

PROJECT PAPER

FACTORS INFLUENCING THE SUSTAINABILITY  
OF SMALL-SCALE NURSERIES MANAGED BY  
WOMEN'S GROUPS IN KITUI DISTRICT KENYA

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## ABSTRACT

Social forestry potentially contributes to rural development or the improvement of living standards and/or well-being of local residents. Social forestry is expected to contribute to the diversification of activities, provide forest products and services, please farmers through forestry activities, and make the best use of resources in collaboration with on-going agricultural activities.

However, conventional social forestry projects often have not performed these services because they have treated trees separately from agriculture and other daily activities in farmers' lives. The integration of forestry activities into other daily activities is essential to insure that social forestry contributes to rural development satisfactorily. It is also necessary to rethink the meaning of the sustainability of project activities because how forestry activities contribute to the sustainability of farmers' lives may become more important than the sustainability of project activities themselves. This research project aimed to identify factors influencing the sustainability of forestry activities and to rethink the meaning of the sustainability of project's activities by examining cases of small-scale nurseries managed by women's groups in Kitui District, Kenya, which were supported by the Social Forestry Training Project (SFTP).

Although there might have been various factors influencing the sustainability of nurseries, this study focused on factors related to labor management. Participatory tools were used to clarify these factors that stretched over various fields. Based on results of test surveys, it was decided to score daily activities in terms of importance awareness and resource allocation, and to assess the life histories of women's groups.

Eight women's groups out of the seventy that were supported by the SFTP were sampled. Four groups out of the eight had continued their nurseries and the other four had not. In addition, interviews were conducted with individuals concerned institutions with this project, such as officers from the Forest Department and Location chiefs.

Results indicated that the degree of importance awareness of and resource allocation to nursery activities did not necessarily influence the sustainability of nurseries. It was revealed that there were two types of groups among women's groups that continued nurseries. One type regarded small-scale nurseries as important income generation activities and the other type managed nurseries mainly for the procurement of seedlings for domestic planting or for the diversification of income sources. The latter groups developed alternative tools for nursery work or reduced costs instead of investment in the nursery. Some women's groups abandoned their nurseries because of a decreased necessity for them.

Factors influencing the continuation of nurseries and those influencing their abandonment could be classified into the same four categories: necessity and/or benefits of nurseries, outside support, resource allocation, and priority among other activities. This suggested that women's groups made decisions about nursery operations depending on the balance of these four categories, and this balance changed with time. Thus, it could be said that every women's group had possibility for continuing, abandoning, or restarting its nursery. It was also revealed that small-scale nurseries had other impacts, such as the establishment of private nurseries, on group members' lives or group operations even in the case of women's groups that

abandoned their nurseries. Hence, it could be concluded that the sustainability of social forestry projects should be evaluated in a broader sense and from a long-term view point.

Based on the results of this study, the following actions are recommended. Social forestry or development projects should tailor their activities according to needs and/or preferences of each target group. At the same time, there is room for the projects to extend farmers' perspectives on the roles of tree planting into their entire daily activities. Donor agencies should evaluate the sustainability of projects in a broad sense, including impacts of project activities on the lives of target groups or communities from a long-term view. In conjunction with this, project support also should be provided from a long-term view. The dependency of target groups and community leaders was pointed out. Target groups should have visions of what they want to be and use outside support wisely to achieve their visions.

This research project clarified the importance of the integration of forestry activities into other daily activities in farmers' lives and indicated some ideas how group members perceived nursery or tree planting activities among their other daily activities. Practical approaches to addressing this integration should be studied in the future.

## BIOGRAPHICAL SKETCH

Hiromi Yamauchi was born in October 1965 in Hiroshima, Japan. Since she was interested in nature from her childhood, she decided to study forestry, which covered both plants and animals. She received a Bachelor of Agriculture degree with a major in forestry from Hokkaido University in March 1988. After graduation, she joined a think tank for regional development in Hokkaido and she dealt with issues related to agriculture and the environmental quality in residential areas. When she sought possibilities for working on forestry in the field, she encountered “social forestry”, tree planting by people for people. Some years later she had an opportunity to work on social forestry projects in Kenya, which were collaborative projects between the Kenyan and Japanese governments. During her more than four years of experience, she realized that social forestry should be facilitated in the context of the entire lives of farmers. Hence, she came to Cornell and studied agriculture and rural development focusing on the participation of local residents and resource management at the household level. She hopes to contribute to facilitate social forestry in the field using both her previous working experience and new knowledge gained during her study at Cornell.

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## TABLE OF CONTENTS

Biographical sketch	iii
Acknowledgements	iv
Table of Contents	v
List of Tables	viii
List of Figures	ix
I. Introduction	1
1. Roles of social forestry in rural development	1
1.1 Historical review of social forestry	1
1.2 Rural development and livelihood strategies	2
1.3 Roles of social forestry in rural development	4
2. Conventional social forestry projects	6
3. Social Forestry Training Project in Kenya	7
II. Research Objectives	12
1. Primary goal	12
2. Objectives	16
III. Small-scale Nursery Approach by the SFTP	20
1. Background	20
2. Outline of the approach	21
2.1 Purpose	21
2.2 Targets	21
2.3 Activities	22
3. Evaluation	23
IV. Research Methods	25
1. Participatory tools	25
1.1 Concept and characteristics	25
1.2 Individual perspectives and group perspectives	30
1.3 Tools for the research	30
1.3.1 Scoring the importance of activities	30
1.3.2 Scoring resource allocation	33

1.3.3 Life history of the women's group	33
1.4 Interviews with institutions concerned	34
2. Sampling	36
3. Test survey	41
3.1 Purpose of the test survey	41
3.2 The first test survey	41
3.3 The second test survey	43
4. Actual survey	45
V. Results and Discussion	47
1. Results of the survey with women's groups	47
1.1 Scoring daily activities	47
1.1.1 Group perspectives	47
1.1.2 Scores of decision making	47
1.1.3 Results shown in the radar graphs	51
1.1.4 Points to observe in the radar graphs	53
1.2 Life history of the women's group	55
1.3 Farmers' perspectives on their daily activities	59
1.4 Factors influencing the sustainability	64
1.4.1 Comprehensive analysis	64
1.4.2 Factors influencing the continuation	64
1.4.3 Factors influencing the abandonment	71
1.4.4 Categories of factors influencing the sustainability	76
1.5 Impacts of small-scale nursery	79
2. Results of interviews with institutions concerned	82
2.1 Position of the Forest Department (FD)	82
2.2 Concerns of Location chiefs	84
2.3 Approaches by development projects	86
2.4 Interventions by outside agencies	90
VI. Conclusion	94
1. Factors influencing the sustainability	94
2. Rethinking the meaning of sustainability	97

VII. Recommendations	99
1. Recommendations for social forestry projects	99
2. Recommendations for women's groups	106
VIII. Further Study	107
Appendix 1 Means of the scores of daily activities	109
Appendix 2 Life histories of the women's groups	112
References	120

## LIST OF TABLES

Table 4.1	Profile of the women's groups in the new locations and the situations of small-scale nurseries in July 2001	38
Table 5.1	Men's intervention in decision making on small-scale nurseries	50
Table 5.2	Summary of factors influencing the continuation and the abandonment	65

## LIST OF FIGURES

Figure 1.1	Map of Kitui District in Kenya	9
Figure 1.2	Agro-climatic zone in Kitui District	10
Figure 2.1	Daily activities in farmers' life	14
Figure 2.2	Sustainability of small-scale nursery and the factors influencing the sustainability	17
Figure 4.1	Input supply and labor management factors influencing the sustainability of small-scale nurseries	26
Figure 4.2	Example of the scoring sheets	32
Figure 4.3	Example of the Life history of a women's group	35
Figure 4.4	Locations of the small-scale nurseries	40
Figure 5.1	Results of scoring daily activities	52
Figure 5.2	Flow chart of the Manyoleni women's group	60
Figure 5.3	Flow chart of the Ikungu women's group	61
Figure 5.4	Total flow chart of goods and services among daily activities	63
Figure 5.5	Factors influencing the continuation of small-scale nursery	66
Figure 5.6	Factors influencing the abandonment of small-scale nursery	72
Figure 5.7	Categories of factors influencing the sustainability of small-scale nurseries	77

Figure 5.8	Intervention by the Forest Department	83
Figure 5.9	Intervention by the Location chiefs	87
Figure 5.10	Intervention by the development projects	88
Figure 5.11	Intervention by outside agencies	91

# CHAPTER I

## INTRODUCTION

### 1. Roles of social forestry in rural development

#### 1.1 Historical review of social forestry

Social forestry has been practiced in many parts of the world during the past few decades as a means of establishing and managing forest resources for the fulfillment of needs of local residents. The term “social forestry” does not have a clear definition (Arnold, 1992; Hopley, 1996). Some use the term synonymously with other participatory forest management schemes, such as community forestry and farm forestry (Nair, 1993). Others define the term narrowly as afforestation for providing firewood or forestry activities for meeting subsistence needs to the exclusion of those for commercial purposes (Arnold, 1992). On the other hand, others consider social forestry as a broader concept including farm or community forestry (Hopley, 1996). Although the term social forestry is used to convey various meanings, it has commonly accepted characteristics that involve local communities or residents in forest management activities focused on meeting their specific needs. These characteristics attribute to historical background of the emergence of social forestry.

The term social forestry first appeared in the 1970s in India to mean forest activities for the provision of needs of local residents (Arnold, 1992; Hopley, 1996). Often conventional forest management by governments attempted to maximize revenue from forest resources through forest products, such as timber, excluding local

residents from forests (Hobley, 1996; Bojang, 2000). This approach by governments did not meet the needs of local residents and became inadequate along with the degradation of forests due to profit-oriented forestry practices by the governments and/or private sectors, and an increase in population pressures on forest lands. On one hand, in the 1980s, the recognition that decentralization or the involvement of local residents in development prevailed among the international community (Hobley, 1996; Bojang, 2000). In addition, in African countries, the government began to face financial and personnel shortage in forest management (Bojang, 2000). These circumstances contributed to the emergence of social forestry with the common characteristics mentioned above.

Social forestry practices, as well as its definition, vary depending on social and environmental conditions, such as land tenure, community structure, and the amount of rainfall. In Kenya, for example, tree planting by individual farmers on their own compound is the most popular form of social forestry.

Whatever the definition or the interpretation is, the important point is the involvement of local residents in forest management activities to meet basic needs in their daily lives. Thus, in this paper, the term social forestry is defined as “tree planting and management including seedling production by the local residents on their own land for the improvement of their living standard and/or well-being.”

## 1. 2 Rural development and livelihood strategies

Although social forestry may work for the management of forests in urban areas in developed countries, it is much more important in rural areas in developing



countries where the local residents rely heavily on forest resources for their daily lives. Before the roles of social forestry in rural development are examined, it is necessary to clarify the meaning of rural development. The definition of economic development by the MIT dictionary of modern economics gives an idea of rural development from an economic point of view. It is that “the process of improving the standard of living and well being of the population of developing countries by raising per capita income.” There is a critique, however, that this definition lacks equity. Todaro (1997) proposes three equally important aspects: raising people’s living levels, increasing self-esteem, and increasing people’s freedom. In addition, sustainability has become a crucial concept of rural development since the 1980s. This idea originally came from environmental aspects, however, it is currently discussed beyond the environmental aspects in rural development. Chambers (1997) emphasizes the following five words: well-being, livelihood, capability, equity, and sustainability, which require consensus in rural development based on the failure of conventional development projects. Based on these ideas, the meaning of rural development is given in this paper as follow. “Rural development is the process that the local residents improve their capability of improving their living standard and well-being, which leads to stable and sustainable lives. In this process, individuals and societies should be respected in terms of perspectives, culture, and equity. ” Although the concept of “sustainable” or “sustainability” is also interpreted in various ways (Chhetri, Nurse and Baral, 1993 cited in Ichiguchi, 1999; Reardon, 1998 in Eicher and Saatz, 1998; Ruttan, 1998 in Eicher and Saatz, 1998), it is commonly necessary for local residents to be prepared for any conditions in order to ensure sustainability.

In conjunction with this, local residents have livelihood strategies. One of the main elements of the strategies is to reduce risk (Arnold, 1995; Gregersen et al. 1989). Scherr in Arnold (1995) analyzes mechanisms to reduce risk, which includes the diversification of activities, the combination of long-term returns and short-term returns, and the reduction of uncertainties by integrating new practices into existing practices. In addition to these, making the best use of resources must be an important element of their strategies.

### 1.3 Roles of social forestry in rural development

Social forestry has potential for contributing to rural development through the practice of elements of livelihood strategies in four modes that operate at the household level. First, it contributes to sustainability through the diversification of activities and the maintenance of farmland. As mentioned above, sustainability is met by the preparation for handling various situations. Trees have very flexible harvest times and some species provide supplements of food or fodder. Thus, when farmers encounter a difficult situation that they cannot deal with by agricultural activities, forestry activities may help. For example, when farmers fail to harvest crops due to drought, they can survive by using or selling forest products. As for the maintenance of farmland, trees contribute to the recovery of soil nutrition status and prevent soil erosion. The maintenance of farmland is crucial for sustainable agricultural practices. Secondly, social forestry contributes to the improvement of living standards and well-being by providing forest products and services such as shade, ornament, and windbreaks. There are few alternatives for these products and

services in rural areas in developing countries. In addition to domestic use, forest products provide opportunities for income generation. Income generation through the sale of forest products supplements that gained through agricultural activities. Income generation through forestry activities is important especially for self-sustenance farmers in marginal areas who have few opportunities to generate income. They also can save expenses and increase their opportunities to purchase goods and services, such as food, health services, and education (Gregersen et al. 1989). Thirdly, social forestry can contribute to the improvement of well-being by providing farmers with pleasure and mitigating gender inequity. Farmers may feel pleasure through tree planting and/or growing seedlings. Concerning gender inequity, men and women have different needs, access, and control of trees (Gregersen et al. 1989). If social forestry facilitates the introduction of tree species to which women have access and/or control, this helps their empowerment. Lastly, forestry activities also play important roles to make the best use of resources in collaboration with agricultural activities. Labor demanded for agricultural activities fluctuates greatly from season to season, so that farmers can use their labor during the agricultural off-seasons for forestry activities. In some cases, farmers plant trees on their compounds to keep land tenure when they do not have enough time or labor to grow agricultural crops on the land. Tree planting is a labor extensive activity compared to agriculture. Farmers also use some portions of their land, which are not suitable for growing crops, for tree planting. In these ways, farmers can diversify their activities by involving forestry activities in their daily lives. This leads to the reduction of risk and the development of stable and sustainable lives. In these ways, social forestry

potentially contributes to rural development.

## 2. Conventional social forestry projects

Many international and donor agencies have conducted social forestry projects in developing countries during the last few decades. However, the issues concerning rural development mentioned earlier have not been taken into consideration and social forestry has not played its roles in rural development satisfactorily. Unfortunately, forestry activities facilitated by many development projects frequently lacked long-term sustainability, so that they did not contribute to the diversification of activities or the maintenance of farmland. They were also frequently conducted separately from agricultural activities (Gelder and O'keefe, 1995). Arnold (1995) pointed out that forestry activities in households could not fully demonstrate their capability when they were conducted in an isolated form. This lack of integration of forestry activities into other activities seems to influence the lack of sustainability of forestry activities. Although conventional social forestry projects have contributed to improving living standards and/or well-being by helping farmers plant trees or produce seedlings, they have overlooked some of the essential points in rural development. They paid little attention to how farmers felt about forestry activities. Some of them did not take gender into consideration when they conducted project activities. In addition, the conventional projects frequently failed to respect the values and/or cultures of local residents. These projects often tended to emphasize technologies that were brought from outside and imposed on farmers. Such attitudes and approaches by project staff not only failed to respect farmers' knowledge, but also

hindered their innovation. If social forestry projects address these issues, especially the integration of forestry activities into other activities and the consideration of sustainability, social forestry would contribute more to rural development.

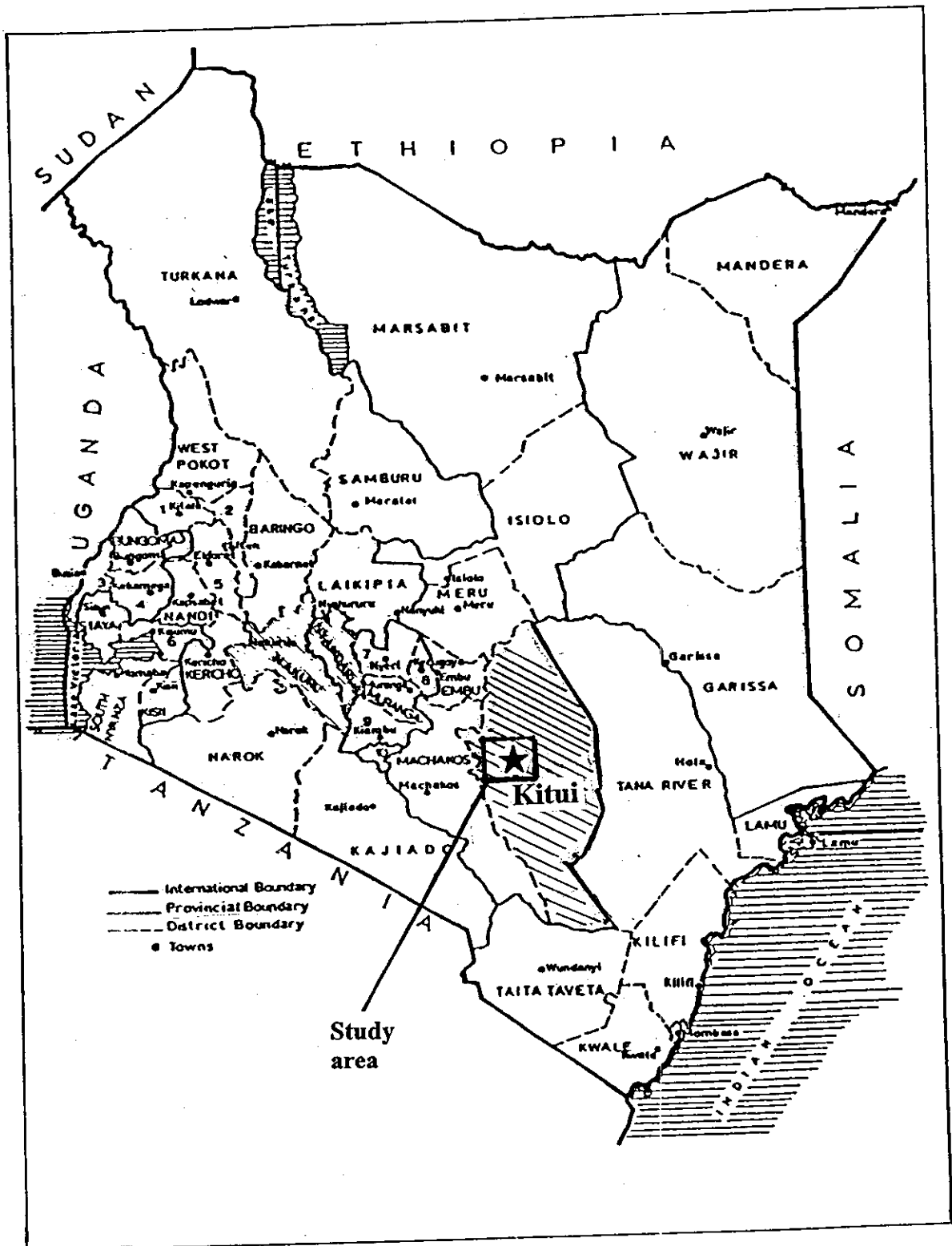
### 3. Social Forestry Training Project in Kenya

Forest resources are important for rural populations in Kenya, especially since wood is the main energy source. In the 1970s, the government of Kenya started to be concerned about the growing shortage of firewood coupled with the rapid population growth. Thus, afforestation became one of the main issues in Kenya; however, seedling supply systems were not adequate to meet the demand for a large number of tree seedlings. After the 1982 Presidential order requesting the production of 200 million seedlings per year was declared, the Kenyan government requested the Japanese government to assist them in the production of tree seedlings. In 1985, a two-year preparatory phase of a collaborative project began. Through the implementation of this phase, it was revealed that not only seedling production but also tree planting by the local residents needed to be enhanced. Then, in 1987, the Social Forestry Training Project (SFTP) commenced with the Kenya Forestry Research Institute (KEFRI) and the Japan International Cooperation Agency (JICA) serving as the project implementers. The SFTP had two main components: one was technology development and the other was training. The former consisted of silviculture, nursery, and extension, and the latter consisted of training at the national and regional (“grassroots”) levels. After five years, the second phase (SFTP (II)) began in 1992. The SFTP (II) was expected to take gender and agroforestry aspects

into consideration. In this paper, the SFTP means the first five-years project and the SFTP(II).

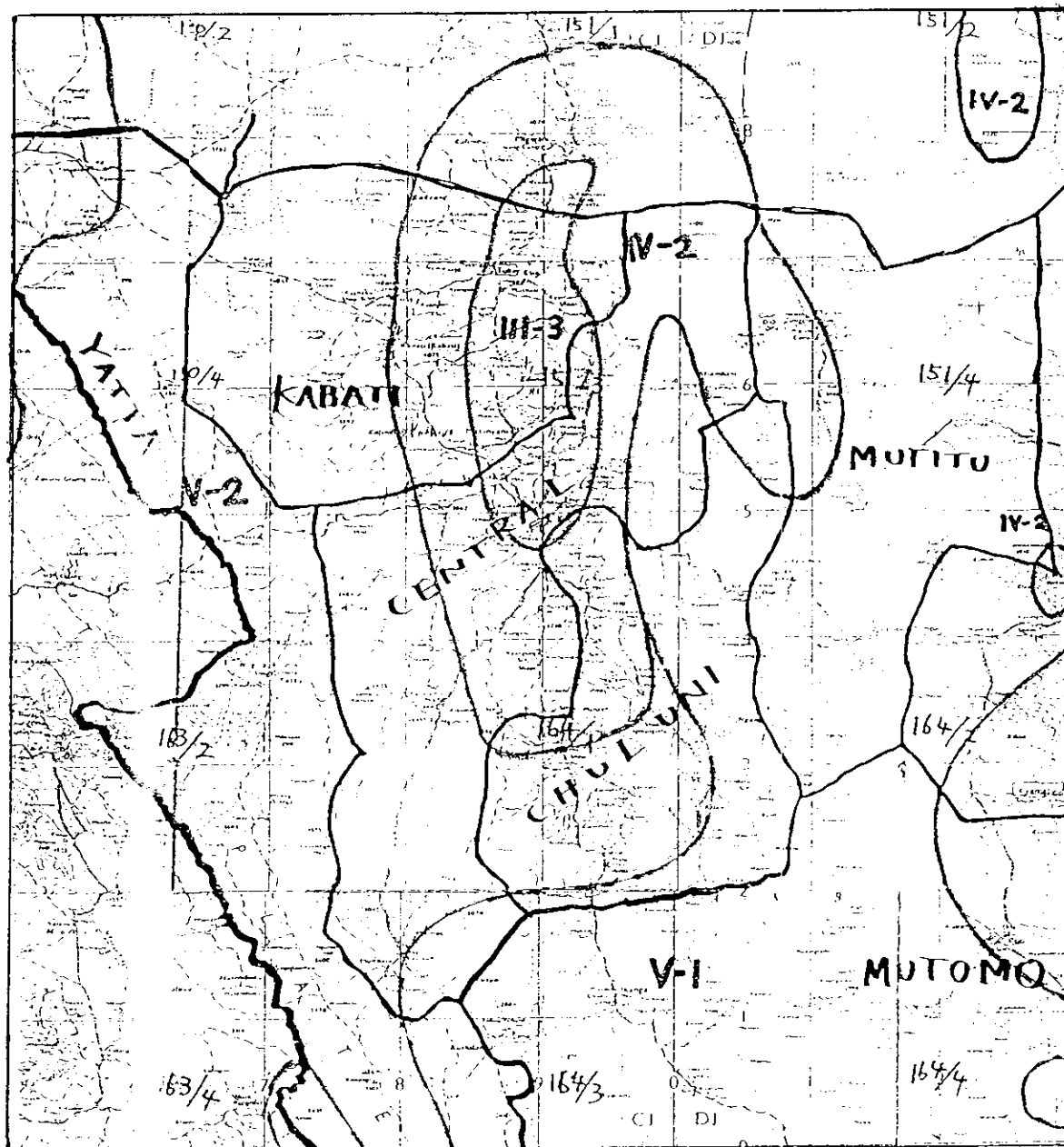
The SFTP targeted semi-arid areas. Development of social forestry was more important in semi-arid areas than in high-potential areas because there are few alternatives for income generation other than agriculture, and agricultural activities are fragile due to unreliable rainfall. In addition, tree planting and seedling production in semi-arid areas was obviously difficult due to the scarcity of water and termite problems.

