

**Assessment of Extension in Sustainability of Communal Forests in Singa
locality, Sudan**

by

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Dedication

To my Mother, Father

Sisters and brothers all my family and

Friends

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Abstract

Assessment of Extension in Sustainability of Communal Forests in Singa locality, Sudan

The overall objective of this study was to assess forestry extension programs in Sennar State and their role in the steady flow of information and technical know-how to guarantee the sustainability of community forestry intervention. Two types of data were used, namely, primary and secondary data. The source of the secondary data includes the Forest National Corporation (FNC) files and archives projects documents. The primary data were principally collected through face-to-face interviewing. A sample of 147 households was interviewed.

The main findings of the study were that; the activity of community forestry is autonomous or locally driven in the study area. The traditional leaders played a substantial role in converting the plan into reality in collaboration with the FNC which provided seedlings, extension services and assignment of parcels of land for the activity of community forestry. The objectives of the communal forests were provision of social services in the village besides the environmental and recreation objectives. The level of genuine participation was excellent or good as perceived by the entire interviewed sample. All the age groups were sensitized and mobilized to participate in the activities of communal forests. The participation of the local people was hindered by natural resource-base conflicts and distribution of benefits. Some of the factors that contributed to the success of community forestry activities are represented by the sound relationship between the FNC and the local communities where systematic extension visits were organized to cover the study area. Most of the communal forests were harvested more than once, and as far as marketing of the products is concerned, different methods were used for marketing the communal forests products (auctions, through FNC, village committee). The

technical aspects of forestry are tackled by the FNC, while the managerial aspects are conducted by the local people. The results indicated that sustainability of communal forests in the study area is guaranteed due to the vital role of traditional leaders in mobilizing and sensitizing local people, and engagement of all age groups (young, mature and old) in the activities of the communal forests.

The main conclusions of this study are that; the traditional leaders have a significant role in mobilizing and sensitizing local communities to participate in community forestry activities. The main constraints and measures of risk confronting the participation of the local people in the activities of communal forest are the conflicts with nomads and among the local people, distribution of benefits, land tenure and the participation of a limited number of youth. The main recommendation drawn from the study area; is the importance of replicating these successful models of community forests in other areas that did not find the chance to be covered by the NGOs working at the study area.

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Chapter 1

Introduction

1.1. Background

The use and misuse of forest resources in developing countries has resulted in some very serious problems including deforestation, loss of biological diversity, erosion and flooding, desertification, and climate change leading to drought and famine (Gradwohl and Greenberg, 1988, Repetto, 1988). Forestry extension is one element in a strategy to provide for social and economic development which minimizes environmental degradation. The main purpose of forestry extension programs is to help local peoples examine the problems that affect their lives and to think about how they might be solved, or at least alleviated, through the use of forestry techniques applied within the range of skills and resources available (FAO, 1987). That is, forestry extension programs are directed at encouraging and facilitating discussion, decision-making and implementation of actions by local people to meet their needs. A major challenge facing the newly emerging discipline of forestry extension is how to evaluate its programs and activities. Evaluation of forestry extension is important not just to program managers and staff, but also to those who design and fund such activities and those to whom they are targeted. But evaluation types and approaches differ depending upon which client group is to be served and when the evaluation is to be performed (Mohammed, 1990).

Assessment is the process of documenting, usually in measurable terms, knowledge, skills, attitudes and beliefs. Assessment can focus on the individual and the community. The term assessment is generally used to refer to all activities use to help learn and to gauge progress. Assessment is often divided for the sake of convenience using the following distinctions: formative and summative, objective and subjective, referencing (criterion-referenced, norm-referenced, impassive), and informal and formal. (Merriam, 2005).

Assessment is often categorized as either objective or subjective. Objective assessment is a form of questioning which has a single correct answer. Subjective assessment is a form of questioning which may have more than one correct answer (or more than one way of expressing the correct answer). There are various types of objective and subjective questions. Objective question types include true/false answers, multiple choice, and multiple-response and matching questions. Subjective questions include extended-response questions and essays. Objective assessment is well suited to the increasingly popular computerized or online assessment format. In general, high-quality assessments are considered those with a high level of reliability and validity. Approaches to reliability and validity vary; however, a good assessment has both validity and reliability. In practice, an assessment is rarely totally valid or totally reliable (Black& William 1998).

1. 2. Forestry Extension Assessment

Needs of individuals for consideration in planning activities can be viewed from the standpoint of personal development. Accordingly, program planners must have a clear understanding of the present behavior of the clientele as well as the knowledge, values, attitudes and interests that shape these behaviors. For instance what do they need to enable them to participate effectively in community activities like forest conservation or reforestation? These needs could be assessed in cooperation of the clientele themselves, the community leaders or knowledgeable persons from other government agencies. Assessment of communities' basic needs\demands and/or ecological requirements should be studied through participatory action research and participatory evaluation. Problem diagnosis, analysis, and alternative solutions should be discussed (Ahmed, 1991).

Needs assessments can be formal or informal. Forestry Extension often has such a close relationship with traditional clientele when need to conduct an informal needs assessment. However, it is periodically advantageous to conduct formal needs assessments. When working with a new group, it is mandatory to conduct a formal needs assessment. Informal needs assessments can be conducted by keeping one's ear to the ground, visiting with members of the target, and frequenting meetings that they frequent (Adams, 1997).

Forestry extension often conducts informal needs assessments of the clientele by speaking with them on a day-to-day basis, visiting their tree farms to see what their issues are, and by regularly attending woodland association meetings. Formal needs assessments can take the form of personal or telephone surveys, open-ended questions on workshop

evaluations, and focus groups. In forestry extension, we have used all of these. Surveys seem to work especially well with the woodland owners and professional forester audiences (Cloughesy, 2001).

In Sudan since 1988 the process of setting up a monitoring and evaluation system (M&E) for extension has been started. This resulted in the introduction of standardized M&E forms in 1989/1990 which are to be used by the field staff of the FDEP (Fuel Wood Development for Energy Project) and several other projects in the central state. For certain extension materials a systematic monitoring was carried out, but this evaluation was in fact restricted to certain tools only and the target group was not involved. Besides pre-testing of printed materials last years has learned that the extension materials are sometimes miss-understood by members of the target group for which they are designed. Therefore there must be an assessment of the impact of the different extension programs on the different target groups (ElAichouni *et. al.*, 1991)

1.3 Problem Statement

The increasing needs and demands of the rural and urban people for forests' products together with the limited forest resources have contributed to the deterioration of the natural resources, the depletion of the forest cover and the spread of desertification. According to Danida (1996): Forest resources are depleted as a result of firewood cutting and clearance for cultivation. The total growing stock of forest resources in northern Sudan in 1996 was estimated at 871 million cubic meters. The annual allowable cut which is

estimated at 29 million cubic meters and the annual consumption at 37.5 million cubic meters shows an over-exploitation of 8.5 million cubic meters. Throughout the history of forestry in Sudan and from the experience of the previous administrative structures it has been apparent that the FNC alone cannot rehabilitate and protect all the forest resources in the country. As a result of this the FNC started a national campaign for involvement of the people in tree planting and protection. The campaign has been encouraged and supported by a separate government fund for social forestry (Hamad, 1996).

Clearly there is a wide range of available forestry extension and communication media and methods used by forestry extension agents for imparting the forestry messages. These programs have been used for more than thirty years. Throughout these years there has been an intensive flow of information using all types of methods, but the actual effect of the programs and their relevance was not examined. The contribution of this flow and these messages to the overall rehabilitation program is not clear. The forestry extension programs used in the study area are not based on an annual plan set for this purpose. It depends mainly upon the availability of the materials in the local office, the available budgets, the location and remoteness of the area and working conditions. Co-ordination is lacking between the different types of methods directed to the same target group and a village can be targeted for all types of the methods.

Some evaluations were carried out for the extension service as part of the Forestry Development Project (FDP) Phase evaluations. These evaluations, according to their objectives, were concerned with quantities of the extension materials produced and distributed, for example number of radio programs produced, number of posters printed and distributed and number of tree seedlings planted or stoves distributed. Their objectives were to evaluate the whole project activities that include a forestation, management, biomass in addition to extension. These evaluations did not go deeply into the actual impact of different messages and methods on perceptions and responses of the program participants. There is an urgent need to examine the participant's responses and perceptions to communication and the real impact of the various forestry extension programs on respondent's forestry related activities.

1.4 Objectives of the Study

The overall objective of the study was to assess forestry extension activities in the study area so as to declare affection of the different extension programs on the villagers awareness and participation, the specific objectives were;

1. To identify the effectiveness and relevance of forestry extension activities and programs by using effective messages and methods suitable for the target group
2. To identify villagers needs perceptions and preferences for the types of forestry extension programs in the study area.

3. To determine the role of forestry extension for the forestry sector and rural development in dissemination of information and technical know-how.
4. To know the possibility of mobilizing villagers in forestry programs and the best method for this task.
5. To identify Problems and constraints confronting forestry extension programs in the study area.
6. To recommend changes necessary in programs by using different messages and methods in order to enhance the quality of the forestry extension program in the study area.

1.5 Research Questions

This study attempted to formulate some questions the answers of which will lead to the fulfillment of the objectives of the research, namely:

1. What are the effective and relevant forestry extension activities to be addressed through extension messages?
2. What are the needs, perceptions and preference of local people regarding forestry extension programs?
3. What is the role of forestry extension in rural development?
4. What are the most vital means for mobilizing and sensitizing local communities to participate in community forestry activities?
5. What are the problems and constraints confronting community forestry programs in the study area?
6. What are the proposals of local people towards development of forestry extension activities in the study area?

1.6 Justification

It is hoped that the study will be used to improve the forestry extension in the study area and then the Sudan. Although the Sudanese experience in the field of peoples' participation in the restocking of tree vegetation and forestry development, is recent is a pioneer experience. Some remarkable achievements were accomplished through the efforts of forestry extension which developed as the most prominent activity of the forests National Corporation (FNC), such as community forests, shelter belts, agro-forestry, tree planting in homesteads, schools, streets and public places and fuel economy through the use of improved stoves. In spite of the positive results of the field activities which materialized in the peoples' motivation towards forestry development, some uncertainties cropped up that necessitate a pause for assessment of the activities. The current techniques in seedlings production, species selection and the use of unsuitable extension methods need continuous revision to be effective in the creation of forestry awareness and the motivation of efforts towards the development of forestry to fulfill its role in the integrated rural development, environmental stability and food security in the study area and then the country.

Chapter II

Literature Review

2.1. Role of Forestry in Development

Forestry is a major agricultural component that contributes to the improvement of economic, social human and environmental elements of the community. Thus it plays a positive role in the process of development. Forestry products directly contribute to the global, national and local income. About two per cent of global GDP is the annual contribution value of fuel wood and wood-based forest products to the world economy (Schmincke, 1995). Forest products form a major source of foreign currency for many countries in the world. Forests are very important for environmental conservation and as sources of food fuel wood and minor forest products beside other benefits. In most developing countries, with the increase of population, deforestation is continuing very rapidly. The most serious consequences of deforestation and forest degradation are the loss of biodiversity, irregular water supply, shortened life span of irrigation channels and reservoirs, soil erosion, and loss of soil fertility. On the other hand, the low increment of volume of growing stock and high pressures of demand have led to a scarcity of timber, fuel wood, and non-timber forest products (Westoby, 1991).

Dember (1995) concluded that forests and tree products are crucial to household food security and rural livelihoods. Thus forest conservation and protection insure the resource availability for the welfare of the rural people.

For most rural people, forests are the main source of livelihood and for them rural community development is based on the sustainable management of forest resources. The welfare of most rural communities is closely linked with the preservation of the resource (Atmmosoedarjo, 1984). The role of forestry in social and human development is apparent from the numbers of people employed or working in the field of forestry. Schmincke (1995) mentioned the socio-economic role by stating that; forest production activities, forest industries and trade of forest products are significant sources of employment and income especially in rural areas.

Social forestry involves large numbers of the rural people who participate in production and management of participatory forest projects. The participatory approach develops the capacity of the rural people, establishes the potential and creativity of the community, and in many situations now farmers have their own community woodlots and private forests (Falconer, 1987, Lundstrom, 1990). The role of forestry in the conservation and development of the environment is more important than the direct productive role. Forestry protects soil from erosion and promotes soil conservation and fertility and hence increases crops productivity (Harrison, 1987).

2.2. Social Forestry (community forestry)

Community forestry is defined in report of the World Bank (1989) as “a process developing awareness, knowledge, and responsibility for forestry among social units, who have an existing or potential benefit from the

presence of forests & trees in their neighborhood". Accordingly it might involve any, many or all of the following components: village wood lots, private tree planting, improved management of existing forests, leased forests, and amenity or recreation forests Davis-Case (1989).

During the early 1970 international aid agencies shifted the emphasis of their funding toward alleviation of rural poverty. Partially in response to this change, their historical concentration on the protection and management of government-owned forest reserves were questioned (Noronha & Spears, 1985). Community forestry has received increasing attention throughout the developing world as a major tool in halting environmental deterioration and satisfying forestry related basic needs of rural population. In the Sudan there has been very little experience with community forestry so far. It has been largely identified with the traditional gum Arabic production system (World Bank, 1989). community forestry is a relative new-comer on the development scene, it was born of the recognition that only with the active participation of local people can the fast denuding forests and resultant environmental degradation and tree related poverty which plagues many countries in the developing world be halted. The goal of community forestry programs is to improve the quality of tree and forest-related activities on the local level, and to initiate such activities where they don't exist (Solveing & Judith, 1991).

The strong emphasis on community in community forestry necessitates a special approach to planning and designing development interventions.

Rather than beginning with experts and imposing technologically complex solutions to problems identified by outsiders, reminiscent of the so-called top-down or blueprint approach to development, planners of community forestry programs begin with the views and needs of farmers and other local producers. Together they explore local views, define local resources and opportunities, and determine local needs (Solveing & Judith, 1991). The thrust of social forestry differs from conventional forestry schemes in three respects. First, it covers the production and use of forest products in a sector of the economy that is mainly non-monetized; second, it involves the direct participation of beneficiaries; and, third, it implies different attitudes and skills on the part of foresters who have to shed their role as protectors of forest against the people and work with people for growing trees (Noronha & spears, 1985).

The social in social forestry should be understood to signify a broader meaning than individual behavioral change alone; it includes collective action, institutional development, and the establishment of enduring social structures and value systems that activate and organize individual actors (Castro, 1992). Collective actions have the highest chance to occur and be effective when people belong to organized groups, are informed and consciously perceive that, it is in their best interests to act purposively in a coordinated manner. Performance of these groups will also improve when the group has developed leadership structures and internal norms and procedures capable of organizing and managing its members and to overcome conflicts and deviant behavior. The deliberate construction of user groups is therefore particularly important for using and husbanding a

common pool resource in programs such as afforestation which depend on sustained, long-term consensual action of a large number of individual actors (Cernea, 1990). When an innovative program is deliberately pursued, central among the social prerequisites for success is a unit of social organization capable of sustaining that program. Therefore, social forestry projects must start with the identification of such a viable unit or group; aim to engage the rural users of forest products in patterns of collective action for producing the products they need; tend to ensure a match between the silvicultural technologies they promote and the social groups they address; and deal with the issues of social engineering with the same scrupulous attention as is given to the technical or financial elements of the strategy (Farah, 1996).

2.3. Extension

Extension is generally viewed as a non-formal educational process aimed at creating desired changes in the knowledge, attitude, skills and behavior of relevant clienteles (Rebugio, 1978). Extension is a term that can be defined in various ways according to different conditions, backgrounds and situations. It is a dynamic and evolving concept in the sense that its interpretation is always changing. Van den Ban and Hawkins (1988) explored the history of the term and its changing interpretations in different countries and changing situations. They defined extension as “the conscious use of communication of information to help people form sound opinions and make good decisions”. Roling (1988) defined extension as a professional communication intervention deployed by an institution to induce change in voluntary behaviors with a presumed public or collective

utility. Extension is a service or system which assists farm people, through educational procedures, to improve farming methods and techniques, increase production efficiency and income, bettering their level of living, and lifting the social and educational standards of rural life (Maunder, 1973, Peter and Desta, 2003).

Extension focuses on different target processes and outcomes. Different target processes at different levels of aggregation, at individual level and at social level. At the first level the target behaviors are attitudes, knowledge, opinion formation and decision making, at the social level the target processes of extension include: nature and energy conservation; environmental protection and issues of presumed collective utility, the extension worker tries to encourage or motivate his client and give him the capability, with the help of this motivation and ideas enable him to act solve his acute problems (Brooksblaud, 2001).

Oakley *et. al.*, (1985) in a number of statements described extension as a process that offers the rural people, advice and information to help them solve their problems, help them increase production and work with them to improve their livelihoods. It is concerned with the development of the people themselves. The term extension is subject to several interpretations because it describes changing and evolving processes and it depends on the situation. Extension therefore is the process of knowledge transfer and awareness that takes place over a time and uses communication to work with rural people, helps them analyze their situation and make positive decisions towards increased production, improvement of their livelihoods and rural development (FAO, 1984). Extension has been regarded as a means of

passing down to farmer's techniques which, it was believed, would be beneficial to them without taking into account sufficiently the particular social or environmental conditions of the area. Fortunately, extension is now being regarded as a much wider task of Integrating indigenous and new skills or techniques, derived from study or research, into an overall framework of discussion and co-operation between the people and the extension organization (Compton, 1984). In broad sense extension is an education process that informs, convinces and links people. It facilitates flows of information between farmers and other resource users, administration managers and leaders (Ageed, 2002).

Extension is fundamentally a system of out of school education for adults and youth alike. It is a system where people are motivated through a proper approach to help them by applying science in their daily lives, in farming, home making and community living. Agro forestry extension is a broad term which has many applications in bringing about forestry and natural resources management in concert with other disciplines concerned with long lasting resource development and management (Richard *et. al.*, 2001). The history of agricultural extension and agricultural technology transfer started in Sudan at the time of establishing the research centers in 1902, with the establishment of experimental cotton farms in Shendi on the main Nile and in the Alkamleen on the Blue Nile (Eltayeb, 2005).

