COMMUNITY FORESTRY PROJECT
BASELINE SURVEY

Research Study No. 76

January 1987

AGRARIAN RESEARCH AND TRAINING INSTITUTE,
114, Wijerama Mawatha, Colombo 7.

SRI LANKA

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Dhanawardana Gamage

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FOREWORD

During the past decade the Government of Sri Lanka took several steps to overcome the problems of rapid denudation of forest cover caused by commercial extraction, chena cultivation and illegal fellings and other issues related to fuel wood scarcity, particularly in the rural communities. Among these steps public afforestation played a key role. Nevertheless, afforestation, by itself, could neither obviate the problems arising out of denudation nor ensure an increased supply of fuel wood for the rural people. In the circumstances, the Government decided to mobilise the participation of rural individuals and communities in planting fuel wood on state lands made available for the purpose on a leasehold basis in selected areas in five Districts. To achieve this objective of community participation in growing small scale fuel wood forests a project known as the Community Forestry Project with financial assistance from the Asian Development Bank was launched in 1982.

The Agrarian Research and Training Institute was commissioned by the Ministry of lands and Land Development and the Forest Department to carry out a baseline survey of the project area and its beneficiaries. Initial survey covered two project villages in the Badulla district. This report presents the findings of the baseline survey of these two villages which may be useful in the process of project implementation and also for future evaluations of the project imapct.

Mr. D.Gamage - Research and Training Officer was the co-ordinator and the researcher of this study. I wish to thank him and others who contributed to this study in various ways for making this study and the publication possible.

T.B.Subasinghe
DIRECTOR

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The author wishes to thank the members of Nugathalawa and Ambatenna communities and many government officials at the village level for providing every possible assistance and information required for the research team and the study.

A special word of thank goes to Mr. T.B.Subasinghe, the Director ARTI and Dr. R.D.Wanigaratne/Head of the Agricultural Planning and Evaluation Division, for the encouragement, comments and suggestions extended in all the stages of the study.

Dr. Peter R. Stevens of Forestry Technical Services, Canbera, Australia made valuable comments and suggestions on the research proposal on his visits of consultancy to the Community Forestry Project, in late 1984.

Mr. Stephen Midlley, the Community Forestry Consultant to the project made several observations on the proposal as well as on an earlier draft, of this report. Many officials of the Forestry Department and Officials of Badulla Kachcheri administration extended their co-operation in bringing this report to a completion. The author acknowledges their assistance with a deep sense of thankfulness.

A note of appreciation is due to Mr. N.N.A.D.Silva Statistical Officer, ARTI for the assistance rendered in the supervision of field work and data tabulation, Mr. H.A.Siriwardena, Director (Publicity and Training), Agricultural Insurance Board for editing the final draft for publication.

Thanks are also due to Ms. Dharshani Fernando and Ms. Indra Balasuriya for typing the final draft.

D.G.

EXECUTIVE SUMMARY

The community forestry project launched in 1982 by the Sri Lankan government with the assistance of the Asian Development Bank emphasised the importance of local level participation in growing localized miniforests in five districts of the country. Under its farmer woodlot programme, selected farmers were to receive 0.5 to 1 hactare of crown land on long term lease for the cultivation of fuelwood, timber and fruit trees. Provision of seedlings and extension back-up under the project too was ensured. The institutional capacity of the Forestry Department (FD), the main implementing agency, was expected to be strengthened to cater to the needs of the community forestry aspect of the project.

The ARTI in November 1984 carried out a detailed survey of two villages in the Badulla district. Beside profiling baseline socio-economic conditions of the project localities for a future evaluation, the study also processed information useful for project implementation and progress monitoring.

Such socio-economic variables as family size and the age group distribution, the size of labour force, higher literacy rates, awareness of the project and its objectives, favourable attitudinal aspects to grow trees registered a marked disposition for successful project implementation.

One of the study locations, Nugathalawa, where nearly 90% of the families depended mainly on agriculture had an abandoned tea-estate for agroforestry. Conversely at Ambatenna, the other location, the families depended more on hiring out their labour and on salaried employment. In the absence of suitable land for farmers in this village steep and rocky land had to be made available to them.

The allocation of land and the selection of beneficiaries, a responsibility which devolved in the local Kachcheri administration entailed snags, delays and procedural difficulties. Suitable sites close to the road for the purpose of creating "demonstration effects" were hard to find. Such problems cut into the real operational time of the project.

Increasing demands for available arable land exerted an unfavourable influence over land allocation resulting in mistrust and dissatisfaction in certain instances. This was more so at Nugathalawa where the selection process left much to be desired, with political intervention causing tension and disappointment in the community. This situation had an unhealthy impact on local level participation and on the diffusion of project objectives.

The shortage of suitable land appeared to have impeded the realization of the project objectives. Not only reasonably arable land was needed to attract people, but also a selection criteria more reasonable in the eyes of locals. Strict adherence to the project document on the selection of beneficiaries had an inbuilt bias towards landholders.

The pressure for land at Nugathalawa was conditioned by the fact that the land was suitable for potato cultivation. Yet at both sites, over 50% of the families had no lands for highland cultivation. In this milieu the project is likely to encounter a constraint in finding land suitable for agroforestry which are concurrently unsuitable for vegetable cultivation, in order to induce beneficiaries to participate in the programme.

The locals reportedly experienced fuelwood shortages and an inability to purchase the required quantities on account of high prices. Influenced by purely economic reasons, their preference was to grow fast growing hard timberwood trees. Such trees are claimed to produce fuelwood as a secondary product. At Nugathalawa, the beneficiaries expressed their willingness to intercrop their allotments with cash crops,

a fact that would be beneficial from the project's point of view since the land would then receive better care. It would do better for the project implementation authorities to accept the farmer preference. During the initial 1-3 years the fertilizer application associated with such crops should in turn benefit tree crops. The anticipated long-term economic returns from growing timber trees may in this regard be a motivational factor.

The planting materials were made available to the beneficiary farmers by the project. The non-availability of seedlings in time was a major constraint. There was also a high demand for specified tree seedlings from certain non-beneficiary locals. Consequently while ensuring a timely provision of the required seedlings to the beneficiary farmers, it would also foster a wider dissemination of the programme if steps are taken at the same time to attract other locals to grow more trees. In this context, the increased supply of seeds is a step in the right direction. Costs in terms of supply delays could be reduced if the farmers selected from the vicinity are supported through subsidies to produce seed plants locally.

The study advocates the need for publicity, training and other management implications for the project. It is recommended that such programmes be conducted at the initial stage of the project to increase public awareness and that of local level organisations and officials involved directly or indirectly with the project on the rationale and objectives of the project. The study reveals the non-existence of acceptable local level institutions which can be entrusted with the project implementation. In this context, possible support from social scientists towards project implementation, by setting up an action research programme on farmer participatory aspect of the project, is another aspect worth looking into.

Study Highlights

The future success of the project will depend to a greater extent on the level of local level support, participation and commitment. Since the project distributes the scarce and valued local land resource, it is likely that this would in turn lead to social and political tensions and conflicts at the village level. This situation may perhaps affect the participatory and 'spread effect' objectives of the project. Such difficulties are however not intractable. One feasible solution would be to take some meaningful measures to improve the marginal lands and distribute them amongst the families who attend to such development works.

- The project management should ensure the timely provision of planting materials and extension advices to the beneficiaries for its successful implementation.
- The participatory aspect of the project requires an understanding of the rationale, objectives and strategies, by various officers directly or indirectly involved with the project, for its smooth functioning.
- Officials at the grass roots-level entrusted with the task of project implementation should be trained on broader community development aspects.
- Training of farmers at local level should be followed with the training of institutionalised groups in order to encourage group activity and to share the information and knowledge on agroforestry
- The provision of planting material supplemented by extension back-up to non-participant locals should increase the rate of tree planting in a given locality.

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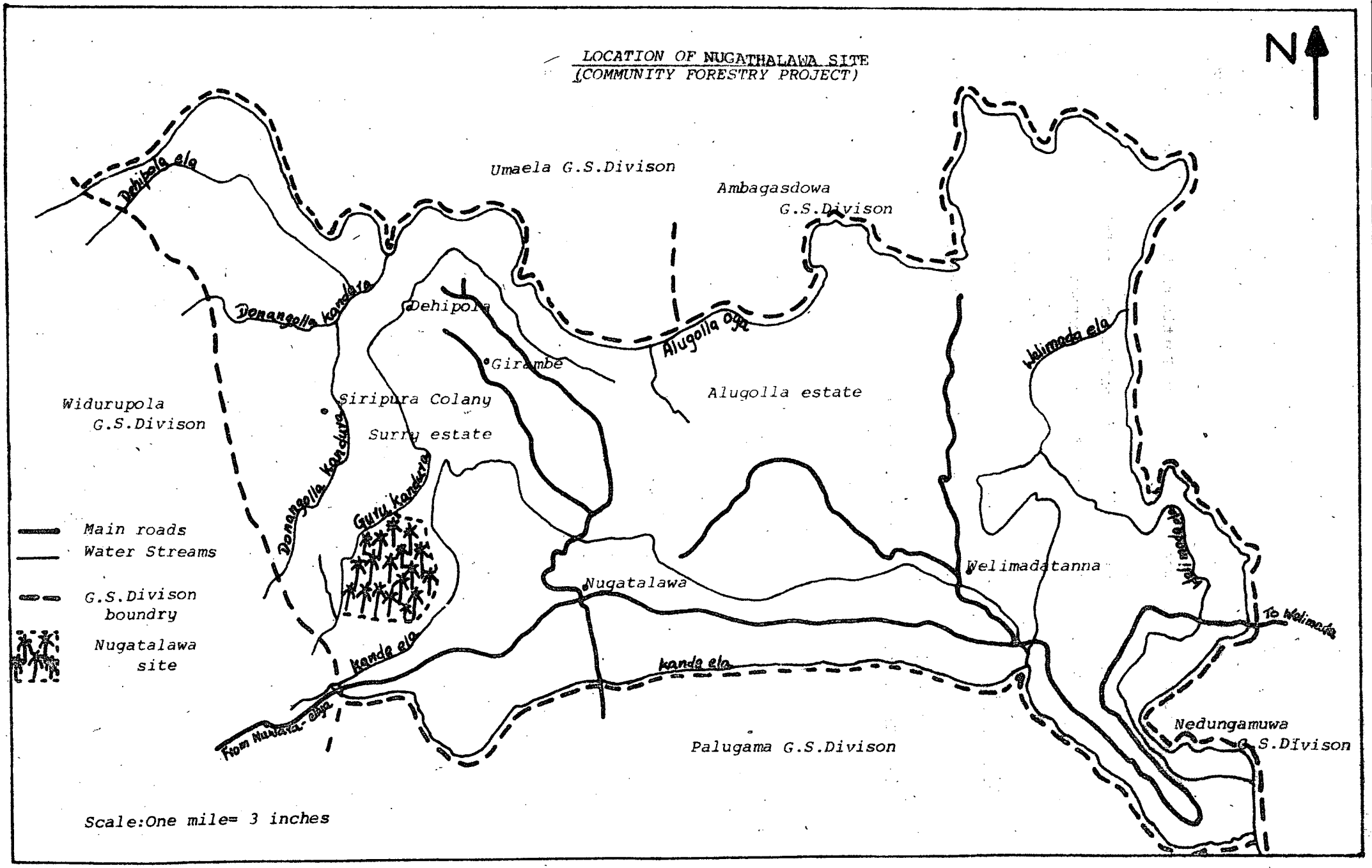
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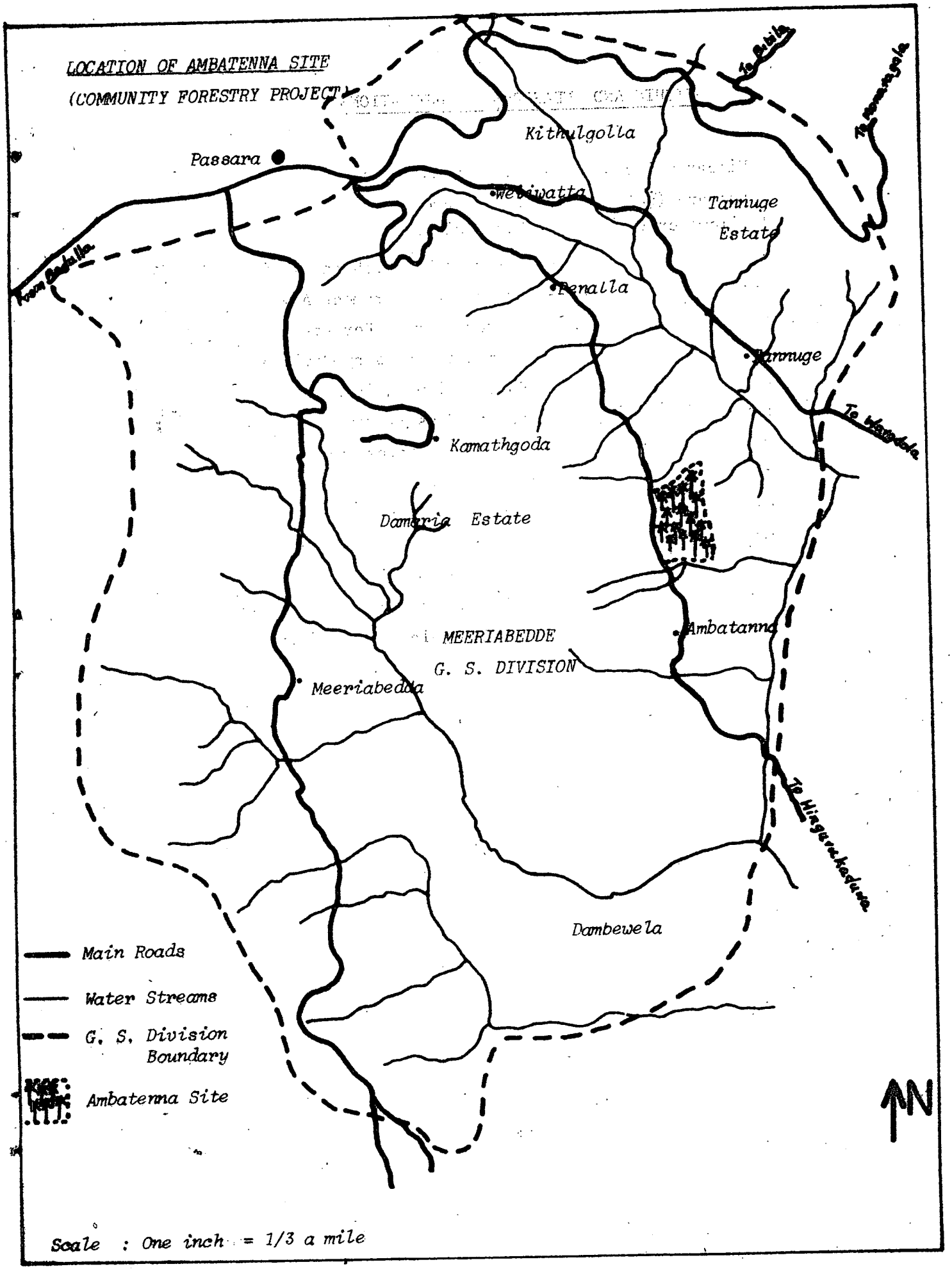
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Scale : One inch = 1/3 a mile

WEIGHTS AND MEASURES, ABBREVIATIONS

1 Kilogram (kg)	=	2.205 pounds (lb)
1 hectare (ha)	=	2.469 acres
1 Kilometer (km)	=	0.622 miles
ARTI	-	Agrarian Research and Training Institute
AGA	-	Assistant Government Agent
CF	-	Conservator of Forests
CFD	-	Community Forestry Division
CO	-	Cultivation Officer
DCF	-	Deputy Conservator of Forests
DFO	-	Divisional Forest Officer
GA	-	Government Agent
GSO	-	Grama Seva Officer
GSL	-	Government of Sri Lanka
MP	-	Member of Parliament
MPCS	-	Multipurpose Co-operative Society
RDS	-	Rural Development Society

Chapter One

INTRODUCTION

1.1 General

Increasing population pressure on land accompanied by state sponsored large scale land settlements and encroachment on forest lands together with commercial extraction, Chena cultivation and illegal fellings of forest trees for timber and fuelwood have resulted in a rapid denudation of the country's forest cover. It has been estimated between 40,000 to 60,000 ha. are deforested each year. With the accelerated Mahaweli Development Programme, as much as 160,000 to 200,000 ha. of forest cover could disappear within the course of 5-10 years.

Approximately 22% of the land area or 1.4 million ha. of the country is estimated to be under forest cover. Of this 1.2 million ha. lie in the Dry Zone of the country and 0.2 million ha. in the Wet Zone. The situation is indicative of a highly skewed, pattern of distribution.

Deforestation is a multi-faceted problem with its adverse consequences on the climate, the environment especially on soil and on the country's river resources.

A related problem is the increasing scarcity of timber and fuelwood, the latter by far being the most important as it is a widely used non-commercial energy source in Sri Lanka.

Fuelwood accounts for 52% of the country's non-commercial energy requirements. A shift of emphasis has been registered in favour of fuelwood, with kerosene oil prices periodically increasing since 1970. Scarcity of fuelwood, coupled with price increases and the decline in fuelwood resources experienced during the period from 1960 to 1980 will necessarily have an unhealthy impact on the country's energy balance and the environment.

1.2 The Project

The Government of Sri Lanka (GOSL) has taken several steps to overcome the problem of fuelwood scarcity, particularly in the rural communities. Other issues related to the rapid denudation of forest cover caused by commercial extraction, Chena cultivation, and illegal fellings, have received recognition in state sponsored programmes. Among these programmes, public afforestation plays a key role, aiming to grow about 8000 ha of forests a year. The Hundred Million Tree Planting Programme (HMTPP) of the Central Environmental Authority, a statutory body and the Cooperative Reforestation Scheme (CRS) of the Forestry Department (FD) are other major programmes. While HMTPP covers the country as a whole, CRS concentrates mainly on the Dry Zone regions of the country.

The government is concerned with the fact that the Public afforestation programme, by itself, can neither combat the problems associated with the denudation of forest cover nor can it ensure an increased supply of fuelwood to the majority of the consumers, the rural poor. Hence the government's intention to mobilise the participation of rural communities to plant trees suitable for fuelwood, on state lands made available on a leasehold basis in selected areas. The regions that have been selected for the project implementation basically include the districts where the country's river systems originate. These are also areas where the growing need for fuelwood is increasingly felt. The community forestry project officially launched in 1982, with the assistance from Asian Development Bank (ADB) envisages the objectives of community participation in growing of small scale controlled fuelwood forests.

1.2.1 Focus and Rationale

The specific focus of the project is on fuelwood needs of the rural people in those areas where the supply of this essential household item is estimated to fall far short of the demand. The rationale behind the involvement of rural people in

fuelwood plantation, is the assumption that the villages cannot afford to bear the transport costs of fuelwood from centralized plantation sites, nor, can the Forest Department carry out a plantation programme to suit the needs of the entire rural sector.

Therefore, the government, through community forestry, aims at assisting the rural communities to meet their fuelwood needs on a self-help basis. The project also rationalizes that it would set the machinery in motion for a much larger plantation programme by generating community awareness and by building up institutional support.

1.2.2 Project Objectives, Scope and its Components

The project aims specifically at augmenting the fuelwood supplies in selected areas and villages where the scarcity is felt to be comparatively acute, and in general its contribution towards environmental protection needs hardly any emphasis. An increased supply of poles and construction timber, streamlining the institutional structure of the FD to back up the project activities are certain other aspects of vital importance. Towards the realization of these objectives, following items would be undertaken (See Appendix 1).

i. To establish 4,055 ha. of farmers woodlots, of 0.5 to 1 ha. on state lands in Kandy, Matale, Nuwara Eliya, Badulla, and Batticaloa districts and to set up 24 village nurseries;

ii. To establish five community woodlots in compact blocks of 25 ha. in the five project districts.

iii Five demonstration woodlots to be established by the Forest Department in compact blocks of 25 ha. each in the four wet zone districts and another 120 ha. block in the dry zone district, Baticaloa.

iv To develop 14,000 ha. of block fuelwood plantation in the Badulla district with six nurseries and other supporting facilities (vehicles, housing, fire fighting equipment).

v To establish a new Community Forestry Division, (CFD) within the Forest Department with a field unit in Badulla.

vi To establish a Community Forestry Research Unit in Badulla including a central research nursery;

vii To construct 169 kms of plantation roads and;

viii Provide 75 man months of consulting services and 118 man months of overseas training fellowships under the project.

1.2.3 The Project Area

The project, as mentioned earlier would be sited in the selected localities of Matale, Kandy, Nuwara Eliya, Badulla, and Baticaloa districts. Kandy and Nuwara Eliya districts are located in the centre of the elevated highlands where rainfall, distributed throughout the year, varies from about 3,000 mm to 5,000 mm. Matale and Badulla districts on the notherly and easterly edge of the wetzone are situated in each of the wet, intermediate, and dry zones and elevations fall from about 2,000 meters to the relatively flat lowlands where rainfall averages from 1,000 to 2,000 mm. Population density on these upcountry regions of the country varies from 540 person per square kilometer to 240 persons per square kilometer in the intermediate and dry-zone areas.

The Batticaloa district, located in the dry-zone has a population density of 123 persons per square kilometer. Badulla and Batticaloa districts are relatively under-developed, and are situated away from the main centres of economic activity.

The project area comprises about 500,000 families, with an average of six members per family. It consists of 463 village clusters, each cluster accounting for about seven villages on an average of about 150 families per village.

Based on per capita figures, fuelwood consumption in the project area is estimated at 1.2 million cubic meters in 1980, 1.5 in 1990 and 1.7 million by the year 2000. It is estimated around 90,000 ha. of fuelwood plantation would be required to meet the demand on a sustained basis in the project area (project appraisal report, p. 10, 1982).

1.2.4 The Project Management & Coordination

The executing agency for the project is the Forest Department (FD) of the Ministry of Lands and Land Development (MLLD). A Community Forestry Division (CFD) is to function under the FD to undertake the responsibilities involved in project implementation and coordination. A project field office has also been set up at Badulla with facilities for research.

The overall coordinating function of the project is entrusted to a "Project Implementation Committee" comprising representatives from the Ministries of Finance and Planning, Rural Development, Agricultural Development and Research in addition to the Director of Information, Conservator of Forests, Deputy Conservator of Forests (Community Forestry Division) of the Forest Department and the Director Forests and Environment in the MLLD. While the Secretary to the MLLD functions as the Chairman of this committee the Director of Forests acts as its Secretary.

In addition to the "project implementation committee" at the national level, "district committees" are formed to look after the district level coordination of the project implementation in each of the five districts concerned. These district committees consist of Government Agents or their nominees who will function as Chairman, Additional Government Agents (Land) the District Land Officers, Asst. Government Agents for the areas where particular project sites are located, district representatives of the Rural Development Department, Asst. Directors of Agriculture, and Asst. Conservators of Forest incharge of the projects Village Woodlot component. Responsibilities involved in the selection of participants and villagers for the project and the allocation of lands are to devolve on these committees. The project appraisal report has suggested a further trickle down, that village forest committees be set up at village level consisting of representatives from village level institutions. Their specific task is to assist the project by recommending to the respective district committee in each district, villages and participants for the programme.

1.2.5 Project Costs and Financing, Benefits and Beneficiaries

The total cost of the proposed project is US $ 13.67 million of which the foreign exchange component is US $ 6.51 million. The remainder constitutes the local funding (currency) of the project. The ADB would provide $ 10 million including $ 4.9 million of the local cost.

The economic internal rate of return of the project is estimated at 18.8 percent by taking into account the directly quantifiable project benefits, i.e. fuelwood, fruit, cashew nuts, and construction timber produced by the end of the project. The main beneficiaries of the project are the households and communities of the project area. To be precise, the benefits can be enumerated as follows:

(a) Employment prospects for about 5000 labour hands during the project implementation phase and for another 1400 thereafter in the area of maintenance and harvesting,

(b) supply of fuelwood to 5,830 rural households by the end of the project.

1.3 Baseline Survey

Considering the project's innovative nature - community participation in afforestation - the Project Appraisal Report (PAR) identifies the need to evaluate the project performance at a post implementation phase. A pre-requisite to this is the baseline survey covering the project area and the beneficiaries.

1.3.1 The Frame of Reference

The PAR seeks to have a nine month survey to collect socio-economic information on the project beneficiaries in the first year of implementation. It is implied that the baseline survey would be completed in all the villages, falling under the purview of the programme. The main objective of the baseline survey as identified in the PAR p. 23, is to collect socio-economic information on the beneficiaries to ensure the availability of data for a later evaluation of the project impact. The PAR makes numerous references to other secondary objectives, which inter-alia, include :

- devising a record-keeping exercise during the baseline survey to monitor the progress of the community and farmers woodlot component of the project (p. 20);
- more accurate assessing of the income to participants (after the baseline survey is undertaken p. 40);
- establishing needs and tree resources of the villages and socio-economic conditions as a point of departure data (p. 76).

For retrieval of information, the PAR identifies four major areas.

- The social and economic stratification,

- The village level institutions and their performance,
- The consumption of forest related goods, and
- The productive capacity of land with regard to forestry and agroforestry.

The areas of information as specified in PAR may vary to suit the data gathering strategies, such as questionnaire surveys to collect information on households, observation methods at village level, questionnaire surveys and interviews to ascertain the social and economic stratifications of villages, village institutions and their performances, and research exercises of a technical nature to generate information on the productivity of land, covering such areas as topography, agro-climatic conditions, soil, and so on. Research of technical nature is beyond the scope of ARTI research and calls for personnel and expertise from outside.

It is understood that the baseline survey has to generate mainly two interrelated sets of information in addition to the compilation of baseline data of project beneficiaries :

- information required for the implementation of the project and for monitoring its benefits. This is of crucial importance in view of the innovative nature of the project, local level participation and the long gestation period the participants have to wait to derive benefits.
- information base for process/post-project evaluation.

The Forestry Department the executing agency for the project requested ARTI to carry out initially, a baseline survey of project beneficiaries on two project villages in the Badulla district, namely Nugathalawa and Ambathenna situated in Welimada and Passara AGA divisions respectively. Having considered the limitation imposed by way of costs, manpower and other allied factors, ARTI agreed to the proposal in preference to an extensive study covering the entire range

of villages detailed in the PAR. The ARTI, in this respect was also guided by the following conditions:

Firstly, selection of representative project localities, for a sample survey, should have preceded the identification of all its localities by the project implementation.