Although the training at the national level covered semi-arid areas all over the country, the main target area for the project was the Kitui District in the eastern part of Kenya (Figure 1.1). The KEFRI Kitui Regional Training Center, which was main facility for the project, was located 170 km east of Nairobi, the capital city. The area had two rainy seasons with an annual rainfall of 510-760 mm (JICA, 1987). It was distributed over agro-climatic zones from III to V (Figure 1.2). Zone III is sub-humid with annual rainfall 700-1400 mm, zone IV is sub-humid to semi-arid with annual rainfall 600-1100 mm, and zone V is semi-arid with annual rainfall 400-800 mm (Braun, 1981). The majority of the population was from the Kamba tribe, who originally were known as a hunting people. However, they now make a living by self-reliance agriculture. Their main crops are maize, pigeon pea, and beans, and popular livestock are goats, cows, and poultry. Young and middle aged males frequently migrated to urban areas to engage in wage employment (Republic of Kenya, 1997).



Modified from Holding, 1998

Figure 1.1 Map of Kitui District in Kenya



Modified from Braun, 1981 by Kemmochi

Figure 1.2 Agro-climatic zone in Kitui District



Immediately after the implementation of the SFTP, its five-year sequential project began to verify and disseminate technology developed during the project to the local residents. This research deals with a small-scale nursery approach, which was one of the activities experimentally conducted by the extension section during the SFTP. This approach was conducted to encourage women's groups and schools to establish and manage their own small-scale nurseries.

## **CHAPTER II**

### **RESEARCH OBJECTIVES**

#### 1. Primary goal

The primary goal of this research is to integrate social forestry activities into the daily activities of farmers for the further contribution of social forestry to rural development. As explained in Chapter I, social forestry potentially contributes to rural development. In order to put this into practice, it is necessary to conduct social forestry activities in a manner that integrates them into farmers' other daily activities, so that they can implement forestry activities without extra stress. Farmers naturally integrate forestry activities into other daily activities when they are not intervened by social forestry projects. Gregersen (1989) notes that farmers deal with tree growing "within the context of their total farming system," because they need to think about security and risks associated with use of their resources such as land and time, as well as net benefit. Jodha (1995), who studies tree management in western Pajasthan, reports that "farmers manage trees as an essential part of their farming systems." Ichiguchi (1999) also notes that "forests are inseparable from farming systems and villagers' lives." However, as Gelder and O'keefe (1995) point out, conventional forestry development projects frequently have treated trees as an independent component of the farm. Conventional social forestry projects, including the SFTP, have focused on tree planting and/or seedling production without taking agricultural and other daily activities of farmers into account. Farmers' daily lives consist of various activities that are related in complex ways. Though tree planting and seedling production are the only concerns for social forestry projects, for farmers they

are just two parts of their daily activities, as the conceptual diagram in Figure 2.1 shows. However, at the same time, although forestry activities occupy only a small portion of farmers' entire activities, forestry activities are essential for their livelihood for the reasons described in Chapter I. Thus, it is important for social forestry projects to address forestry activities by taking farmers' total daily workloads into consideration.

Farmers try to maximize benefits from agricultural, forestry, and other income generation activities as a whole with minimum risk by making the best use of their resources, such as land, labor, time, and capital. Thus, they need to find a good balance among these activities while making the best use of their resources. The idea of making the best use of these resources is especially important for small-scale farmers who have limited resources and few alternatives other than agriculture for making a living. For example, farmers can use parts of their land that are not suitable for crop growing for tree planting. Slopes and infertile portions of farmland can be used to produce forest products without causing any reduction in land suitable for agricultural crops. Under certain conditions, farmers can plant trees together with crops on the same land, which is known as agroforestry, and thereby can potentially increase the total production of both agriculture and forestry products. Another example of the best use of resources in terms of time is conducting forestry activities during an off-season for crop production. Since labor time in crop production fluctuates greatly from season to season, it is important for farmers to make good use of off-season time for forestry and/or other activities.

The final goal of social forestry should be the contribution to rural

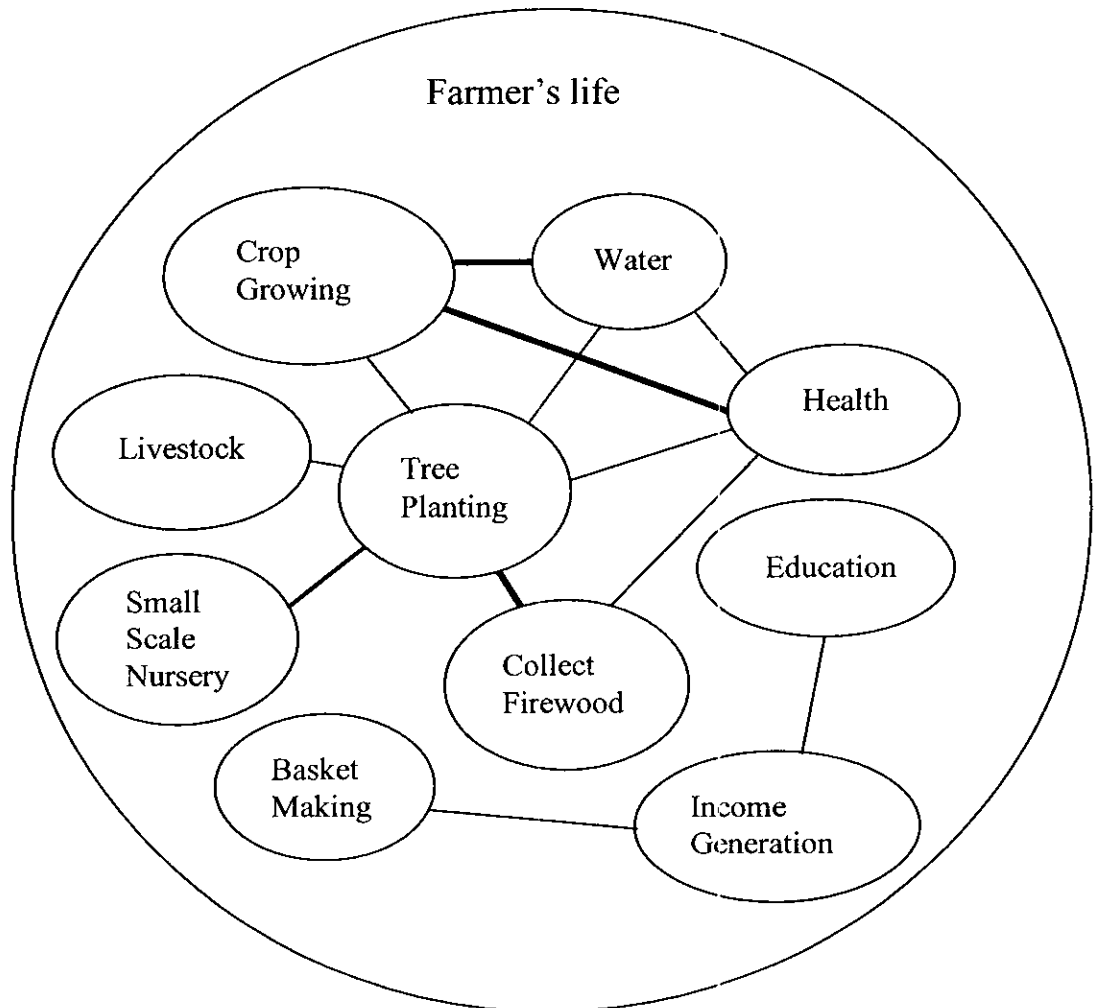


Figure 2.1 Daily activities in farmer's life

development or the improvement of the well-being of households. Social forestry needs to be harmonized with other activities to achieve this final goal. As Gelder and O'keefe (1995) point out, conventional foresters in social forestry projects tend to have the perception that farmers should plant as many trees as possible. Along this line, the projects are frequently evaluated by the number of trees planted or seedlings produced. However, the number of trees or seedlings does not necessarily indicate the degree to which the trees contribute to rural development. In addition to producing forest products, social forestry should aim at enhancing the stability and sustainability of farmers' livelihood, which are also roles of social forestry in rural development, as mentioned in Chapter I. These considerations should also be used to evaluate social forestry projects.

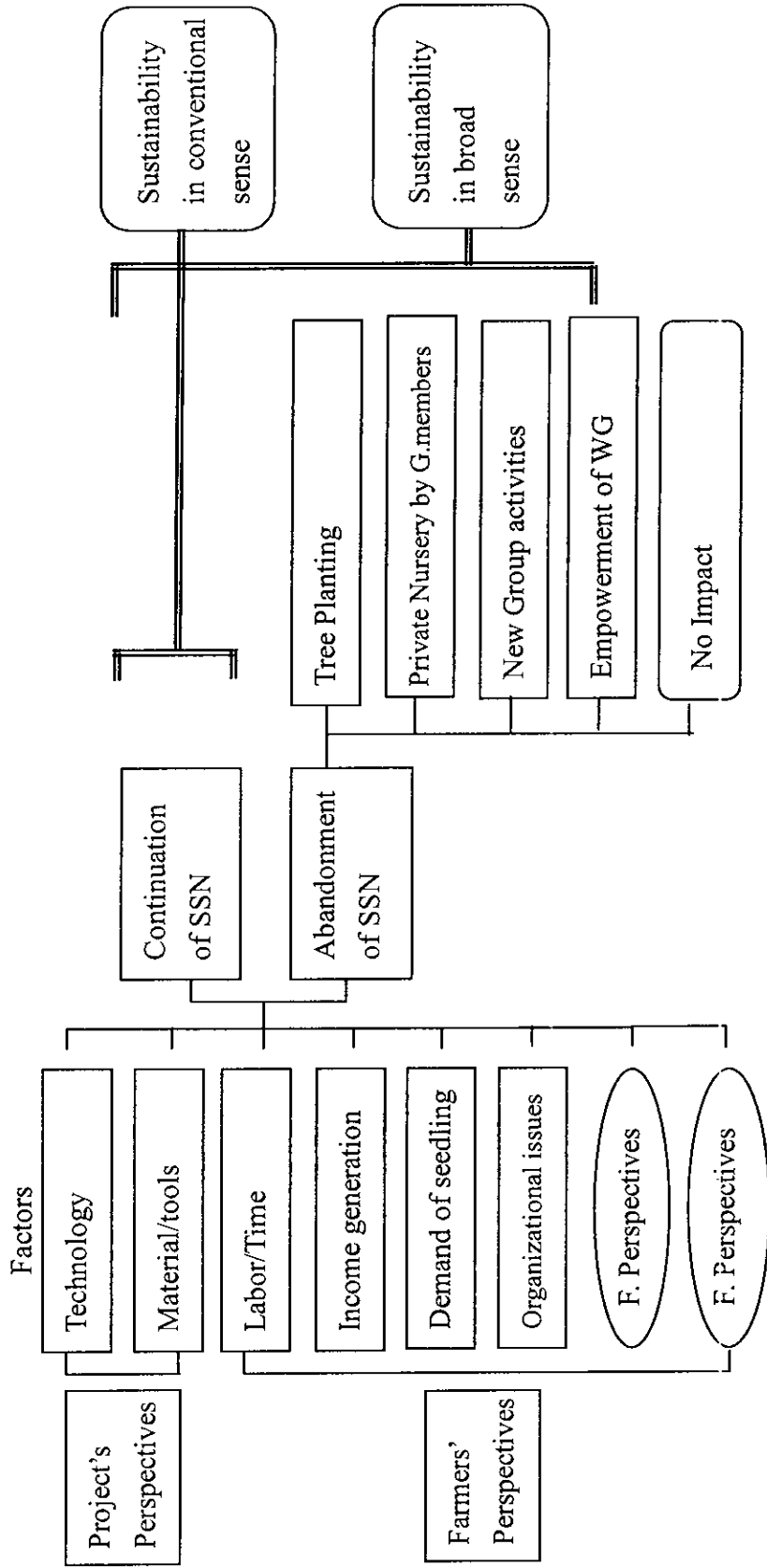
Finally, the integration of social forestry activities into other daily activities is also important to ensure sustainability of these activities. Experiences with social forestry projects in the past have led to the assumption that the lack of integration causes the lack of the sustainability of forestry activities. The SFTP, for example, encouraged 70 women's groups to produce 2,000 seedlings per group by giving valuable awards as incentives, as well as technical and material support. Thus, small-scale nursery activities were unusual ones for group members and as such might have contributed to the abandonment of small-scale nurseries by some women's groups after the withdrawal of the project's support. In the same way, by providing intensive input, social forestry projects encourage farmers to plant more trees than they can maintain after the withdrawal of the inputs. Such conventional approaches to social forestry projects tend to separate forestry activities by farmers from their

ordinary daily lives. It is difficult for farmers to continue unusual activities after the withdrawal of support. Hence, it is important for social forestry projects to integrate forestry activities into farmers' daily activities to ensure the sustainability of project activities, or forestry activities, by farmers.

## 2. Objectives

To promote the integration of forestry activities into daily activities, it is important to understand how farmers perceive forestry activities in their entire lives and why they continue or abandon the activities. In this regard, this research has two objectives. One is to clarify factors influencing the sustainability of small-scale nurseries managed by the women's groups, which were supported by the SFTP. The other objective is to rethink the meaning of sustainability of social forestry projects in a broad sense, which includes the post-project impacts of the activities on farmers' lives.

As Figure 2.2 shows, it was assumed that various factors might have influenced the continuation of small-scale nurseries. The SFTP expected that if women's groups acquired techniques in nursery management and had necessary tools and materials, they would continue their small-scale nurseries on their own. Hence, the SFTP provided technical advice and material support, such as tools, polythene tubes, and seeds. To further ensure sustainability, the project also gave instructions on how to collect seeds locally and how to use local materials instead of having to purchase tubes or tools. However, in fact, some women's groups abandoned their nurseries after the withdrawal of project support. This led to the assumption that



SSN: small-scale nursery  
 WG: women's group  
 G. : group  
 F.: Farmers'

Figure 2.2 Sustainability of small-scale nursery and the factors influencing the sustainability

there were other factors influencing the sustainability of small-scale nurseries. Although there are differences among factors influencing tree planting and those influencing small-scale nurseries, some factors might have common ground.

Dove (1995) in Arnold (1995) presents two factors influencing tree planting: one is the opportunity for other income generation, and the other is availability of land. He also refers to the major constraints of on-farm tree planting such as a shortage of land, labor, and water and absence of motivation. Gregersen et al. (1989) explain incentives for tree growing by farmers based on the idea of opportunity cost. According to them, farmers try to maximize net benefits by using land, time, and other resources while taking security and risks associated with the use into consideration.

These ideas work for the case of small-scale nurseries. Labor availability, for example, might have affected the decision to continue the small-scale nurseries or not. Income generation was also one possible factor influencing the continuation of small-scale nurseries. If a women's group generated income through its small-scale nursery, the group likely continued the nursery. At the same time, a lowered demand for seedlings might have affected the sustainability in that the women's groups would have been reluctant to invest in producing seedlings unless intended to sell them. Organizational issues of the women's groups themselves might also have influenced the sustainability of small-scale nurseries. Some women's groups supported by the SFTP, in fact, reported that the collapse of the group due to misuse of group money or breaking of group rules was a reason of the discontinuation of their group nurseries. There might have been other factors that were not anticipated by the project, and it is important to identify and understand these factors from farmers' perspectives;



otherwise, social forestry projects will continue to repeat activities that lack sustainability. Understanding the factors would be helpful to the study of the integration of nursery activities into other daily activities, because the integration seemed to influence the sustainability of the small-scale nurseries.

The research also aimed to rethink the meaning of sustainability of social forestry projects in a broad sense. “Sustainability” in the context of development projects is frequently discussed from a viewpoint of the continuation of projects (Noda, 2000). It is understandable that projects focus on the continuation of their activities, because the projects are frequently evaluated in terms of sustainability from this point of view. However, as Chambers (1988) cited in Reardon (1998) emphasizes, sustainability of a livelihood is more important for farmers than that of a particular activity or project’s activity. In other words, the important point is how the impacts of projects’ activities contribute to the sustainability of farmers’ lives. Sustainability of livelihood should involve concepts of self-reliance (Chhetri et al. 1993 cited in Ichiguch, 1999; Bramney, 1995 cited in Ichiguch, 1999) and “stable and growing total factors productivity” (Lynam and Herdt, 1989 cited in Reardon, 1998). In line with this, a small-scale nursery should be counted as sustainable, even if a women’s group abandoned its small-scale nursery, group members planted and managed trees as resultants of seedling production at its nursery; some group members established their own private nurseries; or the group began other activities based on output of the nursery activities. Evaluation of the sustainability of social forestry projects in such a broad sense would allow them to make their activities more beneficial for farmers in the long-term view.

## CHAPTER III

### SMALL-SCALE NURSERY APPROACH BY THE SFTP

#### 1. Background

The small-scale nursery approach was one of several extension approaches with which the SFTP experimented. As mentioned in Chapter I, the SFTP originated from the 1982 Presidential order requesting the annual production of 200 million seedlings. Although afforestation was given high priority in Kenya because of the high demand for firewood in accordance with rapid population growth, the number of tree seedlings was insufficient and seedling production systems were inadequate to meet the demand. Initially, seedlings were mainly produced at large scale nurseries managed by the Forest Department (FD). The centralized nurseries had advantages, such as efficient production of a large number and unification of the quality; however, they had problems associated with seedling distribution (Shanks and Carter, 1994). Transportation of seedlings was costly and difficult due to poor transportation systems in rural areas. The transportation over long distances likely damaged seedlings. In addition to the distribution problem, the FD also had a financial constraint on operating the large-scale nurseries. In 1981, the Chief's Tree Nursery scheme started under the supervision of the Ministry of Energy and Natural Resources (MENR) to solve the distribution problem (JICA, 1985) by establishing a tree nursery at the Location chief's office in each location to provide seedlings for the local residents. This scheme seemed to result from a shift in the government's strategy from centralized nurseries to decentralized ones. However, when observed in 1996, many

chiefs' nurseries in Kitui District were not operating (Yamauchi, personal observation). Following this, local residents began to establish small-scale nurseries by themselves on their own land. In this line, the SFTP began the small-scale nursery approach in 1988 to help women's groups and schools establish nurseries.

## 2. Outline of the approach

### 2.1 Purpose

The purpose of the small-scale nursery approach was to establish self-reliant nursery operations for the local residents (JICA, 1992). In the early stages, the project focused on the stimulating their interest in seedling production (Ong'waya and Edasawa, 1990). After it was apparent that women's groups and schools were interested in the work, the activity focused on the transfer of nursery management techniques.

### 2.2 Targets

The targets of the small-scale nursery approach were women's groups and schools. The SFTP recognized that transferring technology to groups was more efficient than working with individual farmers. The project also worked with schools because it was important to educate the younger generation (Yaguchi, 1997). The project began with four schools and eighteen groups in 1988, and at the termination of the project in 1997, eighteen schools and seventy women's groups were being supported.

The approach covered the Kwavonza location in the first five years of the

SFTP, and then, extended its target area during SFTP (II) to four other locations: the Kyangwitha West, Matinyani, Kathivo, and Nzambani locations. These four locations were called new locations by the SFTP. The five locations had diverse natural and social conditions in terms of rainfall, population density, remoteness, and so on. The Matinyani location, for example, had the highest population density, which meant it had a high demand for tree planting and seedlings. The Kathivo location, on the other hand, was a relatively more remote area among the locations, which meant difficult access to nursery materials and markets for seedlings. These different conditions seemed to influence nursery management activities. This point should be noted for the discussion in later chapters on sampling research targets and research results.

### 2.3 Activities

The SFTP provided technical advice and material support to the participants. The project employed extension agents who visited them to give technical advice. The project also provided training on nursery management to leaders of the groups and teachers of the schools at the Kitui Regional Training Center, a facility of the SFTP. For material support, the project provided tools, polythene tubes, seeds, and other materials necessary for nursery operation. While still providing these materials during SFTP(II), the project also encouraged the participants to use local materials, such as milk packets and fat containers as alternatives to polythene tubes, and to collect seeds locally in order to facilitate self-reliance in nursery operation. In the case of women's groups, each group was encouraged to produce 2,000 seedlings since

the second year (Ong'waya and Edasawa, 1990; Yaguchi, 1997).<sup>1</sup>

The other main activity in the approach was a nursery contest, which was held once a year to give the participants the incentive to operate nurseries more effectively. The criteria in judging were quality and quantity of seedlings, tending activities, co-operation among members, and so on. Valuable prizes were offered to outstanding groups and schools, and participation prizes were given to the other participants (Ong'waya and Edasawa, 1990; Yaguchi, 1997).

### 3. Evaluation

Based on their performance - the number of seedlings and the yield percent of seedling raised- the small-scale nursery approach was evaluated as a useful means to transfer nursery management techniques to the local residents, although they had problems such as termites, lack of water, and lack of tools. According to the follow up survey conducted in 1989, the participants realized benefits of small-scale nurseries, such as provision of more seedlings, acquisition of knowledge of seedling production, provision of tools, and provision of prizes (Ong'waya and Edasawa, 1990). It was also reported in 1997, the last year of the SFTP, that the women's groups were very eager to produce seedlings (Yaguchi, 1997). Some groups actively used local materials and others aimed at selling the seedlings. Besides, some groups began to transfer nursery management techniques to other women's groups or individual farmers, which was expected to lead to the voluntary extension of small-scale

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<sup>1</sup> The target number for seedling production was reduced from 2,000 to 1,500 in 1997, the last year of the SFTP, in order to facilitate the use of local materials (Yaguchi, 1997).

nurseries in the area. However, in fact, about half of the seventy women's groups abandoned their small-scale nurseries one year after the withdrawal of the project support (Yamauchi, personal observation), an outcome that suggests the need to review the small-scale nursery approach in terms of sustainability. In this paper, the small-scale nursery approach for women's groups is used as a case to study the sustainability of social forestry project's activities and factors influencing this sustainability.

## **CAPTER IV**

### **RESEARCH MEHODS**

#### **1. Participatory tools**

##### **1.1 Concept and characteristics**

As we have seen in Chapter II, many factors, which could be found from the perspectives of both the project workers and farmer participants, potentially influenced the sustainability of small-scale nurseries. These factors seemed to be categorized into two groups: one was a group of factors related to input supply for nursery operation (referred to as 'input supply factors' hereafter), such as water, tools, and tubes; the other was a group of factors related to labor management (referred to as 'labor management factors' hereafter), such as time availability and pleasure of doing an activity (Figure 4.1). In addition, there might have been another category whose factors were controlled by outsiders, such as government policies and social and economic situations.

Input supply factors have been identified by the SFTP conducting occasional surveys with structured questionnaires or informal interviews. On the other hand, labor management factors have been examined very little. Clarifying these factors would be useful in studying the integration of small-scale nursery activity or forestry activities into other daily activities of farmers, since the factors were influenced by the other activities. Thus, this research focused on labor management factors. To identify these factors, it was necessary to compare small-scale nursery activity with other daily activities in terms of benefits and inputs. Participatory tools were

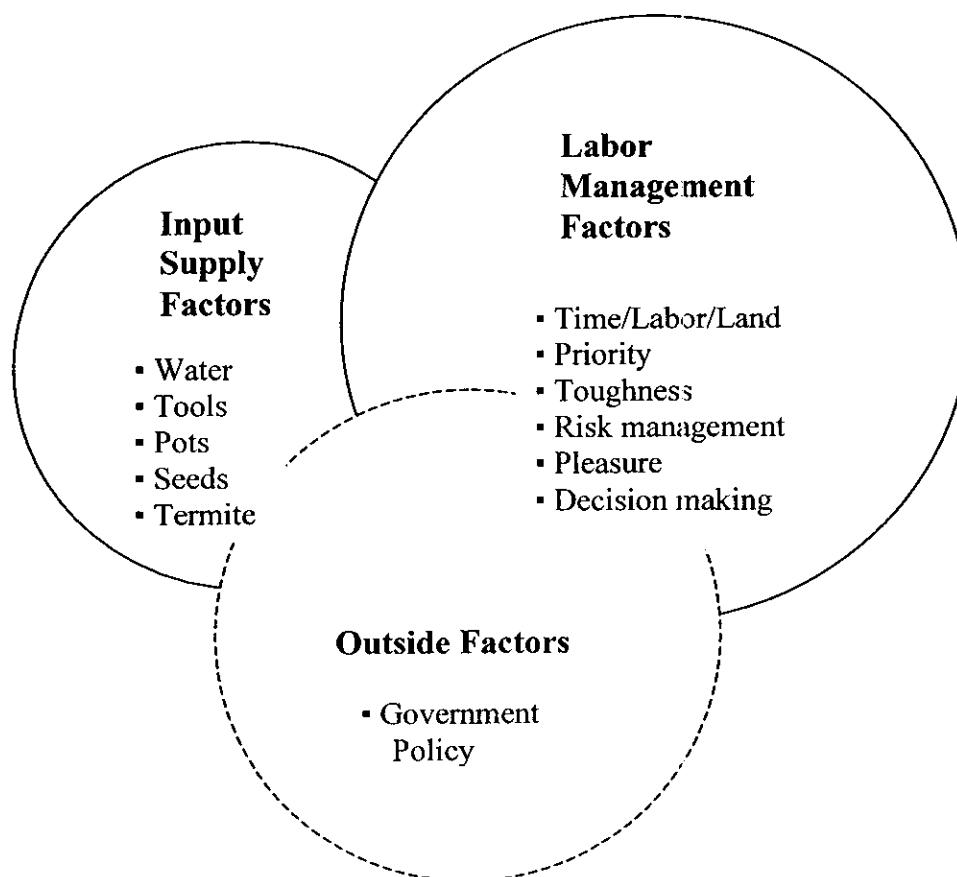


Figure 4.1 Input supply and labor management factors influencing the sustainability of small-scale nurseries



desirable to clarify labor management factors, because they were useful in bringing matters together of separate concern to the various fields involved (PRA Programme Egerton University, 1999).