In Sudan agricultural extension has started at the beginning of the last century when the British began encouraging farmers to plant cotton by distributing free cotton seeds and by establishing irrigated schemes along the River Nile. In the early 1920s free cotton seeds were also distributed among farmers in rain fed agricultural areas. Nowadays agricultural extension services are provided by different agencies distributed along the country for the purpose of exchanging and diffusing new innovations and information between the research centers and governmental bodies and the farmers in the fields (Schroeder, 2006).

2.4. Forestry Extension

Forestry extension could be defined as a system of non-formal education designed to develop among forestry public favorable attitudes toward, and desired capabilities for, forest conservation (Rebugio 1978). It is an important tool to expand forest resources in a resources poor country, to protect its dwindling forest resources, and to ensure optimum use of forest resources. Forestry extension should stem primarily from the need to maintain both efficiency and equity in forestry development. It is the "means" to achieve the "ends" i.e. the adoption of forestry technologies by the villagers for their socio-economic uplift/improvement this article presents the conceptual issues of forestry extension, planning process and development of forestry extension program. It discusses the structure of forestry extension program and probable strategies to effective extension program. With much of the worlds forest area under the ownership and management of individual private owners or communities, extension

services to diverse owners has become critical. In addition to the management and maintenance of forest for ecological services (Lele, 2002).

The history of extension in the field of forestry is recent. It has its own characteristics and is not identical to general agricultural extension service. The message about trees planting and protection is different in the scope of timing and contents. Forestry extension is more difficult than agricultural extension because the tree takes years to grow before the farmer or the community sees the benefits. The message of planting trees for intangible environmental benefits is even more difficult to respond to unless the target groups have been acquainted with results of similar practices and there is a real need for such practices (FAO, 1987).

In recent years a number of different terms have been used to describe the basic activities of forestry extension. The important point, however, is not the particular term used but the acceptance by those concerned of an attitude of approach to the matter. Extension should be regarded as a process of integrating indigenous and derived knowledge, attitudes and skills to determine what is needed, how it can be done, what local co-operation and resources can be mobilized and what additional assistance is available and may be necessary to overcome particular obstacles. It is a dynamic and systemic process of forest sector expects interaction with other partners to advance sustainable development and sound forestry (Dember, 1996).

The term forestry extension is used to cover any situation in which local people are directly and willingly involved in forestry activities from which they will derive some recognizable benefit within a reasonable period of time. It presupposes, however, that the participation arises from some perceived needs or opportunities which the people have recognized as being sufficiently important to devote part of their time, energy and resources to accomplish. The emphasis is not on the accomplishment of specific national or commercial goals but on the recognition by the people of the part forestry can play in conjunction with other rural activities in maintaining the environment, improving living standards and meeting specific needs for forest products (Tembo, 2000). Extension should not be regarded simply as an efficient delivery system to "get things done" but as a catalyst to promote the establishment of an indigenous system for accomplishing widely accepted aims which, in time, will also be able to define and secure the delivery of any external assistance required (Oliver, 1985)

2.5. Purpose of Forestry Extension

The main purpose of forestry extension is to help people to examine problems which are affecting their lives and to consider if they may be solved, or at least alleviated, by using forestry techniques within the range of their skills and financial resources. The views of the people should, in turn, be relayed to the officials who frame the laws and design the infrastructure of the region so that they may promote policies which facilitate the achievement of the people's objectives. The emphasis must be on local people recognizing a need and deciding to do something about it. The contribution of forestry extension is initially to facilitate discussion and

definition of such a need and to indicate a variety of possible courses of action from which the local people can select the one most suited to their particular situation (Reed and Biles, 1996).

2.6. Function of Forestry Extension

The function of forestry extension is not to move into an area and meet, to some extent, what appears to the extension staff to be a need, and then hope that the people will adopt and extend the activity until the problem is finally solved. Forestry extension, as applied, is to facilitate people discussing, making decisions and taking actions on them to meet local needs, generally the goal of the extension process is to enable people to use their skills, knowledge and information to improve their quality of life (Adam, 1982). People in developing countries are mainly farmers or pastoralists; they are used to making decisions in their daily lives on what to grow, where and when. Nomadic pastoralists have usually developed a precise program of movements of their animals to make the best use of the grazing, without any outside intervention (Graham, 1976). The role of an extension service in such cases is to help people to widen their knowledge and experience beyond the immediate range of their crops and animals, to understand more fully how trees or forests fit into the pattern of their lives and whether they are being used, or cared for, as wisely as they should be (FAO, 1985b).

Where a situation arises in which people must reverse recent trends of depleting forest resources, the role of an extension service is to identify areas in which people need specific assistance in knowledge, or the provision of

such items as seeds, special tools, equipment or funds to achieve their objectives. They must then ensure that these supplies are available as required on terms fair both to the users and the suppliers. Though they may, on some occasions, depend on charitable sources to meet a particular need their function is not to dispense charity but to help people organize to achieve the things they desire by their own efforts. Extension work will continue to be the job of forestry employees and increase in both their quantity and quality is needed, increasing extension workers mobility is away to improve effectiveness, another cost-effective option is using training to improve the technical and participatory skill and attitudes of existing extension workers and planners (FAO, 1988).

The concept of encouraging people in forestry activities is new to foresters, until recently social forestry has focused on fuel wood scarcity issues, as a result forestry extension efforts have primarily worked on distribution of seedlings, establishment of nurseries, planting village woodlots and introductions of improved cooking stoves (Falconer, 1987).

2.7. Factors Limiting Forestry Extension

Many factors have, in the past, limited public interest in forestry extension as a means of achieving community-orientated forestry practices and will continue to do so until they are either modified or overcome. Initially, local knowledge limited to certain common agricultural or rural practices has made it difficult to take advantage of introduced forestry species or practices which could prove beneficial. Lack of material and financial resources and

problems of education and health have also proved an obstacle to adopting good forestry practices into the normal pattern of life (Fraser, 1981).

Forestry extension has struggled under several historical tendencies that have limited its effectiveness and even the recognition of the need for this type of approach. First, in many cases the historical concerns of governments were for the protection of limited forest state where the governments itself was responsible for its management. Second as agricultural extension spread, it become a top-down mechanism through which governments attempts to reach to farmers with new technologies designed to enable them to increase production (Dember, 1996).

Interest in many aspects of forestry extension may also be limited by the length of time between effort and reward in forestry activities. People who have no reserves of wealth in any form require a prompt return on any efforts expended. It is, therefore, important to draw their attention to fast-growing, multi-purpose species which will enable them to secure a crop of fodder perhaps, while waiting for a tree crop to mature. Interest in longer-term crops may develop in due course, but only when the people concerned have reached a stage when they are able to invest effort or wealth for a longer period (FAO, 1986).

A further feature which may discourage the development of long-term crops is security of tenure of land. In many cases the only additional areas of land of any reasonable size available for forestry extension are controlled by the

central or local government, often through the forestry organization. Public servants in such organizations are understandably reluctant to give up control of any areas of land which might in turn reduce their authority and importance (Constantino, 1981).

Bureaucratic procedures in dealing with permits to cut transport or sell forest produce may also discourage the adoption of forestry extension practices by people who believe the less they have to do with officials the better. This is a fully understandable attitude in areas where such officials openly seek to supplement their incomes with irregular payments for services performed. Forest produce arising from forestry extension program should be regarded as similar to agricultural or animal products and be marketed with as few restrictions as possible. In particular, the levying of taxes on such produce may either discourage production or distort the market, as people adopt various tactics to avoid payment (Fletcher and Reed, 1995).

In areas where production could be raised beyond immediate domestic needs, the lack of suitable marketing arrangements and an acceptable price structure may be disincentives to increased production. Marketing may be controlled by a powerful middle-man organization which deprives the producers of a proper share of the benefits. Poor communications and transport facilities or the lack of a satisfactory rural infrastructure are also likely to limit production. A reliable supply of planting stock, fertilizers and insecticides, fencing materials or other items required, at reasonable prices

or on acceptable credit terms must be arranged if these are not to be limiting factors in implementing an extension program (Enander and Jonsson, 1983).

On a national scale, since areas operated under extension program may not then appear in official records as forest land, or yield any direct revenue to government, there may be a reluctance to devote part of a limited forestry budget to extension which may appear, on paper, to be a non-productive function. The real importance of a successful extension program can only be appreciated by staff of a forestry authority that have been fully informed and properly orientated to extension forestry. In looking for solutions to local problems, the extension agent should distinguish between technical solutions, involving improved inputs or simple changes in husbandry practice, and solution which involve institutional changes, such as improved credit and marketing systems, solutions involving institutional changes may require action by other agencies and at higher levels. To overcome these problems, educational support covering all aspects of these problems is required (FAO, 1985a; Gerber *et. al.*, 2006).

2.8. Benefits of Forestry Extension Programs

The primary benefit of an extension program is that it meets a need which people have defined for themselves and have considered sufficiently important to devote their time and resources to satisfy. The People may have learned to co-operate and to plan ahead to achieve their objective, skills which can usefully be applied to improve many other aspects of their lives. In material terms the need may have been for: fuel for cooking; poles or

small timber for house building; fodder for animals; fruit for domestic consumption or sale; shade or shelter for people or animals; employment from the manufacture of handicrafts; and cash from the sale of surplus produce. Forestry extension has emerged as a critical service to improve the management of forests and improve the livelihoods of forest owners and forest-dependent communities around the world (FAO, 1986; Sim & Hilmi, 1987).

Many of the benefits may be difficult to measure and value. The ready availability of fuel wood and materials for house construction may lead in some instances to improved health and to increased time for cultivation of food crops. This may be reflected in higher agricultural output rather than in returns of forest products. Similarly, the establishment of fodder or shade trees for livestock may lead to higher values of animal products before any measurable benefit from forest products arises. If these situations, however, help people to understand the inter-relation of forestry and agriculture, this may lead to a more favorable overall view of forestry extension activities in future. Forestry extension program can bring a wide range of benefits to many rural people (FAO, 1987).

The concept of forestry extension as a means of assisting local people to improve their welfare through the sustainable management of forest and tree resources is even more recent. Throughout, the less direct connection between extension and increased national revenue has led to forestry

extension services receiving significantly less funds than those related to agriculture (Richards, 1990).

2.9. Forestry Extension Programs Principles

The following principles are important in forestry extension programming.

- Program planning must be based on a careful analysis of factual situations.
- The program must be educational and directed towards improving the ability of people to solve their own problems.
- The program must be directed and oriented to existing technical, economic and social levels of the people in the area.
- Forestry extension program should be carried out by well trained personnel and effectively supervised, evaluated and monitored.
- Problems selected for action must be those which concern recognized social economic needs of rural and urban people (Marks, 1986).

As forestry extension involves local people in forestry activities, the approach most commonly claimed to have been employed in the problem solving approach (PSA). One of the essentials of the problem solving approach is the involvement of the target group in the planning, implementation and evaluation. Accordingly, an extension program organized to promote agroforestry should follow in principle the same strategy (Best and Waybun, 2001).

2.10. The Nature of Forestry Extension

Forestry extension serves as an informal self-development process because it does not depend on formal teaching. It may prove more acceptable to certain people, for example older men or women who may have had no contact with formal education, but who have acquired considerable knowledge and skills by an informal transfer from their parents or family members. It may also satisfy the needs of the young. To these people it may present education in an entirely new light; as a process of sharing, adapting, adopting and using new knowledge and skills with the assistance of a co-worker, rather than under the guidance of a teacher (Rebugio, 1978).

Forestry extension neither has, nor wants to have, any power to coerce or direct people to do things, however important or valuable they may seem to be to an outsider. It depends entirely on discussion, demonstration and trial to bring knowledge to people and help them integrate what may be useful in it into their indigenous rural systems. It enables people to build up in time an ability to discriminate between useful suggestions and others and to continue and extend the process of learning into other areas of their lives. Forestry extension staff should, whenever possible, regard themselves both as full-time learners. They will, however, find it difficult to co-operate fully with the public, to motivate and guide them at one time if, at another, they have responsibilities for enforcing forestry laws and regulations. Because of shortages of staff, it may not always be possible to achieve this clear division of responsibilities but it is an aim which should always be kept in view and accomplished as soon as staff is available (Schutjer, 1991).

An extension service exists to serve the whole community and not simply a privileged few. In fact, its greatest value should be to the poorest and least able members of the community, who may initially have great problems in time, energy or available land, in taking advantage of what it has to offer. This often imposes difficult decisions on extension staff, whether to concentrate on the more able and often more affluent members of the community who may adopt extension practices readily, in order to achieve some early measurable results, or on those who need help most but who have particular problems in adopting new practices (Hoskins, 1983).

Forestry extension serves the whole community people can and do normally make wise decisions on solving their own problems if they are given full information about them and some relevant advice on possible solutions. Extension procedures should therefore make available information, help people find a solution to their problems, and encourage them to make decisions and to act on them. People have more confidence in decisions they have made for themselves than those that have been presented to them (FAO, 1987). Forestry extension is only one of many factors (social, technical, economic and political) which tend to produce change in a rural society. It is mainly concerned with new ideas or techniques to improve local forestry program such as agroforestry, silvipasture, small-scale forest enterprises or community participation in the management of natural vegetation. Other organizations may aim to produce change in other aspects of life such as agriculture or animal husbandry. In certain cases, advice given to people from these different sources may be conflicting. It is essential, to co-ordinate the program and the advice they give to the public.

Unless this is done, people will be confused and will lose faith in all such advice (FAO, 1987).

Forestry extension organizations should work towards using local people to spread information within their own communities, even though they may not be as technically proficient or as well equipped for the task as professional extension staff. Their standing, and the respect in which they are held by their communities, may be a great advantage to them in spreading information and ideas (FAO, 1986). Local leaders play a vital role in the spread of extension activities in the same way a forestry extension organization should never neglect the opportunity to integrate sound forestry principles into any related extension programs, such as agriculture, animal husbandry or social development, so that staff in these fields can reinforce their efforts by presenting a more comprehensive range of information to the people. In turn, forestry extension staff should take the agricultural, animal husbandry, health and social needs of any area into account in any forestry activities or suggestions they may offer to the people. The involvement of local communities in development activities would strengthen the social relations due to the mutual exchange of roles and work in groups (Chamber, 1982).

2.11. Some Features of Forestry Extension

To promote a forestry extension campaign in an area, the determination of certain important features and an overall strategy for the campaign is essential for successful implementation, an extension program requires:

- Goals, defined benefits or results a particular group wishes to achieve;
- Target groups, groups of people selected as the most likely to achieve particular goals which they themselves have discussed and approved,;
- Message, the information or skills which, in conjunction with local practices and culture, would help the target groups achieve their goals;
- Methods, the means by which knowledge or skills can be combined and presented to the people to assist them to achieve their goals; and,
- Organization, the structure set up by local people on their own or in collaboration with an extension organization to achieve their goals.

A basic strategy to implement an extension program may be summarized as:

- A thorough analysis of the existing situation;
- A detailed discussion with the client group;
- The formulation of realistic goals;
- The determination of means and methods;
- Decisions on who will do what, where, when and how;
- A program for the execution of decisions;
- A system of monitoring, evaluation and feedback for the program;
- A system of incorporating the lessons learned into future action

Program planning must be based on a careful analysis of factual situations, the program must be educational and directed towards improving the ability of people to solve their own problem, individually and collectively, the program must be directed and oriented to existing technical, economic and social level of the people in the village, community and area, and forestry extension programs should be carried out by well-trained personnel and

effectively supervised, evaluated and monitored, and problems selected for action must be those which concern recognized needs (Schutjer, 1991).

2.12. Communication in Forestry Extension

Communication lies at the core of any extension program. Without good communication new concepts or technologies will not reach the people. Without a reverse flow of information from the people administrators will never really know why promising ideas failed to gain acceptance or even what it is the people think they need to break through the barriers of low productivity (FAO, 1987). Unfortunately, many people have failed to recognize fully the problems extension staff experience in convey to their clients not only the technical requirements of a new process but the logic of the whole process and how it can be presented as an acceptable component of a local production system. A new process is not necessarily an acceptable idea because the developer thinks it is good (Magno, 1982). A person may question why he should produce more than he needs for his immediate requirements if the items are in adequate supply locally, if market prices are low, if he is held to ransom by an expensive and inefficient transport system, and if there is nothing to buy in the stores with any money earned. An extension effort should arise from the felt needs of the people, not simply the availability of a new process. Good communication helps people to express their needs in an acceptable form and to relate their needs to available resources of techniques and funds (FAO, 1987).

Extension staffs, many of them expected to be able to communicate regularly on at least three different levels. They must be able to communicate freely with the community they serve, with their colleagues in other organizations or departments involved in development, and with higher level staff who determine policy or control budget allocations. Communication attempts to bridge the gap between the sources of ideas and potential users of them. It attempts to make available information or skills in a form the public can understand, examine critically, and incorporate into their regular practice. (Harrison, 1981). New ideas, however, are unlikely to be accepted readily if they appear to run counter to some established local customs, beliefs, religious or family practices, or a farmer's accumulated understanding of how his land should be farmed. The possibility of any new idea being adopted widely can only be judged against a sound knowledge of local traditions. Identifying a barrier in traditional practices and a breakthrough point may be as important as the new technique itself in changing practices (Magno, 1982).