But at the time this study was undertaken, FD was still on the process of selecting localities. This prevented the conduct of a general sample survey.

Secondly, viewed from the perspective of the innovative nature of the project, it appeared to be appropriate for the ARTI to undertake an initial baseline survey of the suggested two villages early so that it can generate relevant and useful data for project benefit monitoring and the physical implementation of the programme as spelled out.

Thirdly, it was more conditioned by methodological considerations. Adherence to reference made in PAR as to the baseline survey and types of information related would have necessitated the adoption of fairly involved methodological requirements.

Therefore, a baseline survey of a pilot nature for evolving a suitable methodology with the experience gained thereby, was deemed appropriate.

1.3.2 Methodology of the Pilot Survey

The methodology adopted and listed during the survey was governed by the consideration that the survey should generate points of departure data in relation to the socio-economic conditions of the beneficiaries so that at a later stage the impact of the project on them could be readily grasped. It was assumed that at a post evaluation stage of the project, an attempt would be made to identify, examine and quantify the socio-economic impact of the project on participants and on the local community in general.

With a view to facilitating intergroup-comparison (between direct beneficiaries and others), and evaluation of the project benefits on the participants, a group of local residents, other than those from the beneficiary families were also interviewed. The compilation of information on the non-beneficiary families was also undertaken on the same lines as in the case of beneficiary families. The selected non-beneficiary families were from the same localities and shared the same type of agro-climatic conditions. However, if these non-beneficiary locals were to be different from those of beneficiary farmers, it is in respect of their economic conditions because the project aimed at selecting the wealthy farmers of the area.

The second consideration is the necessity to collect information useful in project implementation and benefit monitoring. It was, therefore, rightly thought that other than the occupation, agricultural practices and timing of agricultural activities, availability of family labour, and labour from outside the family, attitudes towards environment in general and attitudes towards agro-forestry and the project in particular, were all important aspects in the successful implementation and active participation of the locals in the project. The theoretical standing of the study was that village level social stress and conflicts which may arise over alternative land allocation choices among affected parties would generate residual effects distorting the smooth implementation of the project. In other words, it was thought, that the extent to which non-beneficiary local families understand and identify with the project objectives and its rationale, would determine the extent to which the local support is extended for project activities. An attempt was made during the study to identify those social, economic and environmental factors that may determine the project implementation within the given local context.

This necessitated interviewing of non-beneficiary families on their attitudes towards and awareness of the project objectives, awareness of environmental problems and how they perceive the alternative allocation of local resources, for example, local land.

1.3.3 Focus of data gathering

Stipulated requirements by the project management for the baseline survey in the two villages recommended and what ARTI considered to be useful in monitoring project benefits, necessitated collection of information mainly in relation to following four areas.

1. Pre project socio economic conditions of beneficiaries and control groups (non participant locals)
2. Consumption of forest related goods (i.e., firewood, timber and fodder for cattle) by selected families in the locality.
3. Villagers' attitudes towards the forestry project and its benefits, environment in general and conservation of agricultural environment in particular, and beneficiary preferences to planting systems and species of forest trees.
4. Village level institutions, their functioning, villagers' attitudes towards them and rating of such local level institution's ability to undertake community forestry at the village level on a collective, self help and sustaining basis, leading to a normative judgement by the researchers.

1.3.4 Research Instruments Employed

In consideration with the nature and type of information to be generated, three basic data collection instruments were employed ; interviewing of project beneficiaries and non-beneficiary locals using structured questionnaires; non

structured interviewing of key informants who are familiar with both the project and localities including office bearers of local institutions, village and divisional level government officials and daily record keeping exercises at household level to profile data in relation to consumption of firewood and related expenditure etc.

1.3.5 Questionnaire Surveys

A substantial part of the information retrieval involved a measure of existing socio-economic conditions of both participants and non-participants in the two villages. Their attitudes too counted here. Two sets of questionnaires, one involving the socio-economic aspects, and the other involving the measure/assessment of local attitudes with necessary specifications for participants, and non participants, were used.

All the initial beneficiaries, except 3 who were absent at the village Nugathalawa, were interviewed using the structured questionnaires. The Forestry Department wanted all the participants from both villages to be interviewed; sampling problems arose in certain instances. For example, Ambathenna had only 17 beneficiary families, too small a population for any sampling, but Nugathalawa had 52 such families. Local variations observed in two localities were quite different in terms of socio-economic and agro-climatic conditions rendering it impossible to draw a sample from the total beneficiary population of both villages. On the other hand, information required for benefit monitoring necessitated the compilation of data on the farmers who had already undertaken planting*. But only less than 42% of the families had undertaken planting at the time of the survey. These limitations left the

* Problems encountered in the process of planting and during the post-planting period, extent of progress achieved and reasons for otherwise, farmers who had not taken an interest in planting were other areas where information was needed in this context.

researcher with no alternative but to interview all the beneficiaries in both localities.

A systematic procedure was adopted in drawing a sample of representative non-beneficiary households from both localities constituting the control group of the survey. In drawing this sample, it was assumed that the different costs and benefits associated with the project, for example, effects of the project on locals in allocating the existing grazing or open lands amongst them unevenly and effects of increased availability of forest related goods such as timber, firewood, would acrue more on the locals living around the project sites rather than away from it. Therefore, the people living around the project's site were considered as the control group.

The participant farmers of the project for the Nugathalawa site had been selected from 3 villages; Nugathalawa, Divurumgama a village under the village reawakening scheme and 'Girambe' including a colony village called "Siripura". All the villages are located around the hilly land allocated under the project and the villagers considered the site as a part of their village. In selecting the sample for non participant locals, a register that was obtained from the local cultivation officer was used. It included 138 persons registered as farmers. Of this, by replacing those locals already under the project and interviewed as beneficiaries, 30% of the families were selected to include in the control group which constituted 42 farm families. In sampling, simple probability sampling method was used.

At Ambetenna too, selection of non participant farmers to include in the control group was determined by their proximity to the project site by way of habitation. A similar sampling procedure as was in Nugathalawa was adopted here too.

It should be mentioned here that the lists of farm households, available with local CO or GSO were not accurate and up to date. For example, at Ambathenna, many households that had been registered as farmer families did not pursue any agricultural activity at all, nor did they depend on agricultural incomes to qualify themselves to be defined as farmers. Such instances were due to the fact that certain families had given up farming after registration or some had purposively registered themselves as farmers to obtain benefits and subsidies available to the farmers.

1.3.6 Record Keeping

The questionnaire surveys were followed by a record keeping exercise at the household levels. The frame of reference given to the ARTI by the Forestry Department specifies the need to collect information on consumption of firewood, including the sources, percentage of household income spent on firewood etc. Family incomes, expenditure in general and item-wise expenditure on household consumer goods in particular and amount of firewood consumed by family or person for a given period were areas where the questionnaire survey could not be precisely relied on for accuracy of information. Information of this nature is subject to memory lapses too. At the same time respondents could not be expected to measure for example, fuelwood consumption per family, per day, and keep records for the study.

In the circumstances, a record keeping exercise of a limited scale to collect specified data was undertaken for two weeks in the project localities. For the given period, at a specified time field investigators employed by the research project were to visit the selected households and keep records of required informations on a daily basis. About 23 local families from Nugathalawa and 13 families from Ambathenna were selected for this exercise. One of the objectives of this attempt, was to obtain accurate

information on the consumption of firewood per family per day by the number of meals prepared and persons who shared the given meals. Per capita consumption of firewood for the given period was determined on this basis. Selection of the number of households that was to participate in the record keeping exercise, was guided by the following factors :

(1) The members of the selected families should be available at the time of the investigator's visit and his regular visits for two weeks should be acceptable to the family.

(2) Depending on the availability of members of the household during the day for the investigator's visit, number of families that an investigator could visit a day was limited.

(3) At the times of the investigator's visits, the given family should have enough firewood to measure and keep apart for the following day until the next measure is taken and recorded in the balance sheet prepared for the purpose.

The field investigators were expected to keep records of following factors on a daily basis. For this an appropriate schedule was used as noted earlier.

- Consumption of firewood in terms of number of meals prepared/cooked, number of persons who shared the given meal, purposes other than cooking meals for which firewood was required
- sources of firewood, time spent and distance transported, type and quality of firewood collected and used,
- daily family expenditure on consumer items including soap, cigarettes and transport etc.
- daily income if any,
- daily expenditure on agricultural activities.

Firewood was measured in units of kgs. by the respective investigator who instructed the housewife to take necessary firewood for the next day from the measured lot. This amount was a little more than what was required by the family for a day. The remaining quantity was measured on the following day by the investigator, and necessary balance sheet of firewood consumption for the day was prepared and recorded.

Information on social, infrastructural and other related facilities at the village level was collected through village level observation; discussion with key informants such as village level leaders, officers and school teachers. The village level officials performed a significant role in the provision of information for the assessment of the performance of village level organizations, especially that of local RDSS. However, data in relation to activities of RDDS and their performance were mainly gathered through discussions with the office bearers, concerned.

1.3.7 Limitation of the Study

This is the first time a study of this nature has been undertaken in Sri Lanka. International experience on the subject and the supporting material available, even for reference was very limited. The study attempts to serve a dual purposes ; to compile baseline socio-economic information on the project participants, and to generate useful information for project planning, implementation and benefit monitoring. The importance of this second objective assumes greater proportions because the two sites selected for the study are also the two of initial sites where the concept of community forestry has been put into practice in the country. Many similar sites were to come under the project later, in the selected five districts and other localities. Or else, compilation of information on pre-project socio-economic conditions of participant farmers alone as had been envisaged in the PAR may not have served a useful purpose for project benefit monitoring.

The baseline information on project beneficiaries would have served its purpose only about 15 years later, consequent upon the long gestation period involved for the project to mature. Combination of two objectives under a single study, coupled with the ranges of information required for management was not without its cost. Varieties of-research methodologies had to be adopted. Questionnaires were too long : Many families were also "burdened with" *entertaining/an investigator daily visiting the family who probed into their incomes, expenditures, fuelwood consumption etc. for two weeks.

Voluminous information unearthed has resulted in a fairly lengthy report. However, it has its limitations too. A considerable amount of information covers the participants per se, rather than typically representating a cross section of the local communities. This had to be so from the project's point of view since the participants had been selected on the basis of specific criteria. The selection of the sample of non-participants, more likely to represent village level socio-economic condition, is expected to set off any drawbacks resulting from the survey of all the participants.

A rigorous statistical analysis has not been adopted in view of the small size of the samples. The presentation of the data is limited to simple percentages attempting to give a total picture of different but relevant aspects. Therefore, this analysis, in keeping with the study objectives and its practical uses, attempts to present data rather than test hypothesis and establish correlations.

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* Researcher's own comment and not expressed or otherwise conveyed opinion of respondent, who in fact cordially welcomed these visits.

Record keeping at the household level too had its limitations. Firstly, the sample was too small to generalize. To derive generalisations would have necessitated record keeping exercises at household levels for relatively longer times and for different seasons.

Chapter Two

PROJECT LOCALITIES AND FARMER'S WOODLOT PROGRAMME

The extent of viability in an agricultural project is conditioned by the inter-relationship of several factors. Some of these are

- nature of the project
- implementation procedure including the beneficiary, official interaction, facilities and services provided under the project
- characteristics of the project localities including the infrastructure, agroclimatic conditions, and the functioning of social and administrative institutions
- socio-economic variables of project beneficiaries/ target groups and other locals that will be affected by the project directly or indirectly, positively or negatively; their awareness of and attitudes towards the project objectives.

The socio-economic conditions of the project beneficiaries and non-participant locals are examined in the Chapters 3 and 5 respectively. Their attitudes towards forestry, forest fire and awareness of the project objectives and other related matters are discussed in Chapters 4 and 6 in relation to the project beneficiaries and non participant locals of the project localities.

The socio-economic conditions of the project beneficiaries and non-beneficiaries, their attitudes and perception of the project apart, it is assumed that the project implementation and its success will be influenced by the natural or the geophysical conditions of the project localities. In the circumstances, it is necessary in a baseline survey to compile information on the overall situation of the villages

as points of departure data. This Chapter deals with the wider socio-economic and natural physical conditions of the project localities, along with the community infrastructure. The Chapter, is also pre-occupied with matters relating to the functioning of social institutions in the localities and issues with regard to the availability and consumption of firewood.

2.1 Badulla District

Badulla is one of the five districts where the project is being implemented. Badulla is also the administrative capital of the district. The project's field unit and the Community Forestry Research unit including its Central Research Nursery are situated within the district. Badulla constitutes in administrative terms, 14 Assistant Government Agent Divisions, and 119 Gramaseva Officer Divisions covering 1,132 villages (Statistical Hand Book, Badulla - 1982 p. 2). Ambatenna is one of the 104 villages situated within the Passara AGA Division. Similarly, the village Nugathalawa is one of the 122 villages in the Welimada AGA Division.

2.2 Farmers Woodlot Programme

Nugathalawa and Ambatenna constitute two initial sites of the 90 villages where the Farmer's Woodlots Component of the CFP will be implemented. The Project Appraisal Report (PAR) anticipates the establishment of farmers' woodlots in 71 villages situated within the 4 wet/intermediate districts and 19 villages in the Batticaloa district. The PAR (p. 14, 15) anticipates the involvement of 5,830 individual farmer participants from the selected localities who will cultivate an area of 4055 ha. According to the PAR the selected farmers of the project localities will be given state lands varying between ½ to 1 ha in extent on lease under a written agreement with the CFD of the Forestry Department for the cultivation of agro-forestry.* Under the agreement the

* In reality due to shortages of land available for the purpose, on an average a farmer is given .20 ha (Personal communication by Midgley S.J., Consultant.

participants will be responsible for planting and maintaining the woodlots. Technical assistance, seedlings, fertilizer and some planting tools will be provided by the CFD.

The project will provide land leases initially for five years which will subsequently be converted to long term leases of 25 years on satisfactory performance of the participant farmers. With regard to the protection of woodlots, participant farmers are expected to bear sole responsibility.

2.3 Nugathalawa

Nugathalawa is one of the seven villages situated within the Dehipola Gramasewaka (GS) Division. Besides these old villages in the GS Division, there were two new human habitats, Divurumgama and Sucharithagama created under the village reawakening movement of the Housing Development Authority. The project site is located along the boundary of Welimada, Nuwara Eliya main road approximately 3 kms away from the Welimada town.

The site selected is an abandoned tea estate; a small hilly area surrounded by undulating flat land which forms the village habitat. On its right is the Welimada-Nuwara Eliya main road and the fringe of Nugathalawa village. On its North is the boundary of Girambe village. Both are old traditional villages. Besides these two villages, the project site is bounded by Divurumgama, a new village under the village reawakening scheme and "Siripura" colony on its west.

The extent of land under Dehipola G.S. Division, constitute approximately 498 ha (1230 acres) of tea land owned by Janatha Estate Development Board. Another 3.8% of the land is a private tea estate. The total number of families living in the area is approximately 714. Divurumgama, a newer village under the said village reawakening scheme alone covers some 19 ha (48 acres) of land where 205 houses have

been constructed and allocated amongst the local families. When the extent under tea is excluded, availability of land per family in the area on an average is .21 ha. (.53 acres). This is an approximation indicating the availability of land in the locality for housing as well as for lowland and highland farming.

Welimada AGA Division is one of the main vegetable and potatoe growing areas of the country. The up-country vegetables and potatoes grown in the area fetch high prices and are transported to the main urban centres of the country. Growing potatoes is the most preferred enterprise of the agricultural land operators of the area mainly for economic reasons. Farmers claim that under favourable circumstances potatoe fetches yield returns to the ratio of 1:15. Financial returns on growing of vegetables, especially exotic vegetables such as Cabbages, Beatroot, Leeks, Carrots and Beans etc. are relatively higher than those on indigeneous vegetables that are grown in the low country areas. A combination of favourable agroclimatic factors together with intensive cultivation practices normally adopted by the farmers in the area has resulted in higher incomes for the farmers from potatoes and vegetables than from any other source.

Situated in the midst of a commercialized farming area, the demand for arable land at Nugathalawa and surrounding villages is rather heavy. This demand also arises from a relatively high scarcity of land in the locality for agricultural and housing purposes.

The survey data revealed that about 26% of the respondents both participant and non-participant of the local population that were interviewed were absolutely landless in terms of lowlands. Conversely, many had some parcels of arable highland including their homegardens. However, the extent of highland available to a family on an average, amongst the respondent families is .27 ha (.68 acres). An inequitable distribution was observed even in case of the little highland they had where holdings ranged from 0.10 ha to 1.37 ha. About 17% of the participant families were absolutely landless in terms of either lowland or highland for agricultural purposes.

A considerable extent of land in the project locality as noted earlier is occupied by a number of state sponsored housing schemes. Badulla district claims the highest percentage of houses under the state sponsored housing schemes between 1977-82, some 15.9% constructed under the village reawakening movement up to 1982 (Statistical Hand Book, 1982, Statistical Division Kachcheri, Badulla). Welimada AGA Division under which Nugathalawa falls claims the highest proportion of these houses.

It appears that this programme has relieved, to some extent, the demand for land for housing. But the demand for cultivable land and the fragmentation of existing land in the locality are observed to be on the increase.

The high response expressed by the locals by way of applications for obtaining land under the Farmers' Woodlot Programme of this village was indicative of the problem of landlessness in the area. On the first occasion when the applications were called for, about 60 persons responded and 50 got selected.

Many who did not receive land were unhappy and they made representation to the M.P. of the area, A.G.A. and even to the G.A. at the Kachcheri level. Intervention of the M.P. resulted in a second selection being made in which process some of the earlier selectees had to be left out. The outcome was the emergence of a certain amount of social unrest.

Some who did not request land for forestry cultivation did so, because they thought that the alienation of land in this way would further reduce the land area available for housing development. The tension sparked off in this way appeared to have resulted in delays so far as the project implementation was concerned.

2.4 Ambetenna

Ambetenna is one of the seven villages of the Meeribedda G.S. Division situated within the Passara A.G.A. division. The village Ambetenna is traditionally demarcated as Ambetenna and Pahala (lower) Ambetenna. The demarcation is related to the topographical character of the land in the village.

The village generally referred to as Ambetenna is a stretch of about 3 km. along the Passara road spreading about 0.5 km to the interior on both sides. The project site situated within Pahala (lower) Ambetenna along the Passara-Hingurukaduwe road constitutes about 7.9 ha (19.5 acres). About 1 ha of this has been cultivated as a demonstration woodlot by the Forestry Department. A thin valley with a water stream known as "Waradola Oya" marks the boundary between Ambetenna and the village Tennuge. About half of the participants of the project were to come from the latter village. The valley constituted the main area of lowland of the locality. Although Ambetenna and Tennuge were two villages lying close to each other social relationship between the two communities was far short of expectations for reasons more physical than economic.

People of lower Ambetenna and Tennuge shared certain socio-economic as well as agro-physical characteristics in common. The majority of the families living in these two localities were traditional settlers, most of whom were cultivating some paddy lands. However, a mixed crop in their highlands was the main source of agricultural income. Most of the highlands and homegardens had been cultivated with cocoa, jack, arecanut, palm and varieties of timber and fruit trees together with betel and pepper wines etc.

Salaried jobs, business and other cottage industries such as jaggery making constituted the main income source of these families. The Tennuge estate, a tea estate managed by the Estate Plantation board also provided employment opportunities for the families of this section of the locality - especially for those at Tennuge.

The village commonly known as Ambetenna is mainly an area of relatively new settlers compared to the inhabitants of Tennuge. Much of the land in this area has been alienated under the village expansion scheme sometime ago on the basis of 0.40 ha. (one acre) per family. However, most families claimed to have more than one acre of highland; the excess might have been subsequent encroachments. In general these lands are steep and rocky. The soils are dry for a substantial part of the year impeding the cultivation of conventional cash crops. Some extents of land are under coconut cultivation. Sugar cane too had been tried out earlier.

Lowland for paddy cultivation is a scarce resource in the area, whereas many families have enough highland either privately owned or by way of crown land reserves. However, in addition to the physical characteristics curtailing the possibilities of farming, the long eroded soils, damage caused by wild animals, together with insect attack, have restricted even the highland cultivation. In all, agriculture has become too risky a venture to depend upon. Recently, some families had opted to grow pepper and coffee with subsidized assistance under the state sponsored minor export crop development scheme. However, the drought which prevailed through June to August thwarted the interests of the villagers.

In the absence of sustaining incomes through farming, many families of the area had to work as hired labourers for which many of the male members of the families of economically active population had to migrate to other areas. However, the majority of the families were either dependent mainly upon salaried jobs in the private and the public sector, or on small business activities. Some also worked on the nearby tea estates while some others sold firewood to earn a livelihood. The sources of firewood for them were the trees in reserve lands for the most part. This was basically a practice of very poor families in the area where the collected fuelwood

was transported by women and children as headloads for about 5 km. to the nearby township Passara.

The project site as noted earlier constitutes about 7.9 ha. True to the morphology of the area, the land that was alienated had been heavily eroded for a long time. This rocky land sloped steeply towards the valley which separated Ambatenna from Tennuge. The elders of the area claimed that the land was under tree cover a long time ago and served as a small village jungle. The land has recently been used as grazing ground for the cattle at Ambetenna, while some had also attempted to get an agricultural crop during the rainy seasons.

2.5 Community Structure, Institutions and Service Facilities for the Localities

Both Nugathalawa and Ambetenna are relatively well served in regard to education, health, banking, agrarian services and other institutional facilities for a rural area. This is perhaps due to their location within about 6 km from the divisional towns and service centres, Welimada for Nugathalawa and Passara for Ambetenna and Tennuge. Nugathalawa is also served by a small bazzar within the village and Keppitipola township which is situated within about 6 km. Only a part of the villages is served with electricity and pipe borne water supply particularly along the roads.

Figure 2.1 shows the facilities and services that are available for the localities within a given distance.

Figure 2.1

Services and Facilities in the Vicinity of Project Localities

Vicinity Distance	Nugathalawa	Ambetenna
Within the locality	Primary and secondary school	Co-operative
	Co-operative	
	Sub-post office	
	Private health centres	
Within 3 km	Bazzar	Primary School
	A.G.A. Office	
	Agrarian Services Centre	
	Bank	
	Govt. Hospital/Dispensary	Madya Maha Vidyalaya
	Police Station	AGA Office
	Village/Weekly fair	Agrarian Services Centre
Within 3-6 km	Madya Maha Vidyalaya	Bank
	Town	Govt. Hospital Dispensary
		Police Station
		Village/Weekly fair
		Town

2.6 Selection of Project Locations and Beneficiaries

The selection of project sites and beneficiaries, entrusted to the local Kachcheri Administration, involved long and complicated procedure and negotiations.

The Kachcheri was required to find suitable project sites situated close to the main roads, mainly for the purpose of deriving "demonstration effect" benefits. Locating such lands and blocking out the allotments entailed long and complex procedural problems which resulted in delays in the project implementation.

The selection of beneficiaries was reported to have protracted much more at Nugathalawa. It was in the first half of 1983 that the project site was selected. Subsequent to this the locals were informed about the project's land allocation programme through display of posters. About 61 locals applied for land at this initial stage. The following criteria and conditions were adopted in the selection of 50 locals, for the project.

a) The persons selected should have lived close to the selected site.
b) They should have resided in the village/GS division at least for three years.
c) Those selected should be financially better off in view of the long gestation period of the project.
d) They should not be employees of the public sector.
e) They should not construct permanent buildings on the given allotments.
f) Only one person should be selected from any given family.
g) They should be married citizens of Sri Lanka.

The items b and d above conforms to the agreement between ADB-GOSL in 1982(p.27). However, at both sites relatively better off farmers have been selected as beneficiaries in spite of the agreement to the contrary, where the agreement specifies that the small farmers should be given priority in the selection if they are willing to participate.

Selection of beneficiaries for the Ambetenna site appears to have been much easier than at Nugathalawa. The AGA of the area claimed that in the absence of any selection criteria for his guidance, a stable economic position of the selected family was considered as an appropriate yardstick. The interest in tree planting among the prospective beneficiaries was also a consideration. It was reported that there had been a "Voluntary Tree Planting Campaign" sponsored

by the AGA in the area. Those who supported the campaign from the Ambetenna and Tennuge localities were given priority in the selections made by the area AGA with the support of local level officers such as G.S. and C.O. at a meeting of villagers. The selectees had the approval of the local MP subsequently.

2.7 Consumption of Firewood

Sources of fuelwood, average monthly expenditure on fuelwood, attitudes towards the shortages, and suggestions to overcome the such shortages, are discussed in chapters 4 and 6 respectively in relation to the participants and non-participants in both villages. This information has been gathered through questionnaire surveys and is limited by issues such as memory lapses among respondents. A limited exercise, as noted earlier in chapter 1, was therefore undertaken to collect information by way of a questionnaire survey in order to overcome the problems arising out of the limitations imposed. In this chapter, data obtained through the record keeping exercise for two weeks of fuelwood consumption in the localities, are discussed.

Table 2.2

Sources of Fuelwood by Location

Source	Nugathalawa (%)	Ambetenna (%)
Own source only	65.2	61.5
Boutique/firewood seller only	4.3	7.7
State Timber Corporation Depot only	8.7	abs
Own source and boutique	4.3	abs
Own source and forest	4.3	15.4
Own source and neighbouring estates	8.7	abs
Boutique and Timber Corporation Depot	4.3	abs
Own source forest and neighbouring estates	-	15.4
Total	100.00	100.00

Source : Survey data - record keeping.

It should appear from data given in Table 2.1, many of the Nugathalawa families who did not have their own fuelwood adequately for family consumption had to purchase their requirements. Only 3 out of 23 families depended on tea estates or forest directly for firewood while these were the most predominant second important source of firewood in Ambetenna. This is made possible because of the existing forest reserves in the Ambetenna area. However, forest appears to be a disappearing natural resource in the locality. In addition to commercial felling of trees, forest fires, felling of trees one by one as converting into fuelwood for subsistence living, contribute to the gradual denudation of the village forest reserves.