Before explaining further why participatory tools are suitable for this research, it is necessary to make the definition and characteristics of “participatory tools“ clear at this point. In the last two decades, the word “participation” has prevailed as a crucial condition for rural development projects (Estrella and Gaventa, 1998). There are various types of participation in development projects depending on the degree to which farmers participate (Biggs, 1989) or the manner in which they participate (Hobley, 1996). Participatory Rural Appraisal (PRA) or Participatory Learning and Action (PLA) (Chambers, 1997) are well known as participatory approaches, especially for rural development in developing countries. In addition, Action Research (AR) is another type of participatory approach from which the ideas of participatory tools for this research were derived. AR is social research consisting of research, participation, and action (Greenwood and Levin, 1998). Although AR originates from experiences in the industrial field in developed countries (Greenwood and Levin, 1998), it can be applicable to rural development, since it shares certain common ground with other types of participatory research, such as respect for complexity and diversity, care of the socially vulnerable, and empowerment of communities. AR also emphasizes dialogues between outsiders and insiders, and examination of events within a historical context. These viewpoints of AR helped the development of the participatory tools for this research.

Although participatory research uses various tools, in this paper “participatory

tools” are defined as those that are used for participatory research and satisfy the following characteristics. First, the relationships between researchers and farmers as research targets should be on an equal level. Conventional research is conducted based on the assumption that researchers or project staff are superior to farmers. In this situation, it is difficult for farmers to express their opinions freely. They are likely to give answers that please researchers or project staff expecting to obtain more support from them. Participatory research, on the other hand, tries to put researchers and farmers on equal footing, which makes it easier for farmers to express their opinions or impressions on projects frankly. The second feature of participatory research is two-way communication between researchers and farmers (Case, 1990). In conventional research, researchers collect specific information from farmers according to their interests and rarely share research results with them (Feuerstein, 1986). Participatory research, on the other hand, encourages dialogues between researchers and farmers, which potentially develop new useful visions or aspects to solve farmer’s problems or enhance farmers’ capabilities of handling them. The third characteristic is the concept of learning (Estrella and Gaventa, 1998). The participatory approach is a process of learning for those involved in research or development projects (Society for Participatory Research in Asia, 1995 cited in Estrella and Gaventa, 1998). The fourth characteristic is the involvement of multi-disciplinary or cross-sectoral dimensions (PRA Program Egerton University, 1995). Conventional research on social forestry projects is frequently conducted by foresters from their own forestry-oriented point of view. Thus, it is difficult to find out what the relationships are between forestry and other activities. When

participatory tools are used, however, it is possible to discern the relationships among them. Moreover, participatory research frequently aims at the empowerment of farmers or communities. It brings them opportunities for decision making and enhances their capability of handling their problems. In other words, participatory research focuses on farmers or communities, whereas conventional research focuses on research subjects or projects.

The author initially paid attention to participatory tools for the reason that they seemed to be useful in investigating labor management factors which stretched over various fields. Then, it became apparent that the other features of participatory tools mentioned above were consistent with other concerns of the author. Although this research did not aim at the empowerment of the women's groups, results of the research should have been shared with group members and might have proved useful to them. Participatory tools seemed to be useful in not only encouraging dialogues between researchers and farmers, but also stimulating discussion among group members. According to the author's experiences, it commonly happened that a chairlady or a secretary of a women's group mainly replied to questions about their small-scale nursery, and other members just stood behind her in silence. It was doubtful whether a chairlady or a secretary represented other members' opinions. Participatory tools seemed to be a way to avoid this situation, because they involved group members practically in the implementation of tools. From these points of view, participatory tools seemed to be appropriate for this research.

## 1.2 Individual perspectives and group perspectives

The other issue about research methods was how to cover individual and group perspectives on small-scale nurseries. The primary goal was to integrate a small-scale nursery activity or social forestry activities into other daily activities of the households; hence, it was necessary to clarify individual perspectives on small-scale nurseries among other individual daily activities. However, at the same time, since a small-scale nursery was a group activity and a decision for its continuation was made by a group, it was necessary to examine group perspectives on the activity within the context of group operation. To satisfy these two aspects, three participatory tools were developed for this research, namely scoring importance of activities, scoring resource allocation, and the life history of the women's group. The first two tools were implemented to clarify individual perspectives and the last one to understand group perspectives.

## 1.3 Tools for the research

### 1.3.1 Scoring the importance of activities

Scoring importance of activities was conducted to clarify to which extent group members were aware of the importance of a small-scale nursery activity in terms of income generation, food procurement, pleasure, and decision making. Group members were asked to give relative scores to seven daily activities, including a small-scale nursery activity. The seven activities included crop growing, livestock keeping, tree planting, small-scale nursery operation, basket making, fetching water, and collecting firewood. These activities were main daily activities for female

farmers in the study area. They were chosen by the researcher based on results of a test survey, as described in a later section. Of the seven activities, the small-scale nursery activity meant group nurseries to the exclusion of private nurseries, while the other six activities were individual ones. Each member was asked to score the activities from her own point of view. For example, if a group member thought that crop growing was the most important in terms of income generation, she gave 5 points to the activity. If she considered that fetching water was the least important in terms of income generation, she gave it 1 point. In this way, group members scored the activities from 1 to 5 points in accordance with the degree to which extent they were aware of importance of each activity in terms of each given dimension (Figure 4.2). It was assumed that women's groups that continued their small-scale nurseries were more aware of the importance of the nursery activity than women's group that abandoned their nurseries. When scoring in terms of decision making, they were requested to follow the next rule. The question about decision making was asked from a gender aspect. It was known that men mostly made decisions on productive activities in the area; however, women could make decisions on women's group activities including a small-scale nursery activity. From this point, it was assumed that a small-scale nursery activity was important for women as an activity that they could control. Thus, if women in a household made a decision alone on an activity, the member who was scoring gave 5 points to the activity. If men made a decision, the member gave 1 point. If both women and men made a decision equally, the member gave 3 points. It was assumed that women's groups that continued their small-scale nurseries made their own decision without intervention from men.

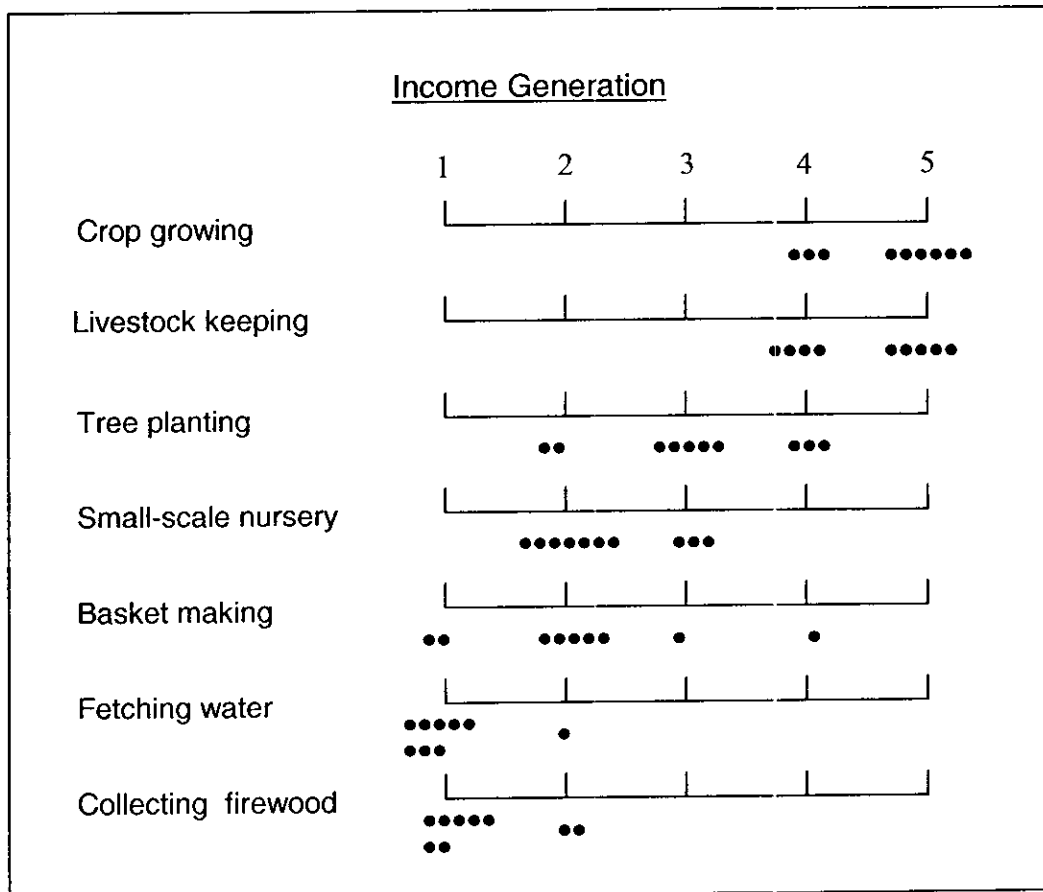


Figure 4.2 Example of the scoring sheets

### 1.3.2 Scoring resource allocation

Scoring resource allocation was conducted to clarify how much group members allocated their resources (time, money, and labor energy), to each activity. In the same way as scoring the importance of activities, they were asked to assign 1 to 5 points to each activity depending on how much they allocated a resource to an activity in comparison with other activities. If a member allocated the most time to crop growing, for example, she gave it 5 points. If she allocated the least time to basket making, she gave it 1 point. In terms of time allocation, they were asked to estimate the total amount of time they spent on an activity in a year, since time allocation to an activity of group members who relied on agriculture oriented activities fluctuated greatly from season to season. Labor energy allocation to an activity also varied depending on the tasks that were required in a particular season. Thus, the members were asked to estimate the total amount of energy in a year as the same as time allocation. It was assumed that women's groups that continued their nurseries tended to allocate more resources to a small-scale nursery activity than women's groups that abandoned their nurseries.

### 1.3.3 Life history of the women's group

The life history of each women's group, on the other hand, was conducted to clarify how the group perceived their nursery work within the context of all their other obligations. It was hoped that the implementation of the life history tool would clarify how a small-scale nursery functioned in the historical context of a women's group. The life history investigated the following items: what activities the group

undertook, how the group formation changed, what agencies supported the group, and how many members the group has had from its establishment to the present (Figure 4.3). Implementation of this tool expected to reveal the relationships between a small-scale nursery activity and other activities, and the impacts of the nursery activity on a group and the lives of group members. It was assumed, for example, that a women's group likely continued its nursery if the group generated income through the sale of seedlings and did not have other alternatives for income generation. It was also expected that a change in the number of group members reflected impacts of small-scale nursery activities. Or, to the contrary, it would be revealed that a change in the number influenced the abandonment of the nursery. The participants were also asked whether they began their own private nurseries, which was regarded as an impact of small-scale group nurseries.

#### 1.4 Interviews with institutions concerned

In addition to the implementation of the three participatory tools, interviews were conducted with institutions concerned, such as FD officers and Location chiefs, since these institutions seemed to influence the sustainability of the small-scale nurseries. The interviews were conducted with the District Forestry Officer (DFO) Kitui and an Assistant Divisional Forestry Extension Officers (Assist. DFEO) in the area who were in charge of extending tree planting and nursery management techniques to farmers and women's groups. Location chiefs in the area were involved in the small-scale nursery approach, especially at the initial stage of the SFTP, when they helped the project nominate women's groups as targets. Incidentally, they



Year	1987	89	90	97	2001	
Group Activity	Cultivation each other					
	Digging terraces					
	Cutting firewood					
	Help thatching each other					
	Merry go round					
	Small-scale nursery					
	Help paying school fee					
	Help paying dowry					
	Help widows and widowers (material support)					
	Shallow well					
	99					
	Group formation	The group was established				
	Agencies assisted the group	87-92 Green belt assisted the nursery		93-98 JICA assisted the nursery		97-99 Catholic assisted shallow well
Number of group members	33		1998 (nursery) 20		33 20	

- Notes: 1. The construction of shallow well was not completed (it did not reach water level). So that they could not get any water from it.
2. After the withdrawal of JICA support, thirteen members withdrew from the nursery activities, although they still continued their membership for other activities.
3. Eight members of the group started their own private nurseries. They explained that they did not want to vain waste water of homestead. The main purpose of raising seedlings was to provided seedlings for domestic planting. They raised different tree species at their private nurseries. Some of them also sold seedlings.
4. The group had four male members.
5. Green Belt Movement assisted the group nursery through provision of technical skills from 1987 to 2001.
6. JICA assisted the group nursery through provision of both technical and material support such as polythene tubes, sieves, and wheelbarrow from 1993 to 1998.
7. Helping to pay school fees for orphans including orphans whose parents were not group members from 1989 to 2001.
8. Giving material support to widows and widowers targeted those who were group members from 1993 to 2001.

Figure 4.3 Example of the Life history of a women's group

were also provided training on social forestry by the project, because it was considered essential for the promotion of social forestry in the area that they understood the work that the farmers or women's groups would be doing. In this survey, two Location chiefs in Kwavonza and Nzambani locations were interviewed, as were officers in two on-going development projects in the area. One project was the Kitui Agricultural Project (KAP) supported by Danish International Development Agency (DANIDA) and the other was Sasol Foundation (SASOL) which was a non government organization (NGO) focusing on water resource development. It became apparent that these two projects influenced the sustainability of small-scale nurseries during the implementation of the participatory tools. The interviews were done by using semi-structured questionnaires.

## 2. Sampling

The purpose of this survey was to compare the perspectives of women's groups that continued small-scale nurseries with those of women's groups that abandoned their nurseries. Eight women's groups out of the seventy, which were supported by the SFTP, were sampled. Four out of the eight were sampled from women's groups that had continued small-scale nurseries and the other four were sampled from the groups that had abandoned nurseries. In addition to the eight groups, another two groups were selected for a test survey.

According to an initial plan, women's groups as candidates for targets for this survey were to be preliminarily selected by using existing data, which the SFTP had previously gathered. This was because it was anticipated that data on items, such as

income generation through the sales of seedlings and primary problems of nursery management, would be found to be relevant to why some nurseries continued and others did not. Thus, the following items were examined: agroclimatic zone, the year of establishment of a group, group activities when a group was established, group activities in 1997 when the survey was conducted, seedling distribution in 1996, and main problems of nursery management (Table 4.1). It was assumed that women's groups that were established in the early years tended to continue their nurseries, for example. Women's groups whose main activity was tree planting were assumed likely to continue their nurseries. It was also assumed that groups would continue if they sold seedlings. It was expected that there were some relationships between main nursery problems and the continuation of a nursery. For example, if water was the most serious problem for a group, the group tended to abandon its nursery.

The information on the continuation of small-scale nurseries in July 2001, when the field survey for this study was conducted, was given by extension agents employed by the SFTP. According to this information, only three women's groups out of forty continued small-scale nurseries in the Kwavonza location and twelve women's groups out of thirty continued nurseries in the other four locations, the new locations. When the items of the existing data were associated with the continuation of small-scale nurseries, no clear correlation between them was found contrary to expectation. Hence, preliminary sampling by using the existing data was not possible.

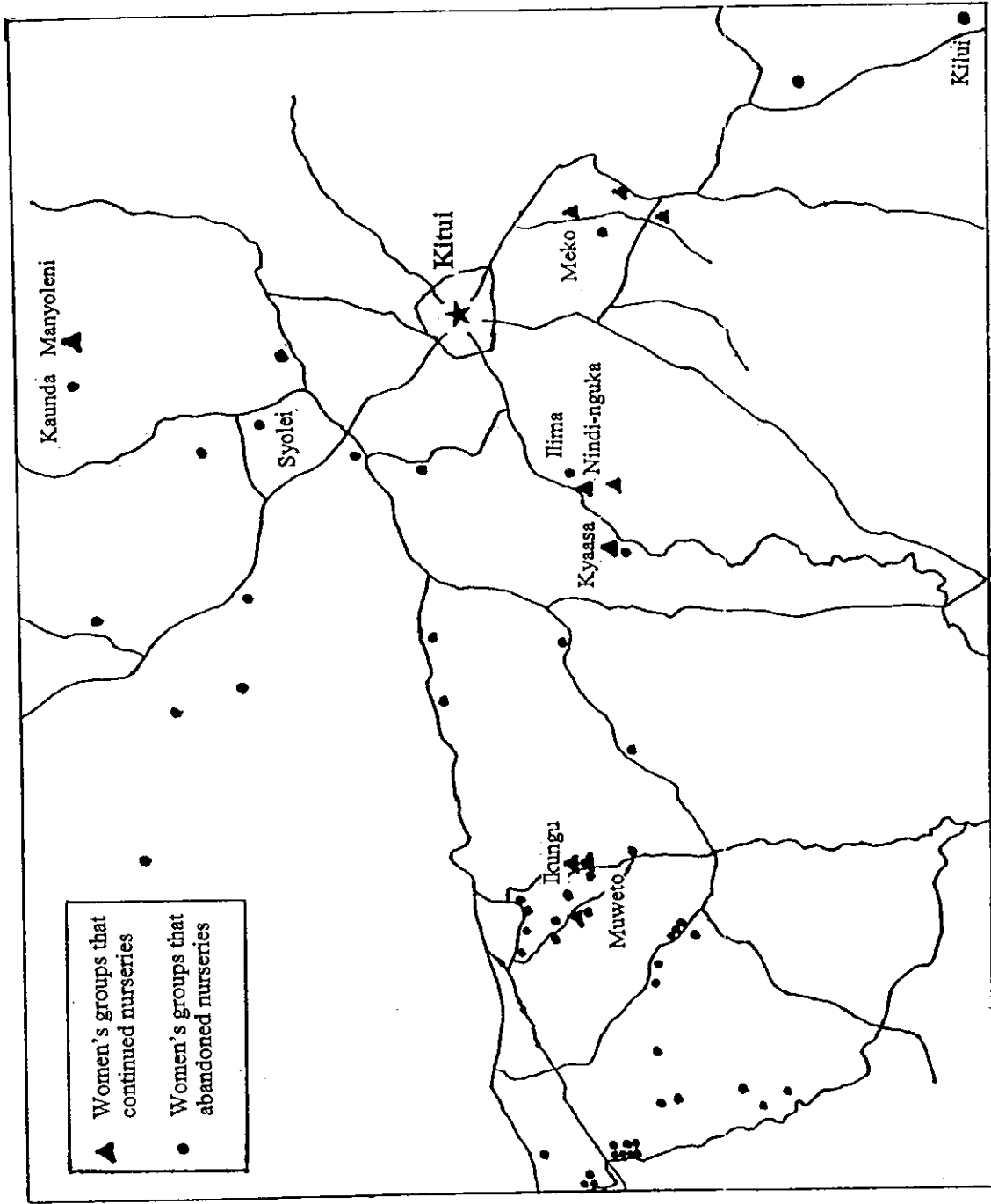
Concerning sampling women's groups that had abandoned small-scale nurseries, the point at which a women's group abandoned its nursery was considered



important. The timing may have reflected reasons associated with the withdrawal of project support. However, sampling based on the timing could not be done, since it was difficult to obtain this information in advance.

Since preliminary sampling by using existing data did not work, the fifteen women's groups that continued small-scale nurseries were identified on a map (Figure 4.4). It was expected that the geographical distribution of the groups would show some tendencies which would be helpful for sampling. When they were marked on a map, six clusters appeared. Each cluster seemed to represent particular conditions, such as microclimate, terrain, population density, and distance to markets or a main road, which may have influenced the sustainability of these nurseries. Thus, it was planned to sample two women's groups, one which continued a nursery and the other which abandoned one, from each of the different clusters. However, this sampling idea was not carried out, because it became apparent during the sampling process that some information on the continuation of small-scale nurseries given by the extension agents was not correct. In addition, it also became apparent that some women's groups were not accessible due to poor road conditions and the unavailability of extension agents who could have initial contact with the women's groups.

In the end, two women's groups were selected from each of the four locations, Kwavonza, Kyangwithya West, Nzambani, and Matinyani. There were no groups that continued small-scale nurseries in the Kathivo location. Although the administrative division did not necessarily reflect distinct natural and social conditions, each location had different conditions to a certain extent. Sampling women's groups from different locations was helpful in avoiding influences of particular natural and



Modified from Yaguchi      Figure 4.4 Locations of the small-scale nurseries

social conditions on the sustainability of small-scale nurseries.

In addition to the eight women's groups sampled for an actual survey, another two women's groups were selected for a test survey from the area. For the first test survey, a group that was expected to have smooth communication was selected, because the first test survey needed to provide an opportunity to practice using the participatory tools for the survey team and to provide sufficient preliminary information for the actual survey.

### 3. Test survey

#### 3.1 Purpose of the test survey

Prior to the implementation of an actual survey with the eight women's groups, a test survey was conducted with two other groups. The test survey had three purposes. The first was to confirm the main daily activities of the group members and their views of why these activities were important to them. This was a preparatory activity for the actual survey. The second purpose was to confirm whether the participatory tools which were planned were appropriate in terms of understanding of participants and a time constraint. The third purpose was to have opportunities to practice conducting the participatory tools for the survey team, which consisted of the author and three research assistants.

#### 3.2 The first test survey

The first test survey was conducted with the Kyaasa women's group in the Kyangwitha West location. After founding it in 1994, the group continued to operate

its small-scale nursery up to July 2001, the time of the survey. All fifteen members and three non-members participated in the survey. Three members out of the fifteen were male. Before conducting participatory tools, the group nursery was observed. In the first test survey, three activities were experimentally used. Before beginning the activities, the team members introduced themselves and then the participants, who were also asked to mention a favorite activity as an “ice breaker”. This also worked to introduce the first activity.

The first activity was conducted to confirm the daily activities of female farmers, which would be used in the actual survey. The participants were asked in open discussion what activities they had in their daily lives. They mentioned the following activities: preparing chai for breakfast, cooking lunch and supper, collecting firewood, fetching water, washing children before going to school, washing clothes, sweeping houses, preparing the fields, planting, harvesting, digging terraces, keeping cattle, watering seedlings at tree nurseries, potting and sowing, building houses, making bricks, thatching grasses, making baskets, and making pots. These activities were categorized into the following nine groups with the agreement of the participants: cooking, collecting firewood, fetching water, cleaning, crop growing, livestock keeping, small-scale nursery, building houses, and making baskets and/or pots. Then, the participants were asked why or for what purposes they did these activities in order to confirm the appropriateness of aspects in the next activity and to lead them to it smoothly. As purposes or reasons they mentioned, such ideas as obtaining food, generating income, planting, providing shade, enjoying ornaments, and making medicine.



The second activity was conducted to clarify their awareness of the importance of daily activities in terms of income generation, food procurement, and decision making. Every participant was asked to give a score from 1 to 5 points to the nine daily activities in terms of each given dimension following the rules that were explained in the section 1.3 of this chapter. From the results of the second activity, it was obvious that some daily activities did not contribute to the procurement of food and income generation. It was also revealed that some activities, such as cooking and cleaning, were managed by only women. Thus, it was decided that these activities would be omitted when daily activities were scored from the aspect of importance in the actual survey.

The last activity conducted during the first test survey was the development of a life history of the women's group. The group members were asked about group activities, group formation, agencies that supported group activities, and the number of group members from the establishment of the group to the present. They were also asked reasons why they stopped some activities and why the number of group members changed. It was found that the change in the number was caused by the small-scale nursery activity. Some members left the group, because they had broken the rules of the nursery.