Extension staffs are a key factor in the communication process. They are normally in regular, direct contact with their clients and are best able to communicate ideas in the colloquial language and idiom the people can understand. Barriers to the acceptance of new technologies or development are not exclusively technical. Administrative or organizational barriers such as a bureaucratic structure or the status some senior staff confers on themselves and how they expect to be approached and deferred to may constitute barriers (Gebre, 1990). Most communication systems identify four basic elements in the communication process: the sender or communicator

of the Idea; the message to be sent; the channel or means of communication; and, the receiver of the message (FAO, 1973). In practice, the feedback or response should receive as much attention as the message itself. A message which is either not understood or not acceptable to a community is valueless, no matter how often it is repeated. In fact, continued repetition without modification may annoy the receivers and prove counter-productive. Feedback is not always complimentary but should be carefully considered (FAO, 1987).

2.12.1. The Message

Forestry extension staff normally believe they have some important information and ideas which they hope the people will receive, understand and incorporate into their normal pattern of activities. In some cases they may not achieve this due to incomplete or erroneous information being given to the people, poor presentation of it, or for a number of other reasons. To avoid these difficulties, they need to consider the purpose of the message, its content and how to present it. The purpose or objective should be clearly defined in their own minds. The preparation of a message can do a great deal to make it acceptable to the receiver. It should be organized and presented in terms he understands and in the form of argument or discussion he normally uses. In particular it should conform to accepted social standards and customs of speech, writing or illustrations. Differing treatments can make a message dull, boring, or even totally unacceptable to an audience. Skills in this field are developed by experience of local reactions to messages than by theoretical training (Gebre, 1990).

2.12.2. The Channels of Communication

The channels of communication may be classified as: visual; spoken; and written. There are also combined methods, such as audiovisual which are often more effective than any of the channels used in isolation (Magno, 1982).

- **Visual Communication:** "Seeing believes" is an important principle of extension education. Pictures, charts, diagrams, posters, exhibits, and displays can perform important communication functions in countries where people are familiar with the use of symbols. Method and result demonstrations are more valuable in other circumstances. Visual and oral methods combined are mainly used by extension staff to serve people with a limited level of literacy. Pictorial methods are now being used frequently and effectively to draw attention to forestry extension message in many countries. There can be considerable differences in understanding of what symbols mean between peoples of different backgrounds (FAO, 1987). The use of colour in visual materials is important; if properly used it can greatly enhance the impact of visual materials. In general, the colours chosen should be "logical". It may not be easy to extract information on inauspicious colours from local people as the topic may be one they are not willing to discuss with strangers.

- **Spoken Communication:** spoken communication takes place regularly during individual contacts such as: home or farm visits; enquiries made at offices; telephone calls; meetings, discussions and demonstrations of all kinds; and, Radio and TV programs. Except for radio and TV these contacts

allow two-way communication which has great advantages. The initial response of the recipient of a message may be as important for future planning as the content of the message itself. Lack of understanding can be detected in the reply and may be cleared up on the spot. Gestures, facial expressions and even the tone of voice, both of the speaker and the listener, contribute substantially to an assessment of how well the communication is being received. One obstacle which must be overcome is this: an oral message is not recorded in any way and the receiver may remember it in a different way from that which the sender intended. Particularly, where precise instructions on forestry techniques are given orally, the receiver has no means of referring back to what was said (Gebre, 1990).

Only a limited number of people can be contacted face-to-face in a day. This makes oral communication expensive in terms of staff time and effort unless, some form of group contact is organized, but it is nevertheless a very effective method of communication for those contacted and may be the only effective method for people lacking skills in reading and interpreting diagrams. Language itself, however, can be a barrier where the extension staff and the receivers speak different languages or even dialects. Spoken communication then requires a third person to act as an interpreter with all the possibilities of differences in emphasis, or even misinterpretation that implies. The process is a very slow and often unreliable. Extension methods make up the techniques of communication between extension workers and target groups with the aim of motivating and enabling them to find ways of solving their problems (Wilson, 2000, Bornhorst and Rauch, 2003).

The use of language on the telephone must strike a balance between the exchange of lengthy customary greetings common in face-to-face meetings and the highly codified language used, for example, in air-traffic communication. Extension staff should be trained to set a good example in the economical use of limited telephone links in rural areas. Domestic radio is the quickest and far-reaching medium for conveying oral messages. It is particularly valuable, and much used, for spreading forestry information. It is claimed that radio is a low cost method of spreading information, but radio can be an expensive medium, if air-time at peak periods has to be paid for, or if the audience is small or does not fully understand the message (Magno, 1982).

- **Written Communication:** written communication is indispensable in the day-to-day operation of any organization, particularly an extension service. The advantages of written communication are:

- With many people, it has greater status and carries more authority than oral communication;
- In some countries it is essential for transacting, type of information to large numbers of people;
- When used in an interesting way it holds a reader's attention and may stimulate him to seek more information on the matter; and,
- The material can be retained for as long as is necessary and is valuable for confirming detailed instructions given orally (Magno, 1982).

The disadvantages of this method are;

- Many people may not yet fully literate;

- It is entirely one-way communication;
- Few people will change their traditional practices just because they happen to have read about alternative methods.

Extension staff must adapt their methods to the particular subject, to the ability of the audience to understand the different techniques used (FAO, 1987).

All people don't learn, or change their practices, at the same speed. For these reasons, the use of a variety of extension methods, suited to the needs of the people, and used either consecutively or in some cases simultaneously, is necessary to carry out an effective forestry extension program (Pennsylvania Farm Bureau, 2006).

2.12.3. The Receiver or the Audience

The audience is made up of all those whom the communicator wishes to receive, understand and use the ideas or information he is presenting. If an audience is to make progress, an extension agent must help them to change their knowledge, attitudes and behavior. Communication has taken place if the people learn useful facts, or if some of them begin to feel a new procedure may offer some benefits, or decide to adopt a new technique. People are different in many ways. One major difference is in their ability to understand forestry ideas and practices. Forestry extension staff cannot expect much progress in getting people to plant tree crops on parts of their land if the idea is presented to them in words and expressions totally unfamiliar to them. Good extension practices require a thorough study of the clients. This is done normally through the conduct of a study of the

social and economic conditions of the area in which they live in more leisurely times; this was accomplished simply by living and working amongst them for a considerable period and recording the knowledge acquired (Gebre, 1990).

An obstacle to good communication is "noise" (or barriers). Experienced communicators can anticipate when barriers are likely to occur, and try to forestall them. Those who hope to work effectively mainly with rural people should realize that there is no basic competition between the methods or channels of communication. One of the basic justification for forestry extension is the provision of information that otherwise would not be available. At other times, extension services seem to have concentrated on the more visible and affluent farmers and farmers groups. Forestry projects have paid insufficient attention to the social barriers impeding the flow of information (Guggenheim and spears, 1991).

2.13. The Adoption Process

Consciously or unconsciously, every person goes through certain mental stages before changing his or her ideas or practices. Experienced extension staff understands this process and fit their guidance to the present stage of thinking of their audiences. People go through five clearly defined stages whilst adopting a new idea or practice. These are: awareness, interest, evaluation, trial and adoption. These are often represented as steps on a stairway. Each stage in the adoption process depends on the preceding stages having been completed successfully. Forestry extension staff might

recommend the adoption of a community forestry project which is either too advanced technically or not socially acceptable to rural people. In other cases, the people may not even be aware of the practice and will, therefore, not have any interest in it. The staff, in such circumstances, will not succeed in introducing it as they have not started at the right point in the sequence (FAO, 1987).

Often the first stage of a forestry extension program is to bring to people's notice that a new forestry technique has been developed. If the new technique can be shown to relate to their normal practices and have some possible beneficial effect on the people, they may be interested to find out more about it (FAO, 1982).

2.14. Methods of Extension

In general, these fall into three main categories:

- **Individual contacts:** A most effective way of bringing about change is through individual contact in the home or the work place of people, or in some cases through informal contacts in markets or public places.
- **Group contacts:** This method is designed to assist specific groups. It is becoming increasingly important as an extension procedure. Not only may information be presented, or techniques demonstrated to several people at one time, but discussion can take place, comments or suggestions can be offered by the group and questions from both sides can be asked and answered. This situation makes learning

easier and may stimulate group members to take joint action on a problem.

- Mass contacts: In this case contact is more tenuous. It is achieved mainly through the various means of mass communication such as printed matter, broadcasts or audio-visual presentations. The lack of direct contact makes it difficult to assess if the message has been properly received and understood by the audience and more difficult to modify to suit any particular groups of people or areas of the country

A person will learn more effectively by using a combination of two or more of these methods (Wilson, 2000).

2.15. Planning Forestry Extension Program

Planning is a process of decision-making in that it seeks to provide answers to problems like: What is to be achieved? Who will be responsible for achieving it? How will it be achieved? What resources will be needed? etc. Planning is generally regarded as a method for delineating goals and ways of achieving them (Ahmed 1991). The result of the process is a document known as plan or program. Planning is a pre-requisite for any kind of development program to:

Ensure what is to be done and why? Identify actions to be taken, Distinguish desired/intended and undesired/unintended goals and objectives, Allocate resources to achieve goals, ensure continuity of the project activities in case of staff changed, and accomplish jobs in cost-effective and time-effective manner (Ahmed 1991).

For forestry extension program development, participatory planning process should be encouraged where local users take part in decision-making. Simply "informing" people does not incite participation; people must be actively involved in planning and managing as well as having a stake in the benefits if they are to be encouraged to participate (Falconer 1987). Here the bottom-up approach of forestry extension should be followed. Extension programs must be developed through a process of "planning from below" involving the intended beneficiaries at all stages (Clark 1982). Participatory planning process can ensure the innovation or program is appropriate and meets peoples' needs. The planning process provides a framework within which an extension worker can translate decisions into action and assess what has and has not accomplished (Oliver, 1985).

Magno (1986) summarizes the following characteristics of sound program planning for forestry extension.

- An extension program should be based upon careful analysis of factual situations;
- Problems selected for action will meet felt needs;
- The program should be flexible;
- Participations of all stakeholders should be ensured;
- Program should be oriented to the existing technical, economic and social level of villagers;
- Program should be educational and directed toward enabling people to solve their own problems individually and collectively;

- The program should be attainable considering such factors as personnel, finances, time and facilities.

Planning forestry extension is important for successful forestry development program in an efficient, timely and cost-effective way. Bottom-up/participatory approach should be adopted ensuring active people's participation, design and implementation. Institutional capacity building and continuous extension training programs for forest department personnel are needed for better forestry extension service (Clark, 1982).

2.16. Extension Program Monitoring, Evaluation and Feedback

Three essential features of a forestry extension program are monitoring, evaluation and feedback. Monitoring has been defined as a continuous or periodic surveillance over the implementation of a project to ensure that input deliveries, work schedules, targeted outputs and other required actions are proceeding according to the plan. On the other hand Evaluation is a systematic approach to assessing as objectively as possible the relevance, effectiveness and impact of a project in the context of the project activities and the needs of the people, while Feedback can be defined as applying promptly and effectively information gathered by the monitoring or evaluation processes to promote the achievement of the project objectives, or to rectify factors impeding its achievement. The principal functions of monitoring and evaluation are to enable the people and the staff involved in extension programs to learn from the achievements and problems of each program. Monitoring and evaluation are based on information gathered

from the participants and intended beneficiaries of a project, at all levels. There is a need, therefore, to co-ordinate information gathering for these two functions to avoid overlap and waste of time of both staff and clients in answering repeated enquiries. There is a limit to the time, effort they can devote to answering questions (Patton, 1978, Scrivent 1980).

Monitoring should continue throughout the duration of a project and form an essential management process to measure and adjust performance against planned activity. The particular items to be monitored will differ in each project but these can be defined initially from the project document and subsequently from the annual or semi-annual plans of operations (FAO, 1985a).

2.17. Evaluation of Program Formulation and Planning

Some questions which should be asked during the formulation and planning phase of a program (conception) like; how did the proposal arise?, who first suggested the activity?, how did it develop before it was formally put forward as a program?, how closely were the local people involved?, how did they make their views known?, and did it arise initially from felt needs or suggestions by the people, or in order to meet official work or expenditure targets? Also the main question regarding the relevance of the evaluation of the extension program include; is the program relevant to local needs; what are the needs; how were these needs determined?, how do they affect the present living conditions, markets, transport systems, etc. of the area; will the program have any impact on related activities; how do they fit into

overall government planning, i.e. are they likely to gain and retain the support of the government; to what extent was the program the outcome of a desire to utilize a grant or loan opportunity, to balance the work load over an area, or to develop a program that would attract external support? As far as the feasibility of the extension program is concerned, there are some questions that need urgent answers.

- What are the people's prior attitudes, knowledge, skills, and resources of energy, time, and land available for the program?
- Is there adequate provision in the program for motivating and training local leaders and participants?
- Are the resources of staff, funds and equipment of the assisting organization adequate for the program?
- Have the edaphically and biotic requirements of the proposed activity been matched to the local conditions;
- Do the proposals comply with guidelines set up by any agencies which might offer material support?
- Have the people, in prior discussion, indicated a willingness to participate actively and develop an organization to take over full implementation of the activities at an appropriate time;
 - Has the program been adequately discussed with, and accepted by, the local administration and other public or voluntary organizations which may be affected by it.

These questions are, in no way, intended to discourage initiative in bringing forward proposals for forestry extension programs. They should, however, help to ensure that proposals are based on sound justifications which have

been favorable or unfavorable influence on the program? (Hobbs *et. al.*, 1993).

2.18. Organization of Evaluation Activities

This must normally be organized at the central level as it is essential that any program which is supported by a public organization is in keeping with government policies and guidelines for planning. It is important, however, that these guidelines should not be set so rigidly that they stifle initiative from the field staff or the community. It is from this level that many valuable innovations are likely to arise. Evaluation must, however, involve the field staff and community leaders, on whom responsibility for initiating and carrying out the work fall. Discussion should play a large part in the process to allow the staff and community members to explain or defend the suggestions they have made. Their "defense" of the proposals will involve them in thinking deeply about the objectives and methods they have suggested and may evoke a stronger commitment to success. (FAO, 1987).

Staff from the central level involved at this stage should preferably have had field experience in the area in question, or be prepared to spend some time getting to know the area and the people before attempting to evaluate the proposals. Voluntary agencies who may be giving support to the program will normally expect to be involved at this stage. It is important to be quite clear about their objectives or aspirations in supporting the program. These may not always be identical to those of the community. Any modifications of the program which the evaluating group may require must be handled

sensitively and fully discussed with the participating group or they may lose enthusiasm for a program they do not feel they have determined for themselves. (FAO, 1985a).

2.19. Women and Forestry

Unconventional scientific research has recently identified a species that might be key factor in combating the energy crisis: woman. Woman has an outstanding ability to adapt well to different sites and it establishes easily, requires little care, is renewable when properly treated and has a high potential to enhance economic development Unasylyva (1984). In many societies, it is women who must find and transport the fuel that their families needs. It is often women, not men, who gather wild fruits and nuts, find fodder for their domestic stock, and make medicines and other products from woody materials (Osman,1996).

Women often also earn what little cash income they have from activities that relate to trees and forests. Only women can identify accurately how future projects are likely to affect them, and in what ways they need help. Secondly, projects that aim to foster local community development can be more effective with the support of women. The aim of rural development is to alleviate poverty. The basic reason why women now need special attention is that, though women work longer hours than men in most rural societies, they are also poorer. We have a responsibility to ensure that future development projects corrects rather than worsen this imbalance” (FAO 1985c). For centuries women have gathered forest products the time spent

in forests, gathering wood has taught women the many uses of trees, including providing fibers for cloth, mat-making and basketry. Women also know the medicinal uses of various trees (Aloo, 1985).

In Africa, a growing recognition of the dominant role of women in the use of forest resources has focused attention to the need to involve them more fully in forestry development activities, and particularly on the need to ensure that they are able to derive a fair share of the benefits from these activities. There are certain constraints to women's involvement in forestry, they include:

- Restricted access to productive resources particularly tenure rights to land
- Lack of time because of other responsibilities.
- Lack of mobility because of household responsibilities and social customs.
- Lack of information, training and education (FAO, 1989).

2.20. Forestry Projects in Sudan

In Sudan, among the different options of the forest policies, there was special emphasis on the role of the forests in environmental protection and the establishment of community, private and institutional forests (Ministry of Agriculture and Forests, 1996). The forestry sector constitutes an appreciable size in Sudan economy. It accounts to some 12% of GNP. However the FNC estimates this contribution to be more than 20% (FNC, 2002). Participatory forestry as a concept is not new.

The success of participatory forestry programs, irrespective of the models, depends largely on effective people's participation at various stages of their implementations. Many social forestry programs have stumbled along and eventually faded away. The downfall of these programs is partially a result of the non-integration of social forestry projects within the field of rural development and partially a result of implementers who did not seek the active participation and involvement of the local people (Sen and Das, 1987). The practice of participatory forestry through the traditional agro forestry systems based on Hashab, haraz, gimbil as practiced by the sedentary people on the gum belt zone and lower slopes and highlands of the Jebel Marra massif is not new. Trees have been retained primarily for food, wood, fodder and a source of income. This system has been able to sustain self-sufficiency of a densely settled population over centuries (Miehe, 1986).

Elmahdi and mahony (1990) showed that in Sudan, social forestry projects take one of the following models;

- Participatory forestry on state land (taungia cultivation). This is practiced in refugee's camps at El Gadarif, (Finish Forestry Company) (ENSO), Rawashda (FAO), Gash delta (KADA), EIDamer, Quala en Nahal (ACORD).
- Social forestry projects administered by FNC on communal land (Super management model). This is practiced in Tendliti area (FiNNIDA) and Kordofan (UNSO).
- FNC as extension agent (support service model). Practiced in Kosti, Medesis (CONCERN), Central and Eastern Regions (FAO), Kordofan (CARE) and UMRuaba (SCF).

- Community project supported by fnc partenership model.practiced in Shendi (SOS),El Damer (UNSO) and Wad bireima village woodlot (FAO).
- Community forestry project with assistance of intermediary. Practiced in Gezira and Rufaa (IRISH AID\PLAN SUDAN), Kassala, Hafarat village, Khartoum (FAO).