2.8 Collection of Firewood

Collection of firewood appears to be a task mainly undertaken by women in the localities. About 92% of the Ambetenna record keeping households reported that the women collected the firewood assisted by their children. At Nugathalawa, more women usually did this job. However, at times, at this location both men and women collected firewood. When the firewood had to be bought and fetched from boutiques and from the State Timber Corporation Depot, males performed that task. Table 2.3 gives the percentage distributinn of households reporting as to who collected the fuelwood.

Table 2.3

Collectors of Firewood

Collector	Nugathalawa N=23 (%)	Ambetenna N=13 (%)
Head of the household	26.1	7.7
Housewife	69.6	92.3
Children	30.4	76.9
Servants	21.7	-

Source : Survey data - record keeping

Note : Percentage does not add up to 100 as several members of the family collected firewood alternately.

2.9 Time Spent on Collection of Firewood

Obviously the majority of the families collected firewood more or less on a daily basis and when required without resorting to the practice of storing necessary firewood for several days. The time spent on collecting firewood by the members of the families when computed on an average amounts to some fifty minutes a day for a Nugathalawa family and 56 minutes for a family at Ambetenna. On this basis a family in the locality spends about 7 hours a week on collection and processing of firewood. When collection was done away from their homegardens or own highland, distance that had to be covered was always less than a mile. However, six Nugathalawa, families (21%) had to travel, a little farther. For most of the time in Ambetenna families used dried, relatively heavy, easily combustible firewood. Sometimes, it was a mix with raw firewood. The firewood used by the Nugathalawa families, was basically of heavy and long combusting type. Firewood was mainly used for cooking purposes. Other types of firewood used by the households are outlined in Table 2.4 which indicates the biomass variety used in combination for cooking.

Table 2.4

Type of Biomass used for Cooking Purposes

Type	Nugathalawa Household = 23		Ambetenna Household = 13	
	No.	%	No.	%
Twigs	05	21.7	09	69.2
Poles	08	34.8	13	100.0
Large branches of trees	19	82.6	10	76.9
Small branches of trees	10	43.5	12	92.3
Rubber wood	01	04.3	-	-
Coconut husk	-	-	02	15.4
Coconut shells	-	-	02	15.4
Paddy shaff	10	43.5	-	-
Saw dust	01	04.3	01	7.7
Tree roots	07	30.4	-	-

Source: Survey data - record keeping

Note : Percentage does not add up to 100 because every household used many type of biomass.

Data in Table 2.4 illustrates that the majority of Ambetenna families used firewood, poles and branches and twigs as the popular types of biomass. All these are equally sought after. But at Nugathalawa branches of trees were the most popular firewood type. In addition to this, rubber wood, a popularly sold biomass in the country, and paddy stalk were also used. In this area, roots of trees formed a long combusting biomass for cooking purposes, suggesting to some extent the scarcity of firewood.

2.10 Type of Cooking Hearth

The type of cooking hearth used by the people is related to the question of biomass, the predominant source of energy for cooking purposes. It is related not only to the traditional practices and culture and availability of alternative sources and methods, but also to life styles, scarcity of biomass types available, and energy generated by them. Therefore, this aspect too was examined during the survey through observations.

The most popular type of hearth used by the local families was the three legged one. Three or more bricks or three stones placed in such a way to support a cooking pot or a kettle formed this common hearth. Occasionally, clay was used to form such supporting legs. Very often a family had two or more such hearths of different sizes. An advantage of the common hearth formed with bricks or stones (if these were not partly buried to make a stable hearth as was occasionally done) was that their size could be changed appropriately to hold a given size of a pot or a kettle. These types of hearths again were useful for feeding biomass such as coconut husks, coconut shells and small tree roots directly without processing. An obvious disadvantage of this type, was the energy waste because the hearths had three openings to feed biomass through which the generated energy was released with lot of waste. There was, to an insignificant extent, a tendency to use hearths with one opening to feed biomass. These were mainly of clay construction and in such instances both the biomass and the generated energy were saved to a considerable extent.

Those who used biomass such as paddy stalks and saw dust utilized most of the time a metal cylinder of an appropriated size to form a cooking hearth. The cylinder into which saw dust or paddy (chaff) was tightly pressed was lighted through a perforation made just above the bottom part of it to form a long lasting fire. The cooking process on this type of hearth appeared to be slow but saved energy; the entire operation was also less costly. To some extent, the relatively lesser use of this type of hearth indicates that the inhabitants of the study villages have not felt the scarcity of conventional biomass sufficiently to warrant a change in the age-old practices.

Chapter Three

SOCIO-ECONOMIC CONDITIONS OF PROJECT BENEFICIARIES

3.1 General

This chapter deals with an analysis of the present socio-economic conditions of the project beneficiaries. Aspects dealt with mainly are :

- Demographic characteristics
- Occupational distribution, sources and levels of incomes
- Household assets, liabilities and the general condition of living
- Land, Land ownership and operational patterns and agriculture
- Local level institutions and participation and,
- Recreation and leisure time activities of participants.

The Chapter aims at providing an information base for ex-post evaluation of the project impact on participants and to examine the present socio-economic condition of the beneficiaries that may have certain implications for both project management and its benefit monitoring. In the analysis, easily referable indicators are used and the two sites are separately treated. The unit of measurement adopted is mainly the household. Due attention where necessary has also been paid to examine the socio-economic conditions of beneficiaries in a national, district and sub-regional context.

3.2 Demographic Characteristics

3.2.1 Ethnic Composition

Ethnic composition of the Badulla district presents linguistic characteristics where Passara AGA Division has a high proportion of Tamils both of Sri Lankan and Indian origin, a concentration of latter predominating in the plantation estates. Yet the study sites are mainly Sinhalese villages.

3.2.2 Composition of Households

The average household size for the district is 5, a little lesser than the national average of 5.23 (Consumer Finance Survey 1981/82 p.22). At Nugathalawa average family size was estimated to be 5.8 amongst the beneficiary families while the corresponding figure for Ambetenna participant population was 6.5. The relatively low living standards observed at Ambetenna and discussed elsewhere in this report, conforms the reported national tendencies. Family size distribution is tabulated in 3.1.

Table 3.1

Family Size Distribution

Family Size	Nugathalawa %	Ambetenna %	Both Villages %
1	-	-	-
2	3.7	11.8	5.6
3	7.4	5.9	7.0
4	13.0	11.8	12.7
5	20.4	11.8	18.3
6	20.4	29.4	22.5
7	14.8	23.5	17.0
8	13.0	5.9	11.3
9	7.4	-	5.6
Total	100.0	100.0	100.0

Source - questionnaire survey data.

Data in 3.1 represents that 75% of the total participant households had five or more members per family. Family size at Ambetenna was the larger, whereas the corresponding figure at Nugathalawa was lesser. Implications of the family size for the project will be further examined later in relation to the age structure of the respondent population and the workforce.

Masculinity ratio for the district was reported to be 101.9 in 1981. Substantially higher masculinity ratios have been reported in the two villages under survey; 121.8 for Nugathalawa and 126.5 for Ambetenna. This increase could have been a result of the purposive sample taken which formed the total participant household population of the villages.

3.2.3 Literacy and Educational Attainment

Educational attainments could be taken as a yardstick to measure the level of relative social development. Literacy, amongst the members of a given community is said to be functional in the adoption of innovations. These factors were taken into consideration in measuring the socio-economic conditions of the participant farmers. Percentage literacy rates are detailed in Table 3.2

Table 3.2

Percentage Literacy and Educational Attainment by the Members of t[he] Beneficiary Households by L[ocation]

	Illiterate	Grade 1-5	Grade 6 senior	Passed senior	Passed higher senior	Graduates
Nugathalawa	13.0	79.3	38.4	14.3	3.5	1.0
Ambetenna	5.7	20.0	44.8	17.1	10.5	1.9
Both Villages	12.4	27.0	39.4	14.8	5.2	1.2

Source - Questionnaire survey data.

Data given in Table 3.2, illustrates that the literacy rates achieved by the members of the respondent groups are high. However, it should be noted that the differential factor in literacy, for example, sex and age / wise, has not emerged here. Therefore, cross tabulation of data was undertaken to identify the more apparent patterns. This exercise has indicated that;

- 94% of those family members over 10 years of age in the participant families at both sites were literate,
- 60% of the family members at both sites had completed 6 years of schooling.

- Elderly females of the families, those over 50 years of age appeared to be less educated than their male counterparts. This pattern is not seen amongst the young adults.
- 90% of the heads of households were literate including 11 women who functioned as heads of the households. Six of the women had passed their G.C.E.(O/L) examination.

The extent of educational attainments realized by the heads of households who are the decision makers, is quite sufficient to warrant the conclusion that they could be exposed to innovations with positive results.

3.2.4 School Attendance

Of those between 5-14 years of age the reported school attandance rates were very high registering 100%; only exceptional case being 95.5% that was recorded for males of this age at the Nugathalawa village. In general, school attendance amongst the group 15-19 years, was lower at this village whereas it was 70% at Ambetenna for both sexes. Corresponding figure for Nugathalawa was reported to be 65.6% for males and 61.5% for females.

It is interesting to note that the school attendance rates among the participant families of Ambetenna are fairly high in contrast to their relatively disadvantaged economic standing. Both villages have schools within accessible proximity. Hence it is very clear as to why the attendance rates had dropped at Nugathalawa, especially amongst those females over 10 years old. Sociological observations suggest that peak periods of agricultural activity demanded the involvement of all available hands in the households. Perhaps this explains, to a certain extent, the causes for the drop-out rates at Nugathalawa.

3.3 Labour Force, Employment and Income

3.3.1 Labour Force

The peasant sector of Sri Lanka labour force, is defined to include those between 15-64 years of age. Accordingly, the proportion of the workforce in both villages amounted to 73% of the total population. Village-wise analysis of data shows that the labour force at Ambetenna is higher than that of Nugathalawa. Furthermore, analysis of the sex composition of the labour force for 100 persons in both villages shows that the female labour force amounted to a 44.8% for Nugathalawa and 44.4% for Ambetenna.

The majority of the labour force belongs to a relatively young age group of 20-35. Males of this age group for Ambetenna were reported to be 48% while the corresponding figure for Nugathalawa was 41%.

Given the high literacy levels amongst the members of participant households, and a male dominant work-force, prospects for mobilizing labour both qualitatively and quantitatively from within the participant households for the project, appears to be promising. However, such prospects mainly depend on perceived benefits of the project as well as motivation to participate because opportunity costs are involved.

3.3.2 Employment and Activity Status of the Participant Family Population

Employment and activity status of the participant population is summarized in Table 3.3. The key terms used in the present discussion together with the scheme of calculation of activity status are as given below.

ACTIVITY

Economically active		Economically inactive			
a.	b.	c.	d.	e.	f.
employed (including unpaid family workers)	unemployed (including those without gainful employment in at least 15 days within 3 months prior to survey)	House wives	Students	Discouraged workers (those not seeking employment)	Others including retired disabled and those too young or too old to work)

Crude Activity Rate % = $\frac{(a) + (b)}{\text{Total in the sample}} \times 100$

Net Activity Rate % = $\frac{(a) + (b)}{\text{15-65 years of age}} \times 100$

Economic Dependency Ratio % = $\frac{(b) + (c) + (d) + (e) + (f)}{\text{Total employed}} \times 100$

Table 3.3

Composition of the Participant Family Population by Nature of the Activity

	Nugathalawa	Ambetenna	Both Villages
a. Percentage employed in the total population	29.8	39.6	32.4
a. 1 male	45.7	56.5	48.5
a. 2 female	10.6	21.4	12.6
b. Percentage employed in the labour force	42.5	48.9	44.4
b. 1 male	64.7	70.0	66.3
b. 2 female	15.2	22.5	17.2
c. Percentage employed in the economically active population	79.7	88.0	82.1
c. 1 male	90.7	87.5	89.8
c. 2 female	48.4	90.0	58.5
d. Unemployed	7.6	5.4	7.0
e. Housewives	15.6	13.5	15.0
f. Students	31.4	28.8	30.0
g. Discouraged workers	4.8	6.3	5.2
h. Others	10.8	6.3	9.6
i. Crude activity rate	37.5	45.0	39.4
i. 1 male	50.3	64.5	54.0
i. 2 female	21.8	20.4	21.5
j. Net activity rate	53.4	55.6	54.0
j. 1 male	71.3	80.0	73.8
j. 2 female	31.3	25.6	29.5

Source : Questionnaire Survey Data

The sections under a,b, and c of Table 3.3, reveals the overall employment situation. 32.4% of the members of households in the two participant groups are employed corresponding to 44.4% of the total work-force. 82.1% forms the economically active population. However, this has to be differentiated in terms of location and sex. Despite the relatively unfavourable pecuniary circumstances prevailing at Ambetenna, higher percentage of the populatinn than at Nugathalawa was found to be employed.

As for the employment situation of females, for every hundred women in the age group of 15-65 in the two villages, only about 7 females were employed, while the corresponding figure for males was as high as 66. At Nugathalawa 91.1% of the males among the economically active population was found to be employed whereas only a half of the females was reported to be employed. A contrary picture emerges for Nugathalawa where the corresponding figures are 90% for women and 87.5% for men.

Overall labour force participation is indicated by both crude and net activity rates. Crude activity rate in both villages, at 39.4%, is in comparison to the rural sector that was reported in consumer finance survey of 1981/82, as 34.3% (118) is higher. In both villages, crude activity rates for females were reported to be as low as 21.5% compared to a 54% for males. This may be due to the fact that the housewives are excluded from the economically active segment of the population.

3.3.3 Levels of Income

In both villages 67.6% of the households had at least one income-earner while 26.8% of the households had two. The earning capacity of family members at Nugathalawa was much higher than at Ambetenna.

The occupational distribution of the employed is as expected biased towards agricultural activities. This is because the allocation of land under the project is weighted towards

the farmer families of the relevant localities where the project is being implemented. To clarify the reality, the respondents were asked as to their main source of family income. Information obtained thus was later classified to form the following three categories (a) households with mainly agricultural incomes, (b) households with mainly non-agricultural incomes and (c) households with agriculture cum non agricultural incomes. The table 3.4 outlines the households according to their principal income sources.

Table 3.4 :

Percentage of Households Earning From Agricultural and Non Agricultural Sources

Source of Income	Nugathalawa	Ambetenna	Both Villages
Agriculture	37.0	17.6	32.4
Non-Agriculture	11.1	17.6	12.7
Agriculture cum non-Agriculture	51.9	64.7	54.9
	100.0	100.0	100.0

Source : Questionnaire Survey Data

The data presented in the Table 3.4 shows the dependence on agricultural activities either as the main or a complementary source of employment and income. In the circumstances 87.3% of the project beneficiaries were farmers.

In spite of this overall picture of high dependence on agriculture, individual differences were rated in respect of the villages with Ambetenna revealing a marked tendency towards non-dependence mainly on agricultural activities.

3.3.4 Income

An attempt was made to determine the exact sources and levels of income of the participant families for the 12 months ending 15th November 1984, covering two cropping seasons i.e. Maha 1983/84 and Yala 1984. In addition income from salaried employment, through skilled or casual labour, self employment

and imputed values of food stamps and income derived from tractor-hire were also taken into consideration.

Generally, the survey data in relation to incomes are under reported, and subject to two kinds of limitations. Firstly, the measuring of certain non-monetory incomes such as the value of subsidized food items, imputed values of rent free housing etc; involved complications. Secondly, the inclinations on the part of the higher income earners to under report their earnings. Another problem was that the information furnished was dependent on the memory of respondents which could not be counter checked in a 'single' survey of this nature.

3.3.5 Sources and Composition of Income

A two-way approach can be adopted to discuss the income composition. First is to consider it as a percentage of household earning through a given source from amongst a number of sources. Second, is to consider it as a percentage of income derived from each activity source. First type of classification gives an indication of the number of families that is dependant on a given source, while the second gives an idea of the extent to which they are dependant on the same source. Income generating activities of participant families have been classified as self-employment, hired labour, salaried employment, values of food stamps, and others. Income from self-employment has again been sub-divided as income from agriculture and non-agriculture. Self-employment in agriculture has also been classified again in terms of crop and livestock. Self-employment in non-agriculture includes mainly the business activities or trading, while skilled labour employment such as masonary and carpentry has been classified as hired labour in non-agriculture.

Approximately 90% of the Nugathalawa families derived their income from agricultural sources; yet, only 37% as the main source of their family income. None of the families at Ambatenna depended on agriculture as their main source of income.

Approximately three fourths of the Nugathalawa families derive incomes from the vegetable cultivation which constituted approximately a 15% of the total household earnings. About 30% of Nugathalawa families cultivated potatoes contributing to some 14.6% of the total household incomes. Compared to this only a fraction of the Ambetenna families grew vegetables and the potatoe cultivation was not practised by anyone. This shows the relative prominence of vegetable growing, including potatoes, in the economy of Nugathalawa households.

Table No. 3.5

Percentage of Households Reporting Income From Various Sources And Composition of Household Income

Income Source	Nugathalawa		Ambetenna	
	% of respondent households reporting	Composition	% of respondent households reporting	Composition
1. Self employment in agriculture				
a. Paddy	51.9	5.0	58.8	12.6
b. Vegetable	75.9	14.4	23.5	1.0
c. Potatoes	29.6	14.6	-	-
d. Tea	22.2	2.7	-	-
e. Other crops	1.9	0.1	47.1	5.0
f. Livestock	22.2	3.4	17.6	0.9
2. Self employment in non-agriculture	25.9	26.4	35.3	18.3
3. Supply of hired labour in agriculture	25.9	3.3	11.8	4.6
4. Supply of labour in non-agriculture and s skilled labour	14.8	3.6	-	-
5. Salaries	33.3	18.4	58.8	55.4
6. Food Stamps	18.5	0.9	35.3	1.8
7. Others	14.8	7.2	5.9	0.2

Source : Questionnaire Survey Data

More than 50% of the farmers at both localities did paddy cultivation, but this was not a significant source of income, more so at Nugathalawa than at Ambetenna. About one fourth of the participant families at Nugathalawa were self employed, a source of income predominating among non agricultural activities. One third of the participant families at Nugathalawa, were in salaried employment constituting about 18% of their incomes.

Many families in Nugathalawa worked as hired labourers too while some others were benefitted by the food stamp scheme. Nugathalawa participant households, in general, are definitely a group of people who had various sources of incomes. This factor appears to have contributed to the reported high levels of incomes amongst the non-participant families of this village.

Compared to this, the range of sources of income at Ambetenna was restricted. Paddy and other perennial crops, provided the agricultural income for the Ambetenna families. However, income from these crops constituted less than 20% of the annual total household incomes. Amongst other sources of income, salaried employment was the important avenue of income for non-participant households in this village both in terms of number of families deriving income from this source and its share in the total household incomes. Approximately 35% of the households derived incomes from self-employment constituting 18% of the total household incomes.

3.3.6 Levels of Incomes

Annual average household income in respect of Nugathalawa families has been recorded as Rs. 23,272/-, whereas it was Rs. 12,350/- for Ambetenna showing the marked income disparities in the two villages. At Nugathalawa the reported levels of the household income ranged from Rs. 3,600/- to Rs. 122,160 per annum and at Ambetenna it was from Rs. 1,741 to Rs. 26,850/-. A per capita annual income of Rs. 3,990/- and Rs. 1,891/- was recorded for Nugathalawa and Ambetenna respectively. Similarly, annual income per income receiver at Nugathalawa was Rs. 16,892 while this was Rs. 8,075/- at Ambetenna.

The data pertaining to distribution of households by levels of incomes gives a clearer picture of the aspects of income distribution amongst participant households of the two localities. Percentage distribution of households by levels of incomes is given in the Table No. 3.6.

Table 3.6

Distribution of Households by Levels of Income

Income Group	Nugathalawa	Ambatenna
0 - 6,000	13.0	17.6
6,001 - 12,000	37.0	35.3
12,001 - 18,000	16.7	29.4
18,001 - 24,000	9.3	11.8
24,000 - 30,000	3.7	5.9
Over 30,000	20.4	-

Source: Questionnaire Survey Data.

According to the data given in Table No. 3.6 most of the participant families at both villages were deriving annual income ranging from Rs. 6001 - 12,000 per annum. Next to this by magnitude of number, 29% of Ambatenna families derived annual incomes between Rs. 2,001 to 18,000/-. However, the next major-group by magnitude in Nugathalawa, approximately 20% were deriving annual incomes of over Rs. 30,000/-.

3.4 The General Conditions of Living

Large scale intervention programmes launched by the state will for the most part, have a wider range of lasting impact on conditions of living and physical quality of life of the target groups. Such programmes, for example include land settlement/intensive area development and integrated district development. The range of activities covered by such programmes is wide and those activities focus on large physical area and target groups. In this

ultimately will ensure the improved availability of forestry related items amongst the local beneficiaries, yielding better incomes, or saving expenditure hitherto spent on such items. To a limited extent the farmer's woodlots programme of CEP will also create local employment opportunities basically at the beginning of the project and at the time of harvesting. Except for this peripheral impact, the farmer's woodlot programme cannot be expected to make significant changes in the quality of life of the beneficiaries concerned.

The conditions of living and quality of life of a given group of people could be measured either by "input" variables or "output" variables. The "input" variables include the facilities and services available both at the household level and at the community level. A measure of certain community level "input" variables such as physician/population ratios are irrelevant measures in depicting the condition of living/ quality of life of beneficiary families of the project given the small size of the population involved. However, certain facilities and services available at the respective village level such as schools, hospitals etc. have been profiled and discussed in Chapter one. The relevance of a measure of certain "output" variables in this respect is also rather limited. This is both due to the limited impacts that are accrued, and the small size of the study sample. The limited study sample population has meant difficulties in arriving at certain other variables such as infant mortality per thousand, birth, and deaths per thousand population and the average life expectancy etc. These have been purposively left out. However, other indicators including educational attainments and literacy levels both for depicting socio-economic conditions of respondents and generating useful information for project implementation have been taken care of.

It was thought at the design stage of the study that conditions of housing, sources of drinking water and available toilet facilities were key indicators of conditions of living of such a small respondent community. Besides incomes,

it was thought that the type and range of household assets owned by the respondent families too would bespeak the relative social and economic situation.

3.4.1 Housing Conditions

Conditions of houses occupied by participant families measured in terms of the type of their structures, maintenance according to the local standards, number of compartments/rooms available in a given houses and the type of occupancy, appeared to be satisfactory in both localities. Overall conditions of houses are detailed in Table 3.7.

Table No. 3.7

Ownership of Housing Conditions

Type	Nugathalawa %	Ambetenna %
Permanent structures	100.0	100.0
Bricks walls and permanent roofs	99.7	94.1
Adequately maintained	64.8	82.4
Owner occupant	87.0	76.5

Source : Questionnaire Survey Data

All the homes in the study area were permanent structures and most of them had cement floors, brick walls and permanent roofing, comprising tiles, asbestoes sheeting or corrugated iron sheets. More than three fourths of the houses at both sites were owned by the dwellers. The number of houses jointly owned or rented was almost negligible. Normative judgement of the respective investigators who observed the conditions of the houses was that most of the houses were well maintained according to the local standards.

3.4.2 Toilet Facilities

Almost all the participant households had toilets with a little more than half having the water sealed type. The others had the pit-type.

3.4.3 Drinking Water

Drinking water available for the Nugathalawa participant families was mostly safer than for those at Ambetenna. The majority of the families of Nugathalawa, approximately 59% of them had well water, while another 39% had pipe borne water. Only one family in this village used stream water for drinking whereas 59% of the Ambatenna participant families used stream water for drinking purposes. Another 29 and 12 percent of the households used pipe and well water for drinking purposes respectively.

3.4.4 Ownership of Household Items and Farm Equipment

As noted earlier, ownership of certain household items such as washing machines, television sets and radio sets can be considered as economic indicators of rural households. Ownership of such items by participant households is presented in Table 3.8.

Table No. 3.8

Percentage Distribution of Household Items and Agricultural Equipments

Possessed Items	Nugathalawa	Ambetenna
Household		
Wall Clocks	59.3	76.5
Gas Lamps	38.9	41.2
Radio	90.7	100.0
Sewing Machines	51.9	64.7
Television Sets	22.2	11.8
Transport Items;		
Bicycles	24.1	11.8
Motor cycles	5.6	5.9
Agricultural Implements;		
4 Wheel Tractor	1.9	-
2 Wheel Tractor	1.9	-
Spray Machine	25.9	11.8

Source : Questionnaire Survey Data

According to data in table 3.8 it appears that despite the income disparities that were observed in the two groups, possession of household items does not show differences in terms of the levels of incomes.

3.5 Land, Land Ownership and Operational Patterns of Land by Recipient Farmers

3.5.1 Land Problems in the Two Localities

Unlike in the Dry Zone the problem of landlessness is very acute in the traditional settlements situated in the Wet-Zone of the country. This is more so in the upcountry Wet-zone settlements, despite the low population density. In the upcountry regions, human settlements were pushed, by a process which began with the estate sector development in the 19th century, towards marginal land for peasants for further settlements. Agriculture is vastly restricted by this phenomenon. The situation with regard to land ownership in both localities in respect of participant farmers conforms to this general picture of landlessness in the upcountry regions.

On the basis of the land use in the upcountry, the land in this region is classified into three types: homegardens, highlands, and lowlands. A homegarden is an area surrounding the shelter of a household constituting the house itself, a toilet/latrine, in certain cases a well and a crop mix of perennial varieties and trees.

Highlands are areas of lands that cannot be put under gravity irrigation and therefore dependant on rainfall, generally for the growth of seasonal cash crops.

However, highland areas that were considered as home gardens in both localities were very small per household. On an average, home garden area including the extent under house and other amenities at Nugathalawa was .16ha. (0.40 acres) per household while this was 0.48 ha. (1.19 acres) at Ambetenna. The extent of difference is again dependent on the difference of definition. Many of the participant families; 8 out of 17 owned .48 ha. (one acre) of L.D.O. land at Ambetenna which they considered as their home-gardens. Growing of seasonal cash crops such as vegetable was not observed in this locality whereas it was the tradition at Nugathalawa. Many farmers at Ambetenna lacked suitable lands for agricultural purposes.

At Nugathalawa, either lowland or highland to the extent of .20 ha constitutes in many cases an economically viable unit for agricultural operations. Many of these lands could be brought under vegetable crops, during the two agricultural seasons. However, this upper limit in economic terms does not apply to the lands at Ambetenna which are relatively unfertile and rocky.