### 3.3 The second test survey

The second test survey was conducted with the Kaunda women's group in the Matinyani location in July 2001. The group abandoned its small-scale nursery in 1999. Before beginning the survey, it was confirmed that only group members would

be participating in the survey, because it was found that three non-members were participating after the first survey was underway. This survey should have allowed only group members to participate, because non-members were in no position to compare a small-scale nursery activity or a group nursery activity with other daily activities when scoring them. The number of participants fluctuated between 25 and 30 during the implementation of participatory tools. In spite of the confirmation at the beginning, it was found towards the end of the survey that many of them were not group members.

The second test survey started with the life history of the women's group to remind members how it was when they managed their nursery. Following this, another participatory tool named "problem hat" (Pretty et al., 1995) was conducted to clarify why the group had stopped its small-scale nursery. Every participant was given a piece of paper and requested to write one reason for the abandonment of the nursery. The pieces of paper were collected in a hat or a paper bag, and then, every participant was requested to pick up a piece of paper from it and read the reason written on the paper. This tool aimed to make all participants express their opinions easily and equally and share opinions with one another. Although this tool managed to explore one reason, food shortage, which was a subject rarely uncovered by conventional research methods, it did not work sufficiently as a whole, because many participants were illiterate, many participants and team members did not understand the tool, and possibly the researcher provided insufficient guidance.

Next, a tool 'scoring resource allocation' was examined. The participants were asked to give scores from 1 to 5 points to five activities: crop growing, tree

planting, making baskets, small-scale nursery, and livestock keeping, in relation to the amount of resources they allocated to an activity comparing the activities each other. The rule of scoring was the same as that of scoring importance of activities mentioned earlier. The participants were requested to score the activities in terms of the allocations of time and money.

#### 4. Actual survey

Based on the results of the test survey, it was decided that the following seven daily activities would be used for the actual survey: crop growing, livestock keeping, tree planting, small-scale nursery (group nursery), making baskets, fetching water, and collecting firewood.

The test survey revealed that the implementation of the participatory tools took much more time than originally estimated. Thus, it was decided that only three tools, scoring importance of activities, scoring resource allocation, and the life history of the women's group, would be used in the actual survey. It was also decided that the scoring importance of activities would be made in terms of income generation, food procurement, pleasure, and decision making; and scoring resource allocation would be made in terms of time, money, and labor energy.

Through the experience of the test survey, it was also revealed that the number of participants should be between 10 and 15 to conduct the tools smoothly within a reasonable time. In conjunction with the number of participants, the researcher needed to make sure that all participants were group members. Thus, the eight groups were requested to select 10 to 15 members and prepare a list of the participants

in advance.

After the implementation of the participatory tools with the ten women's groups including two for test survey, the survey team revisited most of them to confirm whether the author's understanding of their responses was correct and to share survey results with them. This was crucial to the participatory research process as mentioned in the previous section.

## CHAPTER V

### RESULTS AND DISCUSSION

#### 1. Results of the survey with women's groups

##### 1.1 Scoring daily activities

##### 1.1.1 Group perspectives

The means of scores given to each activity in terms of each given dimension according to individual perspectives were calculated to grasp a tendency as a group. A radar graph was then drawn by using the means in order to clearly show differences between women's groups that continued small-scale nurseries and women's groups that abandoned their nurseries. It was assumed that the former attached more importance to small-scale nursery activities and allocated more resources to them than the latter. In other words, it was assumed that the former likely gave higher scores to small-scale nursery activities than the latter. This meant that the size of the shape indicating a small-scale nursery activity of a women's group that continued its nursery was bigger in the radar graph than that of women's groups that abandoned their nurseries. The radar graphs showed the results of scoring daily activities in all given dimensions except decision making. The reasons why scores given in terms of decision making were not included in the radar graphs are explained in the next section.

##### 1.1.2 Scores of decision making

As mentioned earlier, the idea of showing results of scoring by a radar graph

was based on the assumption that the bigger score a group gave to a small-scale nursery activity, the more the group recognized its importance and allocated resources to it. In other words, when a group gave high scores to a nursery activity, it had likely continued it. Regarding decision making, it was assumed that women's groups, whose members were mostly female, were likely to continue their nurseries when the women could make a decision on nursery management without the intervention of men. Thus, the participants were asked to give 5 points to a small-scale nursery activity, when women could make a decision alone. In Kenya, men, as heads of households, usually made decisions about productive activities of the households (Royal Netherlands Embassy, 1994). In agricultural activities, for example, men made decisions about labor allocation, land use, crop species, how much to sell, and so on. The low participation of women in decision making accompanies their little access and control of resources and benefits of productive activities. The same observation applied to social forestry activities. It was reported that women had less control and access to trees in households, especially when trees were intended for commercial purposes. Even though women were the main actors for social forestry in the area because men had migrated to urban areas in search of employment (Royal Netherlands Embassy, 1994; Republic of Kenya, 1997), women still could not make decisions about forestry activities. It seemed that their lack of control and access to trees was a hindrance to the promotion of social forestry. It was understandable that women were not eager to plant trees unless they had a guarantee of obtaining benefits from them. Thus, it was assumed that a small-scale nursery activity, as well as other group activities, was important for women, especially in the case of a nursery being

operated for commercial purposes, because women could control the productive activity and use the money generated from it as they saw fit. Thus, inquiry into the importance of daily activities in terms of decision making was felt to have great significance.

The results of the scores revealed, however, that men's interference did not necessarily work negatively for women in their nursery management. When the participants gave 3 points, which meant that a decision was made equally by men and women, men participated in decision making in various forms (Table 5.1). Some female members explained that they needed to ask their husbands for permission to do small-scale nursery work. The husbands of some members interfered in the use of money generated through the sales of seedlings. In these cases, men's intervention hindered women's control over small-scale nursery activities. In some cases, however, men's intervention helped women with the operation of small-scale nurseries. It was reported that men participated in decision making through the assistance of women in fencing or making seedbeds. It was also reported that peripheral activities such as digging a shallow well gave men authority to involve themselves in decision making on nursery management. Digging a shallow well was usually men's work and the group nursery needed the shallow well to water seedlings, thus, men in a sense interfered in the decision making about a small-scale nursery through digging a shallow well. Although men interfered with decision making in this case, this helped women with the operation of small-scale nurseries. In another case, a wife and a husband equally discussed and agreed on role assignments for small-scale nursery activities and other activities. Husbands of some members were also group members,

so that they participated in decision making directly.

Table 5.1 Men's intervention in decision making on small-scale nurseries

Women's groups continued nurseries	Women's groups abandoned nurseries
<ul style="list-style-type: none"> <li>▪ Discussion/Role assignment</li> <li>▪ Permission</li> <li>▪ Interference with the use of money</li> <li>▪ Interference through an activity related to nursery</li> <li>▪ Assistance with nursery work</li> <li>▪ Control based on paternalism</li> </ul>	<ul style="list-style-type: none"> <li>▪ Agreement/Role assignment</li> <li>▪ Permission/Check on nursery work</li> <li>▪ Interference with the use of money</li> <li>▪ Inquiry about the amount of money</li> <li>▪ Financial assistance</li> </ul>

Moreover, there was no correlation between types of men's intervention and the continuation of small-scale nurseries. Even members of women's groups who continued their nurseries needed to ask their husbands for permission to do nursery work, for example, as well as members of women's groups who abandoned their nurseries. Husbands of some members intervened in the use of money generated through the sale of seedlings. Others of the groups gave 1 point explaining that men made decisions on small-scale nurseries according to the paternalistic custom in the area. On the other hand, some members of women's groups who abandoned their nurseries did not need to ask their husbands for permission and husbands of others did not interfere with the use of the money.

Furthermore, there was another issue about scores given in terms of decision



making. The scores did not necessarily reflect gender aspects mentioned above. Some members gave 5 points to a small-scale nursery activity because they were widows. In this case, they gave 5 points to all other activities regardless of how important a small-scale nursery activity was with respect to gender issues in comparison to other activities.

From reasons mentioned above, it did not seem to be appropriate that the scores given in terms of decision making were handled together with the scores given in terms of other dimensions. Thus, the means of decision making were not included in the radar graphs.

### 1.1.3 Results shown in the radar graphs

Results of scoring daily activities in terms of the importance of awareness and resource allocation were shown as radar graphs in Figure 5.1 (also see Appendix 1). Four women's groups on the left side in Figure 5.1, the Ikungu, Kilui, Ilima, and Syolei women's groups, were those that abandoned their small-scale nurseries and the other four women's groups on the right side, the Muweto, Meko, Nindi-nguka, and Manyoleni women's groups, were those that continued their nurseries. When comparing the first two of each type, it was clear that the shapes indicating small-scale nursery activities of the Muweto and Meko women's groups were larger than those of the Ikungu and Kilui women's groups. In other words, the groups that continued their nurseries were more aware of importance of nursery activities and allocated more resources to them than those that abandoned their nurseries, as was originally assumed. However, a comparison of the other four women's groups did not show clear

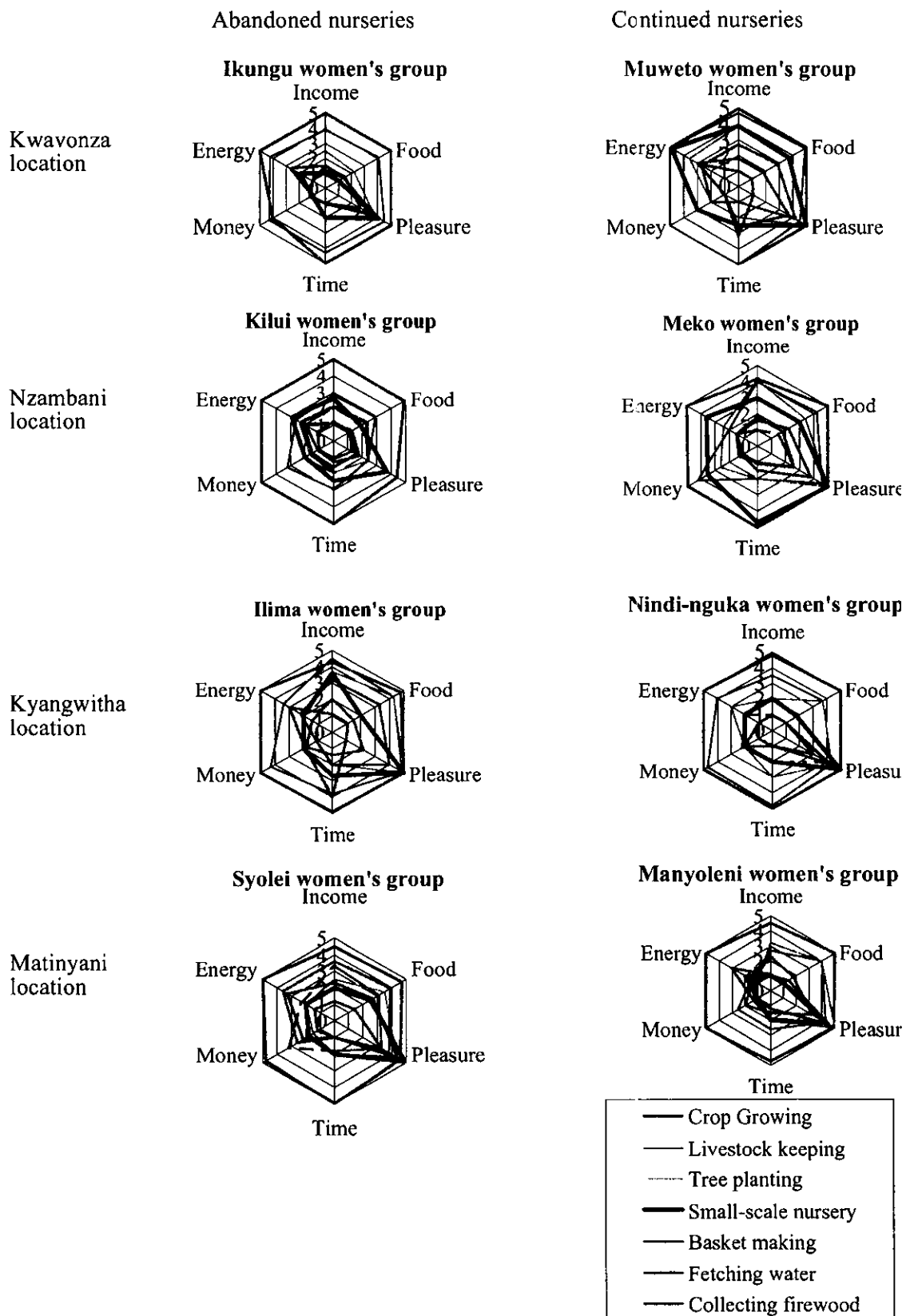


Figure 5.1 Results of scoring daily activities

differences between those that continued nurseries and those that abandoned them. Rather, the shapes indicating small-scale nursery activities of the Nindi-nguka and Manyoleni women's groups, which continued their nurseries, were smaller than those of the Ilima and Syolei women's groups, which abandoned their nurseries.

These observations revealed that there were two types of women's groups that continued small-scale nurseries. One type was the group that managed a small-scale nursery as an important income generation activity and allocated many resources to it, such as the Muweto and Meko women's groups. Another type was the group that maintained their nurseries at a low level mainly for domestic planting or for diversification of income sources. This type of women's group did not allocate many resources to the nursery. Thus, it was found that the degree to which a women's group was aware of the importance of a small-scale nursery and allocated resources to it accordingly did not necessarily influence the continuation or abandonment of the nursery. This result suggested that there may have been other factors influencing the continuation or abandonment which were not indicated by awareness of the degree of importance and/or the amount of resource allocation. The further analysis from this point of view will be made in later sections.

#### 1.1.4 Points to observe in the radar graphs

Before moving to the next analysis, additional observations need to be made about points in the radar graphs. First, each women's group had various perspectives on small-scale nursery and other daily activities, which was shown in various shapes indicating daily activities in the radar graphs. Crop growing, however, was

commonly recognized to be the most important in terms of all given dimensions and allocated the most resources in terms of money, time, and energy by all eight women's groups.

Women's groups in the same location shared some common characteristics, although each had different perspectives. Two radar graphs placed in a row in Figure 5.1 are those of women's groups in the same location. Each pair of women's groups had some common characteristics. For example, the women's groups in the Kwavonza location realized that keeping livestock was quite an important activity and allocated almost the same degree of resources as they did to crop growing. On the other hand, the women's groups in the Matinyani and Nzambani locations placed less importance on livestock. Women's groups in the Nzambani location allocated less time to livestock, because group members frequently tethered animals in this area.

Scores in terms of pleasure also should be noticed. The participants were asked to give relative scores to the daily activities in terms of pleasure in the same way they scored other dimensions. As Figure 5.1 shows, however, the participants seemed to give absolute scores rather than relative scores in terms of pleasure. Moreover, reasons for or criteria of the scores varied depending on participants. Some participants gave a score to an activity in accordance with the necessity and/or benefits of the activity. Others counted difficulty or toughness of an activity when giving a score. Others gave a score to an activity based on their pleasant feeling in doing it. Some participants gave a low score to an activity because they did not engage in it due to various reasons, such as gender labor division, lack of skill, and/or lack of materials. Hence, it should be noted that scores in terms of pleasure had

different meanings from scores in terms of other dimensions. Even so, the following points, which were revealed concerning pleasure in working at small-scale nurseries should be noted. These points may have attributed to the fact that among all the daily activities only the small-scale nursery activity was done as a group.

- All women's groups gave higher scores to small-scale nursery activities, whereas they gave various scores to other activities.
- One of the reasons for the higher scores was that group members could socialize during nursery work. They exchanged ideas, counseled each other, and had opportunities to meet people from outside the community.
- The participants also felt pleasure when they got new knowledge on nursery management and taught it to others.

Since all women's groups gave high scores to small-scale nursery activities in terms of pleasure, the degree to which group members felt pleasure from small-scale nursery activities did not seem to influence the continuation or the abandonment of their nurseries.

## 1.2 Life history of the women's group

The life history of each women's group was investigated to clarify how the group perceived their small-scale nursery activities among all their other obligations and how this activity functioned in the historical context of the group. The life history consisted of the following items: group activities, group formation, agencies which supported the group, and the number of group members from the establishment of the group to the present. It was hypothesized that these items also influenced the

sustainability of a small-scale nursery. For example, it was assumed that if a women's group had managed many group activities, it was likely to abandon its nursery, which was just one option among many others. It was also expected that group activities showed the relationships between a small-scale nursery activity and other group activities. If a new activity was begun after the abandonment of the nursery, it may have been influenced by the nursery activity. Concerning group formation, if a women's group opened a group account after the establishment of its nursery, for example, the nursery work may have contributed to the enhancement of its financial stature. With regard to agencies that supported a group, it was assumed that the more agencies supporting a women's group, the more likely it was to continue its nursery. The number of group members was also expected to show some impact of the nursery activity on group dynamics. If the number of group members increased after the establishment of a nursery, it may have attracted non-members. These items are related to each other, of course. Support by some agencies may have influenced a group activity, and as a result, the number of group members changed, for example.

The life histories of the eight women's groups are shown in Appendix 2. As a result, however, such relationships among group activities or the relationships between some tendencies of the items and the continuation of nurseries were not found to be as strong as expected. For example, the Ilima and Syolei women's groups abandoned their nurseries, though they had been supported by many agencies. Correlation between the number of group activities and the continuation of nurseries was not found. The Muweto and Ikungu women's groups, for another example, had conducted a relatively small number of activities, but the Muweto women's group

continued its nursery while the Ikungu women's group did not.

Although the life histories of the eight women's groups did not show the relationships expected, they did yield interesting information. It was revealed that women's groups frequently conducted activities randomly. Although some women's groups, such as the Meko and Kilui women's groups, mentioned that the construction of a shallow well helped nursery work, other than this, only the Syolei women's group showed relationships between running a small-scale nursery, tree planting, and making and selling medicine. The group established its nursery in 1978, and in the following year began tree planting. Then, the group began making medicine from the trees and selling it in 1996, and then abandoned its nursery in 2000. This case showed that the impact of the small-scale nursery remained in the group's operation or members' lives even though the nursery had been abandoned.

Some groups conducted some activities when they got outside support for them. For example, the Syolei women's group began bee keeping in 1998 when the Ministry of Agriculture (MoA) began assisting this activity. Then, the group abandoned this activity in 2000 because the MoA did not keep its promise to provide protective clothing. The Ilima women's group, for another example, began goat rearing in 1985 with the support of the Ministry of Culture and Social Services, but abandoned the practice in 1990 when service and training were withdrawn.

With regard to group formation and the number of group members, it was revealed that small-scale nursery activities had a greater impact on group dynamics than other group activities. In the case of the Ikungu women's group, five members pulled out of the group because they broke the rule that required them to pay a fine for

being absent from nursery work. In the case of the Syolei women's group, on the other hand, the number of group members increased from 20 in 1975, when the group was established, to 52 in 2001. One of the reasons for this increase was that non-members wanted to have seedlings. Assistance to small-scale nurseries by agencies also influenced the number of members who engaged in nursery work. In the case of the Manoyleni women's group, 13 members out of 33 left nursery work when the SFTP withdrew its support, although they still maintained memberships for other activities. The Nindi-nguka women's group also experienced a decrease in the number of members who participated in nursery work after the withdrawal of SFTP support. At the time of the survey, only eight members out of 35 participated in nursery work. The rest of the members pulled out, because of the termination of providing valuable rewards.

The time when a women's group established its nursery seemed to influence the abandonment of the nursery for the similar reason to that for the withdrawal of some members from nursery work. Three women's groups out of four that continued their nurseries began them with the establishment of the groups, which meant that the nursery activity was one of their main activities. On the other hand, the other four women's groups that abandoned their nurseries began them some years after their groups had been established. Three out of the four began their nurseries when they obtained support from the SFTP. The Nindi-nguka women's group was one of the three. Although this group continued its nursery, most members quit when the SFTP withdrew its support. These facts suggested that those women's groups or group members who began participating when the nurseries received outside support were



most likely to pull out when the support was terminated.

The number of agencies that supported women's groups depended on the locations to a certain extent. The Muweto and Ikungu women's groups in the Kwavonza location did not obtain outside support except for the SFTP. Both the Meko and Kilui women's groups in the Nzambani location received support from DANIDA. The women's groups in the Kyangwitha West and Matinyani locations were also supported by several agencies. Disproportion of outside support among the locations was observed. The information in this section and the other information obtained through the implementation of the life histories contributed to the further analysis of factors influencing the sustainability of small-scale nurseries, which follows in the next section.

### 1.3 Farmers' perspectives on their daily activities

In order to clarify how group members perceived relationships among their daily activities, flow charts of goods and services among them in terms of income generation and food procurement were drawn by using information obtained through the implementation of the three participatory tools. A flow chart of each women's group was drawn and shown to each group to confirm whether the researcher's understanding on members' perspectives was correct. The flow charts of the Manyoleni and Ikungu women's groups are shown as examples in Figure 5.2 and 5.3. Although the charts were not exhaustive, because developing complete charts was not a purpose of the survey, they did reveal that the group members realized various relationships among their daily activities. Recognition of the relationships were