The institutional framework of implementation of forestry projects in Sudan can be summarized in the following points:

- Donor's forestry projects are managed by National Project Director (NPD) and chief technical advisor (CTA) who represents the donors or executing agencies.
- The NPD is heading the project organization (national staff) and the CTA is responsible for experts.
- In some cases, the project organization has to cover a distance of more than 500 km. Therefore, a sub office is sometimes introduced and a deputy NPD deputy and CTA assigned some responsibilities .
- Framework within a region is largely depending on the links with regional director (FNC).
- All official correspondences and contacts with the regional institutes and officers are through the regional director of forests; ongoing monitoring of implementation is achieved centrally through quarterly coordination meetings organized by the technical service and planning departments (El Mahdi and Mahony, 1990).

2.21. Forestry Extension in Sudan

The institutional framework forestry extension in Sudan is stemmed from the vital role of extension in the proper implementation of community or participatory forestry projects (Tully, 1971). The role of extension is to create positive attitudes to the forest among the people and to encourage them to participate in tree planting and the conservation of the environment (Swanson, 1984).

At the FNC head quarters (H.Q) at Khartoum an effective extension division is established in order to play this role. Forestry extension at the regional level is directed through the regional director of FNC Coordination extension offices were established at the regional head quarters (H.Q). The aim is to provide technical support and to coordinate extension activities of forestry project at the provincial district and project levels. The extension framework within projects can be foreseen from the proper functioning of the project extension unit at the local level. The extension function is to enhance implementation and encourage the target groups, farmers, villagers and local institutions to participate in the implementation of forestry projects (ElMahdi and Mahony, 1990).

The methods used in forestry extension are: direct contacts and discussions through social group, chief and village sheikh, meetings with farmers and villagers; extension nights in villages; use of slides and posters; lectures in schools and clubs; personal contacts and maintaining of good social relation with key persons; and audio visual means (radio and T.V) (Jacabsen, 1987).

2.26. Establishment of Forestry Extension Unit

During the late 1970 and early 1980 most of the reforestation activities were funded by about 26 international bilateral donors and NGOs. The forests Administration, while expected to give technical assistance to these donors, exercised little of its own control and coordination over these initiatives. Forestry extension was virtually ignored and led to insufficient support for private and community forestry (Anon, 1987). This situation of rapid deforestation, low forest service morale and inadequate budgets, led to a complete reorientation of both the forest administration and donor policy (Abdulla and Holding, 1988).

The forestry extension section first started in May 1984, supported by the Fuel wood Development for Energy Project which is executed by FAO. The forestry extension was considered as one of the forestry administration Division in the past and when the forestry administration became the Forest National Corporation in 1989 the forestry extension division evolved to the Extension Administration. The extension section had been established and developed at Headquarters (Khartoum), in the Eastern State (Kassala) and in the Central State (Wad Medani), including 6 provincial offices and 7 circle offices, with complete vehicles and audiovisual equipment, the national staff assigned to this section attended formal training courses either in the country or abroad. Also the extension section participated in the establishment of similar units in other states (Kordofan, Darfur and Northern State). It can be conducted that more has been accomplished than originally intended, the fact that extension services have lately become a major FNC program attests

to the successful initiation and implementation of these activities by the project (Evaluation Mission April 1991).

The extension program took up most of the project inputs in equipment and training, approximately 60% of the national project staff is assigned to the extension section. In Headquarters the extension section consists of 4 extension officers and 5 technicians while in central and eastern state the numbers are 7 and 7 respectively (60% are female extensionist). In the Central Region the extension is being supported by an International expert (April 1990). With the extension section three main divisions have been up, communication, field support/ community program and training unit. The extension section in Khartoum gives Technical support to all the states and NGOs. In Northern Sudan, where as a result of project activities extension units were established in Darfur and Kordofan. (Ourefelly, 1991)

The forestry extension section consists of a number of units which represents the group of activities that are implemented by the section in Khartoum and in the Eastern and Central State. These units included first communication and public relation unit which executed the publicity activities which include Radio, TV, Video, and Slides Films, Publication, Press and various exhibitions and fairs. The second division in the forest extension section is the field extension division, this unit is responsible for the execution of the field extension programs in Central and Eastern States, which include village program constituting a number of activities mainly Community Forestry, village nursery, tree planting and village shelterbelts with the objective of

peoples participation. The field extension activities also include school program this cover the activities of school nursery, planting in school and school nurseries, school woodlots. The farm program include the distribution of seedlings to farmers to establish windbreaks and planting trees in combination with crops what is known as agroforetry (Mohammed, 1991).

Women program it's a program which is concerned with the women extension activity mainly in the use and building of the improved stoves (charcoal and woodstoves) for reducing the consumption of firewood and charcoal in addition to raising seedlings in houses and compound tree planting. Another program which started in October 1989 is the Nomads program, this include raising the awareness of nomads about the importance of the forest and how to deal with tree in a way that doesn't harm the forest and to participate the livestock owners in the management and protection of the forest resources. Finally is a setting up seed collection and storage systems for extension activities. The third division in the extension section is the training division which deals with conducting training courses for formal and informal staff such as Forestry staff, newly appointed extensionist, teachers, farmers, women and forest guards. Great emphasis placed in forestry extension training because it was a new activity in Sudan (FDES, 1991).

2.27. The forestry Extension Programs

The program will have special emphasis on:

- Establishing social forestry programs like village nurseries, village woodlots, fuel wood planting, shelterbelts, canal plantings, border strips, fruit and fodder and amenity plantings.
- Conducting school programs for the creation of an awareness and motivation of the youth in Sudan.
- Disseminating new technology on stoves and their proper use so as to conserve fuel wood and charcoal.
- Supporting the FNC at headquarters and in the States in strengthening staff capabilities in implementing forestry extension programs
- Preparing and conducting national programs for National Year of the Forest, National Tree planting week, World food day and similar events.
- Preparing literature and support materials for village and community forestry, school programs, stoves technology for households, training of artisans, and general public awareness and motivation.
- Providing support to the FNC consist of awareness, motivation, technology transfer, workshops, seminars, train the trainers, knowledge, enhancement and improvement of skills (Marks, 1986)

Chapter III

Study Area

3.1. Location

Sennar State lies between latitudes $11^{\circ} 45' N$ and $14^{\circ} 03' N$ and longitudes $32^{\circ} 28' E$ and $35^{\circ} 43' E$. The area of the state is 9.7 million fedans and represents 2.7% of Sudan area. It is situated in central Sudan sharing borders with Gezira State from North and Blue Nile State at the southern part and eastern Gadarif State and Ethiopia country and from the west the White Nile state. The capital of Sennar state is Singa town. Fig. (1) Shows the map of the study area.

3.2. Population

The total population of the state is 1.285.058 capita according to Sudan 5th national census 2008 with an annual growth rate of 3.68% distributed among the localities of the state. Most of the people concentrated in the big towns around the banks of the Blue Nile and Dinder River, while some people concentrated in the production area of the state and areas of mechanized farming (Adam, 2005).

3.3. Administrative Structure

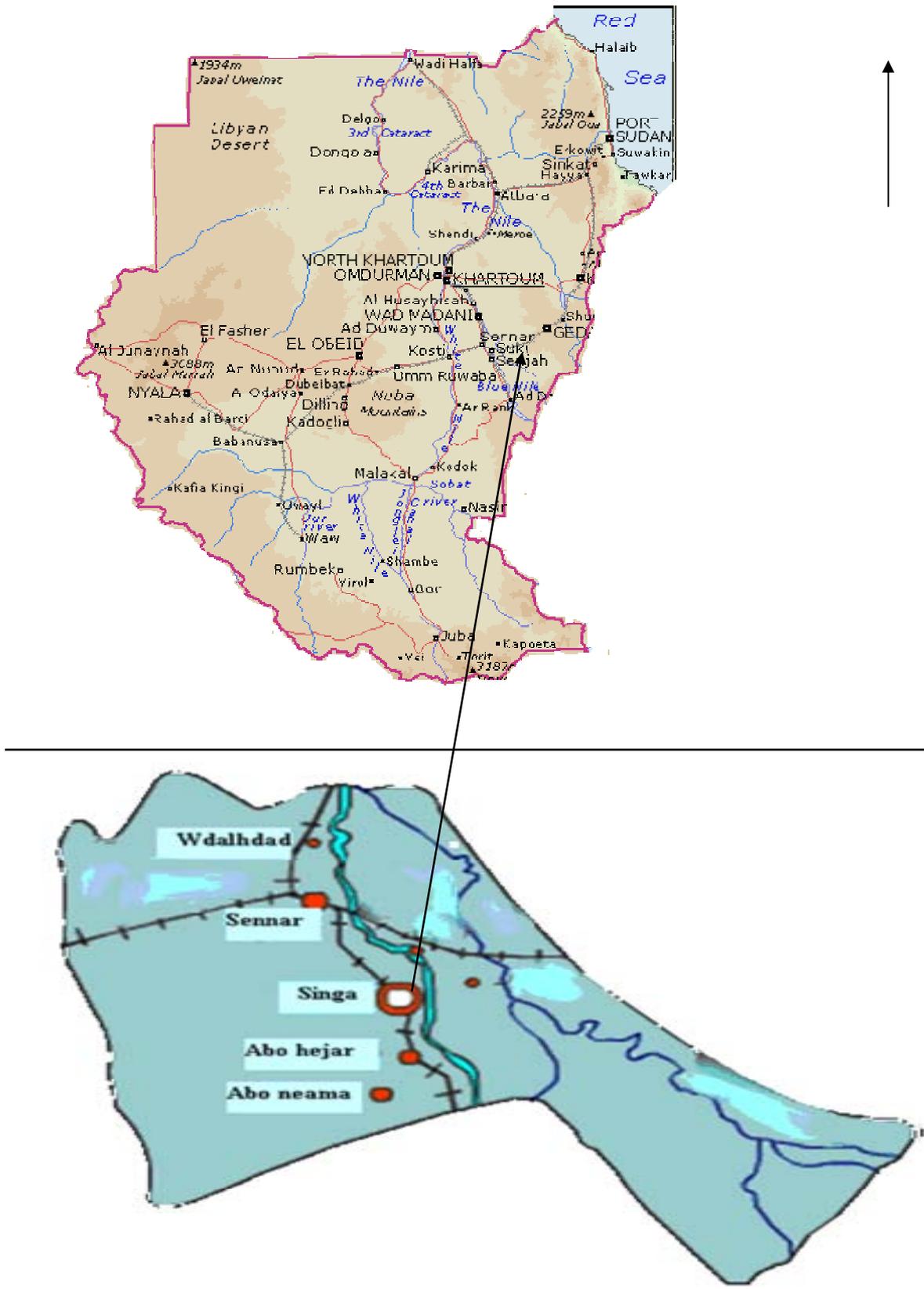
According to different geographical, ecological and ethnic variables, the State is divided into 7 localities and 21 administrative units. Table (3.1) shows the administrative structure of Sennar State. The FNC forest reserves divided to circles in each locality.

Table: (3.1): Sennar State administrative structure

State	Localitiy	Administrative units
Sennar	Sennar locality	3 units
	Eastern Sennar locality	4units
	Singa locality	3units
	Elsoki locality	3units
	Abo hojar	3units
	Eldinder locality	3units
	Daly,Mazmom locality	2 units

Source: Sennar Town Administrative Unit (2010)

Fig. (1) Map of the study area



3.4. Vegetative Cover

The area is classified as semi-arid zone with short grass savanna (Harrison and Jackson, 1958). The riverine forest reserves are distributed along each bank of the Blue Nile and its tributaries Dinder and Elrahad seasonal streams. The riverine forests are dominated by *Acacia nilotica*, planted on the flooded part of the flood basins. However, due to the variations in the topographical features (gerf, maya and karab) of the basins particularly along the Blue Nile, other commercial indigenous and exotic tree species were grown or developed naturally. *Eucalyptus* species, *Khay senegalensis*, *Tectona grandis*, *Dalbergia sisso*, *Oxytenanthera abyssinica* constitute the most important tree species grown in the gerf sites of the riverine forest reserves along the Blue Nile (FNC, 1998).

Sennar state from the rich states with forest resources that, the area of the reserved forests is 1.208.332.67 fedan in addition to the area of Dinder natural reserve which is 2.450.938 fedan. The vegetative cover represents about 34% from all state area. The natural forest reserves, locally called Dahara forest, are the dominant type of forest reserves in the study area. These forests are dominated by the association of *Acacia seyal*, *Acacia Senegal* and *Balanites aegyptiaca* and *Acacia nubica* (laut). *Acacia senegal* is managed for the production of gum Arabic for twenty years maximum rotation. *Acacia seyal* (talh) in Sudan is considered as a very important tree species for producing good quality of charcoal in addition to good quality

fuel wood for twenty years maximum rotation. Table (3.2) shows the different types of forests in Sennar State, and Table (3.3) shows the reserved forests at Sennar State circles.

Table (3.2) The type, No and area of the reserved forests at Sennar State

The type	No	Area/fed
Central forest	181	5976340.0
State forest	69	580111.0
Community and Private Forests	131	355869.0
Total	381	1.208.332.67

Source: FNC Report (2009)

Table: (3.3) The reserved forests at Sennar State circles

Circle	The type		No of forests	Area/fed
	Dahara	Reverine		
Sennar	11	64	75	139.399

Singa	1	25	26	39.437.870
Elsoki	29	16	45	83.702.006
Dinder	14	50	64	55.154.090
Wad Elnil	2	4	6	2721.085
Total	69	181	250	117274577

Source: FNC Report (2010)

3.5. Climate

Sennar state falls within the savanna region which is characterized by short rainy season and a longer dry period (Harrison and Jackson, 1958). As the area lies within very narrow geographical limits, its climate is rather uniform. The annual rainfall variability at both ends of the area is less than 10% of the average annual rainfall of the area, falling within range of 550-620mm per annum (Jackson 1958). The rainy season starts in June and ends in October with a savanna type of distribution having its peak in August. Occasional light showers fall in May. The period from November-February is characterized by cold dry weather and hot dry weather from March to June (Booth 1949, Jackson 1959). Table (3.4) shows minimum and maximum temperature, relative humidity and rainfall for the last 10 years.

During the rainy season the prevailing winds are from the south west and during the dry season from the north east. The mean daily maximum temperature is lowest in January (about 30°C day temperature) and highest in May (about 41°C day temperature). Average temperature is 40°C during

summer and 35°C during winter (Singa meteorological station 1994). The northern part of the state is within the poor savanna with an average rainfall that ranges between 300mm-600mm, while the southern part lies within the rich savanna, where the rain fall reaches up to 800mm. The relative humidity varies between 75-80% (Singa Meteorological Station, 1994).

Table (3.4): Temperature, relative humidity and rain fall at Sennar State

Year	Minimum Temperature	Maximum Temperature	Relative Humidity%	Rain fall
2000	19.5	34.2	67	544.4mm
2001	20.7	35.5	65	326.4
2002	19.8	35.9	49	341
2003	20.3	37.8	50	504.5
2004	20.3	37.3	47	224
2005	20.7	37.7	49	191.5
2006	20.1	36.9	50	437.2
2007	20.0	36.4	53	742.4
2008	20.2	36.6	53	384.4
2009	20.5	37.5	53	309

Source: Sennar Agricultural Research Station (2010)

3.6. Soil and Topography

The state lies within the central clay plain. It consists mainly of extended flat plains with a gentle slope from mountainous areas toward the north. There are some scattered mountains in the state Moya, Sagadi, Kardos, Abougroud, Tozi, Bozi, Dali and Mazmom. According to the FAO, (1974) soil analysis department classified the Blue Nile State soils according to the geographical sites from north to south into different soil types, the most important of which are; loamy, silty clay soil and heavy cranking clay soils. The soil types in Sennar State are not different from the above soil types. Soils affect the distribution and growth of tree species in the area. The soil of the flood basin of the Blue Nile exhibits some variations from that of the clay plain, therefore the soil may be classified into three major soil groups related to the basin topographic classes. The soil of the " Maya" is typical dark, cracking clays. The "Karab slopes" are characterized by a higher content of sand gravel exposed as a result of erosion. The " gerf slopes" on the other hand have deep, permeable silt deposits known to be the most fertile type of soils (Bunting and Lea 1962, Foggie 1968, Elsiddig, 1980). The little variability is expected as an influence of natural features like rivers, mountains, water streams (khores), and closeness to cultivated areas.

3.7. Economic Activities

The economy of Sennar State is predominately dependent on agricultural production. Main crops are dura, sesame, cotton, sunflower, groundnuts and horticultural products. There is expansion in the agricultural activities in the state as indicated by the regional Ministry of Agriculture in the State, where the cultivable land is about 6 million fedans. The 5.5 million fedans used for rain fed agriculture and 1/2 million fedan are irrigated agriculture (Regional

Agriculture Report, 2001). Animal production plays an important role in the economy of the household in the area. The main types of livestock are sheep, cattle, goats, and camels. Livestock raising ranks as second job and about 40% of the population are nomads. Natural grasses are the main source of pasture for livestock (Adam, 2005). There are other activities like employment of the manufactured handicrafts and trading and employment at the government institutions.

Chapter IV

Methodology

4.1. Introduction

This chapter includes description of the scope of research, the target group, and sample selection. Moreover, the data collection instrument (questionnaire) is also described in forms of its construction, validity and field-testing as well as the procedures and methods employed for data analysis.

The study was undertaken for the assessment of the extension activities at Sennar State and the benefits of the different activities adopted by the local communities. Moreover, the study attempted to investigate the potentiality of the local people in managing their communal forests on sustainable basis and guarantee a steady supply of goods and services and protection of the reserved forests in the state. Two types of data were used to collect the necessary information, namely, primary and secondary data. The source of the secondary data includes FNC files and archives, annual reports, projects documents, and previous studies conducted in the same site. The primary data were principally collected through face-to-face interviewing to investigate the local people participation in all extension activities in the study area. More specifically, the data covers the main items of the objectives of the study mentioned in chapter one.