It was concluded that .20 ha (.5 acres)plot at Nugathalawa, was not economically viable enough to sustain a family. Hence, those owning less than .20 ha were considered as landless together with those who did not own any land for agricultural purposes in both localities. Those who owned either lowland or highland exceeding .20 ha of land were considered land owners.

Single and joint ownerships were observed among the land-owning class; the former being the majority. Six out of 17 families at Ambetenna who owned .40 ha L.D.O. highland plots were treated as land-owners. Also 3 out of 17 Ambetenna families who had encroached on crown lands and those who had home-gardens over and above the .20 ha limit fell into this category. The landless population in the sample constituted families that did not own more than .20 ha of land singly, or jointly or those who did not have access to L.D.O. lands or crown lands by way of encroachments. Those who owned either highland or lowland exceeding .20 ha of land jointly posed the problem as to whether they should be treated as landed or landless. Solution to this problem was found in the extent of land they singly owned.

Of those who owned lowlands in the village Nugathalawa average extent per household was .46 ha (1.14 acres) while the figure for highlands averaged .32 ha (o.79 acres). Compared to a 59% of Nugathalawa, 41% of the participant farmer households at Ambetenna were landless in terms of lowlands while the comparable figures for highlands were 50% for Nugathalawa and 59% for Ambetenna. The size of lowlands held by Ambetenna land owning families were quite smaller than that of Nugathalawa families. By contrast, land owning participant families of this village held .40 ha (one acre) of highland compared to .25 ha (.61 acres) at Nugathalawa. It should also appear from the data given in Table 3.9 that only a smaller fraction of the lands in both villages is jointly owned. As far as ownership is concerned this shows the peripheral nature of fragmentation.

Table 3.9

LANDLESSNESS AND OWNERSHIP OF LAND BY TYPE

Type of Land ownership	LOWLAND								HIGHLAND							
	Nugathalawa				Ambetenna				Nugathalawa				Ambetenna			
	No.	%	Extent ha.	Average area per household ha.	No.	%	Extent ha.	Average area per household ha.	No.	%	Extent ha.	Average area per household ha.	No.	%	Extent ha	Average area per household ha.
Landless	33	59.2	-	-	7	41.2	-	-	27	50.0	-	-	10	58.8	-	-
Singly Owned	20	37.0	9.26	.46	7	41.2	1.7	.25	21	39.0	6.73	0.32	1	5.9	0.40	0.40
Jointly	2	3.7	.25	.13	3	17.6	.80	.27	20	4.0	1.11	0.56	2	11.8	0.61	0.30

Source : Questionnaire Survey Data

3.6 Operational Status of Agricultural Land Holdings

At Nugathalawa, beneficiary farmers operated a total of 14.98 ha (37.03 acres) of lowlands, while Ambetenna had 3 ha (7.5 acres). Lowlands more unevenly distributed at Ambetenna were cultivated under different tenurial conditions. The size of lowland per farm family at Nugathalawa was .27 ha. and at Ambatenna .18 ha. Majority of the lowlands at Nugathálawa approximately 62% of the land was singly owned by 37% of the farmers averaging .46 ha (1.14 acres) per family. In this village only two families operated jointly owned lowlands where the total extent was .25 ha and permanent land tenure arrangements under the paddy land Act of 1958 were absent. About 39% of the families operating lowlands at Nugathalawa had resorted to different types of tenurial arrangements including mortgaged leased or rented types. These farm families operated on an average .28 ha of lowland. Rented in operational arrangements of lowland were predominant in this village, with 25.9% of the beneficiary farmers adopting this condition. Virtual absence of ande(permanent lease) practice and increased mortgaged in and rented in type tenurial arrangements reveal not only the scarcity of cultivable lands in the locality but also the monetization of economic activities in the farming community of Nugathalawa.

Similarly at Ambetenna, 41.2% of the beneficiary families owned and operated most of the available lowlands singly. About 41% of the families have owned 1.7 ha of lowlands, which amounts to 0.25 ha per family. In the village, out of those 17 farmers 3 (approximately 18%) were operating lowland under joint ownership averaging .27 ha per family. Except two farmers operating 0.50 ha in extent under ande tenure, there were no other land tenurial arrangements amongst the beneficiary farmers of Ambetenna. Size of operational holdings of land-including those who operated less than .20 ha of either lowland or highland and under different tenurial conditions is given in Table 3.10.

Table 3.10 Size of Operational Holding of Lands

Size of operational holding of land	LOWLAND		HIGHLAND	
	Nugathalawa %	Ambetenna %	Nugathalawa %	Ambetenna %
No. Land	35.2	41.2	1.9	5.9
0 -0.20	24.1	23.5	44.4	5.9
0.21- 0.40	22.2	23.5	22.2	17.7
0.41- 0.80	9.3	11.8	22.2	41.22
0.81- 1.20	7.4	-	5.6	23.5
1.21- 2.00	1.9	-	3.7	5.9
TOTAL	100	100	100	100

Source : Questionnaire survey data.

It should appear from the data given in Table 3.10, about 35% of Nugathalawa and 41% of the Ambetenna participants did not operate any lowlands while a larger segment of the remainder each operated a less than 0.20 ha. But a greater majority of the farmers at both sites operated some highlands suggesting that more of the participant farmers are highland operators. However, majority of the Nugathalawa farmers operated only 0.20 ha of highlands or less than that compared to a similar number (41%) who operated between .40 to .80 ha at Ambetenna.

3.6.1. Land Use and Cropping Patterns

The use of agricultural lands available to the beneficiary farmer families is conditioned by a series of factors: water, rainfall, elevation and soil types with rainfall assuming greater importance. Natural water streams during the rainy seasons also constitute an important source of water for cultivation. Well irrigated cropping practices are in existence: yet marginal.

Depending on the rainfall pattern, two major cultivation seasons have emerged. Maha the main season extends from October to March and it gets the rain with the onset of the North-East monsoon. During this season, most of the asweddumized land are brought under cultivation. The Yala, minor rainfall season extends from April to September and cropping intensity is lower on agricultural lands accordingly.

At Nugathalawa, there have been certain instances where farmers have attempted to get a crop in between these two seasons. The practice of shifting cultivation was not observed among the participant farmers in this locality, due mainly to the lack of suitable lands.

Cropping intensity of asweddumized lands during the two major seasons are compared in Table 3.11. Cropping intensity is calculated as follows :

$$\frac{\text{Extent sown in the cropping season}}{\text{extent asweddumized}} \times 100$$

Table 3.11

Seasonal Cropping Intensity

Season		Nugathalawa		Ambetenna	
		Lowland	Highland	Lowland	Highland
1983/84	Maha	92.0	72.1	100.0	73.2
1984	Yala	54.8	34.1	90.6	36.6

Source - Questionnaire Survey Data

A high incidence of cropping intensity has been recorded for Maha 1983/84 in both locations; as high as 92% on lowlands at Nugathalawa because of the extensive paddy cultivation commonly featured in the area. Of the 28 farmers who undertook lowland cultivation during Maha 67.3% grew paddy on approximately 9.3 ha (23 acres). Cabbage grown in an area of 2.43 ha (6 acres) was the second most important crop amongst the Nugathalawa lowland operators. Among other vegetables that were popular during this season by way of extent cultivated and by the number of farmers in their order of popularity were beans, potatoes, raddish and carrots. Almost all Ambetenna lowlands were cultivated with paddy during the 1983/84 Maha.

During Yala, 1984, the cropping pattern of the asweddumized lowlands changed drastically at Nugathalawa. For example, area cultivated dropped by about 1.2 ha (3 acres) in Yala during which 95% of the farmers cultivated their lowlands with vegetables beans, cabbages, and potatoes constituting the popular crops. All the Ambetenna beneficiary farmers barring one, continued with the paddy cultivation.

During Yala 1984, the operated highlands of the beneficiary farmers of Nugathalawa had a mixed crop of vegetables in an extent almost halved from that of Maha 83/84. At Ambetenna as a result of the limitations enumerated elsewhere in the report, two farmers resorted to sugar cane cultivation on their uplands and four farmers grew a mixed crop of vegetables.

3.6.2 Factors Affecting Agricultural Practices

It was assumed that agricultural practices pursued by the farmers and the condition under which such practices were undertaken and problems experienced, would highlight or imply certain factors that could affect the community forestry practices too. For example, the availability or otherwise of family labour, would influence the timing, or costs of labour required for planting of the given agroforest trees.

3.6.3 Problems of Agriculture

Yala being the cultivation season which coincided with the survey period, farmer respondents were asked about the problems they encountered during this particular season. Only twenty seven farmers from the Nugathalawa village and 8 farmers from the Ambetenna village reported problems. Their responses are tabulated at 3.12

Table 3.12 Problems Faced by the Farmers During the 1984 Yala Cultivation

Problems	Nugathalawa N=27	Ambetenna N=8
Drought	44.4	87.5
Damages by Animals	7.4	-
Pests and Diseases	14.8	25.0
Lack of Funds	29.6	37.5
Difficulties in Obtaining vegetable seeds	18.5	-
Marketing Problems	22.2	-
Damages from rain and winds	33.3	12.5
Low Quality of Vegetable seeds	11.1	-

Source - Questionnaire Survey Data

Paucity of water which is more pronounced at Ambetenna appears to be the common impediment adversely affecting the cultivation in Yala in both villages. Implication of this for the project is that in timing for the delivery of planting material, spells of drought need to be avoided while the supply of drought resistant tree plant varieties warrants particular attention. The second most important factor at Ambetenna and the third at Nugathalawa which hampered the pursuance of agricultural activities was the lack of necessary finances which in turn would pose problems to some of the farmers in forest tree cultivation.

A unique phenomenon observed in the Nugathalawa area was the periodic gusty winds that blow between May - July. The researchers during the field work observed the interest locals evinced towards the possibility of controlling such a situation through agro-forestry cultivation.

3.6.4 Patterns of Labour Use and Costs

Availability of family labour and hired labour the costs involved, are certain factors that would affect the agro-forestry programme as the farmers will have to make choices between agriculture and forestry in the allocation of this limited resource. An attempt

was made to determine the sources of this resource. Forty nine out of fifty four farmers at Nugathalawa and fifteen out of seventeen farmers at Ambetenna reported that they had to resort to labour outside their family for their farming activities in Yala 1984. Such labour was procurred either on hire or on an exchange basis, quite often on daily paid wage rates. Labour use patterns by their source during the Yala 1984 by beneficiary farmers are summarized in Table 3.13

Table 3.13

Sources of Labour for Agricultural Activities

Source	Nugathalawa %	Ambetenna %
Family labour only	12.2	33.3
Hired labour only	8.2	13.3
Family and hired labour	42.9	33.3
Family and "attham"	16.3	-
Family, hired and "attham"	18.4	20.0
Family hired and contract	2.0	-

Source - Questionnaire Survey Data

For want of an adequate family labour force at Nugathalawa to cope with the farming activities, the beneficiary farmers have had to supplement it with labour hired from outside. This was not so at Ambetenna where one third of the farmers used family labour as the only source while a similar number of farmers, used both family and hired labour. About 92% of farmers from Nugathalawa and 87% from Ambetenna, used family labour as the only source or in combination with hired or exchange labour. A note-worthy factor that emerged in the analysis of figures on labour, and which may have its implications on the implementation of the project is the high dependence on hired labour in both villages.

An examination of source/pattern of labour used in both villages brings into focus another two major aspects related to project implementation. Firstly, the peak periods of agricultural activities necessitate employment of hired labour besides the labour

available within the family; and this as an important factor that would condition the availability of labour for agro-forestry cultivation. Secondly attham labour, a tradition which appears to be fading out is still in existence calling for the attention of the project management in their effort to mobilise the local labour for agro-forestry work.

In such a situation, any plan of action to pool the village labour resources should not coincide with the peak farming periods, during which demand for labour will be highly competitive. On the contrary mobilization of labour on a collective or mutual basis on agro-forestry cultivation will also improve community spirit amongst the farmers and the resultant implications are that the farmers would adhere to the commonly agreed upon time tables, pests and disease control practices and protection of village agro-forestry from fire and animals.

3.6.5 Participation and Voluntary Activity

Traditionally, the subject of community welfare has been the responsibility of certain formal institutions and community organizations in the rural sector. Such organizations as Rural Development Societies (RDSs), Co-operative Societies, Gramodaya Mandalayas (GMS) are sponsored and supported by the Governmental organizations. RDSs and GMS are entrusted with the responsibility of identifying local development needs and local resources to meet such needs. Certain non-governmental organizations (NGOs) are also functioning at the grass roots level to help in the task of rural development and foster community welfare.

Besides these, there are other voluntary organizations of local people set up mainly on a self-help basis, and include Welfare Societies, Religious Societies, Death Donation Societies and certain Societies that look after cultural interests.

Extent to which these societies exist at the village level and the strength of community participation in them, generally reveal the capacity of the local communities to organize

themselves, their faith in collective action, the extent of community spirit and social cohesion.

These organizations are of special interest to us in the realization of the objectives of Community Forestry Project. At least on an experimental basis the project anticipates, to seek the involvement of such community organizations, in launching, the community woodlot programme: particularly in the setting up of community woodlots at the village level by mobilizing village labour, on a collective and a voluntary basis. Projected benefits too are to be shared by them collectively.

With this end in view, an attempt was made to determine the viability of rural organizations specially the RDS, to undertake such action programmes. The respondents of the households were asked to name the societies of which they were members and their opinion as to the most active rural institution. They were to rate their opinion on the basis of the local level participation in Shramadana (self-help) activities.

13 different types of rural community organizations, existing in the two localities were identified. Certain organizations such as the Vegetable Growers Associations were location and area specific and were found only at Nugathalawa. Percentage of peoples' participation by way of their distribution in each organizations is detailed in Table 3.14

Table 3.14 Percentage Distribution of Participation in Rural Institutions

	NUGATHALAWA		AMBETENNA	
	Office bearer	Member	Office bearer	Member
Rural Development Society	30.0	57.4	59.0	29.4
Local Sarvodaya Branch	04.0	09.0	12.0	12.0
Paremt Teachers Association	09.0	55.5	18.0	41.1
Buddhist Society	09.0	42.6	23.5	29.4
Co-operative Society	13.0	72.2	-	53.0
Death Donation Society	13.0	68.5	12.0	41.1
Gramodaya Mandalaya	09.0	17.0	06.0	12.0
Young Farmers Club	-	-	-	-
Praja Mandalaya	-	02.0	12.0	-
Political Party Branch	15.0	18.5	06.0	-
Youth Club	04.0	-	06.0	-
Welfare Society	02.0	02.0	-	06.0
Vegetable Growers Association	04.0	-	-	-

Source - Questionnaire Survey Data

The National Co-operative Movement of Sri Lanka with its network of Multipurpose Cooperative Societies at village level has served the needs of the economic life of the local people in a variety of ways purchasing the local farm products, providing farm inputs, retailing groceries in general and state subsidized consumer items in particular. This movement reached its climax some time back. Liberalization of the national economy, private sector development, strengthening of the national agencies at grass roots level recently to provide better and more efficient services to the rural sector resulted in scaling down of some of the funcitons earlier performed by the MPCSs. Withdrawal of the universal food subsidy scheme and the relaxation of the price and subsidy policy on essential consumers items at various times after 1977, pushed the cooperatives into further wilderness. Under the earlier set up all the households in a village were more or less, required to enroll as members of the co-operative society to be benefitted under such schemes.

Nevertheless, it is interesting to note even under these presumably changed conditions association with the co-operative societies by the participant families by way of membership is fairly prominent in comparision to other village level organizations. For example, 72% of the Nugathalawa families were members of the co-operative society as against the next highest, 68.5% of the death donation society. Also 13% of the families held various positions in the co-operative society suggesting a positively favourable level of active participation.

The higher level of participation as office bearers as against non-office bearers in village level institutions, illustrates the differences of level of education and the socio-economic standings of the two groups. Empirical data unearthed by other studies in this context has concluded that the office holders in village level institutions are more educated and better off in their social and economic status than their fellow-villagers . Further down in the social ladder are those non-members who are relatively illiterate, landless, poor and are the agricultural labourers representing the underpriviledged sections of the community.

Despite the emergence of numerous servicing agencies at grass roots level, the participation in co-operative societies continued unabated for the following reasons : Membership in co-operative societies does not call for serious and active involvement as in the case of a Rural Development Society where members are at times required to offer their services by way of labour or material support. Therefore, expenses incurred in obtaining and sustaining the membership at a co-operative are minimum. Another contributory factor for the survival of the co-operative system is that, during periods of scarcities of consumer food items the state agencies have resorted to the MPCs as an effective distribution network to ensure a fair and an equitable distribution of food items.

Hence, the membership in co-operative branch society guarantees certain facilities with little involvement and sacrifice on the part of the villagers. Also the state consumer subsidy scheme to the poorer segments of the country is mainly implemented via Multipurpose Co-operative Organization of which the branches are located throughout the country.

Of the local institutions mainly concerned with the material welfare of the people, the Rural Development Societies appeared to occupy a significant position. This point is driven home by the figures given in Table 3.11. Community Centres, are other rural institutions pre-occupied with the subject of general welfare in the villages. The RDSs in the survey locality have been able to get into their folds, a comparatively higher percentage of members. Other, informal organizations to function at village level: Death Donation Society, Parent Teachers Association, Buddhist Societies are all interested in fostering religious and cultural activities and social welfare.

Gramodaya Mandalayas are an extension of the District Development Council introduced in 1982. This movement is aimed at wider participation of local people, including the officials in all spheres of development at the given specific level of

operation. A body consisting of officials and elected representatives are expected to identify local development needs and available resources in initiating and enhancing village development. This is an organization with a difference in that it is entrusted with financial and other resources that are set apart by the government for local level development. Gramodaya Mandalayas apparently attract lesser participation in relation to other local level organizations, for two reasons. Firstly, the overtly political involvement to such an active extent is not observable. In addition the cumbersome precedure of elective representation for membership may have discouraged the villagers.

Foregoing analysis shows that amongst the village level organizations concerned with material development and welfare at the village level encompassing a broad spectrum of activities, RDSs appeared to be most important and in wider popularity. It should also be noted that rural organizations that are sponsored, organized and supported by non Government Organizations externally, except the Sarvodaya, were non existent in both our study villages. This shows the limited extension of non Governmental Organizations activities to the rural areas in the country.

3.6.6 Most Active Rural Institution

Besides, the respondants of the households were asked to indicate their membership in the existing local level organizations; they were also asked to rate their opinion on the most active rural organization. Percentages of farmers who rated each society are given below in Table 3.15.

Table 3.15 : Percentage Distribution of Respondents Rating of Most Active Rural Institution at the Village Level

	Nugathalawa	Ambetenna
Death Donation Society	42.5	13.6
Rural Development Society	36.3	59.3
Co-operative Society	10.2	-
Buddhist Society	2.7	13.6
Gramodaya Mandalaya	2.3	-
Sarvodaya	1.6	3.4
Welfare Society	1.2	-
Praja Mandalaya	1.2	1.7
Political Party	0.8	-
Youth Club	0.8	8.5
Vegetable Growers Association	0.4	-

Source - Questionnaire Survey Data

It would appear from the data in Table 3.15, that the most popular local level organization at Nugathalawa is the Death Donation Society whereas it is the RDs at Ambetenna. This compares well with reported participation by membership.

3.6.7 Participation in Rural Activities

Shramadana Campaigns at village level are organized to achieve commonly identified objectives, either material or non material in promoting the welfare of the people of the locality. Voluntary donation of labour, and participation in other forms such as donations in cash and kind form the essence of village Shramadana. Traditionally, the activities involving Shramadanas include construction and improvement of village roads, field canals, construction or repairs to public buildings such as schools, community halls etc. and organization of training, extension and religious activities on a group and locality basis. Extent to which Shramadana are undertaken in any given community signifies the ability to organize the members of the community on a common basis, ability to come to terms with common

objectives by them, aspects of social cohesion and the ability to organize village labour in achieving the identified common objectives. Therefore, the extent to which Shramadanas are organized and the strength of participation in them, are an indicator of the capacity of the given community to mobilize village labour. The dominant institute in mobilizing the village level labour still in existence, is the RDs.

To determine how well people are mobilized for collective voluntary activity at the village level, respondents were asked to rate their perceived level of satisfaction in their involvement at Shramadanas. Ratings were categorized as poor, adequate and very good. Results are summarized in Table 3.16.

Table 3.16: Perceived Level of Participation in Shramadana

	Nugathalawa	Ambetenna
Poor	5.6	11.8
Adequate	66.7	64.7
Very good	27.7	23.5

Source - Questionnaire Survey Data

3.7 Recreation and Leisure

How one spends once leisure, indicates to some extent the aspects of the quality of life of that person. It is also a crude approximation of the social opportunities one has within the family, within a particular social group and also within a particular community in its spatial and economic sense. Information on leisure time and recreation activities of relevant communities is also useful for social engineering purposes as such information reveals behavioural aspects of the people such as social groupings, use of mass media on which basis adult education and trainings can be launched. Therefore, the respondents were asked how they spent their leisure hours.

In rural areas,opportunities for recreation in general are marginal and most of the people are engaged in physical labour related to their employment. Table 3.17 indicates the type of leisure time activities undertaken by respondents as reported by them. Certain respondents were reported to be engaged in more than one activity, therefore the data in the table indicate the number of respondents engaged in that particular type of activity.

Table 3.17: Recreation and Leisure Time Activities of Respondents

Activity	Nugathalawa	Ambetenna
	%	%
Reading news papers	72.2	64.7
Reading periodical magazines	14.8	11.8
Meeting friends	44.4	-
Drinking alcohol	4.1	11.8
Gardening	03.7	17.6
Going to the cinema	03.7	11.8
Watching T.V.	43.0	17.6
Listening to Radio	88.9	94.1

Source - Questionnaire Survey Data

It appears that mass media ie. Radio, News papers and the T.V. in that order of importance provide recreational opportunities for the majority of the respondents. So far as reading is concerned, it was observed that Sinhalese weekend magazines were more popular amongst the participants than Sinhalese dailies. While T.V. viewing was of tertiary importance as a recreation at Nugathalawa this was much less important at Ambetenna. This is of course to be expected since T.V. as a news medium has just been introduced. Meeting friends or having face to face relationships was a highly important leisure time activity at Nugathalawa but without importance amongst the participant farmers from the Ambetenna site.

Chapter Four

AGROFOREST CULTIVATION, FARMERS' EXPERIENCE AND ATTITUDES

RATIONALE

The most innovative aspect of the project is that it seeks to mobilize the participation of the local communities and families, to grow trees that are useful in the supply of firewood, timber, poles and edible fruits, on a more systematic basis on a given allotment of land. The term "more systematic basis" assumes greater importance in this context because people grow trees rather spontaneously or haphazardly without resorting to any planned effort. Most of the human habitations in the area, ie. the villages we visited during the study had tree covers, at least on and around the home garden. Older the village larger the tree cover. The often-quoted argument that human habitation or settlements are responsible for the disappearance of the green cover, did not hold true in this upcountry region. It is a truism that trees are felled for agricultural purposes, for housing and timber, for fuelwood and so on; but it is not at the expense of total green cover. Apart from those areas under paddy most of the highland areas were grown with either perennial fruit trees, or herbs or trees for fuelwood.

Opportunity costs seem to be the apparent variable between the two situations of cutting down trees and growing or keeping trees. National costs and benefits associated with growing trees or felling trees apart, certain cost-benefit considerations appear to play a major role at the farm household level in making a decision between these two choices.

Farmers, in the use of their own land holdings or any piece of land they have access to, prefer to grow either paddy or cash crops which bring them immediate financial or material returns. On the contrary, when the investment involved in asweddumizing

a land is considerably high in terms of productivity of the specific land, the prevailing vegetation cover is allowed to remain, since the farmers are mindful of the lower and delayed returns on such investment in any attempted change. The inclination for change is only when the benefits are immediate and good. In essence people grow trees or let trees to remain on marginal lands.

Tree crops that exist on such marginal lands are either grown for a purpose or are a natural growth. However, intensive cultivation practices such as soil conservation, spacing of trees, fertilizer application etc are not undertaken and therefore maximum productivity of lands appears to be of a less important consideration to the farmers as far as any given tree serves some purpose, for example, at least as a shade or a wind breaker.

In accordance with the researchers' preliminary observations in the villages under study in respect of growing tree crops, farmers possible opportunity cost considerations were given due attention. Theoretical standing of the survey was that people in Sri Lanka consider land not only as a resource for generating income but also as their wealth, and as a symbol of prestige. Based on the assumption that the villagers generally would desire to own land given the opportunity, it was conjectured that the situation would be further prominent in the upcountry regions where scarcity of agricultural lands was acute and productivity of lands in relation to growing cash crops was very promising. It was thus envisaged that the people in the project localities, especially those at Nugathalawa where the vegetable crops have been the traditional income earner, there would be a tremendous demand for available land.

4.1 Reported Physical Characters of Allotted Lands

The land allocation programme for the respondents was spread over one year starting from the 3rd quarter of 1983 to the 2nd quarter of 1984. About 89% of the farmers at Nugathalawa and 64% at Ambetenna were given land during the latter half of 1983. Others received their land in early 1984.

Thirteen out of seventeen farmers at Ambatenna stated that their lands were very steep, a characteristic that generally featured the geo-physical conditions of the area. A greater majority of the farmers at Nugathalawa site, over 79% of them, reported their lands were generally steep. Those who received flat land at both sites did not exceed 13% of the total beneficiaries.

Except for some bush plants, including neglected tea plants at the Nugathalawa site, lands at both sites had long been neglected and were barren.

Farmers individual allotments were situated in close proximity to their homesteads about 63% of them at Nugathalawa, were sited just about a quarter of a mile away. Only 7% of the farmers here had they allotments more than a mile away from their homes whereas at Ambetenna this category amounted to 23%. Most of the farmers in both localities had no complaints to make about the distance they had to cover to reach their allotments which, in almost all the cases, were accessible by footpaths.

It was observed in the localities, especially at Nugathalawa, that the farmers used to put up a watch hut during the cropping season within the premises of their cultivated lands. The protective measures adopted by the farmer are indicative of his real interest in the crop. Stealing of tree plants were reported at both sites, reason attributed being the jealousy on the part of non-recipients of land under the project. Damage to plants was also reported. The thefts would also have been prompted by the fact, that certain varieties of plants distributed under the project were not available in the locality.