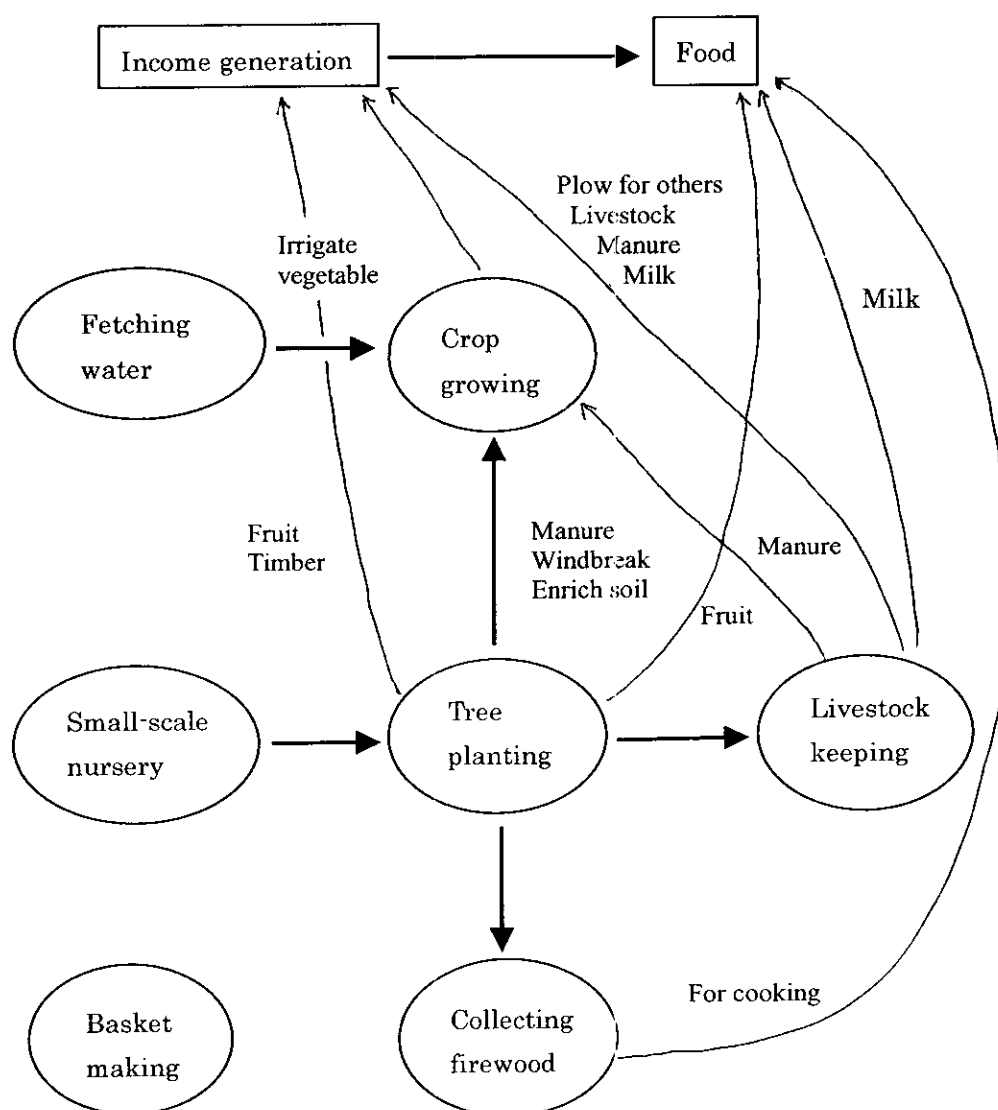


Figure 5.2 Flow chart of the Manyoleni women's group

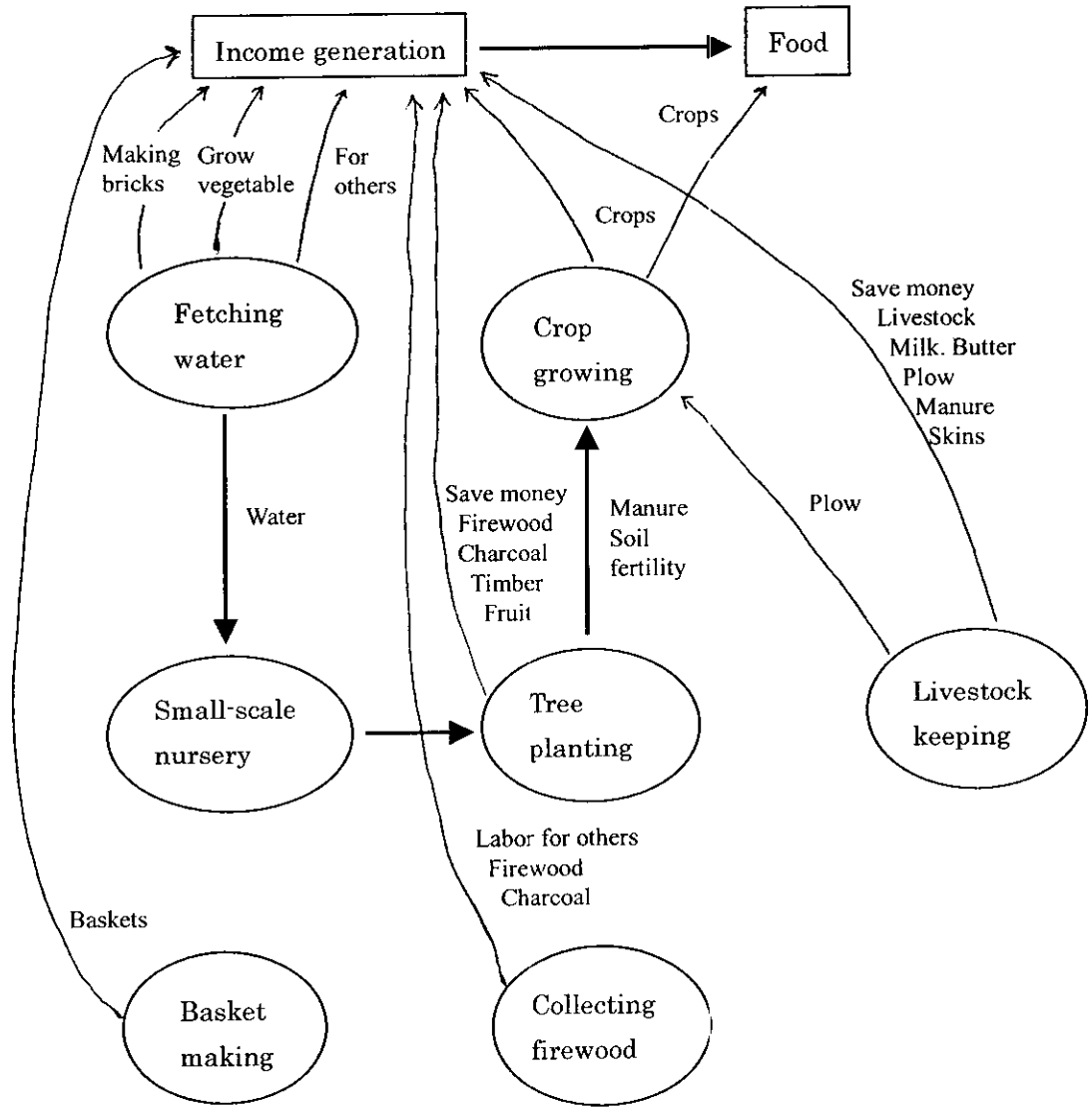


Figure 5.3 Flow chart of the Ikungu women's group

different depending on women's groups, however, the differences did not seem to influence the continuation or the abandonment of their nurseries.

A flow chart combining all information given by the eight women's groups was also drawn (Figure 5.4). This was also shown to the members of each women's group to make them realize the potential for developing roles of activities that they might have overlooked. Moreover, the total flow chart revealed that some roles of activities were commonly overlooked by all women's groups although the chart covered relationships among the activities comprehensively. For example, most women's groups realized that tree planting contributed to food procurement by providing fruits. However, no one realized that some tree species provided other edible parts, such as leaves and pods. For another example, only two women's groups pointed out that tree planting contributed to livestock keeping by providing fodder, although other groups agreed to this practice during a second visit. Concerning relationships between tree planting and crop growing, most women's groups perceived roles of trees for crop growing from various aspects, such as enrichment of soil, provision of green manure, and windbreaks. However, it was doubtful whether they understood these effects properly. In fact, several members wanted to know which tree species were suitable for combining with crops. If group members realized such new relationships, they could increase their options to generate income or procure more food.

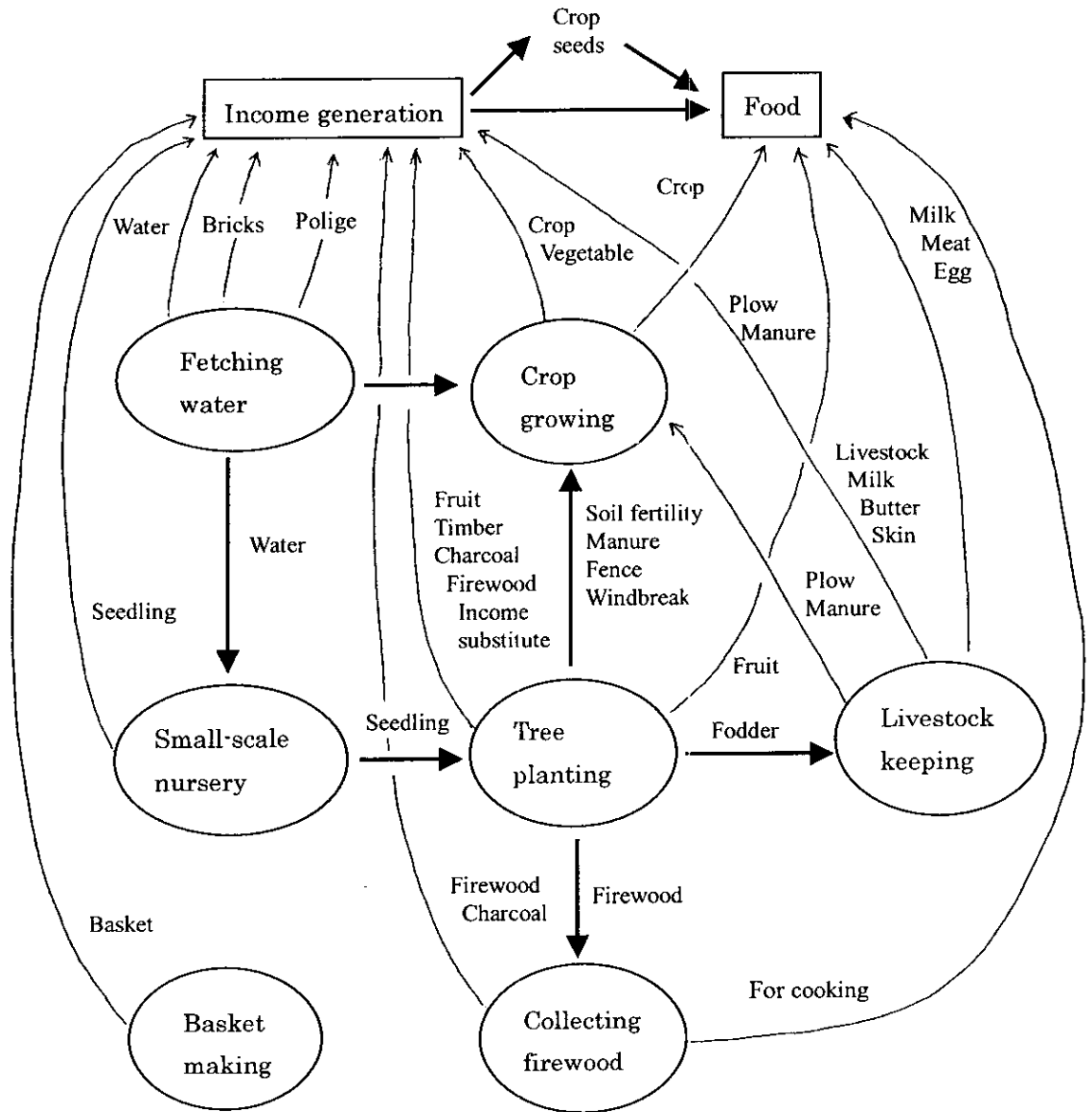


Figure 5.4 Total flow chart of goods and services among daily activities

## 1.4 Factors influencing the sustainability

### 1.4.1 Comprehensive analysis

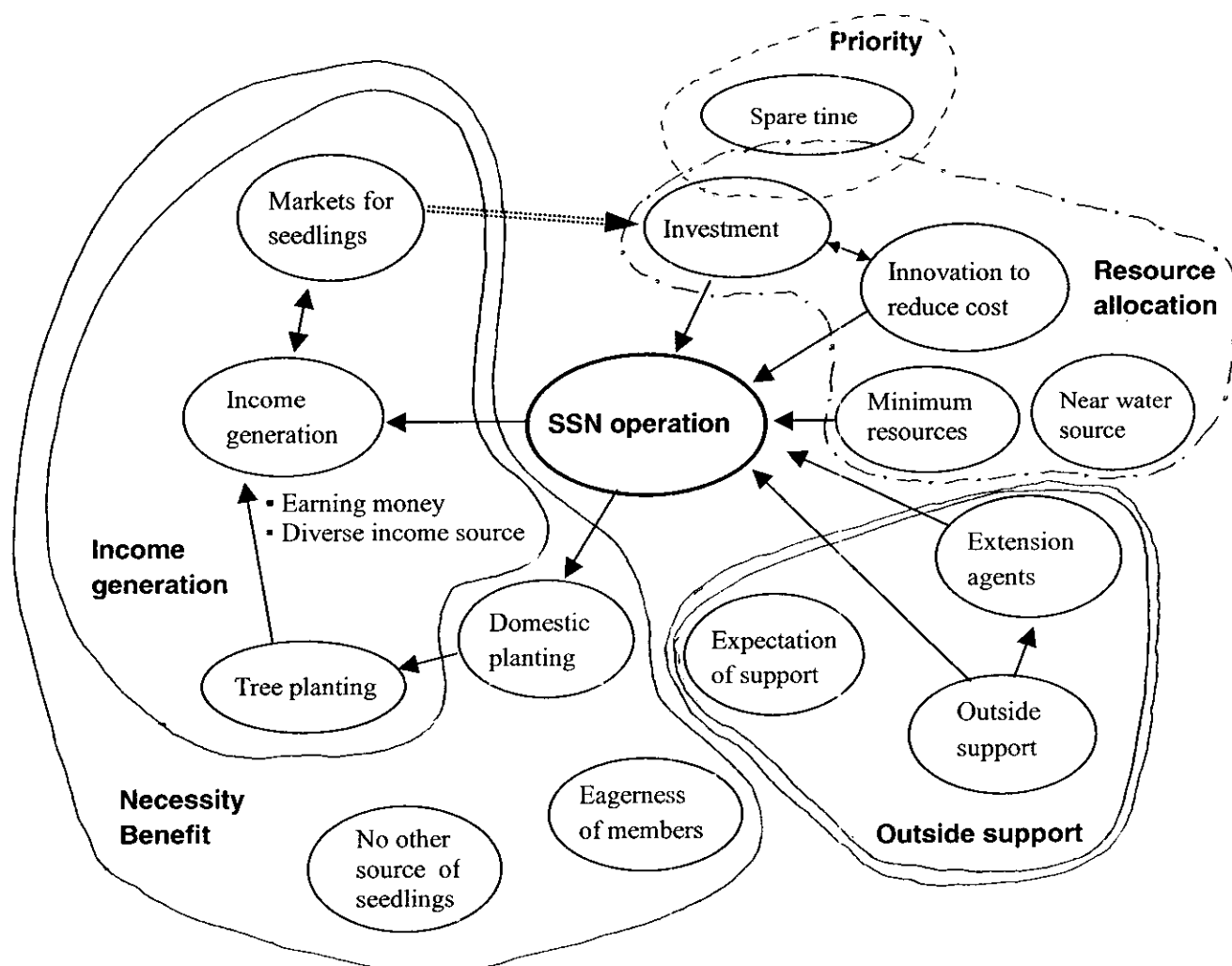
In the previous sections, the results of the implementation of each participatory tool were discussed separately. However, it seemed that some factors influencing the sustainability of small-scale nurseries were not yet uncovered. They were expected to be revealed by analyzing together all the information that was obtained through the implementation of the participatory tools and the discussion during the second visit. All points that seemed to influence the continuation or the abandonment of a nursery were identified from the information provided by every women's group. In addition, reasons why other members pulled out of nursery work were also identified if women's groups had such members. In case a women's group restarted its nursery after having abandoned it, reasons for the re-establishment were also identified. Finally, the points picked up from the four women's groups that continued nurseries were compiled and examined whether they influenced the continuation of their nurseries, or not. In the same way, the points highlighted by the other four women's groups that had abandoned their nurseries were compiled and examined to see whether they influenced the abandonment of them. Factors influencing the continuation and the abandonment of nurseries are summarized in Table 5.2.

### 1.4.2 Factors influencing the continuation

Factors influencing the continuation of small-scale nurseries were clarified and categorized as shown in Figure 5.5. Recognition of necessity of seedling production seemed to be an essential factor influencing the continuation of nurseries. In the case

Table 5.2 Summary of factors influencing the continuation and the abandonment

<u>Factors influencing the continuation</u>	<u>Factors influencing the abandonment</u>
<ul style="list-style-type: none"> <li>○ Necessity of seedling production           <ul style="list-style-type: none"> <li>▪ Members who needed seedlings remained and continued the nurseries.</li> <li>▪ Small-scale nursery (SSN) is an important activity for income generation.</li> <li>▪ It may have been difficult to procure seedlings from other sources.</li> </ul> </li> <li>○ Importance of tree planting (Importance of SSN is consist with that of tree planting)           <ul style="list-style-type: none"> <li>▪ Tree planting was a quite important activity in terms of income generation and food.</li> </ul> </li> <li>○ Experience of income generation through the sales of seedlings           <ul style="list-style-type: none"> <li>▪ The groups earned a lot of money by selling seedlings.</li> <li>▪ SSN is important to diverse income source.</li> <li>▪ Manyoleni women's groups (WG) had not sold seedlings, but they generated income through the sale s of trees.</li> </ul> </li> <li>○ Contact to outside support through extension agents/outside support</li> <li>○ Expectation of obtaining outside support           <ul style="list-style-type: none"> <li>▪ Muweto WG expected to obtain outside support by organizing a WG.</li> </ul> </li> <li>○ Investment</li> <li>○ Innovation to reduce cost</li> <li>○ SSN management with minimum resources</li> <li>○ Easy access to water           <ul style="list-style-type: none"> <li>▪ cf. Muweto WG</li> </ul> </li> <li>○ Spare time</li> </ul>	<ul style="list-style-type: none"> <li>○ Decrease of necessity of the procurement of seedlings           <ul style="list-style-type: none"> <li>▪ Every member had enough seedlings.</li> </ul> </li> <li>○ Shift from group nurseries to private ones</li> <li>○ Evolvement of SSN to other activities</li> <li>○ Complete acknowledgement of nursery techniques through group nursery</li> <li>○ Priority of group activities/other activities           <ul style="list-style-type: none"> <li>▪ Construction of shallow well</li> <li>▪ Syolei WG had many other activities</li> </ul> </li> <li>○ Other income generation activities           <ul style="list-style-type: none"> <li>▪ Kilui WG : business</li> <li>▪ Syolei WG: basket making</li> </ul> </li> <li>○ No direct income generation           <ul style="list-style-type: none"> <li>▪ Ikungu WG</li> </ul> </li> <li>○ Withdrawal of outside support</li> <li>○ Drought/water problem</li> <li>○ Resource allocation to other activities</li> </ul>



SSN: Small-scale nursery

Figure 5.5 Factors influencing the continuation of small-scale nursery



of the Muweto women's group, members who originally belonged to three other women's groups organized the group to raise seedlings after the termination of the SFTP support. The Muweto women's group was the only group that continued its nursery out of 40 that had been supported by the SFTP in the Kwavonza location. In the case of the Nindi-nguka and Manyoleni women's groups, although the groups continued their nurseries, only members who needed to raise seedlings continued nursery work. Members of the Manyoleni women's group explained that they could not procure seedlings without its nursery. This meant that the possibility of seedling procurement from other sources influenced the necessity of small-scale nurseries. The Meko women's group, on the other hand, regarded the nursery as an important income generation activity. The necessity of small-scale nurseries for these reasons made the women's groups continue them.

In relation to the necessity of seedling production, all four women's groups that continued nurseries were much aware of the importance of tree planting, as well as the importance of small-scale nursery activities. In other words, importance awareness of small-scale nursery activities seemed to be consisted with the importance of tree planting. The Manyoleni women's group, for example, did not generate income from its nursery, but it generated income through tree planting, which resulted from seedling production. Tree planting was the second most important activity compared to crop growing in terms of income generation and food procurement. The Nindi-nguka women's group also generated just a small amount of money through the direct sale of seedlings, however, tree planting was the third most important activity following crop growing and livestock keeping. In these cases, women's groups were

aware of the importance of nursery activities because they received benefits from them through tree planting.

The contribution of small-scale nursery activities to income generation was another influential factor. When women's groups, such as the Meko women's group, generated much income through the sale of seedlings, they were likely to continue their nurseries. The Muweto women's group had earned a lot of money by selling seedlings to the SFTP around 1997, but the group realized the difficulty of selling seedlings after the termination of the SFTP. The Nindi-nguka women's group pointed out another issue related to the contribution of nursery activity to income generation. Although the group generated a small amount of money through the sale of seedlings, the members realized the necessity of the nursery work. In this case, it seemed that they considered the nursery activity as being important to maintaining diverse income sources.

Outside support also influenced the continuation of small-scale nurseries. The existence of members who had contact with agencies related to forestry activities seemed to especially a matter. The Muweto women's group had a member who was an extension agent employed by the sequential project of the SFTP(II) and the Meko women's group had two members who were extension agents employed by the FD. In addition, the Meko women's group was visited by an extension agent employed by the sequential project of the SFTP(II) even after the official support was over. These groups had the advantage of having access to information, such as cost-sharing for the procurement of tools or materials, and techniques on nursery management. Thus, the important point was how women's group could contact agencies related to forestry

activities in the long-term view.

Expectation of obtaining outside support also motivated a women's group to continue nursery operation. Members who originally belonged to three other women's groups organized the Muweto women's group because they knew that women's groups had better chances to get outside support than individual farmers.

Voluntarily investment was another key factor in determining whether a women's group continued its nursery or not. The Meko and Muweto women's groups, for example, spent a relatively large amount of money on their nurseries to buy tools and materials. They gave 3 to 3.5 points to small-scale nursery activities in terms of money allocation while other groups gave 2 points or less. Although the Nindi-nguka women's group allocated a small amount of money, it bought tools and pesticide for termite control by itself. In addition, the group tried to reduce the cost of the nursery operation by using reused polythene tubes and local materials. Such innovations to reduce nursery operation costs could be counted as another factor. Besides the Nindi-nguka women's group, the Manoyleni women's group developed alternative tools for nursery work. The group used baskets to carry seedlings or soil instead of a wheelbarrow and jerricans instead of a watering can. These two points were peculiar to women's groups that continued small-scale nurseries. Women's groups that abandoned their nurseries, on the other hand, frequently complained about a lack of tools or materials and provided little investment with little effort to develop such innovations. Although they allocated some money to their nurseries while obtaining outside support, they did not seem to invest voluntarily after the withdrawal of outside support.

In addition to the effort to reduce the costs, the Nindi-nguka and Manyoleni women's groups minimized the use of other resources, such as time and energy to manage their nurseries. This was a strategy for the women's groups that raised seedlings mainly for domestic planting or diversifying income sources. They realized the necessity of seedling production, however, they did not want to allocate many resources to such an activity.

The availability of resources for small-scale nursery operation was other factor influencing the continuation of nurseries in some case. The Meko women's group had an advantage to fetch water for seedlings from a nearby shallow well. The group also had spare time for nursery work, because less time was required for livestock keeping in the Nzambani location than groups in other locations. The factors related to the investment and the innovation to reduce the cost were classified into a category of respect to resource allocation, as well as the water availability. Although the factor about spare time related to resource allocation, it could be classified in another category of priority, since it was decided by taking the other activities into consideration. In this respect, the factor of investment also belong to this category.

Besides, women's groups that continued nurseries seemed to weight technical advice more than material support. Members of the Muweto women's group stated that knowledge was more important than being provided materials. The Meko women's group requested training for new members. Although women's groups that abandoned their nurseries also wanted to have further technical advice, they also requested material support in contrast to these two women's groups. These factors that have been mentioned above seemed to influence the continuation of small-scale

nurseries.

As for reasons why other members pulled out of nursery work, the Nindi-nguka women's group explained that after the termination of the SFTP they could not get rewards which were given at an annual contest. In other words, they were interested in the rewards rather than seedling production. The Manyoleni women's group explained that some members pulled out of nursery work because of the withdrawal of the SFTP support accompanied by the shortage of seeds and polythene tubes. This could be interpreted that it was difficult for them to contribute to nursery operation financially, even though the amount of individual contributions was small. Or, perhaps it was the termination of the chances to obtain rewards that was the strongest reason for them, just as was the case for the Nindi-nguka women's group.

#### 1.4.3 Factors influencing the abandonment

Factors influencing the abandonment of small-scale nurseries, which were clarified from the information obtaining through the survey, were identified and categorized as Figure 5.6 shows.

The factor that the most strongly influenced the abandonment seemed to be the withdrawal of outside support, including that from the SFTP. The women in the Kilui group explained that withdrawal of DANIDA support made them abandon their nursery, while the withdrawal of the SFTP support did not matter. According to the group, DANIDA began providing training and tools for the nursery in 1997 and proposed cost-sharing for nursery management and shallow well construction in 1998,

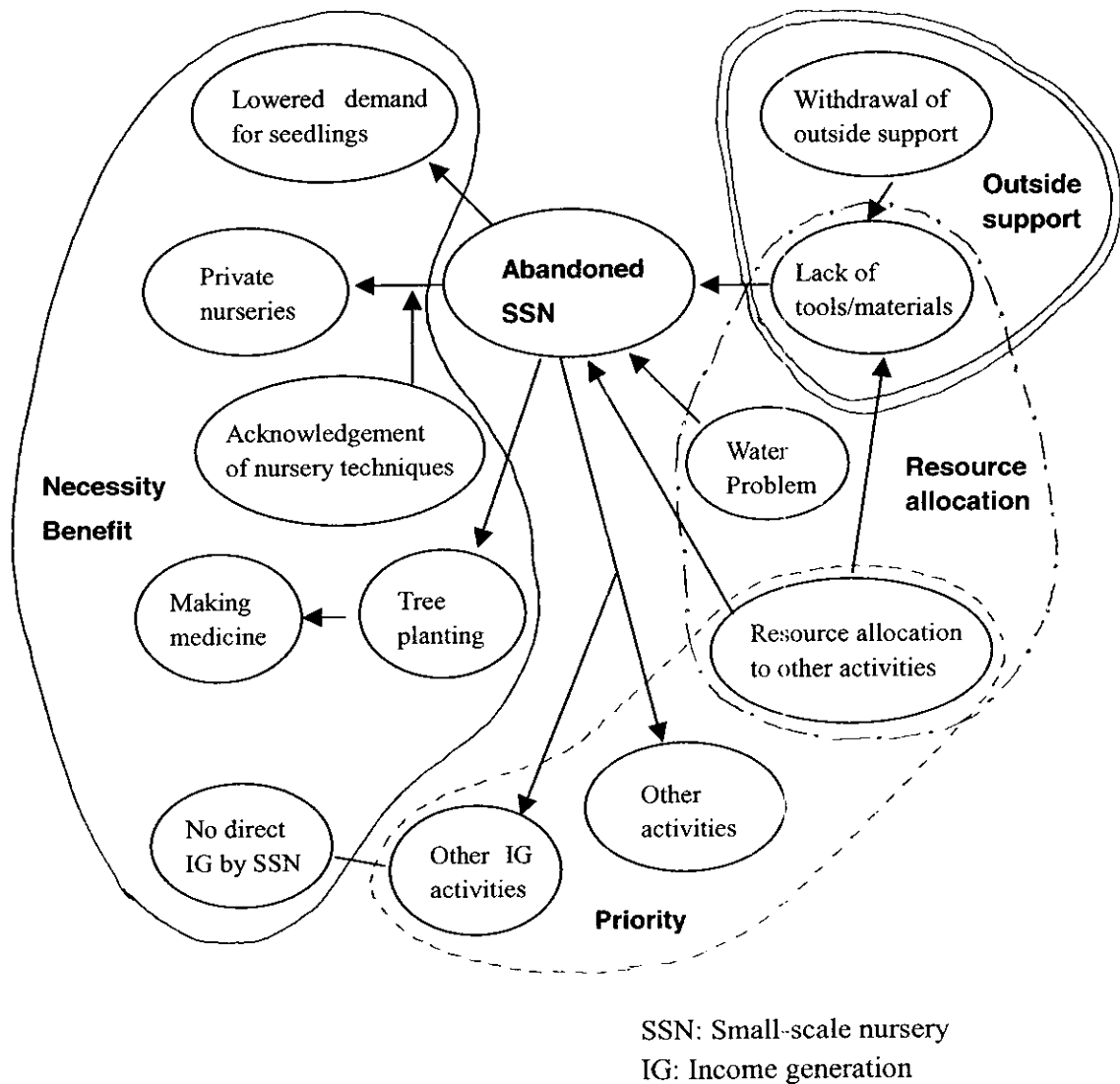


Figure 5.6 Factors influencing the abandonment of small-scale nursery

and then, left the group in 1999. On the other hand, the SFTP assisted the group from 1997 to 1998, according to them. It was deduced that DANIDA still involved itself in the nursery work when the SFTP withdrew its support, thus, the withdrawal of DANIDA support strongly influenced the abandonment. For the other three women's groups, the withdrawal of the SFTP support seemed to be the strongest factor influencing the abandonment of their nurseries.