4.2. Selection of the Study Area

Sennar State is considered as pioneer state in the adoption of the innovation of community forestry in its different forms. The wide spread of the activities of community forest is attributed to the fact that the state had been

an attractive site for NGOs where several organizations worked in the state in the field of community forestry. This situation created a keen, well-trained staff who continued the message after the phase-out of these projects. According to the annual report of the FNC (2010), the number of the private and communal forest reached about (134), this figure reflects the wide spread of the adoption of the innovation of community forestry intervention to the extent the state could be the first ranking state with respect to areas covered by community and private forests. Because of the wide spread of the activity and the devastating area of the state, Singa locality was selected for this research. .

4.3. Selection of Villages

Singa locality is divided to three administrative units: Um shoka, Um benien and Singa. The number of villages in Singa locality are (143), villages. The activity of community forestry is not practiced in all the villages of the locality. Several factors are behind non-adoption of the innovation of community forestry in all the villages like remoteness from the Blue Nile and some villages were not involved in the programs of the NGOs working in the study area. Accordingly, a selection of villages for this study was made according to the number of the community forests in each administrative unit. The number of the community forests in Umshoka administrative unit is (12) and the number in Unbenien is four forests and Singa unit has No community forests. Twenty percent of the villages from each administrative unit were selected, so five villages were selected for this research. Table (4.1) shows the selected villages and the number of respondents.

Table (4.1): Selection of the target group

State	Localities	Selected villages	No of respondents
Sennar	Singa	1-Khalil Elmahata	60
		2-AbuEldahab	20
		3-Elmasudia	23
		4-Khalil Elkubra	20
		5-Ombiaga	24
Total	1	5	147

4.4. Selection of Households

The household is the basic unit of production and consumption in rural areas. Hence, it was difficult to find a correct definition of who should be included in household selection. Mohammed (2000) reported that household members could be identified on combination of the following:

- Residence: the household members live in the same house.
- Production or working unit, the household members work together in a common field.
- Consumption: the household members pool their income.

Many households fulfill all the above criteria. In each surveyed village, simple random sampling was done to choose an individual to represent a household from the list of people participating in community forestry activities. 20% of the households were selected randomly for interviewing from the total No of households of each village.

4.5. Main contents of the Questionnaire

The questionnaire consists of the following contents:

- General characteristics of respondents
- Idea of community forestry
- Management of community forestry
- Marketing and distribution of benefits
- Problems and constraints of communal forests
- Proposals for improvement of communal forests

4.6. Construction of the Questionnaire

The construction of the questionnaire was made according to the guidance of the (FAO 1985a). The suggestion of the supervision as well as ideas of other experts in the field of study helped to reach the final format of the questionnaire. The following guidance of (Burchinal, 1986) was also given special consideration in the construction of the questionnaire:

- To be contain that each question was relevant to the topic and necessary.
- To express each question as simply as possible.
- State questions in specific concerns to terms.
- To obtain criticism of all prepared items by a colleague or friend.

- To state the items in the language respondents use in every day conversation.

Two types of questions were used in the questionnaire, closed-ended questions, with mostly multiple choices or “yes and no” style of answers, and dichotomous question in step-wise style, each answer leading to a specific set of follow up question with no open-ended question except where it is inevitable. This type of questions was used in order to:

- Make the least demand upon respondents.
- Permit quick, efficient collection of data.
- Permit easy, quick and accurate analysis of answers.
- The combination of question and associated response categories sometimes help respondents to understand the question more clearly.
- They are more useful in obtaining answers to sensitive questions.
- The open-ended question at the proper level of generality.
- Responses are difficult to analyze and summarize.
- They may impose considerable burdens on respondents and interviewees.
- They are more likely to produce irrelevant and worthless data.

4.7. Organization of Data

The conceptualization step was followed by the organization of the questions.

The following guidelines were considered:

- To begin with simple, easy to answer questions.
- To place sensitive or more complex questions late in the questionnaire.
- Where it makes sense, to place the items in a logical order.
- To try to create an interesting mix terms within the questionnaire.

An introduction was set to the questionnaire at the top of the first page of the questionnaire, the introduction was written in short, simple sentences in the local language used by the respondents and in words, they understand. The introduction was composed of the following elements:

- Identification of the person conducting the research.
- Explanation of the purpose of the study and why it's important.
- Explanation of how the respondents were selected.
- Assurance that answers would be protected and not made known to any one else to assure confidentiality.

4.8. Pre-testing

The formulation of the questionnaire was followed by a pre-test step to discover and correct any flaws in it. The purpose of the pre-test is to make sure that the questionnaire would deliver reliable and valid data for answering the problem under investigation.

Finally, the supervisor checked the questionnaire, and accordingly, some questions were materialized into simple forms with minimum items to obtain necessary information. The questionnaires were finally revised and printed.

4.9. Permission for Data Collection

Prior to the start of data collection, the General manger of the FNC was informed about the nature of the research and the study area. A request letter was addressed to the general manager of FNC to issue an order to the forest officers in the study area to offer the possible assistance and to help in data collection. After reaching the selected village, the first step involved obtaining permission from local authorities before conducting the survey. This permission is certainly recommended for surveys in rural areas where the residents may be more suspicious of outsiders. The permission was taken from the local authorities. The leaders were also asked to convince the local responsibilities to cooperate in conducting the research.

4.10. Statistical Analysis

The statistical analysis commenced through exploratory manipulations of the data obtained in the study area. This process was accomplished by critically examining the data through the use of simple techniques of analysis. The

main tools were the construction of simple tables and selected cross-tabulation which allows tentative answers to many of the question being asked in the survey.

Chapter V

Results and Discussion

5.1. General Characteristics of Respondents

5.1.1. Age and Source of Income

Age group is an important variable that affect the behavior and attitudes of the targeted communities' different age categories guarantee the sustainability of the activity. The interviewed sample includes 12% of the respondents as under 18 years old; this group represents the young people on which the community development could be based upon. This agrees with Garforth (1982) in showing that when a large percentage of the population is under 18 years of age, these young people represent the farm families of the future, and it is essential that extension does something towards preparing them for that future. About 64.6% falls within the age group between 19-39 years, while the rest of the respondents (23.1%) fall within the age group of above forty. Table (5.1) shows the age groups and source of income of the participants in the study area.

Table (5.1): Age groups and source of income

Village	N	Age (%)			Source of income (%)			
		<18	19-39	>40	Farming	Animal rearing	Gov. post	Other
K.	60	16.7	67.3	15	40.7	5.1	28.8	25.4

Elmahata								
Abueldahab	20	20	55	25	94.1	70.6	-	-
Elmasudia	23	8.7	56.5	34.8	45.5	-	54.5	22.7
K. Elkubra	20	-	60	40	65	5	20	25
Ombiaga	24	8.3	75	16.7	29.2	4.2	29.2	50
Total	147	18	95	34	70	17	40	37
%		12.2	64.6	23.1	49.3	12	28.2	26.1

From these findings, it is clear that most of the respondents are youth. This will facilitate the process of recruiting the local people in activities that contribute to the development of their communities through adoption of community forestry activities. Moreover, the high proportion of the young people reflects the stability of the rural communities in the study area. The category of old people in any community is of, a paramount importance with regard to conservation of the natural resources (indigenous knowledge). This agrees with Chamber (1982) who emphasized the importance of indigenous knowledge, which is acquired through time, could be utilized to the maximum for the protection and rational use of natural resources. The age group and the gender issue are among the most important variables, which are given special consideration in the process of development (Chamber, 1982).

The source of income depends on occupational category of the respondents. It is an indicator of livelihood and welfare of the households in the study

area. Agriculture represents the main source of income in the study area where about 49.3% of the respondents practiced farming (Table 5.1). Irrigated and rain fed agriculture are the two patterns of agriculture practiced where all the community members are traditional tenants. Generally, agriculture in the study area is for self sufficiency where farmers tend to cultivate small parcels of lands with subsistent crops. In the study area the farmers are constantly faced with nagging doubts about whether the rains will come and if they well have enough food to survive on each year. Drought is a regular, unwelcome visitor to the region (Adam, 2005). Agriculture and animal rearing represent the main source of income to the rural dwellers, but in the study area according to the above mentioned reasons animal rearing is practiced by 12% of the respondents. Recently farmers shift from risky rain fed cultivation and animal rearing to government post where 28.2% of the respondents asserted that they rely on government post as a source of income, while 26.1% rely on other activities for income generation like trading in forest products, blacksmithing mason etc.... The results indicate the limited alternatives in job opportunities in the study area.

5.1.2. Education

The educational level is considered as a benchmark against which change in awareness, knowledge, and attitudes can be measured regarding the new ideas in forestry and environment. In the study area, the educational level of the target group differs considerably. Thirty two per cent of the interviewed samples have secondary educational level, while 29.3% have university level and 25.2% have elementary level. khalwa education or illiterates represent

8.2% of the interviewed sample. From the above findings it is clear that high percentage of the respondents is literate which reflects the high degree of awareness towards environmental issues. Generally, the level of literacy is encouraging for using different extension methods for dissemination of information, since the literates are capable to read, write and follow instructions. The illiterate also should not be ignored, suitable extension message could be formulated to address the illiterates, provided that these methods should be simple to understand like home or field visits. Fig. (5.1) displays the educational level of the participants in the study area.

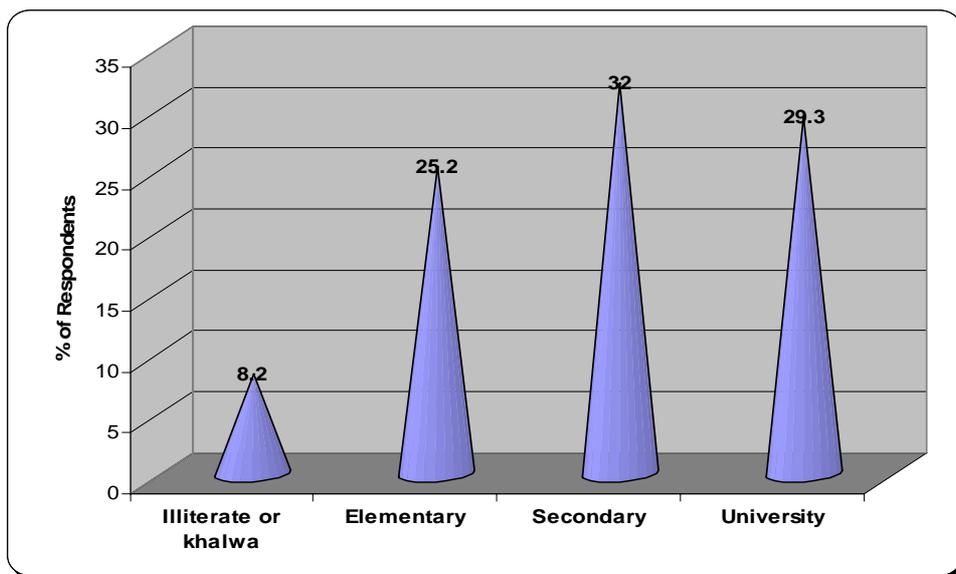


Fig. (5.1): Educational level of the participant in the study area

5.2. The Idea of the Community Forest

In this research, special attempts were made to explore the initiator of the idea of community forestry in the study area. The majority of the

respondents (71.4%) accentuated that the idea of the activity is autonomous (locally driven), while (29.9%) of the interviewed sample mentioned the extension staff of the Forests National Corporation is behind the adoption of community forestry intervention. The extension program in the state started since early 1980, backed with up-to-date infrastructure and facilities that enable the extension personnel to cover devastating areas in the state. The local leaders are the corner stone in the allocation of lands. Fig. (5.2) explores the initiator of the community forestry in the study area.

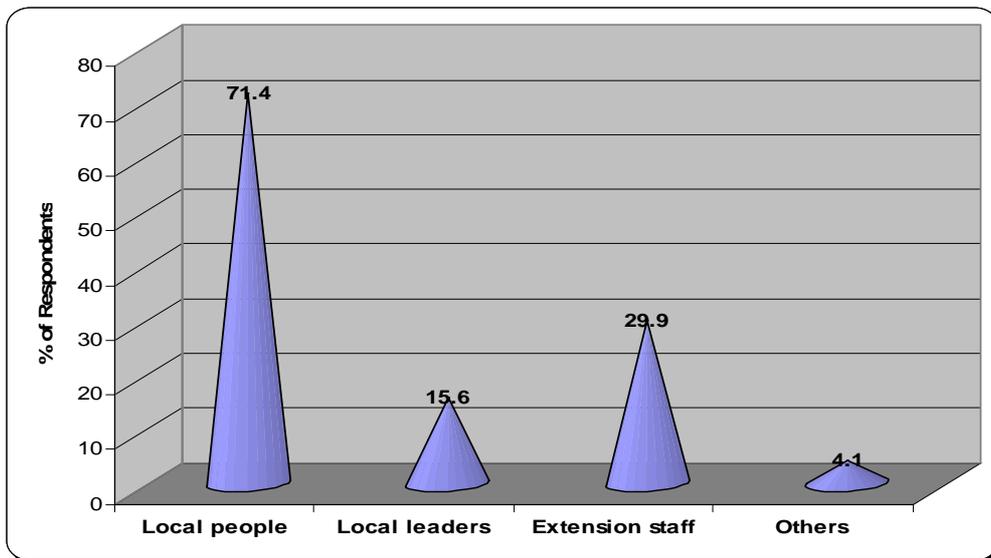


Fig. (5.2): Initiator of the community forest in the study area

The role of the local leaders in the management of natural resources is appreciable as supported by (15.6%) of the interviewed sample who clarified or attributed the success of the intervention to the traditional leaders. This assumption is supported by the argument that the local leaders were acquainted about the activities of private forests and woodlots from the

adoption of the activities in the nearby villages in the study area. The rest of the respondents (4.1%) attributed the idea of community forests to other resources like Non Governmental Organization (NGOs) in the area, and farmers who adopted the activity of private forests on an individual basis.

5.3. The Objectives of Forest and the Determination of Objectives

Clayton (1985) showed that the traditional forest projects have two broad objectives: industrial (commercial) and environmental (protective). Social forestry projects on the other hand have different sets of objectives and activities that aim at increasing rural employment and raising the living standards of the rural and may also have environmental and protective objectives similar to that of traditional forests projects. The overall goal of community forestry (broad objective) is to raise the standard of living. In the study area the objectives of community forestry coincide with the broad objective of the notion of community forestry which focuses on raising standard of living. The majority of the respondents (92.5%) asserted that the objective of community forestry is to improve the social services at the village level with special emphasis on schools maintenance, health centre establishment and water facilities, while 60.5 % of the respondents believed that community forest has compatible objective represented in the environmental value (prevention or mitigation of dust storms, wind erosion and amelioration of microclimate). Some respondents (27.2%) mentioned the recreational value of the community forest especially at ceremonies seasons like national aids. Table (5.2) shows the objectives of the community forests and the methods of determination of the objectives in the study area.

Table (5.2): Objectives of forest and methods of determination of objectives

Village	NO	Objectives of forest (%)			Determinant of objectives (%)		
		Village services	Environ. protection	Recreational site	Consensus	Priorities	Village committee
K. Elmhta	60	88.3	56.7	56.7	80	21.7	18.3
Abeldahab	20	100	45	45	55	55	10
Elmasudia	23	87	60.9	60.9	69.9	56.5	-
K. Elkubra	20	100	65	65	50	50	30
Ombiaga	24	95.8	79.2	79.2	66.7	20	16.7
Total	147	136	89	89	101	52	23
%		92.5	60.5	60.5	68.7	35.4	15.7

There is no specified body for the determination of the objectives of the community forestry in the study area. Different mechanisms were deployed to arrive at an agreed upon objectives. The majority of the respondents (68.7%) showed that the objectives of the communal forests are set by general consensus of the village members. While 35.4% mentioned according to the priorities of the village needs. The rest of the respondents (15.7%) said that the village committee is devoted to manage the communal forest in the different aspects; therefore, they are eligible to determine the objectives of the communal forests.

5.4. The Role of the FNC and Traditional Leaders

Forestry extension agents played an important role in introducing and initiating the idea of community forestry in the area. Also the extension unit played major role in the execution of community forestry through raising of awareness, training and distribution of seedlings free of charge. Moreover, the role of the FNC (extension unit) extends to cover all the procedures of reservation of the forests until their registration in the national gazette. This fact is supported by (69.4%) of the respondents who stated that the role of the FNC is the provision of extension services and (74.1%) mentioned the distribution of seedlings and seeds free of charge as the main contribution of the FNC in the success of the community forestry in the study area, while (6.8%) attributed the provision of land by the FNC encouraged the local communities to adopt the intervention of community forestry. Table (5.3) shows the role of FNC and the role of traditional leaders.

Table (5. 3): The role of FNC and traditional leaders

Village	N	Role of FNC (%)			Role of traditional leaders (%)		
		Extensi on advise	Seeds and seedlin gs	Lan d Pre p.	Mobilizati on of people	Financi al support	Land allocati on
K. Elmahata	60	60	73.3	10	81.7	28.3	38.3

Abueldahab	20	75	85	5	95	25	-
Elmasudiana	23	56.5	91.3	8.7	78.3	30.4	13.0
K. Elkubra	20	85	90	5	90	30	35
Ombiaga	24	87	37.5	-	91.7		25.0
Total	147	102	109	10	128	38	39
%		69.4	74.1	6.8	85.7	25.9	26.5

The role of the traditional leaders in the management and initiation of the community forestry is very important relying on nafir (working party). The traditional method of mobilizing labor in the rural areas is by organizing work parties, 85.7% of the respondents mentioned that the traditional leaders mobilize the local people and encourage them to participate in the activities of community forestry, while 25.9% attributed the financial support of the forestry to the local leaders and 26.5% mentioned that the role of the traditional leaders is land allocation.