The situation necessitated determining what protective measures, the farmers had undertaken in their respective woodlots. About 22% of the farmers at Nugathalawa and 18% of the farmers

at Ambatenna had already put up watch/huts in their wood lots. Of those who had not done so, 95% at Nugathalawa and 57% at Ambatenna reported that they would do so in the future. The watch huts at least at the Nugathalawa site, cannot possibly be a true indicator of interest or otherwise in the tree crop plantation, for two reasons. Firstly, many of the farmers had not planted trees in their respective woodlots. Secondly certain farmers at Nugathalawa had cultivated their allotments with potatoes and other vegetable necessitating the putting up of a watch hut.

83% of the farmers at Nugathalawa and 65% at Ambatenna wanted to fence their plots in the future. Most of them preferred to have a biotic fence using a popular variety of plants named Gliricidia sepium (Kannimurunga). A fewer number of farmers at both sites stated that they would put up barbed wire fence.

4.2 Farmers' Concerns About the Environment and Woodlot Plantation

It was assumed that the extent to which farmers were aware of the role of forestry in the conservation of agricultural eco-system would have a positive relationship with their inclination to participate in the community forestry project. However, it cannot be said such an awareness would guarantee their active participation in growing of forestry as is required by the project, but shows the psychological predisposition to do so, given an opportunity. It was also assumed such awareness would stem from the farmers' self experience, through reading and listening or project related training. It was with such assumptions that the respondents of the participant families were asked to name the benefits of growing forestry. Most farmers at both sites indicated more than one benefit, to be derived from the growing of forestry. Only two respondents both from Nugathalawa beneficiary population could not name any benefit. Responses are summarized in table 4.1 in percentages.

Data given in table 4.1 as to the farmer awareness of benefits of growing forestry is to a larger extent self expressive. Naturally, as expected, mainly due to the project activities, farmers at both sites were aware of project benefits in relation to the production of timber and fuelwood. Besides these benefits, farmers were really concerned about its role in the protection of natural water streams. Similarly, a high percentage of the farmers from Ambetenna indicated the effects of forestry on soil conservation or prevention of soil erosion. Our experience in the two localities also is that the soil erosion of agricultural land at Ambatenna is much greater than at Nugathalawa, and this is ample proof for the concern of the farmers of the locality.

Table 4.1

Percentage of Farmers' Perceived Benefits of Growing Forestry by Type and Location

	Nugathalawa N=52	Ambetenna N=17
Protect natural water springs	96.2	94.1
Prevent soil erosion	36.5	76.5
Helps timely rain	30.8	17.6
Protect soil moisture	40.4	35.3
Provide timber for housing construction	65.4	70.6

Source - Questionnaire Survey Data

Note - Percentage does not add up to 100 as farmers had multiple answers.

It is interesting to note a reasonable number of farmers from Nugathalawa identifying the positive effects of forestry as a natural wind breaker. This concern of the participant farmers is based on local experience where gusty winds during May to July of the year cause damages both to their crops and houses. An overview of the ideas expressed by the farmers prompt us to conclude that the farmers are concerned with the environmental benefits of forestry on the basis of their local experiences.

4.3 Disadvantages of Forestry

Respondents were also given an opportunity to report on possible disadvantages of forestry for the life of the people. Majority of the farmers, about 80% of the total population negated any such possibility. Only one person from Ambetenna, came out with the view that land given over to forestry would worsen the acute scarcity of land for cultivation purposes. At Nugathalawa, ten out of thirteen farmers who indicated negative aspects of forestry, feared that it would provide a living place for animals who would cause crop damage.

4.4 Awareness of the Objectives of the Project

A greater awareness of the project objectives by the participant farmers was considered to be of vital importance for project implementation and to determine the level of such knowledge they were asked to report on what they knew of the project objectives. About 12% of the farmers from Nugathalawa, were unaware of the objectives: data on this aspect are tabulated in 4.2

Table 4.2 : Objectives of the Community Forestry Programme

	Nugathalawa N=54	Ambetenna N=17
To help communities to produce their own fuelwood and timber requirements	74.5	94.1
Impart proper knowledge on forestry to the people	21.6	5.9
To encourage popular participation in growing forests	21.6	5.9
To protect environment	51.0	58.8
To bring under control the existing shortages of timber and fuelwood	21.6	17.6
Optimum utilization of barren lands	2.0	11.8
To bring down government expenditure	3.9	-
Not aware	11.8	-

Source - Questionnaire survey data
Note - Percentage does not add up to 100 as respondents had multiple answers.

The Project Appraisal Report spells out the specific objectives of the project as augmenting fuelwood supplies along with the supply of poles and construction timber with the active participation of local communities. The project also aims at creating an awareness among the local people on matters concerning environmental conservation in relation to forestry and at reducing transport costs entailed, in transporting firewood and timber requirements from the State Timber Corporation depots. Figures in table 4.2 are quite convincing to substantiate the fact that farmers are well aware of the project objectives and benefits.

4.5 Reasons for Participation in the Project

With this relatively high level of awareness, it was thought necessary to ascertain the exact intention of the farmers for participation. During the reconnaisance survey of the study, it was hypothesized that the participants at Nugathalawa in particular, irrespective of their expressed desire to grow forest trees, would be more inclined to procure land, a scarce resource for farming in the locality.

So the respondents were asked as to what exactly made them decide to participate in the programme. Many farmers gave more than one answer, which could be grouped into two broader categories. Firstly the national or local common interests complemented with personal interests. These include the conservation of agro-eco system, protection of water springs and benefits to the country as a whole. Secondly are the exclusively personal interests and benefits comprising the programmes, capability to meet the family fuelwood needs and timber requirements, to obtain cultivable land and generate additional incomes - a fact that prompted the largest number of farmers to take part in the project. While all the participant farmer respondents aired their views on this aspect, 79% of them were interested in obtaining families' fuelwood and timber requirements by participation in the project. Most

interestingly, 39% of the Nugathalawa farmers and 35% of the Ambetenna farmers, indicated that their participation in the project was also conditioned by the opportunity to obtain agricultural land. A sizeable number of participants at Nugathalawa anticipated an additional income through their involvement in the project. Reasons as reported by the farmers are summarized in Table 4.3

Table 4.3 Reasons for Participation in the Community Forestry Project

	Nugathalawa N=54	Ambetenna N=17
To fulfil the fuelwood and timber requirements of the family	77.8	82.4
To contribute to something that benefits the country	18.5	23.5
To help protect water springs	14.8	-
To help break winds	14.8	-
To obtain an additional income	29.6	-
To obtain cultivable lands	38.9	35.3
Because of the interest in the forestry	-	11.8

Source - Questionnaire survey data.

Note - Percentage does not add up to 100 as respondents had multiple answers.

4.6 Farmer Awareness of Project Plantation Design

The Project Appraisal Report specifies the appropriate plantation design or ratios of tree crops that should be planted on each woodlot: for fruits timber; and poles as 60-80%, 10-30% and 10% respectively. If the farmers were to adhere to such a veriety of ratio design of trees imposed by the project, firstly they should have been aware of such conditions and secondly they should have preferred the recommended design to their own. The farmers were asked as to what basis they were supposed to combine different tree crop varieties on their allotments. Response by all the

beneficiary farmers at both sites made it clear that the farmers were not aware of the project's recommended planting design, in the absence of which, over 94% of the Nugathalawa farmers and all the farmers at Ambetenna, had the impression that the allotments were meant for the cultivation of timber trees. Only a very small number of farmers thought that the land was allocated for timber/fruit trees or for fuelwood trees. This situation was quite contrary to the initial project planting design. The farmers seemed to have not been adequately informed of the design ratio regarding the tree planting of tree crop varieties. Growing tree crops for fuelwood is also of secondary importance to the farmers who are more inclined to grow trees for timber, a high priority requirement for them.

Farmers were of the view that there was no particular need to grow trees specifically for firewood because timber trees would produce along with their main product - timber, the necessary firewood for the family as a secondary product out of prunnings and excessive branches. Viewed in this light, even if the farmers were aware of the design specifications of the project they would still have indicated these preferences, implying so far as the project is concerned, to give due weightage to the specific tree crop needs of the beneficiaries.

4.7 Suitable Tree Crop Species for the Area

One of the problems in project planning at national level is the inability to grasp the local variations for generalized guidelines and recommendations for the country as a whole. The plantation model suggested by the project appraisal report also specifies the tree crop varieties that are suitable for this zone. They include Eucaplyptus grandis, Albizzia falcutaria/lebbek and Gimelina arborea, Jack fruit and live hedges of Gliricida and Erythrine on the boundaries of plantations (Appraisal Report, p. 17). These crop species

are suggested on the basis of their past growth and potential to coppice (trees originating from short/root stocks after the first harvest).

An assessment of the technical suitability of the tree crop varieties suggested by the farmers in line with soils, topography and climatic condition of the localities was not undertaken as it was beyond the scope of the ARTI purview and expertise. Particular attention must be paid to ensuring that tree species made available are suitable for the particular site. For example dry zone fruit and forest trees may not thrive at Nugathalawa and species suitable for the wet zone may not thrive at Ambetenna.

Another aspect that might affect the project plantation model or tree crop varieties suggested, is the farmers' preference over perceived/experienced advantages and disadvantages of specified varieties. Farmer preferences go a long way in the realization of the objectives of the project as they determine the level of farmer acceptance and their participation. Therefore, all the participants from both sites were asked to name suitable tree crop species for fuelwood and timber in the two localities. The species the farmers have suggested as given in the table 4.4 appear to have stemmed out of their own local experiences and perception of related advantages or disadvantages. All the farmers at both sites were able to indicate timber tree species suitable for the localities. Forty nine out of 54 farmers at Nugathalawa and 8 out of 17 farmers of Ambetenna, identified suitable trees for fuelwood. Less response in this aspect may have been conditioned by the disinclination of the farmers to grow fuelwood trees on a programmed scale for the simple reason, that scarcity of fuelwood has not yet caused a problem.

Table 4.4 : Suggested Tree Crop Species for the Localities by the Farmers for Fuelwood and Timber

For Fuelwood	Nugathalawa No.	Nugathalawa %	Ambatenna No.	Ambatenna %
No. responded	49	100.0	8	100.0
Levcaena levcocephala (Ipil-Ipil)	7	14.3	-	-
Albizzia mollucana (Mara)	13	26.5	-	-
Neolitsea cassia (Kudu Davula)	14	28.6	1	12.5
Acacia decurrens (Accencia)	31	63.3	-	-
Gliricidia sepium (Kanni Murunga)	4	8.2	2	25.0
Mangifera zeelancia (Etamba)	-	-	4	50.0
Veliveria zizanoides (Savandara)	3	6.1	1	12.5
Cypressus spp. (Cypressus)	1	2.0	-	-
Semicarpus coriacea (Badulla)	-	-	1	12.5
Meliosma simplicifolia (Ellabedda)			1	12.5
Terminalia chebulu (Aralu)	-	-	1	12.5
Gareya arbarea (Kubok)	-	-	1	12.5

For Timber	Nugathalawa No.	Nugathalawa %	Ambatenna No.	Ambatenna %
No.responded	54	100.0	17	100.0
Eucalyptus grandis (Salkina)	6	11.1	-	-
Eucalyptus camadulensis (Baludam)	13	24.1	1	5.9
Grevillea robusta (Sabukku)	34	63.0	5	29.4
Eucalptus spp (Karpantine)	32	59.3	6	35.3
Cedrela serrata (Toona)	35	64.8	6	35.3
Michelica champaca (Sapu)	32	59.3	16	94.2
Tectona grandis (Teak)			1	5.9
Chloroxyon swietenia (Burutha)			1	5.9
Vitex pinnata (Milla)			5	29.4
Pterocarpus marsupium (Gammalu)			6	35.3
Erythuna spps (Dadap)			2	11.8
Chukarasia velatina (Hulantikka)			3	17.6
Melaluca spp (Vanistar)			1	5.9
Thesperia populuca (Suriya)			2	11.8
Syzgium assimile (Damba)			1	5.9

Source - Questionnaire survey data

Note - Percentage does not add up to 100 as respondents gave multiple answers.

4.8 Preferred Physical Characters and Qualities of Trees by the Farmers

It was thought that the size, straightness, branches and relative time taken for maturing were causative factors that led to farmer preferences in the selection of trees. A knowledge of such physical characters and qualities, may help to identify and respond according to the local needs of seeds and plants. Preferred physical characters and qualities of trees by the farmers are listed in table 4.5.

Table 4 5 : Preferred Physical Characters and Qualities of Trees by the Location

Character	Fuelwood		Timber	
	Nugathalawa	Ambatenna	Nugathalawa	Ambatenna
Wellful trees	5.6	11.8	61.1	82.4
Small trees	51.9	70.6	1.9	-
Trees with large branches	3.7	17.6	66.7	82.4
Trees with slim branches	11.1	29.4	-	-
Trees with lot of branches	87.0	29.4	3.7	-
Fast growing trees	50.0	94.1	50.0	23.5
Straight growing trees	3.7	70.6	59.3	70.9
Hard wood trees	-	-	64.8	76.5

Source - Questionnaire survey data

Note - Percentage does not add up to 100 as respondents gave multiple answers.

All the farmers at both localities responded to the question on preferred physical characters and qualities of trees. Most of them indicated several attributes that they would prefer in timber or fuelwood trees. According to data given in table 4.5 more farmers in both localities generally preferred straight, fast growing trees with lot of branches.

The Nugathalawa farmers preferred fast growing fuelwood trees with lot of branches, but small in size. Ambatenna farmers too favoured similar characters.

General qualities and characters expected by the farmers at both localities for timber trees appear to be more in agreement, with high emphasis on straight-grown hardwood trees with large trunks.

4.9 Farmer Preferences by Purpose in Growing of Trees

During the preliminary work on the study, researchers found that the farmers, especially those at Nugathalawa had competed to obtain land for purposes other than the interests of the project· they wanted lands to grow cash crops; liked the timber more than fuelwood. These preferences were tested. Farmers were asked to indicate their preferences, if given an option to select tree crop species for fuelwood, timber, fruits and nuts or fodder. Their overwhelming response was that they would opt to grow trees for timber rather than for any other purpose. To be very precise 94% of the farmers at Ambatenna and 74% of the farmers at Nugathalawa were inclined towards this option. Even as a secondary interest, the number of farmers who desired to grow trees for fuelwood was almost negligible.

Possibly, numerous factors could have influenced the farmer preference patterns. Ambatenna farmers were less inclined to grow fuelwood trees, perhaps, due to the fact that in Ambatenna fuelwood was yet freely and readily available. However, as reported elsewhere in this chapter farmers at both localities,

found it more difficult now to obtain firewood locally than earlier. They also complained of the poor quality and the longer time taken to collect fuelwood. Many of the respondent families who used to purchase their fuelwood requirements commented on the increasing prices.

A second reason as was discussed earlier could be that the farmers think that the timber trees produced along with timber adequate amount of firewood for the family.

The third and the most important consideration by the farmers in preferring timber trees to firewood, trees fruit crop trees and trees for fodder could be the cost benefit and opportunity cost implications. Theoretically the farmers may not undertake an economic cost-benefit or opportunity cost analysis. Yet most farmers at both sites anticipated more earnings from growing trees for timber than from growing trees for fuelwood. An attempt was made to get the farmers' ideas about the time duration these tree crops would take to yield and the expected earnings from the product by that time.

That the farmers were thinking in terms of economic values was revealed in the fact that three fourths of the farmers at Nugathalawa and half of those at Ambatenna were able to project the anticipated earnings from the output of the tree crops.

According to the farmers, firewood crops would start yielding after 5 years of planting. Average number of years as reported by the respondents at both localities varied from 7-9 years. On an average farmers expected an income of Rs. 6294/- at Nugathalawa and Rs. 2500/- at Ambatenna from 0.40 ha of firewood trees during the specified time period. Conversely, the farmers at Nugathalawa projected an income of Rs. 380,000/- per 0.40 ha of timber trees after 10 years of planting and during a time span averaging 16 years. For Ambatenna it was Rs. 340,000/- after 15 years of planting and within an average time duration of 19 years. The farmers expected the fruit

trees to start yielding in a relatively shorter period after 4 years of planting. The estimated average income per 0.40 ha for fruits, was also rather low, with an average of Rs. 437.00 at Nugathalawa and Rs. 3,000.00 at Ambatenna, where this income is a little more than what they anticipated from 0.40 ha of fuelwood trees.

To sum up, farmers, at both sites convincingly preferred growing of timber trees to fuelwood, fruits and trees for fodder. Their economic expectations too fall in line with their preferences, making it imperative for the project management to look for ways and means to integrate farmer preferences, with the project objectives.

4.10 Intercropping

Nugathalawa is situated within a commercialized vegetable growing area and it was the logical assumption of the researchers that given the opportunity, farmers of this area would go all out to use the project allotments for intercropping with vegetables. An attempt was made during the survey to unravel such possibilities and the farmers were asked to indicate their wish to intercrop forestry allotments with vegetables.

Thirty three out of 50 farmers who indicated that they would like to intercrop their forestry allotment at Nugathalawa expressed their interest to grow potatoes while the remainder opted for vegetables.

The farmers would have been induced in this context by the high prices that up-country grown potatoes fetch in the local market. So do the upcountry grown exotic vegetables such as beet, carrots, beans, leaks etc. The difficulties they experienced in purchasing seed potatoes too contributed to the farmer preference to intercrop their allotments with potatoes.

With regard to the type of crop, intended for intercrop, there is a noticeable change of preference by the Ambatenna farmers. Majority of the farmers at this locality wished to grow legumes, yams and chillies. Conditions that might have led the farmers to select such crops were more physical than socio-economic; soil and topographical characteristics at Nugathalawa suited the cultivation of vegetables with market orientation while the farmers at Ambatenna who had got sloping, rocky and infertile land traditionally got used to the growing of legumes, yams and chillies.

It is interesting to examine reasons as to why the farmers wished to intercrop their lands. Many farmers had more than one reason, as tabulated at 4.6.

Table 4.6 : Reasons for Willingness to Intercrop by Location

Reason	Nugathalawa	Ambatenna
To obtain an additional income	76.0	72.7
Intercropping will bring more attention to the forestry land and proper maintenance of it	36.0	9.1
Intercropping requires regular visits and this will help the protection of forestry too	36.0	9.1
The tree crops will be benefitted by the fertilizer applied on intercrops	18.0	-
To utilize the land for maximum benefit	40.0	27.3
Control soil erosion	2.0	-

Source - Questionnaire survey data.

Note - Percentage does not add up to 100 as respondents gave multiple answers.

Intercropping has been resorted to, mainly for economic reasons; either to enhance their earnings or to get optimum benefits from their land resources. The main thrust of the farmers' argument was that this cropping technique which entailed constant care and attention to their plots and proper maintenance, would help develop agro-forestry, in turn.

4.11 Practice of Agroforestry by Farmers

Approximately 96% of the Nugathalawa farmers and 77% of the Ambatenna farmers had cleared their individual plots at the time of the survey in preparation for the Maha 84/85 cultivation.

Out of the total participant population, 29% of Nugathalawa and 71% of Ambatenna farmers had already planted their plots with tree crops, average planted area, amounting to 3.5 ha (8.28 acres) or 30% and 4.86 ha (12 acres) or approximately 70% of the total allocated area, for Nugathalawa and Ambatenna respectively.

Information recorded through informal discussions at the end of the survey revealed that the number of farmers who cultivated their individual lots with tree plants increased from 15 to 22 at the Nugathalawa site.

It was thought necessary to get information from the respondents who had planted their woodlots, about the number of trees they planted of different species the number that survived at the end of the survey, for the purpose of project benefit monitoring in relation to aspects such as plant mix or ratios, survival ratios of plants of different species and so on. This information is summarized and presented in table 4.7.

It is worth recording that all the Ambatenna farmers reported that they had not undertaken planting of any species specifically for fuelwood, but had planted comparatively a larger number of trees for fruits. Amongst the Nugathalawa farmers varieties of Eucalyptus trees were in popular demand for the purpose of timber, perhaps the farmers could not make the necessary differentiation amongst species of this tree variety. However, the survival rates of preferred species of timber trees at this site were not encouraging.

Table 4.7 : Tree Species Planted by Purpose and Survival Rates

Tree species planted by main purpose	Nugathalawa				Ambetenna			
	No. of farmers	Total No.of trees	No. of trees survived	% of trees survived	No.of farmers	Total No.of trees	No.of trees survived	% of farmers
Fuelwood								
Albizia mollvcana (Mara)	13	278	155	55.8				
Acacia decurrens (Acacia)	1	60	60	100.0				
Sub Total	14	338	215	63.6				
Timber								
Eucalyptus spp. (Karpantine)	11	3326	2970	89.3	12	6262	930	14.9
Cedrela toona (Toona)	5	392	377	96.2				
Eucalyptus camaldvlensis (Buludam)	2	450	400	88.9				
Eucalyptus grandis (Salkina)	1	336	236	70.2				
Sub Total	15	4504	3983	88.4	12	6262	930	14.9
Fruits								
Artocarpus heterophyllas (Jak)	11	110	16	14.5	9	235	113	48.1
Mangifera indica (Mango)					4	7	4	57.1
Feronia limonia (Wood Apple)					4	8	5	62.5
Persa gratissima (Avacado)					2	4	2	50.0
Anacardium occidentalis (Cashew)					3	10	5	50.0
Sub Total	11	110	16	14.5	11	264	129	48.8

Source - Questionnaire Survey Data

Note - Percentage does not add up to 100 as respondents gave multiple answers.

4.12 Farmer experiences in Growing of Forestry

Quite contrary to the less promising situation so far as planting was concerned, majority of the farmers at both sites had undertaken land clearing in preparation for cultivation: the figures being 93% and 76% respectively for Nugathalawa and Ambatenna. A little over 50% of them at both sites had done so twice, most of them for reasons other than planting of tree crops.

An attempt was also made to understand the constraints the farmers encountered in the exercise of growing forestry, particularly in relation to labour requirements, and operational costs.

4.13 Problems of Cultivation of Tree Crops by the Farmers

Farmer experience and attitudes towards the problem of growing tree crops on given individual allotments provide useful information for both benefit monitoring and project implementation. Therefore, farmers at both sites were asked during the questionnaire survey to indicate the problems they experienced in planting of tree crops or afterwards. Results are summarized in table 4.8.

Table 4.8 : Problems with Regard to the Cultivation of Forestry Land

Problem	Nugathalawa	Ambatenna
Heavy rains	5.6	12.5
Drought	64.8	62.5
Shortage of labour	3.7	6.3
Excess weed growth	7.4	31.3
Unavailability of planting material in time	85.2	25.0
Damages from animals	20.4	43.8
Lack of funds	27.8	50.0
Inadequate extension advic	13.0	-
Lack of transport facilities	7.4	-
Others	7.4	-

Source - Questionnaire survey data.

Note - Percentage does not add up to 100 as respondents gave multiple answers.

According to the data given in table 4.8, majority of the farmers at both sites were affected by drought to a greater degree. At the same time more than three fourth of the farmers at Nugathalawa and one fourth of farmers at Ambatenna, found that planting materials were not readily available much to the disappointment of the Nugathalawa farmers in particular. Views expressed by the farmers on inclement weather conditions that affected them were paradoxical since they claimed both rain and drought as factors that constrained their cultivation exercises. However, the factors behind these views relate to two distinct periods of dry and rainy seasons.

The tree crops were to be planted with the onset of the major rainy season. Maha rains fall between October and February of the year. A greater majority of the farmers were of the view that either November or December was the suitable period for planting of forest trees. The Project Appraisal Report indicates that the beneficiaries under the farmer woodlot programme should be provided with suitable and recommended species of tree plants at the farm gate level. For this purpose, project document recommends the maintenance of nurseries in closer proximity to the project sites. Majority of the farmers at the Ambatenna site were able to obtain planting materials in time but the survival rate at this site as was discussed earlier was discouraging. However, at the Nugathalawa site for two consecutive seasons farmers could not obtain their planting materials in time. Besides almost all the farmers at both sites who had cultivated their tree crops thus far had obtained their tree plants through the project sources while only three farmers at Nugathalawa had obtained their requirements through private sources too. Planting of trees on farmer woodlots involved, a financial outlay for land preparation, digging holes and later weeding etc, specially if, hired labour was procured. Such costs ranged on an average from Rs. 572/- per plot at Nugathalawa to Rs. 620/- at Ambatenna excluding family labour. The selection criteria of beneficiaries were weighted in favour of fairly better off farmers who could incur the necessary expenditure and await a long gestation period until the tree crops become matured. However, 28% of the farmers at Nugathalawa and 50% of the farmers at Ambatenna, claimed the lack of funds as another problem. Given the selection criteria mentioned above, this problem could have come up for the following reasons: there might have been instances where the selection criteria had not been adhered to. Such scarce resources as labour and finance too would not have been correctly allocated giving rise to other snags. Simultaneous commencement of agro-forestry by most of the farmers during the Maha season also would have made heavy demands on family labour necessitating some farmers to hire out labour which in turn would have made them to incur additional

expenses. A relatively higher percentage of farmers experiencing problems relating to lack of funds at Ambatenna, compared to that at Nugathalawa, could have been the effect of income disparities at the two sites.

Low survival rates of tree plants at Ambatenna could be attributed to damages by wild animals such as rabbits, wild boar and insect attacks. 9% of the farmers who had cultivated the individual woodlots at the Ambatenna site indicated heavy damages to the plants at their early stages of growth by termites - an aspect which should be taken into account by the project management.

Types of activities undertaken by the farmers on woodlot programme through sources of labour used are summarized in table 4.10. It should appear from this data that most of the farmers used family labour to a larger extent either as the main or secondary source. Only less than 1/3 of the farmers used hired or contract labour at both sites for any of the given operations. Hired labour, can be defined as hiring in labour for a given activity with or without meals whereby the hired person, man, woman or child works for a number of agreed upon hours for a day at an agreed rate. This form of labour use was more predominant at Nugathalawa than at Ambatenna. Using contract labour, is a system of hiring labour whereby a specific activity is given on contract or on an agreed upon fee to the contractor. In this form of labour hiring, meals are not included. Contracting labour was higher in Ambatenna than at Nugathalawa.

Most of the hired labour required by the farmers at both sites were locally available, the main source being their own village for 85% of the farmers. The farmers who had already undertaken land clearing, planting, weeding and fencing were asked to report on labour units they deployed on different types of field operations.