The second influential factor seemed to be drought or water problems. The Kilui, Ilima, and Syolei women's groups abandoned their nurseries due to lack of water following droughts which occurred in 1999 and 2000. The water points where they fetched water for seedlings dried up because of the droughts. This factor could be classified in the category of resource allocation together with the lack of tools or materials accompanied by the withdrawal of outside support. This category also included the factor related to priority mentioned in the next paragraph some extent.

Some factors resulted from the priority of group activities or individual daily activities. Women's groups that abandoned their nurseries did not give high priority to nursery activities. Especially the priority in terms of income generation seemed to greatly influence abandonment. Some members of the Kilui women's group, for example, had other income generation activities or businesses, so they did not need to rely on the small-scale nursery to generate income. The Ikungu women's group had not sold any seedlings, thus, the priority of the nursery activity was low. In the case of the Ikungu women's group, even indirect contribution by the nursery to income generation through tree planting was small compared with the Manyoleni women's group which had not sold seedlings, but continued its nursery.

Not only from the aspect of income generation, but also from other aspects, women's groups gave priority to group activities. The Syolei women's group, for example, had many other group activities except for the small-scale nursery activity. Since some of them began in the last few years; thus, the group may have been busy and did not need to stick with the nursery activity.

In proportion to the low priority of small-scale nursery activities, women's groups allocated fewer resources to them. In other words, women's groups allocated many resources to other activities, so that they could not afford to allocate enough resources to the small-scale nursery. The Ikunugu women's group, for example, allocated the most resources to crop growing and livestock keeping. As a result, the group did not have enough resources available for nursery work. In the cases of the Kilui and Syolei women's groups, although they did not spend many resources for livestock keeping, they used resources for other activities such as basket making. Thus, they allocated fewer resources to their nurseries.

Some factors influencing the abandonment were caused by a decrease in the necessity of a group nursery. One case occurred when group members acknowledged nursery management techniques through group nursery operation. All four groups that abandoned their nurseries had members who established their own private nurseries. This meant that they learned the necessary techniques for managing private nurseries through the operation of the group nurseries. Especially, when members joined group nurseries for the purpose of learning about nursery management, they did not need to continue the group nursery after they acquired the necessary knowledge.



Another case of the lowered necessity was the dissolution of a small-scale nursery activity in order to begin other activities. The Syolei women's group, for example, began tree planting following to the commencement of nursery work, and then began making medicine from some of trees that were planted. Although the group stopped its nursery and tree planting, it began a new activity based on the results of these activities. The other case where the necessity of group nurseries vanished was when the demand for seedlings by group members was met. The Syolei women's group reported that its members had enough seedlings, so that it did not need to produce more. All of the above factors seemed to have influenced the abandonment of small-scale nurseries.

Three women's groups out of the four re-established group nurseries for the following reasons. The strongest reason was the expectation of obtaining support from JICA again, presumably due to the visit by the researcher who was dispatched by JICA to the SFTP before. This was deduced from the time when they re-established their nurseries. For example, the Kilui women's group re-established its nursery at the beginning of July 2001, when they were informed that the researcher would visit them. The Ilima women's group had already started the preparation for fencing the nursery site when it was visited the first time. Although the group explained that they had planned the re-establishment of a group nursery from the last year's experience of not having any seedlings, the expectation to obtain support from JICA may have pushed them to act.

The groups explained the reason for re-establishing the nurseries was that they realized again the benefits of seedling production and/or tree planting. This seemed

reasonable. The Kilui women's group explained that the abandonment of its nursery was a kind of punitive action against DANIDA, because DANIDA had failed to meet its promise to help through cost-sharing. However, group members realized that the abandonment of the nursery was a disadvantage to them not to DANIDA. The Ilima women's group explained that the members realized the necessity of seedling production through the last year's experience mentioned above. The Ikungu women's group explained that the members realized the importance of the small-scale nursery through the implementation of the participatory tools.

Water availability, which was newly ensured, also encouraged the re-establishment of a group nursery. The Kilui women's group counted the complete construction of a shallow well as one of the reasons to restart its nursery.

The past experience of income generation also motivated a women's group to restart a nursery. The Ilima women's group had generated income through the sale of seedlings. Although the main purpose of the re-establishment of the group nursery was the procurement of seedlings for domestic planting, this past experience must have motivated the members to produce seedlings again.

#### 1.4.4 Categories of factors influencing the sustainability

As seen in the previous sections, the factors influencing the continuation of small-scale nurseries or the abandonment could be classified into the same four categories: necessity and/or benefits, outside support, priority of other activities, and resource allocation (Figure 5.7). This meant that the decision about the continuation or the abandonment was made by the balance of these four categories. These

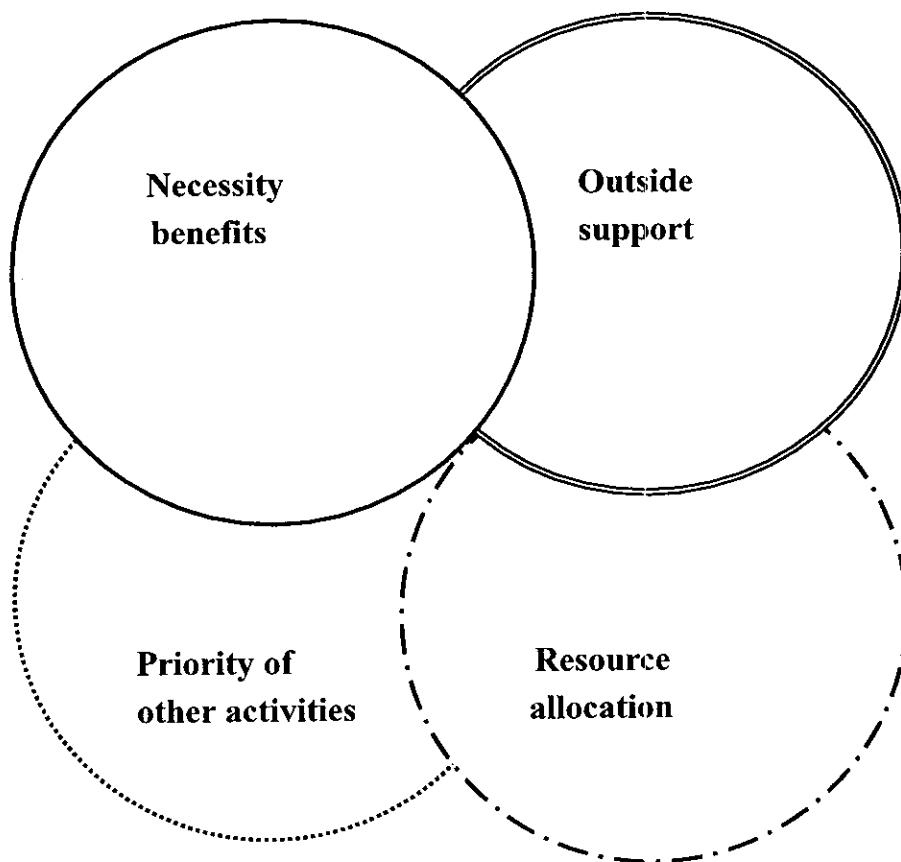


Figure 5.7 Categories of factors influencing the sustainability of small-scale nurseries

categories interacted with each other and the balance among them changed from time to time. The necessity of the small-scale nursery was influenced by the priority of other activities and outside support influenced benefits of small-scale nurseries, for example. Thus, in other words, this meant that every women's group had the possibility of keeping the management of its nursery, stopping it, or restarting it depending on the balance at the moment. The fact that three women's groups out of four restarted their nurseries supported this idea. A result shown by the radar graphs that women's groups that abandoned nurseries were aware of the importance of small-scale nursery activities and allocated resources to them to some degree also supported this idea. For example, when the necessity and/or benefits of a small-scale nursery were large, a women's group kept the management of its nursery. When the necessity and/or benefits decreased, a women's group was likely to stop its nursery operation. When a women's group received material support from the outside, for another example, most women's groups decided to manage their nurseries, since outside support added extra resources to support the nursery activity and enabled the groups to reduce their investment in the nursery operation.

In such a way, the balance of the four categories changed and in accordance with this change, a women's group changed its nursery operation, or decided to either continue or abandon the nursery. In this research it was assumed that there were two types of women's groups: one was women's groups that continued their nurseries and the other was women's groups that abandoned their nurseries. However, this division was not necessarily appropriate. Every women's group had the potential to either continued its nursery, or abandoned it. This discovery contributes to rethinking of

the sustainability of small-scale nurseries, because it appeared that evaluation of sustainability at only one moment in time was not appropriate, since the situation of nursery management by a women's group potentially changed from time to time.

### 1.5 Impacts of small-scale nursery

It was also revealed from the information obtained through the implementation of the participatory tools that the impacts of small-scale nursery activity remained with group operations and with the lives of group members in various forms. The following impacts were identified through the information obtained from women's groups that continued their nurseries.

The experience of small-scale nursery management during the SFTP made group members realize the benefits of seedling production. That was why some women's groups or some members continued group nursery operations despite the withdrawal of project support and the loss of other members' participation. Although it was deduced that the members realized the importance of seedling production through not only the small-scale nursery approach conducted by the SFTP, but also through other extension activities conducted by other agencies, at least the approach contributed to the facilitation of their recognition of the importance of seedling production. In addition to this, a recognition of the benefits of working as a group was counted as another impact of developing small-scale nurseries. Members of the Muweto women's group organized the group with the expectation of obtaining outside support based on their experiences during the small-scale nursery approach.

Another major impact was the acknowledgement of nursery management

techniques. This was shown by the fact that some groups continued their nurseries after the withdrawal of technical support by using techniques that were provided by the SFTP. The establishment of private nurseries by some group members also showed this impact. The establishment of private nurseries also illustrated the impact of small-scale nurseries that made the best use of scarce water. Some members of the Manyoleni women's group explained that a reason for establishing private nurseries was to recycle waste water from the homestead. This idea could be generalized that the facilitation of making the best use of members' resources was one of the impacts of the nursery activities. Seedling production also had an impact on tree planting activities of group members. Provision of seedlings at small-scale nurseries encouraged them to plant more trees on their compounds. They obtained benefits from trees as a result of seedling production. Seedling production had financial impacts on members' lives. Most women's groups were selling seedlings raised at group nurseries. Some members were also selling at their own private nurseries. Seedling production had a positive impact on the financial generation indirectly through tree planting. Small-scale nurseries provided financial stability for members' lives. Although the income generated through the sale of seedlings was small in the early years, it was significant. Small-scale nursery activity contributed to the financial stability of members. This was important as a livelihood strategy, especially for women engaged in agricultural activities under erratic rainfall.

It also was revealed that during the operation of their nurseries, various impacts

members' lives. The most tangible impact was the establishment of private nurseries. Some members from all four women's groups established their own private nurseries. As mentioned earlier, this was also an example of a better understanding of nursery management techniques through the operation of group nurseries. Another tangible impact was shown to be the establishment of new group activities. The Syolei women's groups began planting trees and making medicine from the trees for commercial purposes following the nursery activity. The re-establishment of group nurseries by three groups out of the four resulted from the earlier experience of managing small-scale nurseries. The women's groups acknowledged necessary techniques to establish small-scale nurseries and realized benefits of seedling production through the experience of the group nursery operation, so that they restarted group nurseries when conditions allowed them to do so at some later time. In other words, women's groups still had the option to operate group nurseries, even after they abandoned their initiative ones.

In addition, small-scale nursery activities had impacts on organizational changes in groups. Some members of the Ikungu women's group, for example, pulled out of the group because of strict rules about the nursery management. On the other hand, the Ilima women's group increased the number of group members because some members joined the group in order to learn nursery management techniques. The Syolei women's group also stated that some new members were attracted to its nursery because they wanted to have seedlings. In these ways as we have seen above, the impacts of the small-scale nursery activities remained with group members' lives as well as with women's group operations.

## 2. Results of interviews with institutions concerned

### 2.1 Position of the Forest Department (FD)

Since it was assumed that certain institutions, such as the FD, influenced the sustainability of small-scale nurseries managed by women's groups, interviews with individuals in these institutions were conducted. The FD was an agency that assisted the local residents in forestry activities, including small-scale nursery managed by women's groups. The interviews were conducted with the District Forestry Officer (DFO) Kitui and the Assistant Divisional Forestry Extension Officer (Assist. DFEO) Kabati. The results of the interviews are summarized as follow and visualized in Figure 5.8.

The FD regarded small-scale nurseries managed by women's groups as important sources for supplying seedlings for the local residents and tried to promote their development. Although the FD conducted its own nursery in Kitui District, seedlings produced there were mainly used for plantations on hill sites or gazette forests areas. The FD assisted women's groups in their nursery management through extension activities, where extension agents visited women's groups and gave technical advice. In some cases, the FD provided training and material support in collaboration with development projects. The FD officers seemed to regard support from outside agencies as common conditions, although the DFO realized the problem of dependency on outside support of the local residents including FD officers. He also pointed out that some women's groups joined nursery activities for the purpose of obtaining food or rewards rather than producing seedlings. From this point of view, the DFO welcomed the cost-sharing that was introduced by development projects to



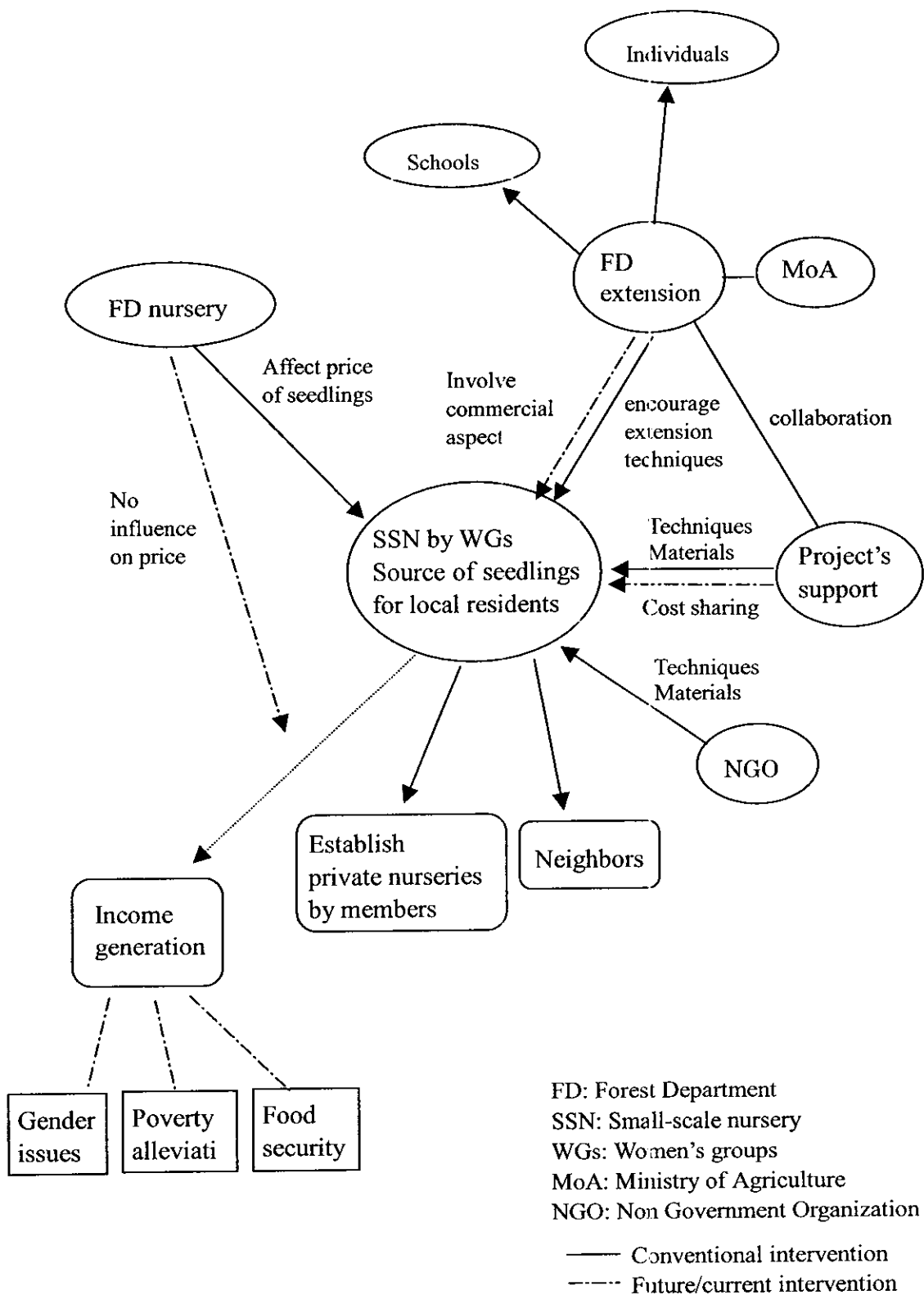


Figure 5.8 Intervention by the Forest Department

avoid their dependency.

The officers were also asked about the impacts of small-scale nurseries on the lives of group members and/or communities. They regarded the impacts of nurseries as being important to technology transfer or information dissemination. The establishment of private nurseries was regarded as an embodiment of technology transfer. Other than this, the impacts of small-scale nurseries on communities, such as the encouragement of forestry activities at schools, were not reported.

The DFO emphasized that nursery activities should have commercial aspects, so that they would contribute to poverty alleviation and food security from now on. He explained that commercialization of nursery activities would also be helpful in changing the dependent attitudes of group members and FD officers. He added that it was expected that small-scale nurseries would be continuously managed by generating income through the sale of seedlings. The FD nursery influenced the price of seedlings when women's groups sold their seedlings, since the FD also sold a small amount of seedlings produced at the nursery to farmers. However, the DFO predicted that the influence of the FD nursery would decline in future, so that women's groups would become better able to control the price of seedlings.

With respect to the integration of forestry activities into other activities, the officers seemed to think that farmers should manage both forestry and agricultural activities on their own to avoid the competition with time and labor between them.

## 2.2 Concerns of Location chiefs

The general thought about small-scale nursery by Location chiefs was that

seedling production was important because farmers needed to plant more trees because of the degradation of forests due to the population growth and drought. The Kwavonza Location chief explained that the local residents cut trees for making charcoal, which was a common practice in the area, especially when droughts occurred. Since the primary duty of Location chiefs was to address general community issues, they did not play a specific role in the functioning of small-scale nurseries managed by women's groups. Thus, they did not know small-scale nurseries in detail. The Location chiefs mainly intervened in the small-scale nurseries by helping women's groups solve problems related to their nurseries when women's groups asked chiefs for their assistance. For example, when goats belonging to local villagers damaged seedlings at a group nursery or when a group treasurer misused group money in relation to its nursery, the Location chiefs were asked to help resolve the problems. Besides, the chief in the Kavonza location and the senior village elder, who was assigned by the Location chief to assist community mobilization, in the Nzambani location assisted women's groups to obtain outside support, when women's groups asked them to do so. The Kwavonza Location chief asked the FD and/or KEFRI to provide material support. The senior village elder introduced women's groups to NGOs and/or governmental agencies, such as the FD and/or the MoA. He also facilitated communication among women's groups that had been supported by outside agencies and women's groups that needed outside support, so that they could share information about where and how they might gain outside support. They also encouraged farmers to organize groups to produce more seedlings because they thought that organized groups would receive more outside support.

These facts suggested that Location chiefs were heavily dependent on outside support.

The Kwavonza Location chief realized that small-scale nurseries facilitated tree planting in the area by providing seedlings. The chief realized that small-scale nurseries facilitated the transfer of nursery management techniques from women's group to women's group. The establishment of private nurseries was one of the outcomes. On the other hand, financial impacts of small-scale nurseries were rarely realized. The Kwavonza Location chief commented that the fact that nurseries contributed little to daily income generation was one of the hindrances to managing nurseries continuously. With regard to difficulties of nursery operation, he also referred to the severe environment in terms of water availability and termite control. However, he did not seem to properly understand problems and their causes related to nursery management. The results of the interviews with the chiefs and the senior village elder are summarized in Figure 5.9.

### 2.3 Approaches by development projects

Interviews were conducted with officers of two development projects: the Kitui Agricultural Project (KAP) and the Sasol Foundation (SASOL). It was revealed through the implementation of the life histories of the women's group that both projects influenced the abandonment of some group nurseries. Results of the interviews are summarized as follow (Figure 5.10).