5.5. Role and Participation of Local People

It is useless to execute or manage any communal work without the active participation of the local population and sub population. This participation has to be undertaken with a total commitment from the early phases of project design through to implementation, since the development is the responsibility of all members of the community (Mohamed and Adam,

1995). The active participation can be attained if the change that follow rural development and disturb the habit of the local people has been gradual and minimal at the first stages and coincide with a substantial improvement of the standard of living (Leach and Mearns, 1988). The participation of local people in different activities considered as a focal point for the success and sustainability of the community forest work. Table (5.4) shows the role and participation of the local people.

Table (5.4): Role and participation of local people

Village	N	Role of local people (%)			Participation of local people (%)	
		Tree planting	Land preparation	Provision of tools	Excellent or good	Poor
K. Elmahata	60	100	20.0	26.7	81.7	13.3
Abueldahab	20	100	5.00	15.0	95.0	5,00
Elmasudia	23	95.7	13.0	39.1	100	-
K. Elkubra	20	100	15.0	40.0	100	-
Ombiaga	24	91.7	4.20	25.0	100	-
Total	147	144	20.0	42.0	135	9.00
%		98.0	13.6	28.6	91.8	6.10

It seems that the extensionists were able to reach the different groups through awareness raising and inducement processes. This is reflected in the high level of participation of the target groups where (91.8%) showed that the participation was excellent. This high level of participation may be verified by the fact that the community forests meet the needs of the local people. Participation recognize peoples central role in directing their own lives, it appreciates that if the people are brought to realize their problems honestly and that they are invited to suggest solutions to the identified problems. They will voluntarily work towards removing those constraints and consequently better their lives (Mungala, and Granholm, 1991). The respondents were involved in different activities; the majority of them (98%) were indulged in tree planting. While 13.6 % of the interviewed people stated that land preparation is the task of the local people and 28.6% mentioned provision of tools.

5.6. Reasons of Poor Participation

Few people (6.1%) in the study area assessed the participation of the local people in the activities of community forestry as poor. The members of this group support their allegations by the following reasons; the number of the youth involve in the activities is limited as asserted by 16.4% of the respondents. The youth are searching for job opportunities not offered to them in their villages. Fig. (5.3) shows the reasons of poor participation in the study area.

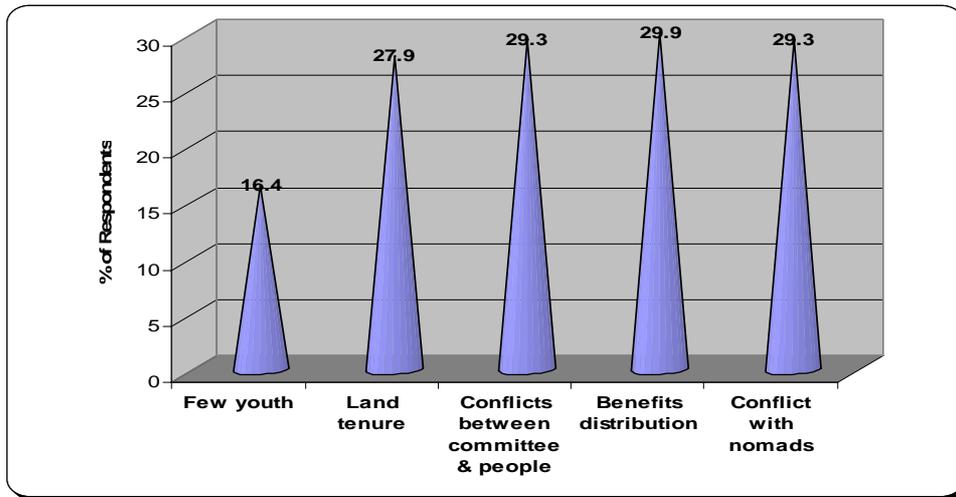


Fig.(5.3): Reasons of poor participation

As far as land tenure system is concerned different forms of ownership exist in the study area. Properly defined and managed land tenure system is essential to ensure balance and sustainable development. Customary land tenure is the most dominant in the rural areas of Sudan, whereby land is owned and disposed of in accordance with customary regulations. Specific rules vary according to ethnic groups and regions. The tenure system also exists on its own as communal land ownership. The land owner around the forest area encourages the communal forest land and creates problems especially when the distribution of benefits takes place. Due to this reason some of the local people in the study area refuse to participate in the community forestry activities as asserted by 27.9% of the interviewed sample. About 29.3% of the respondents attributed the poor participation to the conflicts between the forest committee and the villagers. Villages have not elected the forest committee; therefore they have negative thoughts around some of the members of the village committee and this because there is No, common conscience of all the committee as they thought. Also from

the main problems of the community forests that the benefits distribution as stated by (29.9%) of the respondents. other respondents attributed the reasons to the conflicts with the nomads that by the illegal wood cutting and illegal pasturing.

5.7. The Age Groups Participated and the Women Role

From this study the age group which was more active in activities of community forestry and participated genuinely, as stated by 83.7% of the interviewed sample, was the youth next to them came the old people as indicated by 37.4 %. The last group is children group as mentioned by 14.3%. These findings pave the way for the extension unit to mobilize the local people relying on their willingness to participate in the community forestry activities. Table (5.5) shows the age groups and the women role in the study area. The women had big role and good participation in all the villages of the study area except Abu eldahab village.

Table (5.5): Age groups and women role

Village	N	Age groups (%)	Women role (%)
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		Youth	Old people	Children	Tree planting	Food making	Financially
K. Elmahata	60	68.3	41.7	30	85.7	35.7	3.6
Abueldahab	20	100	25	-	-	-	-
Elmasudia	23	100	30.4	-	77.8	55.6	16.7
K. Elkubra	20	90	30	10	95	45	-
Ombiaga	24	87.5	50	4.2	31.6	89.5	-
Total	147	123	55	21	87	56	5
%		83.7	37.4	14.3	77	49.6	4.4

Seventy seven per cent of the respondents mentioned the role of the women is limited to tree planting activity, while 49.6% stated the role of women is represented in food making, and the rest of the respondents (4.4%) mentioned the women role is financially through paying their money share imposed by the forest committee. It worth mentioning that women role is not similar in all villages for example women of Abueldahab Village had no role in any social work.

From the above findings it is clear that all the age groups participated genuinely in social work. This stratification of community members into different categories helps the extensionists to construct extension messages that best suit any category. In many rural societies, a special relationship exists between women, the family and trees. This fact has been only rarely acknowledged in past development programs. Moreover, only women can

identify accurately how future projects are likely to affect them, and in what ways they need help. The aim of rural development is to alleviate poverty. The basic reason why women now need special attention is that, though women work longer hours than men in most rural societies, they are also poorer. There is a commitment to ensure that future development projects corrects rather than worsen this imbalance (FAO, 1984).

5.8. Community Forest management and Selection of Village Committee

The community forestry activities propose three goals for development: sustainable productivity, equity in the distribution of benefits and a sense of cultural and ecological continuity (Burch and Grove, 1993). The three goals can be met through proper management of community forests. The success of community forestry programs, irrespective of the model, depends largely on effective people’s participation at various stages of their implementations. Many social forestry programs have stumbled along and eventually faded away. The downfall of these programs is partially a result of the non-integration of social forestry projects within the field of rural development and partially a result of implementers who did not seek the active participation and involvement of the local people (Sen and Das, 1987). Table (5.6) shows the responsible body for the management of the communal forests in the study area.

Table (5. 6): Community forest management

Village	N	Forest management (%)	selection of forest committee (%)
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		Forest comm.	Salvation comm.	Traditional leaders	Sheikh	Salvation committee	Villagers
K. Elmahata	60	21	81.7	15	6.7	83.3	48.3
Abueldahab	20	48.3	83.3	6.7	15	81.7	21
Elmasudia	23	65	55	5	10	35	65
K. Elkubra	20	91.3	13	-	4.3	39.1	60.9
Ombiaga	24	100	30	5	-	40	65
Total	147	53	94	15	6	86	91
%		39.1	63.9	10.2	4.1	58.5	61.9

In the study area the management of the communal forest is tackled to different bodies. The majority of the respondents (63.9%) mentioned that the village committee has the final say in the management of the communal forests and 58.5% stated that the salvation committee is responsible about the communal forest management. The rest of the respondents (4.1%) clarified that the traditional leaders also contributes to the management of the forest through their advices and assistance in the different aspects of forest management. The salvation committees which are governmental local organizations were established to facilitate the flow of communal services and organization of local communities. In Khalil El Mahata village, the salvation committee contributes to the management of the communal forest as mentioned by 83.3% of the respondents and in Ombiaga village as stated by (66.7%) of the respondents. In Khalil El elmahata and Ombiaga communal forests the management of the forests is supervised by the

salvation committee as mentioned by the entire interviewed respondents. While in Khalil Elkubera and Elmasudia and Abu eldahab villages the communal forests are managed by forest committee.

The perception of the local people about the management of the communal forest in the study area is good where the majority (61.9%) of the respondents asserted that the forest committee is potential and capable of managing the forest. The majority of the respondents in Khalil Elkubra (65%), Elmasudia (60.9%) and Abu Eldahab (65%) villages claimed that the selection of the forest committee is based on the villager's options (general consensus or election). This procedure was adopted by all the NGOs working in the country. While in Khalil El Mahata (81.7%) and Om biaga (87.5%) villages the selection of the forest committee by the salvation committee of the village. Generally in the study area 63.9% of the respondents mentioned that the salvation committee is responsible of the selection of the forest committee. While 39.1% stated that the villagers who are responsible of the selection of the forest committee and the rest of the interviewed sample (10.2%) showed that the sheikh is responsible of the selection of the forest committee.

5.9. Women Participation and Role of Forest Committee

The selected sample showed that women participation in community forest activities is high as mentioned by, (76.9%) of the respondents stated that the women had role in all activities. In Abu Eldahab village the women participation is missed as indicated by the entire respondents of the village.

While in Khalil Elkubra and Khalil Elmahata villages women had good participation in all activities of the community forest. Table (5.7) shows women participation and the role of forest committee.

The most important element in women's participation in forestry activities is not the tree but the women themselves, while they may provide voluntary labour for environmental rehabilitation efforts; they also need income in order to improve their living standards (Osman, 1996).

Table (5.7): Women participation and Role of forest committee

Village	N	Women participation	Role of forest committee (%)		
			Communication	Financial	participation
K. Elmahata	60	93.3	68.3	43.3	60
Abueldahab	20	-	95	45	55
Elmasudia	23	78.3	96.6	21.7	52.2
K. Elkubra	20	100	70	30	80
Ombiaga	24	79.2	87.5	12.5	25
Total	147	113	111	49	81
%		76.9	75.5	33.3	55.1

The main role of the forest committee in the study area as stated by the majority of the respondents (75.5%) is communication with the extension office and other institutions for the registration steps and extension services.

While 33.3% stated that the forest committee role is advocacy in order to provide the village committee with the necessary finance to manage the forest. The rest of the respondents (55.1%) mentioned that the role of the forest committee is encouraging local people for participation.

In the study area in the different villages each community forest had Committee and each committee is to be formed of 10-15 persons (gender is considered in the formation of the committee) to carry out the following jobs: determine the best site for planting trees, and to help solve any problems related to land ownership or its use, lead the people of the village in carrying out all activities (land preparation, fencing, planting, weeding, thinning...etc)., act as link between the villagers and the forestry extension staff, distribution of benefits after forest harvesting, to carry further contacts in the same or other villages in the study area, to lead the people to do subsequent tending operations and management activities till the final felling of the trees according to the advices of the extension staff, to do the necessary contacts with the governmental institutions (FNC, reports).

5.10. Relation with the FNC

Forestry Extension is a broad term which has many applications in bringing about forestry and natural resources management in concern with other disciplines concerned with long lasting resource development and management. It concerned with such programs and activities as urban and community and village forestry, agro-forestry, tree farming, farm forestry,

afforestation, technology transfer, information exchange and training. The forestry extension programs accomplish the goals and objectives of forest and natural resources management. In the study area the majority of the respondents (65.3%) mentioned that the relationship of the villagers with the FNC is the extension services provided by the FNC, while 27.9% asserted that the relation between the two bodies (FNC and local communities) is restricted to issuing of license and payment of royalties. The rest of the respondents (4.8%) accentuate lack of relation with the FNC. (Table 5.8) explores the relation of the FNC with the targeted communities and the source of seedlings. As far as provision of seedlings is concerned, the majority of the respondents (87.1%) mentioned the source of seedlings is FNC nursery while (12.9%) of the respondents stated that the source of seedlings is private nursery.

Table (5.8): Relation with FNC and source of seedlings

Village	N	Relation with FNC (%)			Source of seedlings (%)	
		No relation	Extension and seedlings	License or royalty	FNC	Private
K. Elmahata	60	6.7	28.3	License or royalty	85	15
Abueldaha b	20	-	100	60	100	-
Elmasudia	23	-	91.3	-	91.3	8.6

K. Elkubra	20	15	70	8.7	85	15
Ombiaga	24	-	100	15	79.2	20.8
Total	147	7	96	41	128	19
%		4.8	65.3	27.9	87.1	12.9

5.11. Extension Services

Extension, which is an informal education, aims to transfer knowledge to local people to change their skills and attitudes in order to improve their lives. Forestry extension meets the same goals, through different practices, such as community forestry activities. For the extension unit to perform its tasks efficiently it should be backed with qualified personnel and suitable infrastructure, particularly transportation means. Table (5.9) explores the main services of the forestry extension in the establishment of the communal forests and other extension services.

In the study area, the respondents believed that, forestry Extension played an important role in the provision of seedlings and their transportation as mentioned by 80.2%. While 75.5% stated transfer of technical know-how is the most important service. Sixty five per cent of the interviewed sample assessed the role of the extension services as raising of environmental awareness and dissemination of information about trees and their benefits. The rest of the respondents (12.2%) emphasized the role of the extension services in energy program in which the extension unit distributed LPG cylinders and improved stoves by cheap prices and through installment to the villagers. Also when the respondents asked about the extension agents at

their villages (28.6%) of the interviewed sample mentioned the presence of extension agents at their villages. Table (5.12) shows the extension services at the study area.

Table (5.9): Extension services in the study area

Village	N	Role of forestry extension (%)				Para-extensionist (%)
		Information	Seeds & seedlings	LPG & stoves	Technical know-how	
K. Elmahata	60	47.1	68.3	18.3	70	30
Abueldahab	20	85	85	-	75	6
Elmasudia	23	43.5	69.6	4.3	78.3	39.1
K. Elkubra	20	85	55	30	85	45
Ombiaga	24	91.3	62.5	-	79.2	20.8
Total	147	89	118	18	111	42
%		65	80.2	12.2	75.5	28.6

From the above findings, clear that the respondents subjected to extension services through the different extension programs which dealing with environmental issues with special emphasis on tree planting (at home and farm or public places) and this is by seeds and seedlings distribution free as mentioned by the majority of the respondents (80.2%).

5.12. Extension Visits to the Communities

Regarding the extension visits, 78.2% of the respondents stated that there are extension visits in the study area and the number of the extensionists varies from time to time. About 20.4% of the respondents describe the extensionists' visits as irregular. The number of visits per month is not constant. The majority of the interviewed sample (64.1%) described the visits as sporadic, while 30.3% mentioned that the number of visits vary between one to four times per month. The rest of the respondents (5.5%) stated that the number of extensionists' visits per month is more than four times per month. About the time of the visits the majority of the interviewers (70.7%) stated that the visits are arranged at suitable times, but in Khalil ElMahata the majority of the respondents stated the time of visits not suitable for them, and they thought the suitable time at evening. Table (5.10) shows the extension visits to the study area.

Table (5. 10): Extension visits to the study area

Village	N	Extensionists visits (%)		No. of visits/month (%)			Time of visits (%)
		Extension visits	Systematic visits	1-4	>4	Sporadic	
K. Elmahata	60	58.3	23	34.5	6.9	58.6	41.7
Abueldahab	20	100.0	-	5	-	95	95

Elmasudia	23	95.7	47.8	34.8	17.4	47.8	100
K. Elkubra	20	90	20	35	-	65	75
Ombiaga	24	83.3	4.2	33.3	-	66.7	91.7
Total	147	115	30	44	8	93	104
%		78.2	20.4	30.3	5.5	64.1	70.7

From the above findings, all the respondents showed that they are aware of the existence of extensionists at their sites and they have direct relation with the extensionist as mentioned by 78.2%. The majority of the respondents showed that the time of visits suitable for them (evening or morning). This result shows that some respondents are subjected to extension visits during morning and/or evening times. The arrangement of extensionist visits was made for the sake of meeting all the respondents. In the morning women stay at home while men look for income generating activities. From the above findings it seems the extensionists are aware of the suitable time for the arrangement of visits for the target group as indicated by 70.7% of the respondents. Also, the visits were not systematic and sporadic as mentioned by (64.1%) of the respondents. The visits not regular attributed to many reasons in the study area so no special vehicles for extension work, also no perfect plan for the programs. The advantage of the visit method is the greatest value in the direct contact between the person visited and the staff member. This can create true two-way communication and a mutual understanding of forestry issues both from the official and personal view point. FAO (1986) showed the disadvantage of this method which is exemplified in its difficulty for the extension staff actually to carry out all

the tasks which are part of their job beside commitment to pursue this method. This method requires much travel, which are skipped in favor of easier duties.

5.13. Topics Tackled by Extension and Proposed Fields of Extension

Forestry extension field programs are differentiated according to the target groups and types of activities. These programs include village woodlots, farmer’s woodlots and shelterbelts, schools program, women’s tree planting and improved stoves, tree planting activities for homes, roads and public places plantations and the program of nomads’ forest protection. In the study area the extension program focuses on the social forest program as mentioned by the majority of the respondents (88.4%). The other program focuses on raising of the awareness especially environment protection which mentioned by 53.7%. While 19% mentioned shelterbelts and the rest (18.9%) mentioned energy saving programs. Table (5.11) shows the topics tackled by extension and proposed fields of extension. The study area is pioneer in the adoption of community forestry intervention. The number of community forests in the state is 136 forests (FNC 2010 report). The majority of the respondents (88.4%) asserted that the main topic tackled by the extension unit is community forestry.