4.14 Labour Requirements for Forestry Cultivation and Costs

The farmers were requested to report on their labour requirements per operation, their source and method of labour mobilization if obtained outside the family, costs involved if any and also to report on the availability of labour outside the family. Sixty one percent of the Nugathalawa farmers and 53% of Ambatenna indicated that they required labour outside the family in times of field operations. Approximately 40% of the farmers pointed out difficulties in obtaining the services of hired labour at peak periods. This was mainly due to the fact that those who normally hire out their labour were either engaged in other agricultural activities or were employed on the tea plantations with higher wages.

Average rates for hired labour unit on a per diem basis are given in table 4.9. Differentiation of rates could be observed in relation to sex and age as well as in relation to the location. Wage rates per type were determined on the basis whether the meals were provided or not. Usually meals included morning tea/breakfast and the main meal at noon.

Table 4.9 : Average Wage Rates for Hired Labour per Day

	Nugathalawa Rs./day	Ambatenna Rs./day
MALE		
Without meals	26.00	23.00
With meals	34.00	33.00
FEMALE		
Without meals	18.00	20.00
With meals	23.00	27.00
CHILDREN		
Without meals	15.00	16.00
With meals	20.00	21.00

Source - Field Survey Data

Table 4.10 Sources of Labour and Average Costs per Operation of Activities on Farmers Woodlots

Field Activity	No. of farmers		Source of Labour												Costs			
			Family Labour only		Hired Labour only		Contract Labour only		Family and Hired Labour		Family and Attam Labour		Hired and Contract Labour		Average cost per 0.40 ha. per operation Rs.(excluding family labour)		Average cost per 0.40 ha/ Rs.(including family labour)	
	*1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Clearing	52	12	32.7	46.2	13.5	-	3.8	15.4	46.2	30.8	3.8	-	-	7.7	661	412	1455	1018
Planting	15	12	53.3	58.3	13.3	-	6.7	16.7	26.7	25.0	-	-	-	-	223	103	411	338
Weeding	12	11	50.0	63.6	15.9	-	8.3	27.3	16.7	9.1	-	-	-	-	261	105	486	375
Fencing	02	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-
Total Cost															1145	620	2652	1731

*1 - Nugathalawa

2 - Ambatenna

Source - Questionnaire Survey Data

A greater majority of the beneficiary families at both sites used family labour alone or in combination with hired labour. Such labour was engaged on daily wage rates or the work was done by contracting out the task/activity to be completed on prior agreed terms and conditions. On very rare occasions, exchange of labour was observable whereby two or more families exchanged their labour. In such exchanges wages were not paid but necessary meals, mostly tea and lunch were provided by the persons who obtained the labour. Source and method of labour mobilization per operation in relation to the forestry lands together with average costs per operation are summarised in table 4.10. Estimated costs are average costs per single operation of the given activity. In estimating the costs of family labour, values have been imputed on the basis of the rates of local labour market.

As noted earlier extent given under the project per family at Nugathalawa was 0.20 ha and at Ambatenna 0.40 ha. However, labour requirements and costs have been calculated on a 0.40 ha basis, a common unit of measurement to facilitate the comparison pruposes. Obviously, to get the actual costs for Nugathalawa figures presented in the table have to be halved. It should also be noted that except for the data presented in relation to clearing lands in table 4.10 costs and labour requirements related to other operations are, approximate as the averages are estimated on a smaller number of farmers. This is because activities such as planting, weeding and fencing had been undertaken only by a small number of farmers.

Comparatively, Ambatenna farmers used more family labour on all types of operations. Only a small percentage of farmers employed hired labour alone for their field operations. However, farmers from this village employed more labour outside the family on contract basis than at Nugathalawa. The role of exchange labour had been very insignificant at both sites, reflecting the fact that the tradition is fast disappearing. This phenomenon carries more implications for the planning of the CFP especially if the project management is thinking in terms of mobilizing labour on

a collective and mutual help basis for growing of local agro-forest cultivations. According to the data given in table 4.10 average cost per operation or the total cost for all types of operations in Ambatenna is reported to be higher than at Nugathalawa. This variation cannot be explained through costs per unit of labour or differences in amount of work undertaken at the two sites. For example wages paid for the male labour were slightly higher at Nugathalawa, but at Ambatenna this margin was set off by the slightly hire rates, the farmers paid for women and child labour. One other reason that could be ascribed was the differences in work load, completed at two sites ie. thickness of the bush cover and the extent of weed growth. However the nature of the land allotments at both locations prior to clearing, was not known to the researchers. But the lands given at Ambatenna were very steep, rocky and reported to have rapid weed growth, necessitating more labour in land preparation or entailing more costs if hired labour was employed. Therefore it is not possible that differences in costs are due to the differences in physical character of land and associated hardships.

4.15 Fertilizer Application and Annual Maintenance Costs

The farmers who had already planted their respective forestry plots were asked whether they applied fertilizer for their cultivation. They answered in the negative, but the greater majority of the farmers at both sites, 80% at Nugathalawa and 92% at Ambatenna were quite positive that they were prepared to fertilize the forest trees in the future. They indicated that the fertilizer would cost them on an average, Rs. 523/- per application at Nugathalawa and Rs. 232/- at Ambatenna. The farmers seemed to have got an idea about the annual maintenance costs too, - estimated costs ranging from a somewhat low average of Rs. 1564.00 at Ambatenna to Rs. 2477.00 at Nugathalawa.

4.16 Project's Extension Support

Project's package to the farmer includes not only the provision of suitable land for cultivation and provision of seedlings but also the provision of the extension back up. Farmers were to

acquaint themselves with the appropriate techniques of agroforestry through the project officials and also through demonstration plots. A Beat Forest Officer living in the locality of Nugathalawa was expected to assist the farmers in obtaining seedlings and follow up with necessary technical advice. He claimed that his main responsibility in the locality was to co-ordinate the work of the project and make the beneficiary farmers conversant in agroforestry techniques. His counterpart at Ambatenna could not be contacted.

At both sites, an extent of land had been allocated as a demonstration plot, and had already been put under cultivation. Survival rates of plants at both sites were not impressive.

As the name implies the demonstration plots at project sites, are meant to create an awareness of agroforestry and demonstrate necessary techniques, involved in undertaking such activities. As a public sector sponsored activity it is possible that cost of cultivation and maintenance of such plots are comparatively high.

To measure the awareness levels of the beneficiary farmers of the existence of such a demonstration in proximity to their own woodlots they were asked whether they had seen demonstration plot of community forestry and if so where. Twenty one out of 54 farmers at Nugathalawa and 8 out of 17 farmers at Ambatenna answered in the affirmative. Yet, a greater majority of them had seen such plots outside the village but within the district. Only 2 farmers from Nugathalawa and three farmers from Ambatenna, reported that they had seen the particular demonstration plot, close to their own woodlots. Others, possibly would have been referring to such plots maintained under the public afforestation programme within or outside the district. Taking these responses into consideration, it would be safer to conclude that the beneficiary farmers were not aware of the real purposes of demonstration woodlots.

The relevant Beat Forest Officer was known to 83% of the farmers at Nugathalawa and to all beneficiary farmers at Ambatenna, who claimed that the B.F.O who was responsible for the particular site had visited them at least on one occasion to give them necessary guidance. Other reasons for his visits to the farms or individual woodlots included, distribution of planting materials, inspection of the tree crops cultivated so far and giving advice on planting designs.

On the contrary it was very rarely that the farmers had gone to see the field officer for advice. Only 19% of Nugathalawa farmers and 2 at Ambatenna reported of such visits. The matters on which the B.F.O had given instruction to the farmers at both localities are tabulated at 4.11.

Table 4.11 : Percentage Response of Type of Advice Obtained by the Farmers

Type of Advice Obtained	Nugathalawa %	Ambatenna %
Land preparation	77.8	82.4
Planting time	59.3	88.2
Planting design	72.2	88.2
Maintenance	20.4	23.5
Fertilizer application	5.6	17.6
Timing of weed controlling activities	9.3	11.8
Protection from the animals	9.3	5.9

Source - Questionnaire survey data.

Note - Percentage does not add up to 100 as respondents gave multiple answers.

4.17 Attitudes Towards Forest Fire

Forest fires annually cause serious damages to the country's natural forests, controlled forests and the public afforestration programmes of the Forestry Department.

It is claimed such fires are purposefully set off by people on certain occasions for different purposes such as control of reptiles and wild animals. One of the aims of the Community Forestry Project is to create an awareness amongst the people on the role of forestry in environmental conservation and to seek people's participation in the protection of the environment. In this context,it was thought useful to get the viewpoint of the farmers on their experiences in this regard.

Virtually all the farmers in both localities had witnessed wild fires either in the village or elsewhere.

4.18 Causes of Forest Fire

The respondents were questioned as to their knowledge about the reasons for forest fires. Over three fourths of the farmers from each site believed forest fires to be mar made. Only 4 respondents believed forest fires to be sparked off by natural causes.

4.19 Reasons for Setting Fire to Forests

Farmers were also asked in which forests they had seen fires. Of 43 farmers at Ambatenna who had seen such fires 46% explained that they were within the areas under the Forest Department. They had also seen wild fires on natural, chena and reserve forests. Of the eleven Ambatenna farmers who had seen forest fires 7 or approximately 64% of them explained that they saw them on savana forests.

This situation calls for a further explanation. To the west of Ambatenna is a state-owned natural forest, which covers a large area, where the land is steep and it slopes rapidly towards

a natural water stream. Soil erosion is rampant here and the earth is rocky and thinly covered by herbal and other wild trees. The settlers around the areahave little use of this land except it provides as a grazing ground and as a source of firewood. Under the thinly spread out forest trees, a thick cover of Imperata cylindrica (Illuk) grows which when matured turns too rough for fodder. The foot paths made by the villagers too become lost in this wilderness of Savana. The luxuriant growth of Savana bushes provides a haunting place for poisoneous reptiles and wild animals. Just before the onset of the rainy season, these bushes are set on fire either to check the damages caused by wild animals or to hunt them. This particular time is selected, because with the rain green grass suitable for cattle sprouts. This process does not spare the valuable trees which are later used for firewood. This destruction is not openly claimed by anyone, yet the spoils: the green grass and the firewood turn out to be common property. In the absence of any supporting evidence, the process is not open for any remedial legal measure.

About 6 farmers at Ambatenna claimed that they had seen forest fires on forestry cultivations of the Forest Department, suggesting their belief that even state-owned forest lands are vulnerable. Natural forest areas adjacent to the village Ambatenna too were no exception.

Assuming that all arguments point to an obvious case that all forest fires are man made. Contemplanting any measures to check this devastation necessitates, delving deep into the causes, as to why forests are purposely set on fire. Farmers' responses on this aspect are summarized at table 4.12. Their opinion can be taken as what they perceived or as a logical extension of what they heard and experienced.

Table 4.12 : Reasons for Setting Fire to Forests

Reason	Nugathalawa N=47	Ambatenna N=14
To obtain fuelwood	46.8	14.3
To obtain timber	23.4	-
For Chena cultivation	34.0	14.3
To chase wild animals and control reptiles	6.4	57.1
To get political advantages	4.3	-
For fun	21.3	21.4
Poaching	2.1	7.1
To clear the land to allow the growth of fresh grass	4.3	28.6
For no reasons	4.3	-

Source - Questionnaire survey data.

Note - Percentage does not add up to 100 as respondents gave multiple answers.

The data in table 4.12 makes it clear that the majority of the farmers at Nugathalawa believed that people set fire to the forests for personal material gains such as for fuelwood or for Chena cultivation. A sizeable number of farmers held to another view - that the forests are set ablaze for fun or for chasing wild game.

A greater majority of farmers at both localities were aware that forest fires caused damages to the human environment. Ninety six percent of the farmers at Nugathalawa and 94% of them at Ambatenna were able to identify one or more disastrous effects of wild fires (see table 4.13).

Table 4.13 : Perceived Disadvantages of Forest Fire by Type and Location

	Causes water springs dry %	Destroy forest resources %	Reduce the moisture of the soil %	Contribute to soil erosion %	Causes disappearence of forest cover %	Affects rains negatively %	Affects natural environment %
Nugathalawa	76	92	30	21	.04	.04	.02
Ambatenna	.06	13	87	50	62	-	-
Both villages	57	90	44	35	18	.02	.01

N = Nugathalawa 52, Ambatenna = 16

Source - Questionnaire survey data.

Note - Percentage does not add up to 100 as respondents had multiple answers.

Adverse effects of forest fires as reported by the farmers were either general such as destruction of forest wealth, forest cover and its negative effects on natural environment as the subsequent drying of water springs, reduction in the moisture levels of the soils and soil erosion. Majority of the beneficiary farmers agreed that the forests are a national asset, which such unchecked fires could destroy. Nugathalawa farmers who were specific in adducing reasons believed that wild fires had much to do with the disappearance of village water springs.

4.20 Fuelwood

It was noted earlier that the community forestry project basically attempts to augment the supply of fuelwood locally through the involvement of local people in growing of fuelwood trees. Therefore, the success of the project greately depends on the extent to which the people are interested and want to take part in growing of fuelwood trees. Thus it has to be proceeded on the assumption that the project beneficiaries would have felt the scarcity of fuelwood already by way of short supply or non availability, in the respective localities or else felt the increasing costs involved in the purchase of this primary energy requirement of the respective households and therefore would participate in the realization of project objectives. Truly the project rationalizes its objectives in projecting the possible future requirements too. Hence, it was necessary during the survey to identify the sources of firewood, costs involved if any and the scarcity of fuelwood as experienced by the participant households.

4.21 Sources of Fuelwood

Sources of fuelwood for the majority of farmers at both sites were of their own meaning; their own trees in home gardens and uplands. Farm families with their own sources of fuelwood amount to approximately 67% at Nugathalawa and 76% at Ambatenna. Many farmers got fuelwood from different sources in combination with their own sources in times of scarcities (see table 4.14).

Table 4.14 : Percentage Distribution of Households by Sources of Fuelwood

Source	Nugathalawa	Ambatenna
Own lands/trees	66.7	76.5
Fuelwood seller	7.4	11.8
Neighbouring forest	5.6	5.9
Tea estates	7.4	17.6
Boutique	5.5	11.8
State Timber Corporation Depot	37.0	-

Source - Questionnaire survey data.

Note - Percentage does not add up to 100 as many families had different sources of fuelwood.

Information in table 4.14 reflects the fact that forests no more serve as a direct or main source for firewood for the respondent families in the two localities. Another important factor that surfaced during the survey was that in the old traditional villages, people used to have their own sources of firewood since their gardens consisted of a tree-mix with perennial trees, fruit and garden trees serving a variety of purposes. Prunning of these trees and the removal of unproductive ones, provided important sources of fuelwood to the people. Coconut husks and shells, twigs and supporting sticks for bean vines also constituted supplementary sources.

Approximately 40% of the families at Nugathalawa were dependent solely or partly on purchased fuelwood. Farmers used to purchase their requirements from the fuelwood seller, closeby boutique or from the nearest Timber Corporation Depot.

Method of transport of fuelwood was basically dependent on the quantity and the distance transported. Fuelwood sellers transported fuelwood on lorry/truck or by tractor trailors and delivered at the farmgate, the cost of which most of the farmers could not afford to bear. Fourteen out of 20 families who used to get their fuelwood requirements from off cuts of timber from the State Timber Corporation Depot, also had to depend on motorized transport except one family who used a bicycle for the purpose. A greater majority of the families, transported fuelwood manually from the place of collection. In most cases the distance transported was less than 0.1 Km. However, five families of Nugathalawa had to travel about 4 Km to purchase fuelwood and transport them manually.

Information on average monthly expenses on firewood was obtained from the respondents who purchased their requirements. This data were used later to compute average cost of fuelwood per month per family, which amounted to Rs. 83/- at Nugathalawa and Rs. 53/- at Ambatenna.

4.22 Shortages of Fuelwood

The Community Forestry Project derives its rationale for encouraging locals to grow their own requirements of fuelwood on the basis of projected future needs. Do the participant families experience the problem of scarcity of fuelwood was the next question the study attempted to find an answer to. Approximately 80% of the Nugathalawa and 71% of the Ambatenna farmers agreed that the problem of shortage of fuelwood was more acute than three years ago. Yet about 15% of the farmers at Nugathalawa and 23% at Ambatenna saw no difference while the remainder, expressed that the problem has eased out. It should be remembered that in spite of this scarcity which most of the farmers claimed to exist, they preferred to grow trees for timber, to trees for firewood. Only conclusion to be derived is that the farmers are thinking in terms of maximum returns to investments while majority of them do not want to produce fuelwood for the market.

All in all farmers were asked for their suggestions to augment the supply of fuelwood. Only 42 farmers from Nugathalawa and 12 farmers from Ambatenna, had suggestions (see table 4.15).

Table 4.15 : Suggestions for Augmenting Fuelwood Supplies by Respondent

Suggestion	Nugathalawa N=43	Ambatenna N=12
Expansion of the Community Forestry Project	39.5	08.3
Planting trees for fuelwood on homegardens	60.4	91.6
More use of substitutes ie. electricity, paddy husks etc.	20.9	33.3
Confining Community Forestry Project to growing of fuelwood only	09.3	-
Provision of tree seedlings with subsidies or free of charges in the locality	04.6	-

Source - Questionnaire survey data.

Note - Percentage does not add up to 100 as many farmers had many different suggestions.

According to the data in table 4.15, a majority of the farmers at both sites emphasised that planting of trees for fuelwood should be undertaken on home gardens, to augment fuelwood supplies locally. Expansion of the Community Forestry Project has been suggested by 39% of the Nugathalawa farmers while a similar percentage of the Ambatenna farmers would think in terms of using more alternative sources of energy. However, in general terms, farmers appear to have attached lesser importance to the role of the CFP to increase the fuelwood supply. Many would like to grow suitable fuelwood trees in their home gardens. This again confirms, to the fact that the farmers

do not expect high monitory returns from growing trees solely for fuelwood compared to the practice of growing trees mainly for timber purposes. This is more evident in the case of Ambatenna farmers. The relative position of the two villages in relation to the availability of fuelwood should be considered here. It may be that, except in situations and locations of extreme scarcities, villegers would not want to make comparatively heavy investments to grow firewood trees when an equal investment on land could result in higher financial returns.

4.23 Timber

Timber use by the farm families

Amongst participant respondents only 21 Nugathalawa families and 5 Ambatenna families had used timber for any purpose during the last three years. Basically timber was used for construction or house renovations. Use of timber for furniture was very much less. Of those who used timber, 12 Nugathalawa families and 3 Ambatenna families used timber from "the family's own sources". Except two persons, one claiming that he borrowed timber from a friend and the other claiming that his requirements were extracted from the jungle, all the others had purchased their requirements, main source being the private trader.

Most popular timber species used in the construction of homes in Nugathalawa appeared to be Graviliya robusta which was locally called Sabukka. At Ambatenna it was Michelica champica (locally called Sapu). Four farmers out of 5 constructed furniture at Nugathalawa using Cidrela serrata.

4.24 Farmers' Perception on Availability of Timber

Almost all the farmers in both villages believed that the scarcity of timber had become more and more acute during the last three years. Reasons given by them for this situation are tabulated at 4.16.

Table 4.16 :Percentage Distribution of Farmer Responses as to the Timber Shortages Experienced by Location

Reason	Nugathalawa N=51	Ambatenna N=15
Decline of forestry	33.3	67.7
Illegal fellings	21.6	-
Legal steps by the government to control the processing and selling of timber	21.6	33.3
Selling of timber trees for fuelwood	3.8	13.3
An illeffect of the extensive housing construction	37.3	6.7
Non replacement of trees that were felled (lack of reforestation)	33.3	33.3

Source - Questionnaire survey data.

Note - Percentage does not add up to 100 as respondents had multiple answers.

It is obvious that the farmers are aware of the impact of deforestation on the supply of construction timber in absence of substantial reforestation programmes. They also seem to be aware of the negative effects imposed on the forest reserves, by the unprecedented housing boom.

4.25 Suggestion to Overcome the Shortage of Timber

As in the case of firewood, farmers were asked for suggestions to overcome the shortage of timber. Responses made by them are outlined in table 4.17.

Generally, the concensus of opinion among most of the farmers was that reforestation was an effective mechanism to surmount the problem. Some of them had faith in the CFP, provided it extended its activities towards reforestation. They seemed to

have grasped the magnitude of the issue, when they admitted the need for a more extensive strategy to fill the gap left by the extraction of timber for construction purposes.

A majority of the farmers at both sites suggested that reforestation as the solution to the problem. In this respect 54% of the Ambatenna farmers had their faith in the extension of the CFP. It appears that while the farmers thought growing of fuelwood trees on home gardens would answer the problem of fuelwood scarcity, in respect of timber wood problem they believed that the answer lay in the extensive reforestation programme. Farmers responses according to the suggestions have been outlined in table 4.17.

Table 4.17 : Percentage Distribution of Suggestions Given by Farmers to Improve the Availability of Timber

Suggestion	Nugathalawa N=43	Ambatenna N=11
Further expansion of the Community Forestry Programme	20.0	54.5
Planting trees for timber in the home gardens	18.6	9.1
Steps should taken immediately for reforestation	62.8	18.2
It should launch programmes to create public awareness of the importance of community forestry	4.7	9.1
Provision of subsidized planting materials to the public	4.7	9.1
Banning of felling trees	-	88.2

Source - Questionnaire survey data.

Note - Percentage does not add up to 100 as a number of farmers gave multiple answers.

4.26 Suggestion for Improving the C F P

In conclusion the farmers were invited to suggest ways and means to make further improvements to the Community Forestry Project. It was assumed firstly that the suggestions emerging would highlight the problems faced by the farmers in the cultivation of their respective wood lots. Secondly, it was thought that the farmers might come out with, proposals of a pragmatic nature since they had been directly in touch with the issue over a long period of time (see table 4.18).

Table 4.18 : Percentage Distribution of Farmers Suggesting Ways of Improving the CFP by Type of Suggestion and Location

Suggestion	Nugathalawa N=48	Ambatenna N=16
Proper extension advice	60.4	56.3
Financial assistance for the maintenance	45.8	43.8
Fertilizer should be provided free of charge or with subsidies	21.1	43.8
Plants should be provided at the right time	39.6	6.3
Woodlot farmers should form an association	10.4	25.0
Ownership to the land should be legalized	16.7	-
Officers should make frequent visits to the woodlots and have regular contact with the farmers	12.5	6.3
Larger extents of land should be given	2.1	6.3

Source - Questionnaire survey data.

Note - Percentage does not add up to 100 as respondents had multiple answers.

The information is self-explanatory and it is clear that the farmers were not quite satisfied with the extension advice given by the project and other input services. However, the major problem, observed by the study team in relation to the lack of progress in the project, was the non availability of planting materials in time. This was specifically so in the case of Nugathalawa farmers. Most of the farmers had been thinking in terms of costs associated with maintenance - especially that of fertilizer application. An interesting suggestion has been made by the farmers of Nugathalawa on the legal rights to the land. Of course certain farmers expressed fear that the land would be withdrawn by the state in the future. However, when checked on this point the project personnel informed the research team that there was no reason for such fears if the farmers progressed well in cultivation of the recommended tree crops. It is also possible that the project management would lose control over farmers, if and once the legal rights to the land is given to the farmer; a situation which calls for carefull attention of the project management. Another noteworthy suggestion that surfaced was the interest of the farmers to form "forestry farmers association". It might do well for the project management to review this idea constructively because such an association would positively contribute to the project implementation and protection of farmers' woodlots. Details are discussed under conculsions and recommendations in Chapter 7.

Chapter Five

SOCIO-ECONOMIC CONDITIONS OF NON PARTICIPANT FARMERS

General Socio-economic characteristics of project participants were detailed in Chapter three. A limitation in the exercise is the variables discussed there do not bring out a representative picture of the project villages in general, because of the selective nature of the study sample which necessitated all the available participant farmers in both localities to be interviewed. For details see Chapter one.

The systematic sampling procedure adopted in the selection of non participants farmers has eliminated the bias associated in the case of participant farmers. Hence, the socio-economic conditions of non participant villagers discussed in this chapter represent a cross section of the community in the respective localities, especially those who inhabit the areas around the project sites. The analysis of this information is governed by the need to have comparable data for a post-project impact evaluation.

5.1 Population Characteristics

The average family size for non participant local families at Nugathalawa was 5 while the corresponding figure for Ambatenna was 6. For Nugathalawa and Ambatenna participant families the figures were 6 and 7 respectively. Average family size of the non participant families corresponds more closely to the reported district average of 5. Implications for the project are that the participant families with the higher average appears to be more favourably constituted towards the provision of labour for agro-forestry. (see the Table 5.1)

Table 5.1 : Family Size Distribution

Family size	Nugathalawa	Ambatenna	All non participant families
	%	%	%
01	-	-	-
2	7.1	-	5.3
3	11.9	6.7	10.5
4	16.7	13.3	15.8
5	28.6	20.0	26.3
6	4.8	13.3	7.0
7	16.7	40.0	22.8
8	7.1	6.7	7.0
9	7.1	-	5.3
	100.0	100.0	100.0

Source - Questionnaire Survey Data.

Compared to 75% of participant families, approximately 64% of non participant families had 5 or more members per family, 64.3% and 80% of the non participant families had five or more members at Nugathalawa and Ambatenna respectively.

Masculinity ratio amongst the members of non-participant families for Nugathalawa was 107.5 while at Ambatenna it was reported to be 100.

5.2 Literacy and Educational Attainment

Those in the age group of 10 years or more in the category of families were mostly literate. Literacy rates and educational levels recorded for participant farm families in the villages were generally comparable with those of the

non-participant families, however, there is a slight drop in the literacy rates amongsts the members of the non-participant families followed by reduced educational attainment after 6 years of schooling. (see Table 5.2)

Table 5.2

Percentage Literacy among the Members of Non-participant Households

Location	Illiterate	Grade 1-5	Grade 6 senior	G.C.E. (O/L)	G.C.E. (A/L)	Graduates	Total
Nugathalawa	17.1	25.2	32.9	14.9	6.8	3.1	100
Ambetenna	14.8	30.7	31.8	12.8	9.1	1.1	100
Both village	16.4	26.8	32.6	14.2	7.4	2.6	100

Source - Questionnaire Survey Data

Similarly, as against 60% of the population who had 6 or more years of school education in relation to participant families, a reduced percentage approximately 56.8 - has been recorded for non-participant families, a situation which reflects that the participant families were slightly better off to keep their offsprings at school for a longer period. The relatively higher level of education attained by Ambetenna participant farmer families, than those of Nugathalawa was not observable in Ambetenna in relation to the non-participant families.