The KAP was a project implemented by governmental agencies with financial support from DANIDA, while the SASOL was a local NGO. Both projects aimed at wholistic community development or natural resource management by participatory

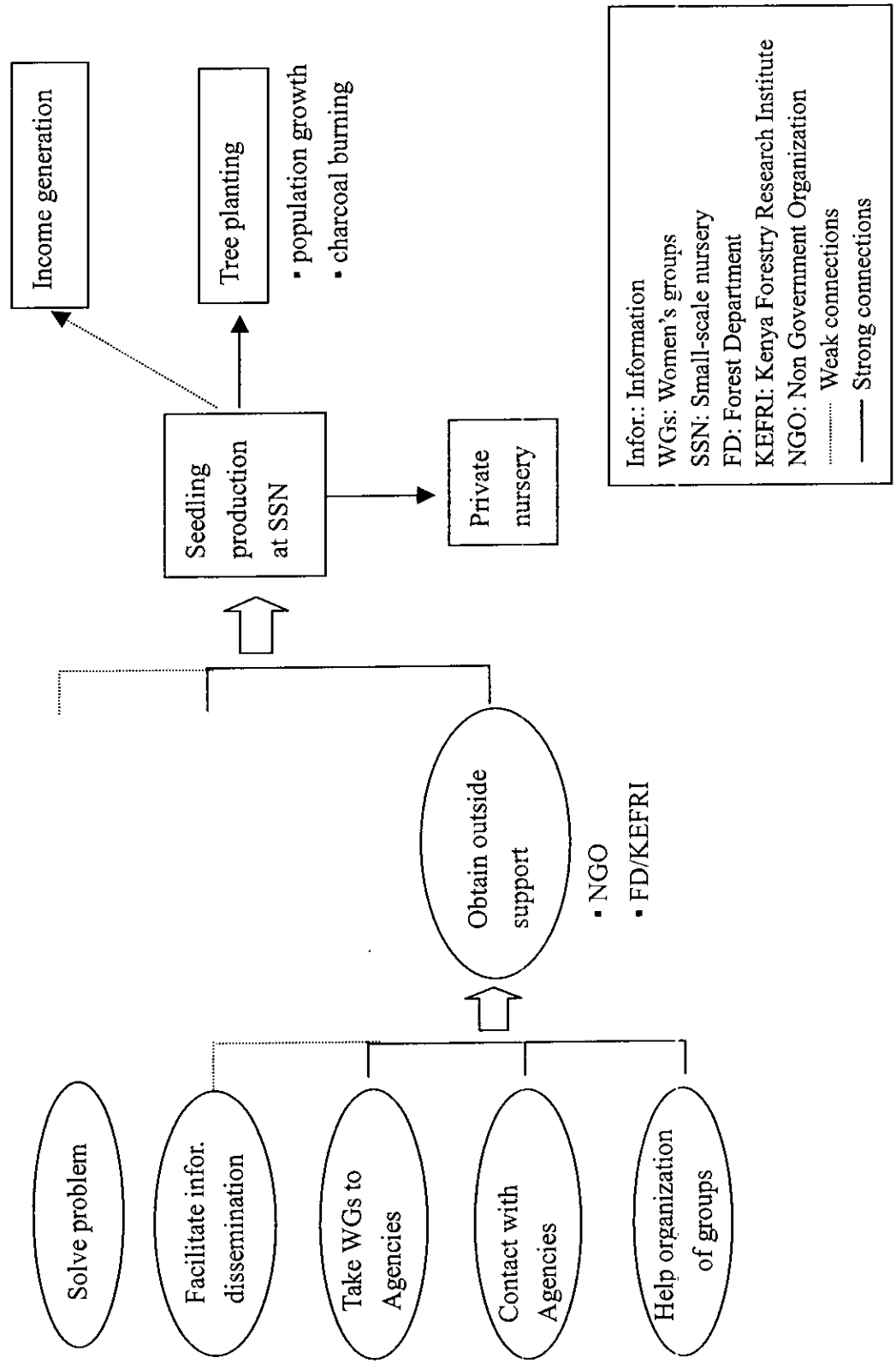


Figure 5.9 Intervention by the Location chiefs

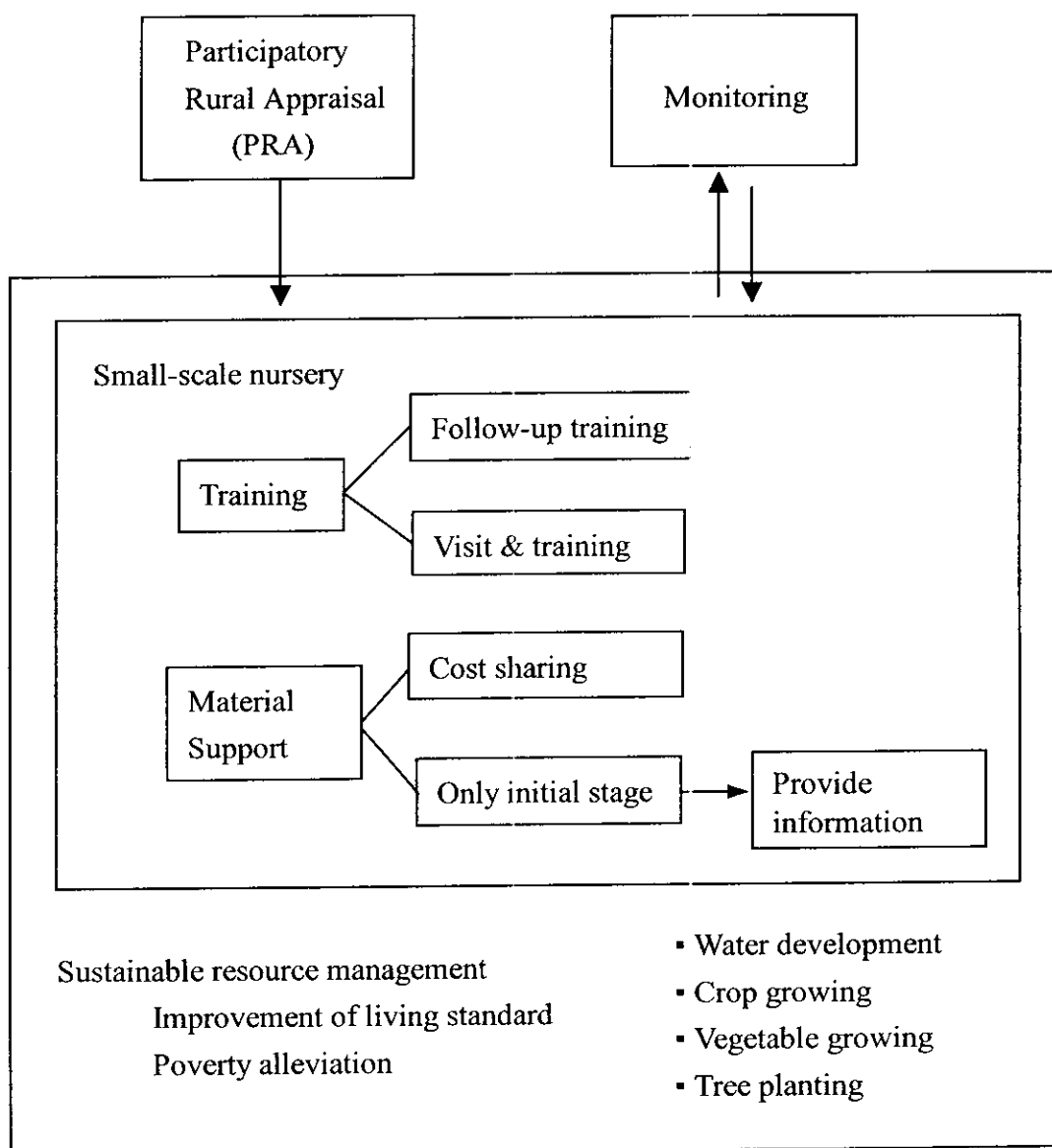


Figure 5.10 Intervention by the development projects

approaches; thus, nursery activities were regarded as an activity that contributed to these goals. The super goal of the KAP was to improve the living standard and alleviate poverty through the increase of crops, livestock, and forest products. The KAP involved eight departments, including Agriculture, Veterinary, Livestock, Forestry, Land Rehabilitation, and Social Service. In the case of the KAP, after the implementation of PRA, communities themselves decided what should be done and by whom. When a community decided to establish small-scale nurseries, the KAP assisted by providing technical and material support.

The main activity of the SASOL was the development of water sources. According to the manager, it was very common that people wanted to establish tree nurseries for obtaining benefits from trees after they developed water sources with assistance of the SASOL. When women's groups requested the SASOL to help them establish group nurseries, the SASOL provided technical assistance and polythene tubes. The SASOL expected that women's groups would manage their nurseries by themselves as commercial enterprises, so that it provided the material support only in the first and the second years, and then, it gave the groups information where they would be able to buy polythene tubes. In addition, the SASOL provided assistance for vegetable growing for income generation, leadership training, and training on natural resource management and community mobilization.

The approaches of both projects integrated nursery and forestry activities into other activities in farmers' lives. Based on their views and the activities mentioned above, the following impacts of group nurseries on members' lives and communities were expected: income generation through the sale of seedlings and trees planted,

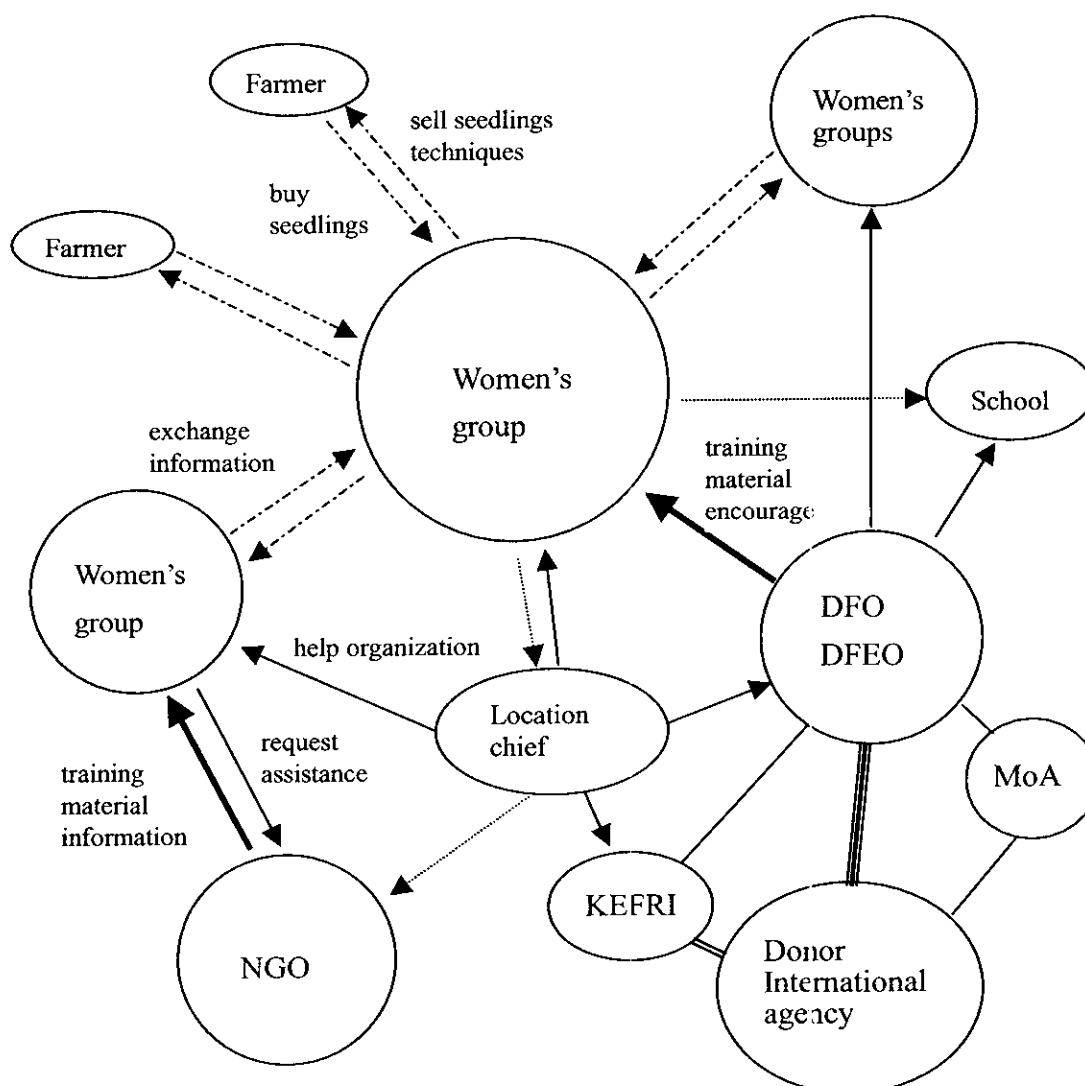
increased living standard through tree planting besides a financial dimension, and contribution to sustainable ecological resource use through tree planting. In addition, it was expected that communities would enhance their capabilities to identify problems and then plan, implement, and monitor actions taken.

#### 2.4 Interventions by outside agencies

Interventions by outside agencies in the small-scale nurseries managed by women's groups are shown in Figure 5.11. The interviews were made because it was assumed that outside agencies influenced the continuation or the abandonment of small-scale nurseries. However, only the Meko women's group out of the eight was supported by the FD and the Location chief, so that these agencies did not directly influence their nursery operations. In other words, general support such as authorization of nursery activities gave the same conditions for all women's groups, thus, it did not directly influence the continuation or the abandonment of their nurseries. With regard to development projects, it was revealed through the implementation of the life histories of the women's groups that the KAP and the SASOL directly influenced the abandonment of some group nurseries. In the case of a women's group that abandoned its nursery due to the intervention of the SASOL, the assistance for the construction of a shallow well influenced the abandonment. It should be noted that not only direct intervention into group nurseries, but also indirect intervention, influenced the abandonment of the nurseries.

From the viewpoint of sustainability, it was revealed that the transfer of technology, including the establishment of private nurseries, was commonly regarded





DFO: District Forestry Officer  
 DFEO: Divisional Forestry Extension Officer  
 MoA: Ministry of Agriculture  
 KEFRI: Kenya Forestry Research Institute  
 NGO: Non Government Organization

Figure 5.11 Intervention of outside agencies

as an impact of group nurseries. It was also revealed that most of the agencies thought that small-scale nurseries should have contributed to income generation, however, the contribution was rarely observed. They considered that the contribution to income generation of nurseries influenced their sustainability.

Beside, the results of the interviews revealed that there was a gap between perspectives of the agencies and those of group members. Income generation from small-scale nurseries was a main issue about which most of the agencies were concerned. It seemed to be ideal that women's groups continuously manage their nurseries by generating income. Commercialization of small-scale nurseries, on the other hand, raised issues about marketing, gender, and seedling production for domestic planting. Although the agencies emphasized the importance of nursery operation for commercial purposes, they hardly addressed the marketing of seedlings. Market problems would appear as a result of the encouragement of seedling production for commercial purposes in near future. Income generation from nurseries would benefit group members or women. However, there were concerns that men would entry nursery ventures and dominate them after nursery activities were commercialized. The DFO agreed with this prediction. In fact, it was reported that women were marginalized from the business of non-timber forest product in India as a result of men's entry in the business, after the business became large scale venture (Campbell, 1991). An experience of the Ilima women's group also supported this concern. Group members reported that they quit brick making because they were out competed by young men who brought new technology to make bricks. The third issue was the necessity of support for women's groups that managed their nurseries

mainly for the procurement of seedlings for domestic planting. As revealed in the previous section, some women's groups continued their nurseries for the procurement of seedlings for domestic planting. The agencies should care about women's groups of this type as well as women's groups that manage their nurseries for commercial purposes.

Following to the issue of income generation, dependency of women's groups and even Location chiefs and FD officers was another main issue. It was revealed that Location chiefs and even FD officers heavily depended on outside support, while the DFO and officers of the development projects were concerned about their dependency. Cost-sharing, which development projects introduced frequently in these years, was a countermeasure against such dependency. The agencies also expected that the women's groups would manage their nurseries independently by generating income through the sale of seedlings.

Cost-sharing seemed to be effective for this sake, however, it should have been introduced carefully. As some women's groups reported, failure to provide cost-sharing by an agency demotivated members to continue their nursery. It was also reported that cost-sharing caused conflict among members because some members failed to pay financial contributions. The problem was that the agencies did not seem to realize these potential negative impacts of cost-sharing.

## CHAPTER VI

### CONCLUSION

#### 1. Factors influencing the sustainability

The first objective of this research project was to clarify factors influencing the sustainability of small-scale nurseries in the context of the entire daily lives of farmers. It was assumed that the factors would be clarified through a comparison of members' perspectives on small-scale nursery activities among women's groups that continued their nurseries and women's groups that abandoned their nurseries in terms of importance awareness and resource allocation. Members of the groups were asked to score small-scale nursery and other daily activities based on individual perspectives. In addition, since a decision about the continuation or abandonment of a nursery was made as a group, group perspectives on nursery activities in the historical context of group's operation also were clarified.

In conclusion, the following points were identified. First, it was revealed that there were two types of women's groups even among the groups that continued their nurseries. This heterogeneity had not been anticipated. The first type consisted of women's groups that managed their nurseries mainly for commercial purposes. This type was named type A for convenience. Type A groups were very aware of the importance of small-sale nurseries in terms of income generation and food procurement, and allocated many resources to them. On the other hand, the other type (type B) consisted of women's groups that managed their nurseries mainly for domestic planting or diversification of income sources. Thus, type B groups were

less aware of the importance of nurseries in terms of income generation and food procurement, and, thus, allocated fewer resources to them. Incidentally, women's groups that abandoned their nurseries were named type C for convenience.

Since type B groups were aware of the importance of nurseries to almost the same degree as type C groups, the degree of the importance awareness did not necessarily influence the continuation or the abandonment of nurseries. In the same way, the degree of resource allocation also did not influence their decisions about their nurseries.

However, although the degree of the importance awareness and resource allocation, which were shown as scores, did not necessarily indicate differences between women's groups of type B and type C, the reasons of giving the scores were different between them. For example, both allocated few resources to small-scale nurseries; however, type B groups developed alternative tools for nursery work to reduce costs. Type C groups complained about the lack of tools and/or materials without efforts to develop alternatives. For another example, women's groups of both type B and C were little aware of the importance of nurseries in terms of income generation. In the case of type B, a reason for this was that seedling production was mainly for domestic planting or diversification of income sources. On the other hand, women's groups of type C considered that nursery activities were less important because their members had other income-generating opportunities. In addition, perspectives on the necessity or benefits of small-scale nurseries were different between groups of type A and B, and groups of type C. The former realized the importance of nurseries in accordance with the importance of tree planting. Type C

groups, on the other hand, diminished necessity of nurseries because they had met their demand for seedlings, learned nursery management techniques, or transformed from managing a nursery to other new activities.

Another point which was revealed from the survey was that factors influencing the sustainability of small-scale nurseries could be categorized into four groups. Although factors influencing the continuation and factors influencing the abandonment were different, these factors were classified into the same four categories: necessity and/or benefits, outside support, priority of other activities, and resource allocation. Thus, the balance of these four categories seemed to influence women's groups in their decisions to continue or abandon their nurseries. These four categories interacted with each other and the balance of them changed from time to time. Thus, every women's group had the possibility of continuing, abandoning, or restarting a nursery. This was an important finding as this research project was developed based on the assumption that there were only two types of women's groups: those that continued their nurseries and that did not.

In addition to what has been concluded above, another point related to gender was also revealed in relation to the factors influencing the sustainability of small-scale nursery. It was assumed that men's intervention in making decisions about nursery management hindered women's control of nursery operations. However, it was found that the ways of men's intervention varied and some of them actually assisted women in their nursery management activities. As a result of the intervention that helped women with their nursery work, men also influenced decision making about nursery management. In this case, men's intervention did not constraint nursery

operation by women.

The other noteworthy point was that all women's groups enjoyed group nursery activities. Since all the eight women's groups enjoyed nursery activities to almost the same degree, it appeared that the degree of pleasure did not influence the continuation or the abandonment of nurseries. One of the main reasons for the high scores was that group members could socialize during nursery work. They exchanged ideas or counseled each other about agricultural activities or home affairs, and had opportunities to meet people from outside the community. This may have been a common idea of not only small-scale nursery management, but also other group activities. The other reason for the pleasure was that members got new knowledge or learned new techniques about nursery management through group nursery work and taught it to others. Although some women's groups eventually abandoned their nurseries in spite of such great pleasure, the pleasure likely motivated most women's groups to continue or restart their nurseries.

## 2. Rethinking the meaning of sustainability

The second objective of this research was to rethink the meaning of sustainability of social forestry or development projects. Conventionally, the sustainability of development projects has been evaluated only by the continuation of the project activities themselves. Hence, in the case of the small-scale nursery approach by the SFTP, sustainability was measured by the continuation of nurseries in the project region. However, it was revealed that the influence of nurseries remained in the lives of group members or group operation in various forms. One was an

understanding of nursery management techniques. This was shown by the establishment of private nurseries by group members and the re-establishment of group nurseries without technical assistance. Continued recognition of the necessity and/or benefits of small-scale nurseries was another influence of the small-scale nursery approach. Group members realized the necessity and/or benefits of seedling production through group nursery operation. Small-scale nurseries also influenced tree planting activities by members and other local residents in the area. Group members received benefits from trees planted as a result of seedling production. Moreover, new activities, such as tree planting and making medicine from the trees, resulted from nursery activities.

In addition, as discussed in the previous section, every women's group had the possibility to continue, abandon, or restart its group nursery depending on the balance of the four categories of factors: necessity and/or benefits, outside support, priority of other activities, and resource allocation. From these points, it can be concluded that the sustainability of social forestry or development projects should be evaluated in a broader sense including impacts of project activities in the long-term view.



## **CHAPTER VII**

### **RECOMMENDATIONS**

#### **1. Recommendations for social forestry projects**

Based on the results of this study, the following recommendations were identified for social forestry and development projects. The first was that the projects should tailor their activities according to needs and/or preferences of each target group. In the case of the small-scale nursery approach, the projects should provide different kinds of support to different types of women's groups. For example, for women's groups of type A that managed their nurseries mainly for commercial purposes, the projects should assist them in marketing and provide them with information on the purchase of materials, such as polythene tubes. For type B groups that managed their nurseries mainly for the procurement of seedlings for domestic planting, on the other hand, the projects should provide information on the proper use of local materials and encourage the groups' development of alternative tools for nursery work. In this way, social forestry projects should be able to provide suitable support for each target group.

The second recommendation was that social forestry projects should try to extend farmers' perspectives on the roles of tree planting in their entire daily activities. Although group members recognized the relationships between tree planting and other daily activities comprehensively, some relationships were commonly overlooked as explained in the section 1.3 in Chapter V. The examples which were given in that section suggested that there was room to extend farmers' perspectives on uses of trees,

such as for food and fodder. If farmers realized such uses of trees or interactions among forestry and other activities, they would be able to enhance the contribution of forestry activities to income generation and/or food procurement.

For this sake, it is important for social forestry or development projects to understand forestry activities in the context of entire farmers' lives and their perspectives on their daily activities. Understanding the relationships among farmers' daily activities allows the projects to provide appropriate support. For example, when projects are requested to assist with income generation, they frequently try to develop activities that directly generate income. However, if the project officers understood that fetching water was a constraint to income generation activities, they would develop water resources, which would be a more efficient, but indirect, way to encourage income generation activities. Another case was given from the results of this survey. Some women's groups generated only small amounts of money from their nurseries, but they generated income through tree planting as a result of seedling production. In this case, the projects supported their income generation indirectly through assistance in their nursery activities. This suggested that project support for tree planting also contributed to income generation in the same way, even if farmers earn a small amount of money from tree planting directly, since tree planting frequently contributes to the increase of crop harvest which, in turn, generates income.

The next recommendation is given to donor or international agencies rather than social forestry or development projects. The sustainability of the projects should be evaluated in a broader sense including impacts of project activities on the

lives of target groups or communities from a long-term view. As discussed in Chapter II, the continuation of project activities themselves is not necessarily important to local residents. Rather, how or what extent the activities contribute to the sustainability of their livelihood is important. Besides, the results of this research showed that women's groups maintain the ability to restart nurseries even if they had abandoned them in the past. Thus, the evaluation that is conducted at one moment does not necessarily show the sustainability of the projects from the long-term view. Furthermore, even if women's groups abandon their nurseries, some cases did not necessarily indicate a lack of sustainability. As we have seen in Chapter V, some women's groups abandoned their nurseries because they had successfully met their demand for seedlings, understood nursery management techniques, or transformed from nursery activities to other new activities. This fact suggests that the important point is to understand reasons why target groups abandon activities that the projects support. If the reasons result from inappropriate approaches, the projects should revise their approaches. If the reason results from the achievement of target objectives, the abandonment should not be considered to indicate a lack of sustainability. In addition, it is important for target groups to keep the activities that they experienced during the projects open as options for further use. It may be necessary to remind them of these activities in order to prevent them from forgetting about them completely. It also may be necessary to give momentum to them when they want to restart the activities at some later time. Although this recommendation is mainly for sponsors of the projects, the project officers should also try to make the sponsors understand this new concept of assessing the sustainability of projects.

It is recommended that project officers should consider providing support in flexible ways. Development projects frequently give intensive support over a short period. This is effective and efficient in general. However, they do not necessarily need to provide intensive input in an official and systematic way. It was revealed in this survey that some women's groups obtained support from agencies through group members who were employed by the agencies, although they were not official targets of the agencies' activities. This fact suggests that projects have room to provide their support in such flexible ways, or to combine a period of providing intensive input to a target and a period of assisting it in flexible relationships.

The provision of flexible support may be appropriate for following up project activities. According to the author's experience, maintaining relationships with target groups for the long-term was more difficult than providing intensive input in the short-term. One of the reasons was that follow-up activities were seldom included in the project operational plans. Development projects are frequently expected to conduct new activities and extend targets. However, it is necessary to make sure that follow-up is also important as well. Unless the follow-up is conducted properly, it is difficult for project activities to become fruitful. It is expected that follow-up also weights newly when the sustainability of projects is evaluated in a long-term view.

Recommendations about technical support were also suggested by comments from women's groups. It was revealed that the women's groups needed further technical advice on nursery operation and tree planting in spite of the fact that most of them had been given technical advice for more than five years. According to them, they encountered new pest and disease problems after the withdrawal of the SFTP

support. Other techniques, such as propagation methods or specific uses of trees, which they wanted to know were also identified after the termination of the SFTP. From these findings, it is suggested that the projects should provide information concerning how or which institutions women's groups or farmers can contact for assistance with technical problems or to get further information related to the activities, such as processing or marketing before the projects are withdrawn. In accordance with rethinking the sustainability of projects, project support in such a long-term view is also necessary.