Table (5.11): Topics tackled by extension and proposed fields of extension

Village	N	Topics tackle by extension (%)	Proposed fields of extension (%)
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		Soci al fore st	Shelt erbel ts	Ener gy	Protect ion	Rural devel op	Afforesta tion activities	Awaren ess raising
K. Elmahat	60	83.3	13.3	25	70	66.7	18.3	16.7
Abuelda hab	20	100	30	-	55	30	29.2	10
Elmasu dia	23	91.3	17.4	8.7	26	39.1	8.3	13
K. Elkubra	20	95	25	30	90	40	10	10
Ombiag a	24	83.3	20.8	16.7	45.9	6.3	25	25
Total	147	130	28	27	79	75	28	23
%		88.4	19	18.9	53.7	50.3	19	15.6

Beside the different activities carried out by the extension unit in the study area the respondents have proposals that can be covered by the extension unit in the study area as stated by 50.7% of the respondents. Afforestation activity was suggested by 19% and 15.6% proposed intensive extension on awareness raising.

5.14. Information Dissemination to Local Communities

It is generally assumed that forestry extension staff should be backed with relevant, scientific and up-to-date information which should be disseminated to the clients so as to change their attitude or help them to solve their problems. The successful extension staff should be able to understand the local conditions of the communities, the willingness of the local people to cooperate and their readiness to accept changes through using different extension methods (Magno, 1982). Table (5.12) shows the main fields of extension methods in the study area.

Table (5.12): Extension methods in the study area

Village	N	group extension method (%)			Individual method (%)	Mass media methods (%)		
		Fair	Seminars & lectures	Meeting & group discussion	Visits	Radio	TV & video	Press
K. Elmahata	60	16.7	41.7	63.3	28.3	Radio	71.6	11.7
Abueldahab	20	-	-	20	80	51.7	40	-
Elmasudia	23	4.3	21.7	26.1	52.2	85	56.5	-
K. Elkubra	20	15	35	70	40	91.3	100	10
Ombiaga	24	4.2	8.3	29.2	62.5	35	63.3	8.3
Total	147	15	39	69	68	79.2	99	11
%		10.2	26.5	46.9	46.3		67.4	7.5

The majority of the respondents asserted that the extensionists use mass media methods (radio) as stated by 69.6%. While 67.4% mentioned TV and audiovisuals methods. Also group extension methods used specially meeting and group discussion as stated by 46.9%. In the study area the extension staff also uses individual methods like client visits either at home or at field and this mentioned by 46.3%. The greatest value of visits is the direct contact between the participant and the staff member. This creates two-way communication and a mutual understanding of forestry issues both from the official and personal views. The forestry extension staff should have the freedom to convey the people's views on important issues to their senior officers (FAO, 1986). The selection of this type of extension method for the dissemination of information is successful, because the extensionist finds enough time to discuss with the client in a good atmosphere, in which the client feels free to ask any question stinging in his mind without the fears of being criticized by others. Seminars and lectures are also used to convey extension messages to the local people as mentioned by 26.5%. Few respondents (10.2%) mentioned fair as a method for dissemination of information, while (7.5%) mentioned press.

5.15. Number of Harvests and Marketing Method

The community forests in the study area initiated early at eighties, so much of them reach the time of cutting and some of them were harvested several times, as asserted by the respondents. The majority of the respondents (57.1%) mentioned that the community forests were cut two times (khalil Elmahata and Ombiaga communal forests), while Abu Eldahab and Elmasudia were cut four times as stated by 29.3% of the respondents. About

13.6% of the interviewed sample mentioned that, Khalil Elkubra was cut five times. Table (5.13) shows the No of harvests and marketing method in the study area.

Table (5.13): No. of harvests and marketing method

Village	N	No. of harvests (%)		Marketing method (%)			
		2	>4	Auctions	Villagers	FNC	Others
K. Elmahata	60	100	-	61.7	-	30	8.3
Abueldahab	20	-	100	85	-	15	-
Elmasudia	23	-	100	65.2	-	30.4	4.3
K. Elkubra	20	-	100	50	20	5	25
Ombiaga	24	100	-	45.8	4.2	50	-
Total	147	84	63	90	5	41	11
%		57.1	42.9	61.2	3.4	27.9	7.5

From the above table we noticed that Khalil Elkubra was cut five times and this indicated that the people of Khalil Elkubra more aware about the

silvicultural operations and they apply the technical advice as they gained from the extensionists, so they had more benefits from their forests.

As far as marketing of the products is concerned, different methods are used for marketing the communal forests products as shown in Table (5.19). The main method of marketing is through auctions as mentioned by 61.2% of the respondents. The forest committees tend to market the timber as standing trees in order to reduce their expenses, while 27.9% stated that the FNC should shoulder the responsibility of marketing the communal forests products, and 7.5% mentioned other methods like village committee and the rest of the respondents (3.4%) mentioned villagers who buy the forest product.

5.16. Age of Harvest and Changes in Community

The age of harvest is determined by the extension officers as stated by 70.7% of the respondents and 24.5% mentioned the forest committee is the responsible for the determination of the age of harvest as shown in Table (5.14). The economical benefits from the community forests programs, is the most attractive factor that stimulates local people participation; other factors like environmental and social factors come next. Obstacles to participate in community forestry program will result in the failure of the project. These obstacles can arise from diversity in attitudes and interests among the concern population due to the social stratification (Ahmed, 1982).

Table (5.14): Age of harvest and distribution of benefits

Village	N	Age of harvest (%)		Distribution of benefits		Changes in community (%)		
		Para- extensio nist	Forest commit tee	10 % FN C	Ot her	Social consolid ation	Aware ness raising	Incom e genera tion
K. Elmahat a	60	56.7	31.7	95	5	11.7	70	61.7
Abuelda hab	20	95	5	10 0	-	10	45	95
Elmasud ia	23	95.2	39.8	95. 7	4.3	30.4	69.6	26.1
K. Elkubra	20	80	20	10 0	-	50	70	75
Ombiaga	24	83.3	16.7	10 0	-	33.3	75	25
Total %	14 7	104 70.7	36 24.5	14 3 97. 3	4 2.7	11.7 23.1	99 67.3	83 56.5

Therefore, the issue of distribution of expected benefits should be addressed from the early stages of community forestry programs. In the study area the distribution of benefits is organized by different bodies, the majority of the respondents (97.3%) showed that the FNC took 10% of the benefits and the

rest for the village services. While (2.7%) of the interviewed sample stated other bodies like (forest committee, salvation committee and local leaders).

According to the benefits gained from the community forest, there are many changes in the community. These changes can categorize to social, environmental and economical (Table (5.14)). About 67.3% of the respondents asserted changing in attitudes and awareness raising among the most positive changes created in the local communities. While 56.5% mentioned the economic changes, as an important change, in the local communities where job opportunities contributed to addition of a new income generation option. This change is apparent in khalil elkubra and khalil elmahata villages. The rest (23.1%) mentioned social consolidation (like strengthen nafir and assistance of friends and relatives).

5.17. Selection of Trees Species for Afforestation

The people will be aware of importance of trees and dangers of desertification so they were participated in planting of trees as community forestry, shelter belts around their farms, in public areas and in their schools and houses. In the study area the selection of trees for the community forests carried by the extensionist as mentioned by 70.1% of the respondents and 28.6% showed that the selection of the tree species for the afforestation program is carried out by the villagers, while 32% stated village committee is the responsible body for the selection of the tree species. Table (5.15) shows the selection of trees and the reasons for planting trees at houses.

Table (5. 15): Selection of trees and trees at houses

Village	N	Selection of trees (%)			Trees at houses (%)		
		Extenist.	villagers	Village committee	Shade	Protection from dust	Fruits
K. Elmahata	60	68.3	28.3	38.3	96.4	45.5	20
Abueldahab	20	80	35	25	100	60	20
Elmasudia	23	56.5	39.1	39.1	100	26.1	21.7
K. Elkubra	20	65	25	30	100	50	45
Ombiaga	24	83.3	16.7	16.7	90	60	15
Total	147	103	42	47	124	59	30
%		70.1	28.6	32	96.9	46.1	23.4

In the study area the forestry extension is not only concern about the communal forests, but the efforts of the extensionist extend to include homestead plantations, farm forestry, schools. In the study area People grow trees at houses for many reasons, the majority of the respondents grow trees for shade (96.4%), while 46.1% mentioned protection from dust storms and 23.4% stated production of fruits. The rest of the interviewed sample (11%) grows trees for other reasons (like, fuel wood, fodder, building materials).

5.18. Preferred Tree Species

For planting trees in yards and farms trees must be from indigenous species to guarantee ecological matching, but in the study area people preferred

some species more than others for certain reasons like tolerance to soil type, drought, and diseases....etc. Most of the local people (73.5%) prefer Neem (*Azadirachta indica*) and (12.2%) preferred *Eucalyptus* spp, while (4.1%) mentioned Digin elbasha (*Albisia lebic*) and the rest of the respondents stated other trees like sunt. Fig. (5.4) shows the preferred tree species.

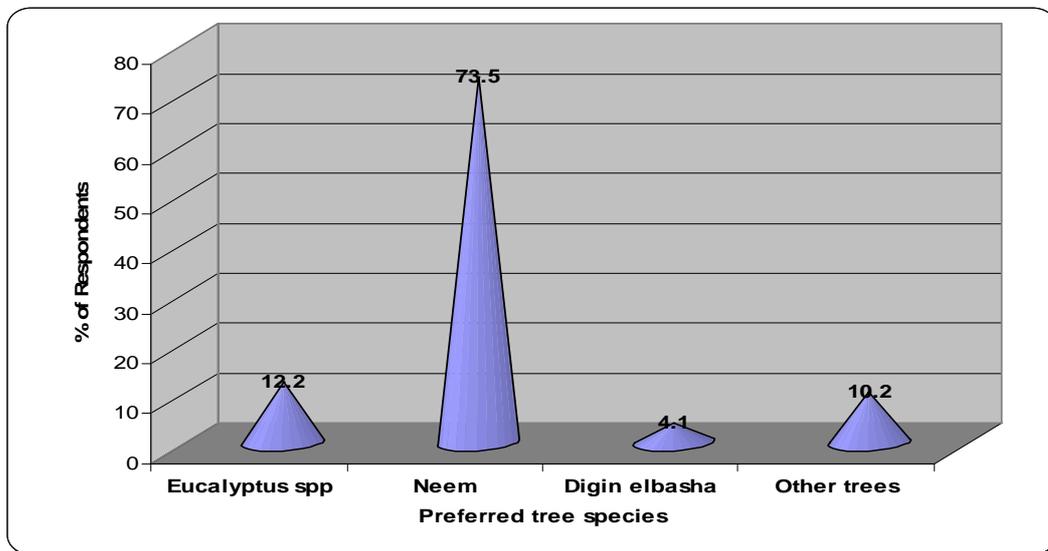


Fig.(5.4): The preferred tree species in the study area

From the above findings most of the respondents (73.5%) preferred Neem and (12.2%) Eucalyptus species and the two species are exotic trees. The exotic trees characterized by their fast growing nature and capability to produce valuable timber. The introduction of exotic tree species was therefore imperative. Among the earliest introduction of exotic tree species in the Sudan were *Azadirachta indica* introduced at Shambat in 1916 and

about Eucalyptus in particular there were records of trails of over 70 species. *Eucalyptus citridora* and *E. tereticornis* in 1917 at Kagelu, and *E. microtheca* in 1922 at Shambat (Badi *et al.*, 1989).

5.19. Problems of Tree Planting

Most respondents agreed about the importance of trees but they have no chance to grow trees in their houses or farms for different reasons. Sixty eight per cent of the respondents complained from water shortage particularly at the early stages of seedlings development. This problem is shouting in Elmasudia village. Protection of trees and seedlings is the corner stone for the development of the communal forest, (40.1%) of the respondents showed that protection of their forests represent a genuine headache particularly for the people of Abuedahab village (herders), and (17%) mentioned shortage of seedlings and the rest of the respondents (12.2%) thought limited land is the factor against tree planting. Table (5.16) shows the problems confronting tree planting and the problems associated with forests in the study area.

Table (5.16): problems of tree planting

Village	N	Problems of tree planting (%)				Problems associated with forests (%)	
		Water	Seedlings	Animals	Limited lands	Birds	Thefts
K.	60	80	13.3	48.3	23.3	35	36.7

<i>Elmahata</i>							
<i>Abueldahab</i>	20	75	-	85	-	60	60
<i>Elmasudia</i>	23	87	-	21.7	-	26.1	26.1
<i>K. Elkubra</i>	20	30	25	15	20	35	35
<i>Ombiaga</i>	24	45	50	20.8	-	12.5	12.5
Total	147	100	25	59	18	49	50
%		68	17	40.1	12.2	33.3	34

Beside the importance of trees few of the respondents stated that trees have problems when grown near villages or in houses through harboring birds as mentioned by (33.3%), thefts and other problems were mentioned by (34%).

5.20. Types of Associations

Without local participation sustainable resource management cannot be assured, (Falconer, 1987). When the respondents were asked about their involvement in local organizations and committees, almost (38.5%) stated that they were members in salvation committee, (11.3%) of the respondent were members in the cooperative committee, and the same percent in the farmers union and the rest (9.4%) are members in other organizations and committees like students parents council, agriculture committee, forest committee and nation youth organization. Fig.(5.5) shows the types of associations in the study area. From the above results, the local people in the study area were members in many associations and this indicates that they are aware about the importance of the general work to solve their

problems and from their positions as community leaders they share in broadcasting the extension messages.

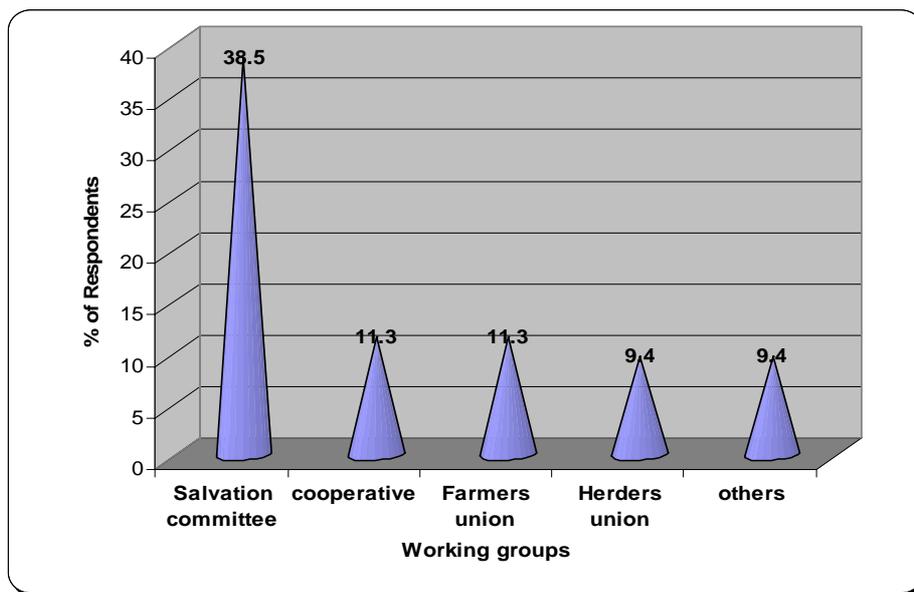


Fig. (5.5): Types of associations in the study area

Eldool (1995) stated that, managing forest in Sudan by FNC alone would not be sufficient to cater for the needs of population as well as to restore good environmental conditions. However, over the past decade, rural population started to be aware of household energy crisis, environment degradation and food shortages, their awareness of the magnitude and importance of these problems pushed them towards playing a positive role towards forestry. Their attitudes towards contributing in communal works concerning forestry become noticeably good (FAO, 1985). Vira (1997) stated that, emphasis of

the role of civil society and organized groups increasing-not just as service providers to furnish what government have failed to deliver, but also as decision-makers, making choice about what should be provided. Foresters have to learn to work with the people rather than seeing them as threat that has to be controlled.

5.21. Fields of Training

Training is an essential activity in any new community development process in order to achieve the prescribed targets and goals. As social forestry and extension activity in general is a new concept to rural people in the study area, the need for training is vital. The concept of training of the local inhabitants should be given priority in order to qualify the local inhabitants to be potentially capable of executing the adopted activities of the extension program. Training is considered as one of the economic objectives. There are different types of training like job training programs that integrate conservation training with business skills and basic education, development of micro businesses based on community resources which promote economic growth, identification of long-term job and career path in environmentally related professions for local residents which contribute to the general socio-economic development of the rural people through employment generation. In the study area, there are many fields of training which include social forestry, tree planting, rural development and other fields. It was found that social forests and tree planting was the top of the other fields (represents 8.2% and 7.5% respectively). Fig. (5.6) shows the fields of training.