5.3 School Attendance

In the age group of 5-14 years, almost all the children, both male and female attended school in the two villages. The school attendance amongst the members of non-participant families at Nugathalawa in respect of this age group was generally comparable with that of participant families. However, among those between 15-19 years of age at Ambatenna only 64% of the males and approximately 43% females were attending school.

5.4 Labour Force Employment and Activity Status

Data in relation to the overall employment situation of respondent non-participant local families are given in table 5.3. Same definisions and method of calculation as was adopted in the case of participant families have been used in arriving at these figures too.

It could be observed, according to the data given in table 5.3, that one third of the non-participant population in both villages are employed (this includes unpaid family workers). This was quite in line with the situation prevailing with regard to the participant families in the two localities. The percentage employed in the workforce and of the economically active population, stand as 51 and 85 respectively, revealing a slightly increased rate of employment for the participant families in the two localities. Comparative employment situation, sexwise among the total non participant population is as follows: For every 100 males in the group of 15-64 years about 71 were employed while the figure for women was 33 for every 100. However, the problem of underemployment of women does not arise as 79% of those who were prepared to work were employed. Comparable figure for men is 86%. Therefore, it appears that more members of non-participant families, men and women between 15-64 years of age are employed than those of participant families.

Table 5.3 : Composition of the Non-Participant Family Population by Nature of the Activity

	Nugathalawa	Ambatenna	Both Villages
a. Percentage employed in the total population	32.4	33.0	32.6
1. Male	49.6	36.4	45.9
2. Female	14.0	29.6	18.5
b. Percentage employed in the labour force	51.4	49.2	50.8
1. Male	75.0	61.5	71.6
2. Female	23.4	39.4	28.9
c. Percentage employed in the economically active population	85.7	82.9	84.9
1. Male	87.7	88.9	88.0
2. Female	78.9	76.5	77.8
d. Unemployed	5.4	6.8	5.8
e. Housewives	16.7	11.4	15.2
f. Students	30.6	33.0	31.3
g. Discouraged workers	1.8	4.5	2.6
h. Others	13.1	11.4	12.6
i. Crude activity rate	37.8	39.7	38.4
1. Male	56.5	40.9	52.2
2. Female	17.8	38.6	23.8
j. Net activity rate	60.0	59.3	59.7
1. Male	85.5	69.2	81.4
2. Female	29.7	51.5	37.1

Source - Questionnaire Survey Data.

5.5 Income

5.5.1 Source and Composition of Income

Of the Nugathalawa non-participant families, 40.5% depended on agriculture as the main source of income. Another 50% of the families relied on agricultural incomes as a secondary source while only 9.5% of the households looked for non-agricultural purposes as the main source. Nevertheless none of the Ambatenna non-participant families depended on agriculture alone for livelihood, while 46.7% of the families of this village had their earnings through non-agricultural sources. Another, 50% depended on agriculture as a secondary source of income or in complement with non-agricultural sources.

Percentage of households, with the sources of income together with the percentage compositions of the total incomes, are given in Table 5.4. Methods of classification and the computing of break-down figures are quite similar to those applied for the participant farmers.

Table 5.4 : Percentage of Sample Households Reporting Incomes From Various Sources and Composition of Household Incomes

Income Source	Nugathalawa		Ambatenna	
	% of Households reporting	Composition	% of households reporting	Composition
1. Self Employment in agriculture				
a. Paddy	45.2	3.7	26.7	4.3
b. Vegetables	71.4	12.6	30.0	0.4
c. Potatoes	33.3	13.1	-	-
d. Tea	11.9	6.8	-	-
e. Other crops	2.4	0.2	20.0	7.0
f. Livestock	14.3	0.6	40.0	3.4
2. Self Employment in agriculture	19.0	22.2	20.0	14.6
3. Supply of hired labour in agriculture	14.3	1.9	-	-
4. Supply of hired labour in non-agriculture	4.8	0.8	20.0	24.1
5. Salaries	38.1	34.2	40.0	37.8
6. Food stamps	23.8	0.9	33.3	2.0
7. Others	11.9	3.0	20.0	6.4

Source - Questionnaire Survey Data.

Note - Percentage does not add up to 100 as respondents gave multiple answers.

As for the Nugathalawa non-participant households, 37% of the total annual incomes were reported to have been derived from self-employment in agriculture; less than 3% of the total agricultural incomes reported for the participant farmer families. At Ambatenna too self-employment in agriculture provided 19.5% of the total household incomes of the participant families; a little higher than 15.1% reported for non-participant families. About 71% of the Nugathalawa respondent families undertook vegetable cultivation contributing for about 12.6% of the total household incomes. Another 33.3% was engaged in the potatoe cultivation constituting some 13% of the total incomes. These two crops take pride of place so far as the agricultural activities of the village are concerned. None of these sources contributed significantly to the household incomes of the Ambatenna non-participant families. Incomes from other sources such as perennial crops constituted the largest. Compared to Nugathalawa also a higher percentage of the Ambatenna families undertook animal husbandary which constituted 3.4% of their total household incomes.

Significance of growing paddy and its contribution to the total household incomes is further lessened in relation to the non-participant families than for the participant families at both villages. This was specially so for the Ambatenna non-participant families. Hiring out labour in agriculture, was of no importance as to make a contribution to the total household income at Nugathalawa.

A larger majority of the non-participant families of both villages derived incomes from salaried sources and non-agricultural labour employment. Self-employment in non-agricultural spheres too constituted a major source and significantly a greater share of the incomes of the non-participant families.

5.5.2 Income Levels

When both villages are taken into account, on an average a non-participant family was receiving an income of Rs. 13,089/-

annum whereas for a participant family, the reported annual average household income was Rs. 14,666/--.

However, intervillage and intra village income disparities were not so contrasting to the conditions that prevailed in the participant households in the two villages. The same scheme of estimations applied for the participant farmer families have resulted in the following indicators.

Figure 5.1 : Indicators of Variation of Incomes

Income Indicator	Nugathalawa Rs.	Ambatenna Rs.
Average annual total household income	21,124	11,534
The range	1,250-144,000	3,482-24,000
Per capita annual income	3,996	1,966
Income per income receiver	15,037	7,864

Source - Questionnaire Survey Data.

Not quite dissimilar to the participant households, income disparities between the two villages and amongst the non-participant households of the same village were quite high. A remarkable disparity was noted for the non-participant households of Nugathalawa compared to that of the participant households. However, Ambatenna presented a contrary picture. For example, the average total annual household incomes amongst the participant households ranged from Rs. 1,741 to Rs. 26,850 in this village while the reported range for non-participant families was Rs. 3,482 to Rs.24,400.

A comparison of data on this aspect in the two villages suggests that the poorest family at Nugathalawa is worse off than that at Ambatenna. The level of per capita income coupled with the income

per income receiver per annum further confirms the overall relative poverty at Ambatenna compared to that of Nugathalawa. The distribution of households by levels of annual household income is presented in Table 5.5.

Table 5.5 : Distribution of Households by Levels of Income

Income group	Nugathalawa	Ambatenna
0 - 6000	21.4	6.7
6001 - 12,000	35.7	59.9
12,001 - 18,000	7.2	20.0
18,001 - 24,000	14.3	6.7
24,001 - 30,000	-	-
Over 30,001	21.4	-
	100.0	100.0

Source - Questionnaire Survey Data.

According to data presented in Table 5.5 approximately 36% of the Nugathalawa families and 60% of the Ambatenna families were within the income range of Rs. 6,001 to Rs. 12,000 per annum. None of the Ambatenna families had incomes over Rs. 30,001 per annum compared to 21% at Nugathalawa, which had such income. At the same time another 21% of the Nugathalawa families derived annual incomes less than Rs. 6,000 per annum.

5.6 The General Conditions of Living

5.6.1 Housing

The size of the houses, number of compartments or rooms that the non-participant families had were very much similar to those of the participant families. Ownership status and conditions of houses are given in table 5.6.

Table 5.6 : Ownership and Housing Conditions

	Nugathalawa %	Ambatenna %
Permanent structures	100	93.3
Brick walls and permanent roofs	97.6	80.0
Adequately maintained	95.2	53.3
Owner occupant	78.6	86.7

Source - Questionnaire Survey Data.

Perceived from an overall perspective the housing conditions of the non-participant families seemed to be poorer. However, the Nugathalawa non-participant families had maintained their homes in better conditions than participant families, Compared to this close upon 50% of the non participant families at Ambatenna had not properly maintained their houses. As was the case with the participant families, a greater majority of the houses were owner occupied. Approximately 17% of the Nugathalawa and 13% of Ambatenna houses were rented or leased by the occupants.

5.6.2: Toilet Facilities

Three (20%) out of 15 non-participant respondent families at Ambatenna had no toilet facilities. Of those who had toilet facilities in this village, they were basically of the pit type; the number accounting for 66.7% of the households. About 38% of the toilets at Nugathalawa were also of this type. Approximately 62% of the Nugathalawa and 13% of the Ambatenna households had water sealed toilets.

5.6.3 : Drinking Water

About 45% of the Nugathalawa and 40% of the Ambatenna families had access to pipe borne water while 59% and 20% of the families of both villages used well water for drinking purposes respectively. 40% of the Ambatenna families used water from a stream for drinking purposes; a situation suggestive of health hazards.

5.6.4 Ownership of Household Items and Farm Equipments

As with participant farmer families, household items and farm equipments owned by the non-participant respondents were profiled too. Given below in table 5.7 is a percentage distribution of such items by type.

Table 5.7 Percentage Distribution of Household Items and Agricultural Equipments

Possessed item by Household	Nugathalawa	Ambatenna
Wall clocks	61.9	20.0
Gas lamps	28.6	13.3
Radio	88.1	60.0
Sewing machines	54.8	46.7
Television	23.8	6.7
Transport		
Bicycle	23.8	13.3
Motorbicycle	4.8	-
Agricultural Implements		
Spray machines	28.6	6.7

Source - Questionnaire Survey Data.

At Nugathalawa, the pattern of ownership of household items did not vary much between the participant non-participant families. This was also the case for the ownership of bicycles, motorcycles and spray machines except tractors. On the contrary, non-participant families at Ambatenna did not own most of the items discussed above at the same rate as their counterpart participant families. This is an indication of the level of relative poverty of non-participant families of the village.

5:7 : Land, Land Ownership and Operational Patterns of Agricultural Land by Non Participant Locals

Data pertaining to landlessness and ownership of land is given in table 5.8. The definitions and method of estimation of landlessness etc. were the same as those followed in the case of participant families in the two localities.

About 45% Nugathalawa and 80% of Ambatenna respondent families lacked lowland for agricultural purposes. At Nugathalawa, 3 families jointly owned 0.30 ha. of lowland; 0.10 ha. per family among them on an average. The size distribution ranged here from 0.10 ha. to 0.40 ha. Therefore, in practical terms these 3 families could be considered landless in terms of lowland holdings. Eighteen families at Nugathalawa and 3 families at Ambatenna owned lowlands on a single owner basis. At both villages the extent of lowland singly owned by the families was less than 0.31 ha (0.76 of an acre) on an average. The land size singly owned ranged from 0.10 ha to 0.91 ha at Nugathalawa and 0.10 ha. to 0.40 ha. at Ambatenna.

Pattern of landownership changed in relation to highland holdings at Ambatenna. At this village, as was observed with the participant farmers too, majority of the families, approximately 80% of them held L.D.O. lands averaging 0.64 ha. per family. Three families who owned traditional highlands averaged 0.74 ha. per family too. Contrarily 57% of Nugathalawa families, held lands smaller than 0.20 ha. Twelve out of 42 families at this site (approximately 29%) owned highland singly where average holding of land was estimated at 0.85 ha. per family. The distribution of highlands at Nugathalawa appears to be, very unequal.

Table 5.8 Landless and Ownership by Type

Type of Ownership	LOWLAND								HIGHLAND							
	Nugathalawa				Ambatenna				Nugathalawa				Ambatenna			
	No.	%	Extent ha.	Average Extent per House hold ha.	No.	%	Extent	Average extent per house hold ha.	No.	%	Extent ha.	Average extent per house hold ha.	No.	%	Extent ha.	Average extent per house hold ha.
Landless	19	45.2	-	-	12	80	-	-	24	57.1	-	-	1	6.7	-	-
Singly Owned	18	42.9	5.56	0.31	3	20	0.91	0.30	12	28.6	10.21	0.85	3	20.0	2.23	0.74
Jointly Owned	05	11.9	0.91	0.18	-	-	-	-	4	9.5	1.42	0.36	1	6.7	0.40	0.04
L.D.O.	-	-	-	-	-	-	-	-	5	11.9	1.01	0.20	12	80.0	7.69	0.64
Encroached	-	-	-	-	-	-	-	-	1	2.4	0.05	0.05	-	-	-	-

Source - Questionnaire Survey Data

5.7.1 Land Use and Cropping Patterns

Basically the land use and cropping patterns adopted by both participant and non-participant families were quite identical. However, a basic difference that was observed in relation to the non-participant farmers in the two localities was the cropping intensity. Amongst the non-participant locals seasonal cropping intensity was of a lesser degree than that of the participant farmers in the two localities. For estimated cropping intensities of the non-participant farmers for Maha 1983/84, and Yala 1984 see table 5.9.

Table 5.9 : Seasonal Cropping Intensity by Location

Season	Nugathalawa		Ambatenna	
	Lowland	Highland	Lowland	Highland
Maha 1983/84	73.7	42.1	80.0	22.9
Yala 1984	69.8	13.2	60.0	-

Source - Questionnaire Survey Data.

According to data given in table 5.9 cropping intensities in Maha at both locations are high; relatively higher on lowlands. However, seasonal cropping intensity of agricultural holdings of the non-participant families was comparatively low compared to that of the participant farmers of the localities.

At Nugathalawa, out of 27 families who cultivated 65% their entire lowland plots in Maha 1983/84, 20(74%) families had a paddy crop. The remaining 35% of the lands were cultivated with vegetables, mainly cabbages. Almost all farmers at Ambatenna who cultivated their lowlands during Maha had a paddy crop.

Cropping intensity of lowlands was lower during the yala season, At Nugathalawa 25 farmers ventured growing vegetables, potatoes beans and cabbages in that order of popularity. At Ambatenna, three out of two farmers who cultivated their lowlands during the season at all, grew vegetables on their plots, while the others preferred paddy.

During Maha 1983/84, 12 non-participant families of Nugathalawa had cultivated about 3.64 ha. of highland with vegetables: the popular crop being beans. Only two farmers at Ambatenna attempted cultivating their highlands in Yala, one going for plantains while the other grew sugarcane. Only a handful of farmers were interested in growing any crop during Yala 1984 on their highlands at Nugathalawa and at Ambatenna no attempt was made to grow any crop.

Maha being a favourable season, about 48% of the Nugathalawa farmers had attempted growing vegetables on their home gardens too. On homegardens at this site, they had a crop mix including potatoes and cabbages. This was practised but to a lesser extent at this site on home gardens during Yala 1984 too. At Ambatenna too some attempted to get a vegetable crop during Maha but most of the farmers remained satisfied with their home garden crops such as coffee, pepper etc.

5.7.2 Reported Problems of Agriculture

Non participant farmers were asked for their views on problems they faced during Yala 1984. Altogether 29 families, 25 from Nugathalawa and 4 from Ambatenna responded with one or more difficulties they faced during the season, (see table 5.10).

Table 5.10 : Problems Experienced During the Yala 1984 in Agricultural Practices by the Non Participant Farmers by Location

Problem	Nugathalawa N=25 %	Ambatenna N=4 %
Draught	64	75
Damages from animals	40	50
Pests and diseases	20	-
Lack of funds	32	25
Difficulties in obtaining vegetable seeds or its low quality	24	-
Marketing problems	16	-
Damages from rains and winds	12	-

Source - Questionnaire Survey Data.

Note - Percentage does not add upto 100 as many respondents gave multiple answeres.

Information tabulated at 5.10 reveals that a greater majority of the families who tried to get a crop during Yala was affected by drought. Crop damages by animals have also been reported. In general, the issues enumerated by the farmers at both sites were common.

5.8 Pattern of Labour use in Agriculture

As was with participant farmers, labour for agricultural practices was drawn from many sources by the non-participant locals too, with family labour, being the main source for many. Percentage distribution of families according to the source of labour used, is given in table 5.11. Only 80% of the families at Nugathalawa and 60% at Ambatenna, had engaged in agricultural activities during Yala season this being mainly of lowland cultivation.

Table 5.11 : Source of Labour for Agriculture Activities

Source	Nugathalawa N=37 %	Ambatenna N=9 %
Family labour only	24.4	66.7
Hired labour only	10.8	11.1
Family and hired labour	18.9	11.1
Family and Attam labour	18.9	11.1
Hired and Attam labour	2.7	-
Family, hired and Attam labour	21.6	-
Family, hired contract labour	2.7	-
	100.0	100.0

Source - Questionnaire Survey Data.

Most of the families resorted to family labour for agricultural work during the specified season. In addition, 64% of the Nugathalawa families combined family labour, with hired, attam or contract labour. Next to family labour, hiring labour on a daily paid basis was predominant. Another form of labour mobilization at Ambatenna was the exchange basis (Attam).

Labour outside the family was mainly drawn for vegetable cultivation. For example, only Nugathalawa farmers grew vegetables to an extent which required outside labour, with 13 out of 24 families, wanting the services of labour from outside the family. Nine farmers who grew paddy during the season too used hired labour.

However, labour outside the family was mobilized mainly for vegetable cultivation, for two reasons. Firstly, during Yala season, growing of vegetables was more extensively undertaken than paddy. Secondly, vegetable cultivation is more labour intensive than paddy cultivation.

5.9 Livestock

It was assumed that the community forestry project would have both disadvantages and advantages for local cattle breeders. Thinking in terms of negative effects on the local cattle breeders it was felt that the land which hitherto had been the common grazing land for cattle was now distributed unevenly amongst a few locals for a different task and their access to pasture land had now become limited. Lot of them were in agreement with this assumption. However, once the project becomes viable it would benefit the locals, by providing fodder, a fact which many of the farmers did not seem to realize. It was our observation in the villages that fodder, except from a limited number of tree species such as the jack tree, was not popular as a cattle feed. Of the natural food, for cattle, grass was the most popular. Cattle were stall fed with grass or fed in the open areas. Almost all families at both sites used grass as the main feed for cattle while fodder was used as the main mixture ingredient or in supplement.

At Nugathalawa, 15 out of 41, and at Ambatenna 8 out of 15 respondent families, were rearing cattle at the time of the survey. Generally, a family at Nugathalawa reared one head of cattle each per family while at Ambatenna on an average a family had two animals. Buffaloes were not reared at any of the sites. Certain families had some poultry and goats, a practice which was not wide spread as in the case of neat

cattle. About 7 respondent families at Nugathalawa and 2 at Ambatenna were reported to have reared cattle and had ceased to do so for want of grazing grounds.

Bearing this response in mind the cattle breeders were asked to explain their difficulties. Many came out with the problem of having insufficient grazing lands, while a few explained, that the problem was due to the lack of trees to obtain fodder. A few of the farmers were interested in venturing into livestock production in both villages.

5.9.1 Project's Effects on Local Cattle Rearing as Perceived by the Locals

The farmers were asked to comment on the effects of the Community Forestry Programme on local cattle production. 30 farmers at Nugathalawa and 10 at Ambatenna responded to this question. Majority of them were of the view that the project would deprive them of their pasture lands. Percentage distribution of responses on this aspect indicated by the locals is detailed in table 5.12.

Table 5.12 : Perceived Effects of the Local Community Forestry On Local Cattle Keeping

Effect	Nugathalawa N=30	Ambatenna N=10
Limited availability of pasture and fodder	53.3	60.0
Deprived tethering of grazing area	50.0	50.0
Community Forestry will increase the availability of fodder in the future	23.3	10.0
More grazing land on the project sites in the future	6.7	10.0

Source - Questionnaire Survey Data.

Note - Percentage does not add upto 100 as respondent gave multiple answers.

5.10 Leisure Time Activities

Leisure time activities of non-participant locals include, meeting friends and relatives, drinking alcohol, gardening, watching T.V. and film shows and reading newspapers. A greater majority of the locals at both sites, approximately 80% of them reported that they spent their leisure time by listening to the radio. About 80% of the Nugathalawa and 47% of the Ambatenna farmers used to read newspapers during their leisure hours. One third of the locals at Nugathalawa indicated, T.V. viewing and only 2 respondent families at Ambatenna had regular access to T.V. (see table 5.13).

Table 5.1: Percentage Distribution of Locals According to the Leisure Time Activities

Activity	Nugathalawa N=42	Ambatenna N=15
Reading newspapers	43.8	13.3
Reading magazines	14.3	13.3
Meeting friends	19.0	13.3
Drinking alcohol	16.7	13.3
Watching films	4.8	6.7
Watching T.V.	33.3	13.3
Listening to the Radio	88.1	80.0

Source - Questionnaire Survey Data.

Note - Percentage does not add up to 100 as respondents had many different leisure time activities.

5.11 Exposure to Mass Media

Exposure to mass media is also considered as an important variable, since it is a determinant of the awareness levels of the respondents. About 52% of the Nugathalawa respondents indicated that they read news papers very often while only 20% did so at Ambatenna. Approximately 21% of the Nugathalawa families used to view T.V. regularly whereas it was one out 15 families at Ambatenna. Radio seems to be a more popular medium with 76% of the farmers at Nugathalawa and 67% at Ambatenna claiming to listen to this medium during their spare hours.

In accordance with the rating of exposure to media by the respondents themselves, it appears that the radio ranks high among media, as the most popular source to which the non-participant families were exposed. Approximately, 48% of the respondents at both sites claimed that they received information mainly via this source. Thus it appears to be the best bet for the project to carry its propaganda and training work, if mass media are to be used at all. About half of the Nugathalawa and one fifth of the respondents at Ambatenna as was noted earlier were used to reading newspapers regularly; and it becomes the second most important source. Television is the popular tertiary source of information at Nugathalawa.

5.12 Participation in Rural Institutions

For reasons spelled out in chapter 3, non-participant locals were also asked about their involvement in local level organizations. Involvement was measured by way of positions the family members held in each of the existing organizations at the village level. (see table 5.14).

Table 5.14 : Participation in Local Level Organization by Type of Membership

Name of the rural organization	Nugathalawa		Ambatenna	
	Office bearer	Member	Officer bearer	Member
Rural Development Society	21.4	59.5	46.6	80.0
Local Sarvodaya Branch	-	2.3	40.0	33.3
Parent Teacher Association	9.5	41.6	6.6	46.6
Buddhist Society	2.3	16.6	-	26.6
Co-operative Society	4.7	78.5	-	20.0
Death Donation Society	9.5	71.4	6.6	33.3
Gramodaya Mandalaya	2.3	4.7	-	6.6
Young Farmers Club	2.3	4.7	13.3	13.3
Praja Mandalaya	2.3	4.7	13.3	26.6
Political Party	-	4.7	-	-

Source - Questionnaire Survey Data.

Note - Percentage does not add upto 100 as the respondents were members of different types of local level organizations.

When asked as to the most active local level organization a substantial number of the Nugathalawa locals, about 44.2% of them, indicated that the Death Donation Society was the most active organization in the village, with the RDs, (42.5%), running a close second. The pattern changed in Ambatenna, when 53% of the locals claimed RDs as the most active local level organization. 32% of the Ambatenna locals viewed the Sarvodaya as the best organization. Almost all the non-participant respondents of this village were reluctant to recognize either the co-operative, Buddhist society or Gramodaya Mandalaya as viable forms of organizations. But the local Praja Mandalaya was recognized by some of them as an active organization.

About 26% of the non participant locals at each site admitted that the local level participation in voluntary activities was poor. Approximately 14% of the Nugathalawa and 20% of Ambatenna locals rated participation in Shramadana as satisfactory.

The co-operative society was the most popular local level organization amongst the non-participant families at Nugathalawa with the Death Donation Society and the local RDs occupying the second and third places respectively. However, the [illegible] village level organization which was most popular amongst the non-participant families of Ambatenna was the local RDs. More than 80% of the non respondent families of this village had membership in the RDs. Active participantion in the activities of the local RDs by way of holdings offices by the members of non participant families of this village was encouraging. The respondent families of this village appeared to take part more in the activities of the local Sarvodaya Branch and Parent Teacher's Association than in the Co-operative Society and the Death Donation Society.

All in all, the information in this respect suggests that the project participants are more likely to hold office bearer positions than the non-participant locals. It also appears that the Ambatenna non-participant locals are more likely to be involved in the work of the RDs, Parent Teacher's Association and the local Sarvodaya Branch than in any other village level organization.

Chapter Six

ATTITUDES OF NON PARTICIPANT FARMERS

Non participant farmers were also interviewed through a questionnaire particularly to determine their awareness of the project and its objectives and attitudes towards the project. They were also asked for comments on the benefits or otherwise of the project and for suggestions to improve the project. In addition to these attitudinal aspects they were expected to report their experience on forest fires, fuelwood and the use of timber.

A profile of this type of information of the non participant farmers is important basically for two reasons. Firstly the non-participant farmers constitute the control group of the study. It is envisaged that the project in the near future would result in changes in quantitative aspects of the life of the participant families by way of increased incomes and through improved supply of their tree crop requirements. The project it is hoped would also result in strengthening the environmental awareness of the participant families in general and enhancing the knowledge and awareness of growing forestry and its role in human environment and life in particular.

This latter aspect of changes constitute the subjective or qualitative aspects of life of the participant farmers as well as local non participant residents. The measure of changes in these aspects of life of the people as a result of the project needs to be evaluated in the future. Compilation of information on attitudes and related aspects of non-participant farmers was undertaken to fulfil this requirement.

Second reason for compilation of qualitative information with regard to non participant farmers is the need to provide useful data for project management and implementation, specially in relation to the reduction of social costs and increasing the project's social benefits. It was pointed out in the preceding chapters that there were some differences of opinion, for example, in Nugathalawa on matters related to the allocation of land. Apart from the responses of the farmers to the manner in which the project would be implemented it was thought that the success of the project, specifically the protection of the locally grown woodlots would depend to a certain extent on non participant locals too. Perception of a situation and the subsequent attitudes towards that situation are said to be a pre-requisite for action that follows. Therefore it was felt that, if such information was collected on non-participant locals their pre-disposition to the project's work and its objectives etc. would give guidelines in the right direction.