The fact mentioned above also indicated that women's groups had less information than they were assumed to have. In this specific case, some of the techniques that group members wanted were developed and disseminated extensively in Kitui District by the sequential project of the SFTP. In fact, the information was mainly disseminated to new targets in the area, because it was considered that the concentration of the provision of support on the specific women's groups lacked equity and it fostered their dependency. However, from the results of this study it is recommended that new information should be disseminated to the previous target groups as well as new targets, although it is difficult for the projects to cover both old and new targets so the issue of equity remains important.

With regard to technical support, social forestry projects are advised to show options for techniques to target groups because appropriate techniques are different according to environmental and social conditions and the preferences of local people. For example, some group members felt that bottle watering required less labor than micro catchments, and others felt vice versa. Thus, the projects should show various

techniques, so that farmers can choose suitable techniques for them from the options. In addition, the projects should encourage farmer-innovation and help them share new ideas among them. Their innovations must be simple, so that other farmers can easily follow them.

As the DFO pointed out the dependency of women's groups, Location chiefs, and FD officers was a problem. As long as the local residents depend on outside support, they cannot ensure the sustainability of their livelihoods by themselves. Some approaches that were conducted by conventional social forestry or development projects have fostered dependency of the local residents unintentionally. Although material support including the provision of tools works as an incentive for women's groups or farmers to manage nurseries or plant trees, material support should be provided carefully; otherwise it only fosters their dependency. Cost-sharing, which is frequently introduced by development projects in these years, may be a good idea to change their attitude. Cost-sharing calls on their responsibility for their activities. However, cost-sharing should also be introduced carefully, because its introduction is likely to cause misunderstandings between project officers and their targets, which discourages the target audiences from doing the activities. In other cases, cost-sharing jeopardizes the solidarity of a group because some members have difficulty giving financial contributions. The projects need to recognize these potential problems when they introduce cost-sharing as a development strategy.

Dependency by target groups also hinders the accomplishment of projects' objectives or goals. In the case of the small-scale nursery approach, some women's groups joined nursery activities because they wanted to obtain valuable rewards.

They were not interested in seedling production or tree planting, so that they pulled out of nursery work after the withdrawal of the project support. This meant that the project wasted its resources without promoting small-scale nursery activities. When women's groups managed nurseries independently, it was obvious that they were eager to produce seedlings. Although one of the objectives of social forestry projects is to stimulate interests in local residents in forestry activities, it is important for the projects to select appropriate target individuals who are serious about the activities in order for the achievement of the projects' goals.

The last recommendation for social forestry or development projects is that they should cooperate with each other. At least, they should try to avoid repetitions of providing similar support to the same targets. It is desirable that each project should consider collaboration with other projects or connection of its support with other project's support. For example, it is reasonable that social forestry projects provide support for forestry activities to women's groups after they develop water sources with another agency's assistance. The projects also should exchange information about their activities and targets' needs, so that some projects can find appropriate targets for their activities and others can meet the needs of their targets which are beyond the scope of the projects. In fact, collaboration among the projects is not easy. It is expected that local governmental agencies, who are frequently partners of projects sponsored by donor or international agencies and are familiar to projects conducted by NGOs in the area, will play a coordination role among the projects.

## 2. Recommendations for women's groups

While social forestry or development projects need to change their approaches, the local residents or recipients of the projects also need to change their attitudes in order to make the projects more useful in improving their lives. First, women's groups or communities should have visions or strategies about their lives. The results of the life histories of the women's group revealed that some groups conducted group activities randomly according to the availability of outside support. There is an argument that this flexibility is their strategy. This is understandable, however having a vision is also recommendable. When people have a common vision, they make an effort to put it into practice. After they have visions, it is expected that Location chiefs or other community leaders would play a role to help them find specific outside support when they need it. This does not mean encouraging their dependency. It is expected that social forestry or development projects will be conducted by donor and international agencies, or local NGOs in the next few decades. The important point is that the local residents wisely use outside support according to their visions. When the local residents work actively and responsibly as equal partners with the projects, they are not dependency. Without their participation, social forestry cannot play important roles in rural development or the improvement of their lives.



## **CHAPTER VIII**

### **FURTHER STUDY**

The primarily goal of this research project was to investigate the possible integration of forestry activities into other daily activities in farmers' entire lives. This study tried to clarify why the integration was important and why it was not achieved in conventional social forestry projects. It also tried to clarify how women's groups perceived small-scale nursery activities in their lives as a starting point to investigate the integration. Although the flow charts of goods and services among the daily activities gave some ideas to promote the integration of forestry activities into other daily activities, the practice of the integration in this respect is superficial. More fundamental change in project approaches is necessary to address the integration. How or what should social forestry projects do to take such an integrated approach? Although the KAP took the wholistic approach by involving various governmental departments, FD officers still seemed to be concerned only about trees or seedlings. They paid little attention to women, for example, although they were supposed to work together with officers from another department, who were in charge of gender issues. It is desirable to involve multi-disciplinary personnel and conduct PRA together, however, it is frequently observed that the personnel from different departments might work in close proximity, but actually do not integrate with each other. It is necessary for the projects to change their approaches or attitudes fundamentally to address such integration.

When social forestry projects take integrated approaches, how do the

approaches influence project performance or output? This question leads to issues about evaluation. When approaches or activities of the projects aim at integration, the evaluation should also be made from an integrated viewpoint. In other words, how much tree planting or nursery activities contribute to the improvement of farmers' lives should be evaluated rather than simply the number of trees planted or their survival rate. One constrain to this approach is that the contribution of tree planting or seedling production in a small number to farmers' livelihood is frequently small and implicit. In addition, in the case of trees, it takes time to yield benefits, so that it is more difficult to evaluate their contribution within a project's time period. An idea to solve this problem is to conduct post-evaluation of projects in the past and predict long-term impacts of forestry activities by local residents which are supported by a project based on the results of the evaluation. Or, conducting interviews with farmers who have already benefited from trees planted may also provide useful information for the prediction of project impacts in a long-term vision.

The integration of forestry activities into farmers' other daily activities is essential for making social forestry play their roles satisfactorily in rural development or contribute to improving the living standard or well-being of local residents. Practical approaches to address the integration and evaluation methods from the viewpoint of the integration should be studied as a next step in understanding this process.

**APPENDIX 1**  
**MEANS OF THE SCORES OF DAILY ACTIVITIES**

Muweto Women's Group

Activity \ Aspect	Importance awarness				Resource allocation		
	Income	Food	Pleasure	Decision	Time	Money	Energy
Crop Growing	5.0	5.0	5.0	3.0	5.0	5.0	5.0
Livestock keeping	4.7	4.9	4.5	3.0	5.0	5.0	5.0
Tree planting	3.9	3.7	5.0	3.3	2.0	2.0	3.6
Small-scale nursery	3.9	3.7	5.0	3.3	2.5	3.0	4.9
Basket making	2.7	2.9	4.2	5.0	1.0	2.0	2.7
Fetching water	1.0	1.0	1.1	5.0	3.2	1.0	2.9
Collecting firewood	1.8	1.8	3.7	4.8	2.6	1.0	3.0

Meko Women's Group

Activity \ Aspect	Important awarness				Resource allocation		
	Income	Food	Pleasure	Decision	Time	Money	Energy
Crop Growing	4.2	5.0	5.0	3.6	5.0	4.9	5.0
Livestock keeping	4.0	4.2	4.6	4.0	2.0	4.2	2.0
Tree planting	4.1	3.4	5.0	3.8	2.0	2.6	2.4
Small-scale nursery	3.0	3.0	5.0	4.1	4.7	3.5	3.6
Basket making	1.8	1.8	2.6	5.0	1.0	1.3	1.5
Fetching water	1.0	1.5	2.6	5.0	1.1	1.0	1.5
Collecting firewood	1.6	2.2	3.8	4.6	1.5	1.1	1.5

Nindi-nguka Women's Group

Activity \ Aspect	Important awarness				Resource allocation		
	Income	Food	Pleasure	Decision	Time	Money	Energy
Crop Growing	4.8	5.0	5.0	4.0	5.0	5.0	5.0
Livestock keeping	3.5	3.7	4.3	3.7	4.8	4.7	4.0
Tree planting	2.0	3.7	4.3	3.7	3.0	2.0	3.0
Small-scale nursery	2.0	1.8	5.0	3.7	2.0	2.0	2.0
Basket making	1.0	1.0	4.2	5.0	1.0	2.0	1.0
Fetching water	1.0	1.0	3.0	5.0	1.0	1.0	1.0
Collecting firewood	1.0	1.0	4.0	5.0	2.0	2.2	2.0

## Kilui Women's Group

Aspect Activity	Importance awareness				Resource allocation		
	Income	Food	Pleasure	Decision	Time	Money	Energy
Crop Growing	5.0	4.9	4.4	3.3	5.0	5.0	5.0
Livestock keeping	2.8	2.9	2.4	3.7	2.9	3.2	2.6
Tree planting	2.1	2.3	2.4	3.7	1.9	1.6	2.3
Small-scale nursery	2.6	1.9	3.7	3.8	2.4	2.0	2.9
Basket making	1.2	1.1	1.3	5.0	1.1	1.0	1.1
Fetching water	1.1	1.1	1.6	5.0	1.6	1.5	2.1
Collecting firewood	1.1	1.3	1.8	5.0	1.3	1.1	1.9

## Ikungu Women's Group

Aspect Activity	Importance awareness				Resource allocation		
	Income	Food	Pleasure	Decision	Time	Money	Energy
Crop Growing	5.0	5.0	5.0	3.0	5.0	4.0	5.0
Livestock keeping	3.9	4.1	4.5	3.2	4.3	4.3	4.2
Tree planting	2.5	2.2	3.8	2.8	1.1	1.0	2.6
Small-scale nursery	1.0	1.0	4.1	4.6	2.0	1.0	2.0
Basket making	1.5	1.5	2.7	5.0	1.0	1.2	1.0
Fetching water	1.2	1.4	3.5	5.0	1.0	1.1	1.0
Collecting firewood	1.5	1.4	3.9	5.0	1.9	1.0	2.7

## Ilima Women's Group

Aspect Activity	Importance awareness				Resource allocation		
	Income	Food	Pleasure	Decision	Time	Money	Energy
Crop Growing	4.3	4.8	5.0	3.8	4.9	5.0	5.0
Livestock keeping	4.5	4.3	4.9	3.8	3.8	4.3	3.4
Tree planting	3.7	4.3	5.0	4.2	2.0	2.0	2.0
Small-scale nursery	3.6	2.0	5.0	3.8	2.7	2.0	2.0
Basket making	2.0	1.5	2.2	5.0	1.4	1.8	1.4
Fetching water	1.1	1.1	1.0	5.0	4.0	1.9	3.0
Collecting firewood	3.2	3.3	4.0	5.0	2.0	1.1	2.2

## Syolei Women's Group

Activity \ Aspect	Important awarness				Resource allocation		
	Income	Food	Pleasure	Decision	Time	Money	Energy
Crop Growing	4.5	4.7	4.6	3.7	5.0	4.8	5.0
Livestock keeping	3.3	3.1	3.3	3.5	1.8	3.2	2.3
Tree planting	2.5	3.5	4.3	4.5	2.0	1.5	2.0
Small-scale nursery	2.0	2.5	4.9	4.3	2.0	1.8	2.0
Basket making	3.6	3.9	3.8	4.8	1.0	2.6	3.6
Fetching water	1.2	1.4	3.3	5.0	1.0	1.2	1.4
Collecting firewood	2.3	2.7	4.4	4.8	1.0	2.2	3.3

## Manyoleni Women's Group

Activity \ Aspect	Important awarness				Resource allocation		
	Income	Food	Pleasure	Decision	Time	Money	Energy
Crop Growing	4.5	5.0	4.9	3.9	4.7	5.0	5.0
Livestock keeping	2.7	4.0	4.3	3.9	2.6	2.5	1.5
Tree planting	3.2	4.0	5.0	3.9	2.0	1.0	1.0
Small-scale nursery	1.0	1.0	4.4	4.1	2.0	1.0	1.9
Basket making	2.3	1.8	3.2	5.0	1.5	1.9	1.4
Fetching water	1.1	1.0	4.3	5.0	1.9	1.3	3.0
Collecting firewood	1.0	1.4	4.5	5.0	1.2	1.1	1.3

**APPENDIX 2**  
**LIFE HISTORIES OF THE WOMEN'S GROUPS**

Life History of Ikungu Women's Group		Year	1970	75	80	88	90	98	2001
Group activity									
Group formation	The group was established								
	Group rules were made								
Agencies assisted the group									
Number of group members		25	25	22	22	21			15

- Notes: 1. The group stopped its group nursery at the beginning of 2001 due to lack of seeds, tubes, watering cans, and sieving. They used tools which were provided by JICA until they worn out at the beginning of 2001. They collected seeds locally, but, they could not get seeds from the trees from which they got seeds.
2. The group have not sold any seedlings produces at the group nursery. The group distributed the seedlings to the members.
3. A member run away due to hard work of nursery work in 1989 and four members also escaped because they broke a group rule, which required them to pay a fine for absent of nursery work.
4. Two members started their private nurseries in 2000 and 2001 for domestic tree planting.
5. Goat rearing was stopped in 1980, because a disease prevailed.
6. The group have not gotten any support from non-governmental or governmental agencies except JICA.
7. The group did not open group account.

Life History of Muweto Women's Group		WG: women's group	
Year	1977	1999	2001
Group activities	Cultivation, Digging terraces (Top) 87 People's plantation (Top, Muli) 88 Small-scale nursery (Wendo, Top) 89 Rearing goats (Muli) 94 Small-scale nursery (Wendo, Top) 96 Merry go round (Top) 97 Rearing goats (Top) 98 Merry go round (Top) 99 Small-scale nursery (Muweto) 2000 Merry go round (Muweto)		
Group formation	77 Top WG started (still continues up to 01) 86 Muli WG started (continues up to 01) 88 Wendo WG started	97 Muli WG opened group account 98 Wendo WG collapsed 99 Muweto WG established	
Agencies assisted the group	88 SFTP assisted establishment of Wendo WG	92-93 Food for work (for the location) (constructing roads)	98 SFTP pulled out its support
Number of group members	Top 7 (increased)	Muli 10 (increased) Wendo 13	Top 23 Muli 22 Muweto 14

Notes: 1. Top WG and Muli WG stopped peoples' plantation due to political influence. The location chief dismissed SFTP activities.

2. In 2000 some members had private nurseries, but no member has in this year.

3. Wendo WG was established for its nursery supported by the SFTP. The group collapsed in 1998 following the withdrawal of the support.

4. Muli WG opened the group account in 1997 by using registration and monthly fee. They did not use money generated by rearing goats to open the account. The money got by selling goats was deposited in the group account.

5. Muweto WG has not opened group account, but they were planning to have one in the near future.

6. Withdrawal of project support by the SFTP led three groups to combine one group to attract outside help besides assisting each other. Group members also wanted to raise their own seedlings for planting.

7. Not all members of Top WG and Muli WG joined Muweto WG. Top WG and Muli WG still existed.

8. There were/are projects by DANIDA, Sida (Swedish International Development Agency), and KENGO (Kenya Energy Non-government organization) around the area, but the groups did not get any support from them. They were not supported by the MoA. Once FD staff came to Muweto WG under the KAP by DANIDA, but the group was not chosen as a target.

## Life History of Kilui Women's Group

Year	1995	96	97	98	99	00	2001	
Group activities	Merry go round							
	Shallow well construction							
	Tree nursery						Tree nursery	
	Growing vegetable							
	Cultivation (help each other, for others)							
	Cultivation on group farm							
	Poultry							
	Goat rearing							
	Group formation	Group established						Group almost died
		Group became active again						
Agencies assisted the group	DANIDA provide trainig & tools for nursery 97-98 JICA assisted group nursery and trained two members							
Number of group members	25						20 15(+5)	

- Notes: 1. The first shallow well was constructed from 1995, but it was collapsed in 1997 due to elnienyo rain. After that, the second shall well was constructed immediately.
2. They grew maize and beans on their group farm.
3. The main purpose of goat rearing was to increase the number of goats and distribute them to the members. The group sold goats only twice.
4. The group stopped several activities in 2000. The group stopped poultry because a disease of chicken prevailed and all chicken died. Merry go round stopped in 1999 following drought which resulted to famine and lack of money for Merry go round.
5. The group stopped nursery in 2000 due to the lack of water and withdrawal support by DANIDA. The group restarted a group nursery in July 2001 due to the following reasons: the group members realized benefits of trees, they gave up to obtain support from DANIDA expected, and a shallow well was constructed.
6. The withdrawal of the SFTP support did not influence the abandonment and re-establishment of the group nursery. After JICA stopped support to small-scale A target farmer of the sequential projects of the SFTP was near to the group nursery.
7. The group did not open a group account.
8. The decrease of group members from 25 to 20 because some members became too old and others became sick. In 2001, status of 5 members were not clear.
9. Only one member had a private nursery. She started her private nursery, because she wanted to plant more trees on her compound and sell seedlings. She sold 900 seedlings, such as *Grevillea robusta* and oranges, and got a lot of money in 2000.



### Life History of Meko Women's Group

Year	1987	93	98	2001
Group activities	Free nursery Growing vegetables Digging terraces Merry go round Cultivating (help each other) Helping payment of dowry each other	Help school fee (two children) 89 ← → 90	97 open group account misuse group money → increase subscription some members don't pay money for cost-sharing	Shallow well 99 ← → 00
Group formation	Establish the group			
Agencies assisted the group	87-01 FD supported group nursery	93-01 JICA supported group nursery 93-95 Green Belt supported nursery	99-01 DANIDA supported nursery and shallow well by cost-sharing	
Number of members	1987 88 5 8	90 12 93 16 95 18 96 16	99 20 01 20	

Notes: 1. After the group stopped vegetable growing in 1998 due to diseases, a lack of water and land, each member planted 500 seedlings on individual compounds.  
 2. Since 1998, most members managed their private nurseries after they were trained the techniques by the group.  
 3. The group nursery produced seedlings for income generation. Private nurseries produced seedlings for domestic planting.  
 4. They used water fetched from the shallow well nearby the nursery. They used water from the well for cooking and washing clothes.  
 5. JICA withdrew its support to the nursery officially in 1999, but after that an extension agent employed by the project still visited to the group and give technical advice. Hence, the members regarded that JICA still supported up to 2001.  
 6. Two members were extension agents employed by FD. This was why the other members felt that they were supported by FD up to 2001.  
 7. From 95 to 96, the number of group members decreased because of death of two members.  
 8. Assisting each other in cultivation stopped in 1999 due to unreliable rainfall and poor health in the majority of the group members.  
 9. The cost-sharing by DANIDA for the nursery assisted to purchase seeds, polythene tubes, watering cans, pangas, wheelbarrows, jembes, shovels, and pesticides. The total cost was Kshs.5,000. The group paid Kshs.2,500.

## Life History of Ilima Women's Group

Year	1985	88	90	94	96	99	2001	
Group activities	Digging terraces	→						→
	Cultivation (help each other) (for others)	→						→
	Goat rearing	→						
	Building school (labor and money by harambee)	→						→
	Making brick and build houses (help each other)	→						→
	Cutting firewood (for school fee)	→			Group nursery			
	Planting crops (training by MoA)	→						→
	Merry go round	→						→
								shallow well
								weir
Group formation	The group was established	87 - 92 Open group account			96 -01 Open group account (2nd trial)			
Agencies assisted the group	85-88 MoA provided training	88-90 MoCultural and Services trained goat rearing		94 -99 JICA assist group nursery		01 SASOL		
Number of group members	1985 10	86 25	90 30	94 30			01 32	

- Note: 1. The group stopped goat rearing in 1990 because of diseases and the withdrawal of support by the Ministry of Culture and Social Services which assisted group members in breeding of goats besides advisory service.
2. The group stopped making bricks and house construction as group activities, because young men brought new technology, so that the group was defeated the competition in making bricks.
3. The group stopped cutting firewood, because JICA started assisting the group nursery in 1994. The group nursery was started to generate income, provide seedlings, and attract outside help.
4. The group stopped the group nursery in 1999 due to the lack of water and lack of tools. They fetched water for seedlings from a dam, but it dried up in 1999. It was 9km far away. Tools provided by JICA worn out. Money generated from other group activities was not used to purchase tools for nursery work, though the group was planning to do so. The group, however, had a plan to restart a nursery this year or later due to the last year's experience of not having any seedlings to plant or even to sell. They are preparing for fencing, but it is a little late for nursery activities. The main purpose of the group nursery is to provide seedlings for domestic planting.
5. Since the group had its nursery, three members established their private nurseries. A young male member managed his nursery from 1999 to 2000 for commercial purpose. He stopped his nursery because he became busy with work for the construction of weir.
6. The group opened the group account in 1987 using money generated through cultivation and digging terraces. The group closed the account in 1992, because they withdrew all money. It reopened a group account in 1996 by using money generated through group nursery. After the group stopped it, they deposited money generated through cultivation or digging terraces.
7. One of the reasons why they constructed shallow well and weir is a lack of water realized in 1999 for the group nursery.
8. The increase of group members was due to the awareness of benefits of group activities by non-members.



## Life History of Syolei Women's Group

Year	1975	77	78	79	94	95	96	98	2001	
Group activities	Shallow well		Construct wall in the well			Cultivation (each other)				
			Group nursery			00				
			Tree planting			Private plantation				
			Making terraces			Making medicine and sell				
			Teaching how to make baskets							
			Making bricks							
			Collecting firewood (help each other)							
			Counseling on home affairs							
						Making oil for body and sell				
						00				
						Helping construct houses				
						Financial contribution to funeral				
						Bee keeping				
						00				
					Merry go round (for school fee)					
Group formation	The group was established				Open group account			Want to close the account		
Agencies assisted the group	Catholic assisted shallow well MoWater assisted construction of the wall AMREF assisted dig the well and pump				JICA assisted the group nursery to make medicine from trees			JICA taught how to make medicine from trees MoA assisted bee keeping		
Number of group members	20		20			46			52	

- Notes:
- The group members used water fetched from the shallow-well for watering seedlings and trees as well as drinking and cooking.
  - Ministry of Water assisted the group to construct the wall of the shallow well, after the Catholic assisted to dig holes.
  - The group started the group nursery in 1978 although they did not know enough knowledge. They improved the group nursery after JICA came to assist the group nursery.
  - At present some members (9 out of the participants) have private nurseries. The main purpose is to sell seedlings. They have water source near their nurseries. The members like both group nursery and private nurseries, because they enjoyed activities as a group.
  - They planted seedlings produced at the group nursery, and used trees planted as a group for medicine. They used trees such as *Carica papaya* and *Azadirachta indica* for medicine.
  - They want to close the group account, because they are required Kshs. 20,000 as the minimum balance.
  - The number of group members have increased from 20 to 52 due to the following reasons: newly married ladies joined non-members wanted to join the group to have seedlings and get water from the well.
  - They stopped the group nursery in 2000 due to the following reasons: every members have already had enough seedlings shortage of water (the shallow well dried up in 2000), JICA withdrew support, and termite problems. They still need technical advice, such as kinds of medicine for termite, proper knowledge of use of local materials (fat container had water logging problem), and diseases, as well as material support.
  - The group stopped bee keeping in 2000, because MoA did not give cloth for protection despite making the promise.

## Life History of Manyoleni Women's Group

Year	1987	89 90	97	2001
Group activity	Cultivation (helping each other)			
	Digging terraces			
	Cutting firewood			
	Helping thatching each other			
	Merry go round			
	Small-scale nursery			
	Help paying school fee			
	Help paying dowry			
	Help widows and widowers (material support)			
	Shallow well ↔ 99			
Group formation	The group was established			
Agencies assisted the group	87-92 Green belt assisted the nursery	93-98 JICA assisted the nursery	97-99 Catholic assisted shallow well	
Number of group members	33		1998 (nursery) 20	33 20

- Notes: 1. The construction of shallow well was not completed (it did not reach water level). So that they could not get any water from it.
2. After the withdrawal of JICA support, thirteen members withdrew from the nursery activities, although they still continued their membership for other activities.
3. Eight members of the group started their own private nurseries. They explained that they did not want to vain waste water of homestead. The main purpose of raising seedlings was to provided seedlings for domestic planting. They raised different tree species at their private nurseries. Some of them also sold seedlings.
4. The group had four male members.
5. Green Belt Movement assisted the group nursery through provision of technical skills from 1987 to 2001.
6. JICA assisted the group nursery through provision of both technical and material support such as polythene tubes, sieves, and wheelbarrow from 1993 to 1998.
7. Helping to pay school fees for orphans including orphans whose parents were not group members from 1989 to 2001.
8. Giving material support to widows and widowers targeted those who were group members from 1993 to 2001.

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