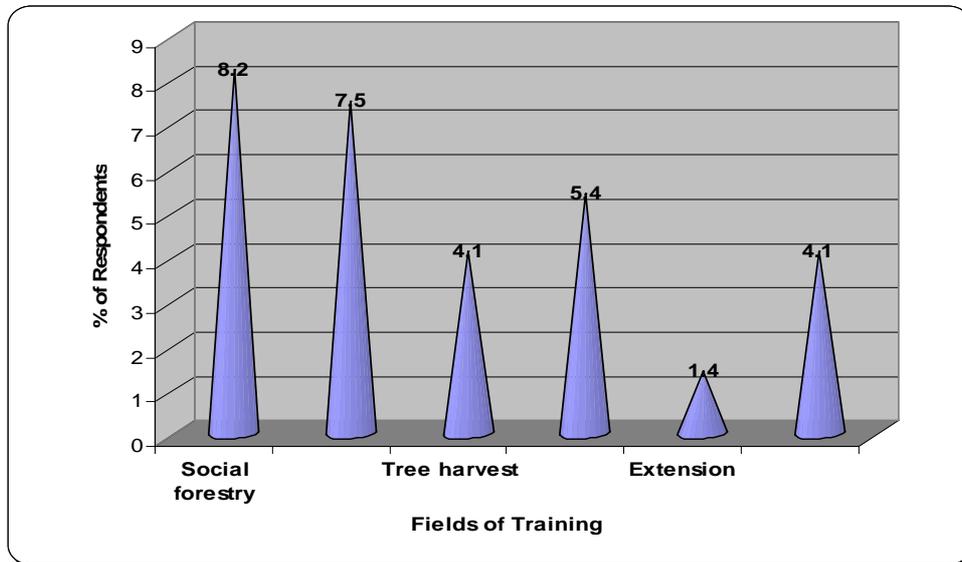


Fig.(5.6): Fields of training

Unfortunately, the percentages of the training of the different fields is very low, this means few respondents had the chance to be subjected to training sessions. This could be considered as one of the pitfalls of the extension unit in the study area because the different stratification of the community should be trained to guarantee the sustainability of the adopted intervention.

5.22. Difficulty of Expansion of Forest Area and Constraints Confronting Forests Establishment

About a third of the respondents opposing the idea of increasing the area of the community forest, but 70.7% of the interviewed people agree to increase the area. The reasons of the difficulty of increasing area are justified by the limited vacant lot of land for the expansion as asserted by 68.2% of the

respondents and 29.5% believe that the available land in the study area has rough topography and needs additional efforts for reclamation. This group believes that there is no body can provide finance for such reclamation. The situation is aggravated by the high level of poverty in the study area. The norm of traditions, culture and taboos also has significant role in the expansion of community forestry in the study area. This traditions and taboos some times are exemplified in the difficulty of involving women in the community forestry activities. Table (5.17) shows the difficulty of increasing area and constraints confronting forests in the study area.

Table (5.17): Constraints confronting community forest

Village	N	Difficulty of increasing area (%)		Constraints confronting forests (%)		
		Limited land	Topography	Financial problems	No consensus	Management problems
K. Elmahata	60	100	100	58.6	43.1	32.8
Abueldahab	20	-	-	68.8	25	6.3
Elmasudia	23	-	-	31.8	36.4	27.3
K. Elkubra	20	85.7	85.7	25	62.5	-
Ombiaga	24	14.3	14.3	41.7	50	4.2
Total	147	30	30	66	59	27
%		68.2	68.2	48.5	43.4	19.9

Under the light of lack of credit accessibility, the financial problems represent a serious constraint towards the development of the communal forests. This fact is supported by 48.5% of the interviewed sample. This type of constraint emerges when the local people manage to register the forest. The registration requires passing through different institutions (formal and informal) starting from the traditional leader through the localities, FNC and surveying administration unit ending with the declaration of the reservation in the national gazette. Most of these stages require financial capability. Therefore, these constraints could be looked at as economical and institutional constraints. In many countries, the lack of appropriate legislation has been a considerable constraint to the integration of forestry into rural development due to the fact that forestry usually has a long life span that requires a continuing commitment from government FAO (1978). This situation necessitates setting up coordinating bodies defining the administrative and legal arrangement, which are vital for the implementation of the community forestry programs. Some respondents asserted that although the communal forests were established based on the general consensus, 43.4% of the respondents claimed that sometimes there are some conflicts associated with the distribution of benefits and exploitation of forest resources. While 19.9% attributed the main problems and constraints to management problems, that there is no proper management of community forests and this depend on the responsible body for the management of the communal forests.

5.23. Resolving Problems

Resolving of conflicts and constraints confronting community forestry in the study area is usually taken care of through extension services to reveal any ambiguities regarding distribution of benefits. This fact is supported by 39% of the respondents, while 19.9% mentioned involvement of local people in all the stages of the community forestry from planning until the distribution of the benefits. Fig. (5.7) shows resolving of the previous problems. About 37.5% of the respondents attributed solving of the problems to financial support. Addressing the issue of incentives and subsidies is a vital mean for resolving conflicts, but addressing such issue necessitates setting up of a coordinating body defining the administrative and legal arrangement, which are vital for the implementation of the community forestry programs

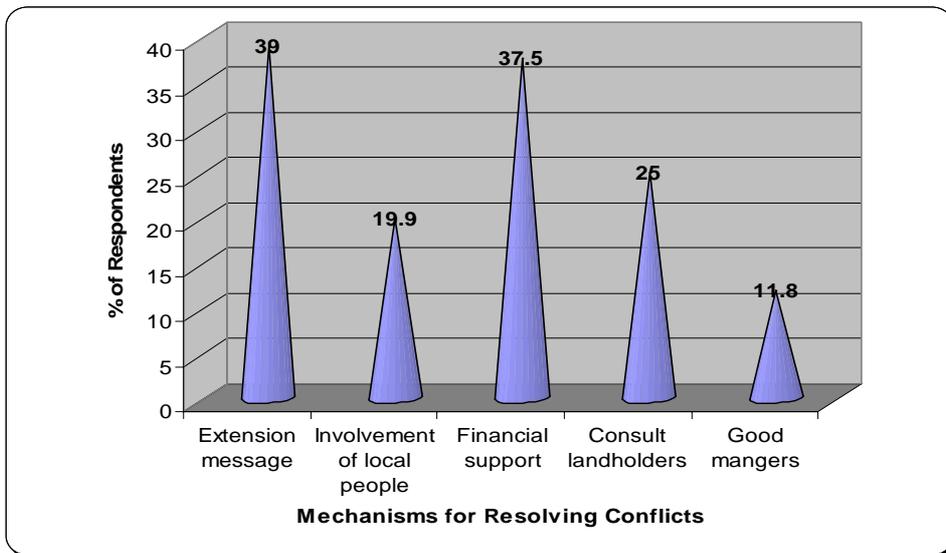


Fig. (5.7): Resolving problems

In many countries, lack of appropriate legislation has been a considerable constraint to the integration of forestry into rural development due to the fact

that forestry usually has a long life span that requires a continuing commitment from the government (FAO, 1978). Twenty five per cent of the interviewed sample believe that resolving of conflicts necessitate consultation of the land holders and involve them in the management of the communal forest. The rest of the respondents (11.8%) mentioned that to solve the communal forest problems there must be good managers, because they thought all the problems climbed out of the bad management of the forest.

5.24. Improvement Proposals of the Community Forest

The attitudes and perceptions of the local people were considered in the research for the sake of exploring their ideas for developing the activity of community forestry in the study area. The majority (53.7%) of the respondents mentioned that to improve the community forest the activity must be expand to include additional areas, while 32.7% suggested that for improving the communal forests it is important to change the tree species or add another species. Moreover, 43.5% of the respondents stated improving the irrigation of the forests will improve the forest condition. Table (5.18) shows the improvement proposals and problems confronting community forest.

Table (5.18): Improvement proposals and problems confronting the forest

Village	N	Improvement proposals	Problems confronting the forest (%)
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		(%)					
		Expansion	Trees spp	Irrigation	protection	Irrigation	Land tenure
K. Elmahta	60	61.7	45	43.3	80	36.7	40
Abueldahab	20	55	-	35	100	20	-
Elmasudia	23	39.1	26.1	60.9	34.8	91.3	4.3
K. Elkubra	20	50	20	65	65	50	-
Ombiaga	24	50	45.9	16.7	85	25	-
Total	147	79	45	64	109	63	25
%		53.7		43.5	74.1	42.9	17

Problems Confronting the Forest

In general, in the fields of environment, it is not easy to launch a project or activity without confronting measures of risks and constraints. The respondents mentioned some factors which they believe confront the development of the community forest. About (74.1%) consider grazing, pests, diseases and fires which are the main menaces confronting the community forest. While (42.9%) of the interviewed sample complained from the irrigation problems, especially El Masudia forest which suffer much as mentioned by (91.3%) of the respondents. Land tenure is one of the

problems confronting the community forest and mentioned by (17%) of the respondents.

From the above findings it is clear that the main problems confronting the community forests in the study area were protection against animals, pests and diseases and other problems. The importance of the protection measures arises from the fact that the study area is rich in livestock population particularly in Abu Eldahab Village.

5.25. Role of Forestry Extension and Improvement of Extension

Forestry extension could be defined as a system of non-formal education designed to develop among forestry public favorable attitudes towards, and desired capabilities for, forest conservation, (Rebugio 1978). In the study area the forestry extension helped in the conservation and protection of the reserved forests. There are many methods practiced by the respondent to protect forest like prevention of illegal cutting and grazing also protection from fires. The local people asserted that there is no illegal felling of trees as asserted by 86.4% of the respondents, while 27.3% contribute to the protection of their communal forest by restricting grazing at the communal forests, and the rest (14.4%) of the interviewed sample stated No fires. Table (5.19) shows the role of forestry extension and improvement of extension.

Table (5.19): Improvement of extension

Village	N	Role of forestry extension (%)	Improvement of extension (%)
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		No cutting	No grazing	No fires	Selection of good methods	Good extension messages	Capacity building
<i>K. Elmahata</i>	60	89.4	10.6	19.1	41.7	50	36.7
<i>Abueldahab</i>	20	75	55	10	70	30	20
<i>Elmasudia</i>	23	78.3	30.4	4.3	52.2	39.1	13
<i>K. Elkubra</i>	20	88.9	38.9	27.8	30	40	60
Ombiaga	24	95.8	25	8.3	29.2	45.8	20.8
Total	147	114	36	19	70	64	46
%		86.4	27.3	14.4	47.6	43.6	31.3

Like in most of the developing countries there is a serious shortage of mature and experienced staff available for extension duties and the organizations have to rely mainly on young urban, recently qualified, people who lack a depth of field experience and who find it difficult to establish the trust and mutual respect necessary between the extension staff and their clients. This may be a particularly serious problem in communities where there is more respect for age and wisdom than for formal education. Community mobilization and facilitation skills are essential tools in promoting community forestry; project experience has shown that these skills are mainly developed in field practice, working with communities. This experience casts doubt on the ability of formal and classroom training alone, to fully equip workers for their roles as community forestry promoters (FAO, 1987).

In the study area the respondents suggested some solutions to develop and improve the extension service. About 47.6% asserted that to develop the extension services the extensionist must select good extension methods that can suit the different categories of the community. Also the selection of good extension messages from the factors which improve extension services as stated by (43.6%) and the rest of the respondents (31.3%) mentioned capacity building.

Chapter VI

Conclusions and Recommendations

6.1. Conclusions

- The majority of the respondents clarified that the idea of adoption of communal forest is autonomous (local driven) and few respondents asserted that the idea is an outcome of the local people and the efforts of FNC in the state.
- The traditional leaders played a significant role in the management of the natural resources in the study area among which the natural and communal forests. Also, the role of NGOs is appreciable by the local people in the adoption of community forestry intervention.
- The FNC contributed to the successes of the communal forest activities through provision of extension services, provision of seeds and seedlings and assignment of land for reservation as communal forest.
- The role of the traditional leaders was represented in mobilization and sensitization of local communities to participate genuinely in the activities of community forestry besides provision of land and finance for running the activity.
- The local people are willing to expand the activity of community forestry in the study area but their plans are blocked by the lack of vacant lots of land and lack of credit accessibility.

- One of the main constraints confronting communal forests in the study area is natural resource-base conflicts between nomads and local people in the study area.
- Local people proposed addressing of incentives and subsidies, consultation of land titleholder and management according to scientific plan as means to resolve conflicts associated with communal forests in the study area.
- Almost, the entire interviewed sample assessed the level of participation of the local people in the communal forest activities as excellent or good. It is worth mentioning that, the local people participated genuinely in tree planting, land preparation and provision of simple hand tools.
- The main problems confronting the participation of the local people in the activities of communal forest are represented in conflicts with nomads and among the local people, distribution of benefits, land tenure and the participation of a limited number of youth.
- All the age groups participated genuinely in social work. Women role in the communal forest is represented in food making during nafir (work party), provision of money share and tree planting.
- the objectives behind the adoption of communal forest activities are provision of social services in the village (schools rehabilitation, maintenance of water station and establishment of health care centres) besides the environmental and recreation objectives. These objectives arrived at through general consensus or by the village committee.

- The respondents mentioned different bodies responsible for the management of the communal forests, namely; forest committee, as mentioned by the majority, salvation committee and traditional leaders.
- Some proposals were suggested for the improvement of the communal forests in the study area like expansion of the communal forests areas, diversification of the tree species and adoption of irrigation techniques (water micro-catchments).
- The relationship between the local people and the FNC is exemplified in provision of seedlings and extension services. The main role of the extension services besides provision of seedlings is provision of technical know-how for some activities, dissemination of information and adoption of LPG and cooking stoves.
- The entire interview respondents asserted that there are systematic extensionists' visits to the study area and the number of visits varies between 1 to 4 visits per month according to the run activities.
- The main topics tackled by the extensionists are, issues related to social forestry, establishment of windbreaks, energy substitutes and protection of the communal forests.
- The extension unit deployed different methods for delivering their extension messages. Exhibitions, seminars, lectures, meetings and group discussion are the main group method. While the mass media (radio, TV and press) are used frequently and there is a limited use of the individual extension method.

6.2 Recommendations

The study arrived to some recommendations for the FNC and the local people in the study area, namely;

- The extension services represented in visits should be systematic based on a pre-hand schedule because sporadic visits mitigate the willingness of the local people to participate in the communal forests activities. This necessitates the importance of having an efficient and effective extension unit.
- the FNC should expand community forestry activities to areas not covered before neither by the NGOs nor FNC since the people of these area acquired enough experience of establishing communal forests from neighboring villages.
- The FNC has to provide assistance in the process of reservation of the communal forest which necessitates provision of considerable amount of money and time.

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Annexes

Questionnaire for the villagers

Annex (1)

This questionnaire was made to collect information about assessment of extension activities at Sennar state .The information will used in a research for M. Sc Degree. Please answer the following questions as accurate as possible. Where actual data are not available please use your closest estimation. Your answers will be strictly confidential and will not be used for any purpose other than the research.

General Description:-

1-Village name:-.....Locality.....

2-Age :-(a) <15 (b) 16-25 (c) 26-35 (d) >35

3-Sex: - (a) Male (b) Female

4-Source of income:-

A- Farmer B-animal rearing C-Government post D- other

5-Educational level:

A-illiterate B-Khalwa C- Basic school

D-Secondary School E-university

Community forests:

1-From where the idea of the community forest was originated?

1-leaders 2-villagers 3-Extension officers 4-others

2- What is the forest area?

3-what is the role of the FNC?

1- Extension advice 2-Availability of seeds and seedlings 3-land preparation
4- Others (specify).....

4 – What is the role of the local leaders?

1-encourage people to participate 2-Financial support
3-land allocation 4- land preparation

5-is it possible to increase the forest area?

1-yes 2-No

6-if the answer is No, what is the reason?
.....

7- What are the main constraints faced the communal forest establishment?

1- Financial constrains 2-management problems
3- No, general consensus 4-others.....

8-How the problems were solved?
.....

9-What is the role of the villagers?

1-Tree planting with nafeer 2-land preparation 3- provision of tools

10-how was the participation of the villagers?

1-good 2- weak 3- No participation

11-if there is No participation what is the reason?
.....
...

12-is there any social problems appeared after the establishment of the communal forest?

1- Yes 2- No

.....
...

23-how the forest was managed?

- 1-forest committee 2-village committee
3-Traditional leaders 4- others

24-is there special committee for the forest management?

- 1-Yes 2-No

25-how this committee was selected?

- 1-local leaders' 2-village committee 3-local people
4-Traditional leaders

26- Is the woman represents in this committee?

- 1- Yes 2- No

27-what is the function of this committee?

- 1-communication with the extension office 2-search for support sources
3-encourage people to participate 4- others

28-what is the land tenure?

- 1-village land 2- belong to some individuals 3- others

29-what are the proposals for communal forest development?

- 1- Area expansion 2-exchange trees species
3-iimprove irrigation system 4- others

30-what are the seedlings sources?

- 1-FNC nurseries 2-special nurseries 3-village nursery

41-if the answer is No what is the suitable time?
.....

42-What are the topics tackled by extension?

1-community forests 2-wind breaks and shelter belts 3- nursery establishment
4-energy conservation 5- environmental protection

43-what are the proposed fields of forestry extension?
.....

44-what are the methods used by extension staff?

1-field and home visits 2-lectures and seminars
3-Fair 4-meetings and group discussions

45-are these methods suitable?

1-Yes 2- No

46-are there any extension messages delivered by the mass media methods?

1- Yes 2-No

47-what are the best ways and means of passing/ conveying the extension message?

1-radio 2- TV 3-vidio show 4- newsletters and posters 5- others

48-are there home visits?

1- Yes 2- No

49-are there meetings with the extension staff at the wood lot?

1- Yes 2- No

50-was the forest cut before?

1- Yes 2- No

51- What is the No, of harvests?

52-how the product was marketed?

1-by auction 2-for the villagers 3-FNC 4- others

53-how the time for harvest was determined?

1-by extension agents 2-forest committee 3-others

54-how the income was distributed?

1-10% for forest and the rest for village services 2-for the villagers 3- others

55- What are the changes in the community attributed to the establishment of the communal forest?

1- Social consolidation 2- awareness raising

3- Income generation 4- others

56-is the tree type for the forest suitable?

1- Suitable 2- not suitable

57-how the tree species was selected?

1-extension staff 2-villagers 3-forest committee 4- others

58- How did you first hear about Forestry Extension?

A- Extension Agent contact B- Neighbors C- Radio D- TV E- Others

59-do you have trees at your house?

1- Yes 2- No

60-if it is yes why?

1- Shade 2- fuel wood 3-protection from dust 4- fruits 5- others

