List of trading products between farmers (not through markets and stores system)

Product	Species	Transact Modes	The System
Tree products			
Tree Seedlings		Cash, Gifts	F-F, Group Sharing
Poles		Cash	F-F
Sawn Timber	Eucalyptus	Cash	F-F
	Grevillea	Cash	F-F
Firewood		Cash	F-F
Fruits	Pawpaws	Cash	F-F
	Mangoes	Cash	F-F
	Citrus	Cash	F-F
	Avocado	Cash	F-F
	Z Cordutum	Cash	F-F
	Z Guava	Cash	F-F
	Custard Apple	Cash	F-F
Agricultural	Grains	Cash	F-F
	Cereals	Cash	F-F
	Vegetables:		
	Kale	Cash	F-F
	Tomatoes	Cash	F-F
	Cabbages	Cash	F-F
Livestock	Goats	Cash	F-F
	Chicken	Cash	F-F
	Cows	Cash	F-F

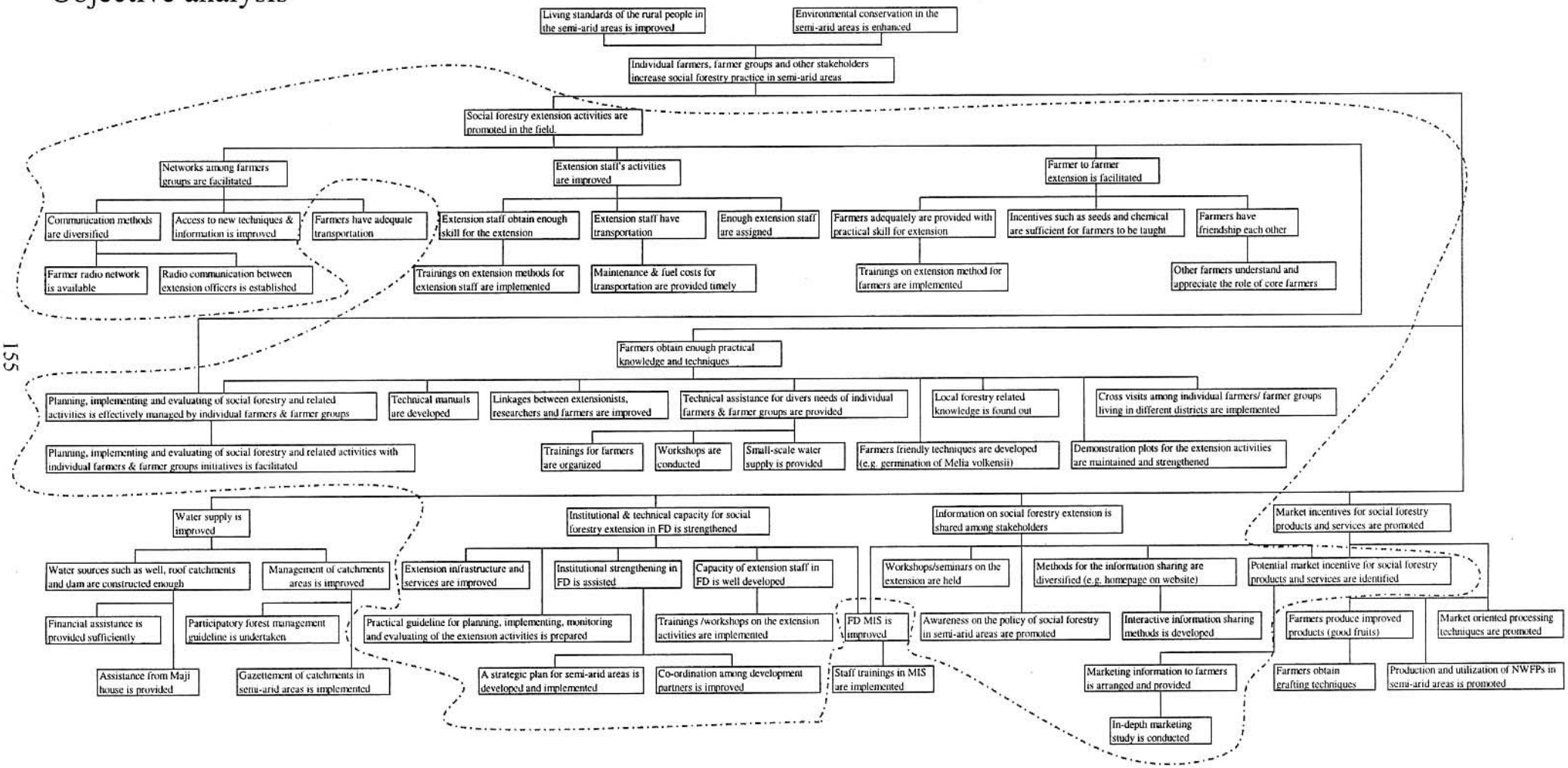
Annex 10

Problem Tree and Objective Tree with Project Selection in PCM Workshop

Problem analysis



Objective analysis

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