6.1 Awareness of the Existence of the project by the Non-Participant Locals

A greater majority of the non participant locals that were interviewed, 39 out of 42 farmers at Nugathalawa and 13 out of 15 farmers at Ambatenna knew that the project sites were located in their respective localities and some of their colleagues were participating in it. As to the remainder, except one respondent at Nugathalawa all of them were aware of the land allocation under the project. Thus what remained to be understood was as to how and to what extent these locals were aware of the specified objectives of the project. Numerous ideas and opinions were expressed on this aspect by the non-participant locals (see table 6.1).

Table 6.1 : Purpose of CFP as perceived by the Non Participant Locals

Purpose	Nugathalawa	Ambatenna
	%	%
To obtain public participation in afforestation	23.6	13.3
Production of timber and fuelwood requirements of the community by themselves	59.5	40.0
To impart proper knowledge on forestry to the people concerned	4.8	6.7
To protect the environment	45.2	46.7
To overcome the problems of timber and fuelwood shortages	28.6	26.7
To grow fruit crops	7.1	6.7
To reduce the costs involved in transporting timber from distance places	7.1	6.7
Establishment of small forests for the people	7.1	6.7
To reduce government expenditure	4.8	-
As a wind breaker	11.9	-
Optimum utilization of barren lands	2.4	13.3

Source : Questionnaire Survey Data

Note : Percentage does not add up to 100 as respondents gave multiple answers.

Information in table 6.1 drives the point home that the majority of the farmers at both sites had understood the project objective as, growing timber and fuelwood trees by the locals themselves. From the perspective of the project objectives it is revealing to note that a little less than half of those interviewed were aware of

environmental issues, when they perceived environmental protection as one of the major objectives of the project. In some instances, certain amount of bias is observed in the responses which are conditioned by problems related to local situations. For example, some farmers at Ambatenna thought that the project was meant to get optimum benefits from the barren lands while certain farmers from Nugathalawa were of the view that the local objectives of the forestry cultivation, was to grow trees as wind breakers.

6.2 Main Sources of Information for the Locals on CFP

The villagers indicated different sources of information through which they came to know of the existing project sites in their own village areas. Most important single source of information for them appears to be the beneficiary farmers. For example 18 out of 41 (44%) locals at Nugathalawa, and 10 out of 15 (67%) respondents at Ambatenna indicated beneficiary farmers as their source of information on project activities. Second most important source, was the other local villagers at both sites. About 36% of the respondents at Nugathalawa, had come to know of the project through village level officers such as BFO, GSO and CO, G.S.O. being the most important source.

It appears that mass media channels such as radio, newspaper and TV have not been effectively utilised for this purpose.

6.3 Perceived Benefits of the Project

It is important to know for future planning and for benefit monitoring how the project is perceived by the non-participant locals. About 57% (N=24) of the Nugathalawa and 80% (N=12) of Ambatenna non participant locals indicated project's contribution to the local area as mainly beneficial. Of this respondents, about 75% of Nugathalawa and 83% of Ambatenna, thought that the project would augment both timber and fuelwood supplies in the area. Nearly three fourths of the respondents believed the project's contribution to be protection of soil. 61% of them indicated that the forest trees once grown, would

serve the purpose of a windbreaker. Additional incomes, prevention of soil erosion and assistance to livestock production were other benefits which the respondents thought would accrue as a result of the project.

As for disadvantages of the project, several farmers expressed their concern that the project activities would curtail their access to land which has so far been a common resource in the villages. The main problem they emphasised was relating to the loss of land for grazing local cattle. Also some had been using the land for chena cultivation, a place for collection of supporting sticks for bean wines and firewood and they claimed that they had lost such opportunities as a result of the allocation land under the project. Some farmers at Nugathalawa also thought certain tree species if planted in the site would contribute to the drying of ground water.

6.4 Perceived Benefits of Forestry in General

In spite of differences of opinion among the respondents as to the benefits of CFP in the locality, they all accepted that forestry in general had advantages one way or the other. Disagreement expressed by certain locals on CFP could have been due to the bitter feeling that they had, because their access to the land in the project site, now was restricted.

Table 6.2 : Percentage Distribution of Respondents by the Type of Advantages Indicated Regarding Forestry

Benefit	Nugathalawa	Ambatenna
Protect spring water	92.9	73.3
Make rain in time	21.4	26.7
Prevent soil erosion	26.2	46.7
Makes good weather conditions	9.5	20.0
Protect moisture of soil	38.1	33.3
Provides fuelwood	90.5	73.3
Provides timber	76.2	93.3
Provides fruits	9.5	26.7
Provides fodder	14.3	20.0
Functions as a wind breaker	23.8	-
Provides a living place for animals	-	6.7

Source : Questionnaire Survey Data

Note : Percentage does not add up to 100 as respondents had multiple answers.

Data in table 6.2 reveals that one of the basic environmental concerns of the farmers is the protection of natural water springs, a fact about which the beneficiary farmers too were concerned. This could, especially be due to the farmer's heavy dependance on natural water springs for irrigation purposes in both localities.

Certain water springs used to last for a long period after the rains. The locals feared that this is a dissappearing phenomenon and were afraid of the situation further worsening. This concern of the villagers, irrespective of their participation or otherwise in the project was realistic. Other environmental interests and the role of forestry in environmental conservation perceived by the non participant locals appear to be very much in line with those of the beneficiary farmers.

6.5 Local Co-operation to CFP

It was noted earlier that certain locals were unhappy because, they thought that the project would deny them access to land given under the project. Besides the matters related to the implementation of the project on provision of inputs and the extent to which the participant farmers are enthusiastic it was assumed that the co-operation of the non participant locals towards project activities was also important in its successful implementation. Provision of manual labour for project activities keeping cattle and goats away from the project sites and maintaining vigilance to prevent fires were some of the ways, in which it was thought, that the non-participants could extend their support. When questioned on this aspect, 83% of the Nugathalawa and 87% of the Ambatenna locals indicated, diverse ways in which they would like to contribute to the project (see table 6.3).

Table 6.3 : Percentage Distribution of Farmers by Type of Help they would extend to the CFP in the Locality

Type of contributions	Nugathalawa N=35	Ambatenna N=13
Would provide voluntary labour	71.4	92.3
Tethering cattle and buffaloes	14.3	30.8
Maintaining vigilence to prevent forest fire	14.3	30.8
Helping to put out forest fire	22.9	15.4
By disseminating information to those who are not aware of the benefits of the project	49.2	30.8

Source : Questionnaire Survey Data.

Note : Percentage does not add up to 100 as respondent gave multiple answers.

It is obvious that providing voluntary labour, if required or solicited was the preferred way, respondents wanted to participate. However, it should be noted here that more than 90% of the labour that was utilized in land preparations and planning was either family labour or hired labour at both sites. Nevertheless, it is encouraging to know that the locals were ready to assist farmer's woodlot cultivation by providing voluntary labour, and were also prepared to keep their cattle away and help to put out forest fires. Another possible contribution that the farmers have suggested is by way of working as opinion leaders to educate the others regarding the benefits of the project.

6.6 Type of Trees suitable for CFP in the Locality

The query on type of trees, the locals would propose to cultivate on the sites of farmer's woodlots drew a variety of responses. 31 out of 42 (74%) of Nugathalawa and 12 out of 15 (80%) of Ambatenna locals preferred timber trees. Fuelwood trees were second in priority . Information on their preferences was compiled. All the respondents were asked to indicate the particular tree species, and the

purpose for which it would be suitable for the locality and the site. In analysing this data, percentage distribution of preference by species and purpose was arrived at later. Preferences by popularity up to the 4th most popular species is given in table 6.4.

Acacia decurrens appears to be the most preferred fuelwood tree at Nugathalawa, a preference also shown by the participant farmers at this site (see table 4.4 page 79). However, most popular species for fuelwood acceptable at both sites was *Albizzia molucanna* (mara). Compared to this it should be recalled that the participant farmers from Ambatenna showed little interest in growing of fuelwood trees and only a few suggested suitable firewood species. At this site the pattern of preferences for fuelwood trees changes with most of the non participant locals coming out with suggestions for suitable tree species. It should be remembered that the single tree species preferred by most (4 out of 8 participant farmers at this site) was Margifera Zeylana.

Preferences to timber tree species by non-participants differed in terms of the variations observed in localities. For example most popularly quoted tree species at Nugathalawa was *Eucalyptus spp* while at Ambatenna it was *Michalica champica* (Sapu); the most acceptable tree species at both sites. All in all following timber species had a reasonably high demand in both project localities.

Michelica champica (Sapu)
Eucalyptus spp (Karpantine)
Cedrela toona (Toona)
Grevillia robusta (Sabukka)

It should be noted that *Grevillia robusta* (Sabukka) is not preferred by non-participant locals at Ambatenna whereas approximately 29% of the participant locals liked it. A general observation is that preferences for tree species, vary more among Ambatenna villagers than among those at Nugathalawa.

Table 6.4 : Most Preferred Species of Trees by Purpose indicated for Local CFP Sites by Non Participant Locals

Purpose/Species	Rank of priority by popularity							
	Nugathalawa				Ambatenna			
	1	2	3	4	1	2	3	4
For fuelwood								
Acasia decurrens (Acacie)	70.0							
Albizzia mollucane (Mara)		62.5			53.8			
Neolitsea cassia (Kudadavula)			37.5			23.1		
Cypressus spp (Cypress)				12.5				
Terminalia chebulu (Aralu)							23.1	
Phyllanthus embila (Nelli)								13.4
For Timber								
Eucalyptus spp (Karpantine)	76.2				46.7			
Grevillea robusta (Sabukka)		73.8						
Michelica champeca (Sapu)			71.4		80.0			
Cedrela serrata (Toona)				69.0				40.0
Prerocarpua marsupium (Gammalu)						60.0		

Source : Questionnaire Survey Data.

6.7 Forest Fire

Approximately 80% of the local respondents at both sites said that they had seen forest fires. Of this 36% of Nugathalawa and 67% of Ambatenna locals had seen such fires within their own village areas. Approximately 42% of the Nugathalawa locals and 75% of the Ambatenna locals, had witnessed this disaster within a period of an year suggesting that forest fires are fairly common in the localities. Of the respondents - a sizeable crowd would believe that they had seen them on natural forests, in contrast to the majority of the participant farmers who indicated that they saw forest fires in forestry cultivations under the Department of Forestry, A substantial number of local respondents at both sites explained, that the fires they had seen were either on chena lands or grass lands.

6.7.1 Causes of Forest Fires

At Nugathalawa 41 local respondents and at Ambatenna all of them aired their views on the causes that led to forest fires. Except 4 locals who thought forest fires were caused by nature and 3 locals who did not respond at Nugathalawa, all the other respondents of both sites indicated that forest fires were man-made. In other words 68% of the Nugathalawa and 80% of Ambatenna respondents held on to this view while the remainder, suggested negligence of human beings, or lapses as causes. Impressions in this respect, of both participants and non-participants do not differ much.

6.8 Sources of Fuelwood for Non-participant Locals

For the non-participant locals too the main source of fuelwood continues to be the home gardens and highlands etc. However, so far as reliance on the "own source" is concerned, the importance is noted to have reduced by 12% and 13% for the non-participants at Nugathalawa and Ambatenna respectively. More and more non-participant locals relied on a secondary/complementary source of fuelwood. (see table 6.5).

Table 6.5 : Sources of Fuelwood Obtained by Non Participant Families

Source	Nugathalawa N=42	Ambatenna N=15
Owned	54.8	53.3
Fuelwood seller	9.5	13.3
Neighbouring forest	2.4	46.7
Tea estates	9.5	26.7
Boutique	1.4	-
State Timber Corporation	52.4	-
Friends	2.4	-

Source : Questionnaire Survey Data.

Note : Percentage does not add up to 100 as many families had difference sources of fuelwood

Obviously the locals at Ambatenna in addition to their own sources of firewood were depending heavily on forest or neighbouring tea estates, with only a very marginal requirement purchased. In comparison to this some dependence on purchasing of firewood by the Nugathalawa local has been reported. More than 50% of the locals at this site relied on State Timber Corporation (STC) Depot.

It was observed earlier that for the greater majority of the participant farmers at both sites "own sources" were the most significant in the supply of fuelwood requirements of the family (table 4.14).

In contrast to this the non-participant locals of both sites were dependent on sources outside the family. The resources were either the STC Depot for purchasing or the neighbouring forest and tea estates. The differences noted in relation to the sources of fuelwood amongst the participant and non-participant locals could perhaps be due to the selection criteria adopted by the project.

The participant farmers had more of their own land and tree resources to collect their fuelwood requriements.

Means of transporting fuelwood used by the non-participants were more or less the same as those used by the participant except for the fact that more non participant families depended on manual methods. All non-participant families at Ambatenna used manual ways of transporting firewood from the place of collection to the respective homes while the majority of the families at Nugathalawa who used to purchase their fuelwood requirements from State Timber Corporation Depot, used vehicular transport.

Barring instances where fuelwood purchases were made from the STC Depot and in certain cases where fuelwood was brought from the fuelwood seller, in almost all the cases maximum transporting distance from the collecting point was less than one km. In certain other instances it was even lesser.

The cost of fuelwood per family per month in respect of those families who used to purchase their requirements were basically the same at Nugathalawa as compared with its participant families. However, a noteworthy differences, a reduction of costs from Rs. 53 to Rs. 38 on an average was noted for Ambatenna non-participant locals. This could be due to the fact that most non participant locals of this village collected their fuelwood from the neighbouring forests, or tea estates in addition to their own sources.

6.9 Shortages of Fuelwood

It may be recalled that 80% of the Nugathalawa and 72% of the Ambatenna participant farmers, reported that the shortage of fuelwood was more acute than 3 years ago; 90% of the Nugathalawa and 80% of the Ambatenna non-participant local respondents also agreed with this view.

For Ambatenna locals this shortage did not relate to any particular season. But it appears that at Nugathalawa, the respondents experienced shortages of fuelwood from November onwards till January each year. When asked 21 out of 27 farmers at this site indicated that during December, each year, the scarcity was most acutely felt. The peak agricultural activities with the on-set of the Maha rains might have been the cause.

6.10 Suggestions to Overcome Fuelwood Shortages

As with participant farmers, the non-participant locals of the area were asked for suggestions to overcome the prevalent fuelwood shortages. Only 39 and 12 locals from Nugathalawa and Ambatenna respectively came out with suggestions (see table 6.6).

Table 6.6 : Percentage Distributions of Non Participant locals' Suggestions to Overcome the Fuelwood Shortages

Suggestions	Nugathalawa N=39	Ambatenna N=12
Expansion of the Community Forestry Project	84.4	75.5
Enforce regulation to control illicit fellings	15.4	25.0
More use of substitutes for fuelwood	25.6	33.3
Plant trees for fuelwood on home gardens.	12.8	8.3
Provision of tree seedlings with subsidies or free of charges	2.6	-

Source - Questionnaire Survey Data.

Note - Percentage do not add up to 100 as many respondents had multiple suggestions

As against the majority of participant farmers who preferred to grow more fuelwood trees on homegardens, the majority of the non participant locals proposed the expansion of the CFP to obviate difficulties arising out of firewood scarcities. Many of them certainly would have wished to be benefitted by the

expansion of the project. An aspect different from the attitude of the participant farmers of the localities, observed in respect of non participant locals was the suggestion that the latter made for the Govt. to enforce legal action against illicit fellings. Some participant families as well as non participant families of the localities also thought in terms of substitutes for fuelwood.

6.11 Timber

Only 10 families at Nugathalawa and 4 families at Ambatenna had used timber during the last 3 years. About half of their timber requirements were from "own sources". In purchasing timber, the depot of the State Timber Corporation and the private trader were equally important sources. Eucalyptus Spp and Terpantine were the most popular timber trees in housing construction at Nugathalawa while Michelica champica (Sapu) was the favourite at Ambetenna. Tree species such as Gravilia rubasta (Sabukka), Cidrella serrata (Toona), Pterocarpus marsupium (Gammalu) were popularly used by the locals in the construction of furniture.

6.11.1 Shortage of Timber

Almost all the non participant locals at both sites thought as in the case of fuelwood, that timber too was in short supply more acutely than three years ago. More than 75% of the farmers at both sites attributed this to the decline of forest resources in the country. Similarly, a smaller number of the locals at Nugathalawa and 3 at Ambetenna complained that this was mainly due to the fact that the reforestation programmes were lagging far behind excessive deforestation taking place. Of the Nugathalawa respondents, 11 of them found fault with the extensive housing development programmes of the Govt. especially that of the village re-awakening movement, which according to them, imposed an unusually heavy demand on timber. About 7 locals at both sites thought, that shortages could be due to the difficulties in obtaining necessary permits to fell timber trees and transport them.

As for fuelwood too, a majority of the locals, approximately 88% at Nugathalawa and 73% at Ambatenna, thought that the possible solution to the timber shortages, was the expansion of the Community Forestry Programme. Several respondents at both sites, suggested that a plan of action he set in motion to encourage planting timber in homegardens.

6.12 Suggestions to Improve the Community Forestry Programme

The non-participant local respondents were given an opportunity to make their suggestions, for improvements to the CFP. 39 Nugathalawa locals and 14 from Ambatenna responded with more than one suggestion. Approximately 67% at Nugathalawa and 71% at Ambatenna pointed out the need for providing necessary funds to the allottees. From both localities 22 farmers or about 38% of the, respondents proposed that awareness be created and appropriate knowledge on forestry imparted through extensive training programmes. This was a felt need in the localities where many did not have access to extension advice from the project. Approximately 30% of the farmers, again in both sites highlighted the need to have planting material in time. About 20% of the Nugathalawa families suggested that the land should be given only to the families who could afford to meet the financial commitments involved in forestry cultivation. A notable observation is that a majority of the non-participant locals had no complaints about the adequacy of the extent of land given under the project.

Chapter Seven

SUMMARY AND IMPLICATIONS OF FINDINGS

This study undertaken as a pilot bench mark survey of two initial project villages of the community forestry programme has three interrelated objectives. Firstly to work out an appropriate methodology for the proposed main survey; secondly to compile baseline socio-economic information of project beneficiaries and non beneficiary locals with a view to facilitating future comparative studies which would indicate the effects and impacts of the project; thirdly to generate information requires for project benefit monitoring. The respondent's attitudes towards and awareness of the project objectives, its rationale and the farmers experience in growing tree plants and their concern over environmental problems in relation to forestry were tested in detail.

The inventorization of existing socio-economic factors of the project beneficiaries and the non beneficiaries consisting of the non participant locals has resulted in the establishment of a set of socio-economic indicators that would be useful in the evaluation of project benefits at a later stage in relation to the respective localities. These variables complemented with the analysis of respondent attitudes towards and the knowledge of project objectives and the problems concerned in taking into agro-forestry cultivation form useful information for further project planning and benefit monitoring. This chapter summarizes the findings of the survey and draws broad conclusions that will be useful both in project implementation and benefit monitoring.

7.1 Demographic Aspects

The average family size for beneficiary locals was found to be larger than the district average or the average for non-beneficiary families, reflecting the possibility of mobilizing more family labour for agro-forestry cultivation, than in the case of non-beneficiary families. The project is not expected to have a direct impact on a demographic aspects in the localities in the same magnitude as that of land alienation or settlement programmes.

The recorded literacy rate for those at the age of 10 years or more in the two localities was 90%. About 60% of the members of beneficiary families had acquired at least six years of schooling. Obviously the literacy rate is not of major concern so far as the project activities are concerned; yet the high literacy level prevailing in the localities augurs well for the innovating task targetted by the project.

General standard of living in terms of ownership and condition of households, availability of safe drinking water, toilet facilities and household items, etc., appears to be relatively satisfactory in comparison with the prevalent conditions in the dry-zone areas. With the fairly high incomes of both participant and non participant families at Nugathalawa, the possession of household, transport and other items such as agricultural implements, was well within their capacity.

Despite the inter village and intra village income disparities that prevailed, a greater majority of the households had [illegible] receiving sets which formed the most popular source of recreation and the major source of information amongst the respondent families. Newspapers, were another popular medium amongst the participant families of both localities. A reasonable number of Nugathalawa families, owned and viewed TVs both for recreation and as a source of news. The extent of exposure to mass media, matches with the reported level of literacy and general conditions

of living in the area. In this situation, the mass media, especially the broadcasting medium constitute the best bet for the project's propaganda activities and training of the locals in certain activities involved with the project.

For the majority of the families in both localities the main source of fuelwood was their own tree resource. More participant families depended on this source, than in the case of non-participants. This may be due to the fact that the project adopted the criterion of selecting relatively richer farmers, implying that they were the people with at least some land resources on which they had some trees for this purpose. A higher percentage of the families at Nugathalawa had to purchase their firewood regularly while the Ambatenna families relied on neighbouring forest or tea estates as a secondary source. A forest reserve provided them with a veritable supply of firewood. On an average a family spent 7 man hours a week on collection of firewood at both localities. An average family with 5-6 members generally spent 4% of the family earnings on firewood, if it was purchased.

7.2 Employment and Income

Over 80% of the economically active population of the local population in both localities are employed. This compares well with the national employment situation. Here too, it is more likely that the members of the non-participant families and more males than females are employed. Sources of employment include self employment in agriculture and salaried jobs. Salaried employment is more predominant among the non-participant families. Of the participant families, salaried jobs found more favour at Ambatenna than at Nugathalawa. However, approximately 52% of the Nugathalawa and 65% of the Ambatenna participant families derived their income from agriculture and non-agricultural sources.

At Nugathalawa, the per capita annual income of a family on an average was double that of the participant families and non participant families, with participant families getting a higher income than non participant families. The basic difference in the levels of income could be related to the sources of income. About 40% of Nugathalawa participant families and 37% of non participant families had their earnings mainly from agriculture, while the corresponding figures for participant and non participant families at Ambetenna were 19% and 15% respectively. Agriculture, potatoes and other vegetables, provided them with the major share of their income.

The average income does not present the magnitude of poverty and income disparities in the two localities. For example, 21% of the Nugathalawa non participant families and 13% of participant families earned an annual income of less than Rs. 6000/- per family. Corresponding figures for Ambetenna were 6.7% and 17.6% respectively. At Ambetenn a higher number of families relied on food stamps, a social benefit scheme introduced by the Govt. for those who are below the poverty line.

7.3 Land Use and Operational Patterns

The population pressure in both localities is felt on agricultural lands. This is more so on existing lowlands for paddy. Barring the highland vegetable operators at Nugathalawa, most of the respondent families at both sites cannot be defined as farmers, since the operational land holding is so small in extent. Assuming that at least 0.20 ha (0.5 acres) of land is required for an economically viable farming operation, majority of the Ambetenna and Nugathalawa respondent families were landless in respect of lowland. About 50% of Nugathalawa and 59% of Ambetenna participant families had no lands for any successful highland cultivation. However, approximately 80% of the Ambetenna non participant families each owned at least 0.60 ha (1.5 acres) of highland which had been alienated under the Land Development Ordinance.

Most of the lands were singly owned. About 37% of the Nugathalawa families owned 0.46 ha (1.14 acres) of lowland on an average. Comparative figure for non participant families at this village was 0.30 ha (0.76 acres) with 42% of the families owning 5.56 ha (13.75 acres). Similarly, the average size of Ambetenna lowland holding was 0.25 ha (.61 acres) for participant families and 0.30 ha (.75 acres) for non participant families. However, the total extent of acres operated by participant families were limited to 1.7 ha (4.25 acres) while the corresponding figure for non participant families for this village stood at 0.91 ha (2.25 acres).

There is a dearth of lowlands for paddy cultivation in both villages. Coupled with this participant families at both villages lacked lands for highland agricultural practices too while the non participant families at Ambetenna were more fortunate in this respect.

The operational size of agricultural holdings was smaller than one acre inclusive of those under different types of tenure.

7.4 Agriculture

Situated in a major vegetable growing area facilitated by a combination of favourable soil, agro-climatic factors, the back-bone of farming at Nugathalawa constituted vegetables including potatoes. Vegetables are grown on highlands and homegardens and paddy on lowlands during the Yala season. However, the main crop on all lands during Yala is vegetables. Yet a reduced cropping intensity of asweddumized lands is observed during Yala. The commercialized vegetable cultivation necessitates high levels of labour usage and intensive cultural practices. The labour requirements in this respect are mainly met through family sources very often supplemented with hired labour.

Many families in the area reared at least one cow for milking purposes. Grazing land for cattle in the area is very limited and cattle are fed on the edges of paddy lands, along the roads under human supervision or are stall fed. Fodder feeding of cattle is almost non-existent.

7.5 Community Structure and Service Facilities

For a rural area, both project localities are well served in education, health, banking and other agrarian services and institutional facilities. Most of these facilities are located within a radius of about 6 km of the project sites. Undoubtedly, the fairly high standard of living prevailing in the localities is a result of the ready availability of these services and facilities.

7.6 Attitudes

Respondents' awareness and attitudes towards, matters such as deforestation related environmental problems, objectives of the community forestry project and its rationale, the crop species preferred in the localities and their characteristics, intercropping, causes and problems of fire etc. together with perceived costs and benefits of the project have been discussed in detail in chapters 4 and 6.

Beneficiary farmers were not used to put up watch huts within the allotted land as was done on other agricultural holdings for security purposes. However, many intended to do so in the future if the necessity arose. They also wanted to have fences of a biotic type. It was reported that the tree crop plants were damaged by such natural causes as drought and also by animals and pests. Some farmers claimed instances of thefts, too, especially by those who were not benefitted by the project. This was mainly for reasons of jealousy.

The risk could be minimized by resorting to an arrangement of proper distribution of plants both among participants and non-participants who may be keen on growing tree crops. The practice should also boost the tree crop cultivation in the area.

A greater majority of the participant farmers attributed their participation in the project to their interest to meet the family fuelwood and timber requirements.

Majority of the farmers were not aware of the project's plantation design, i.e., the ratio of fuelwood to timber trees. Most of them wanted to have more timber trees than fuelwood trees. Due to the fact that the envisaged economic returns of timber were much more than that of fuelwood or fruit trees.

The preferences for timber and fuelwood species differed between the localities and also among participant and non participant groups.

The extent to which the community is aware of project's objectives and the level of identification with these objective may influence the support extended by the community to the project in the realization of set targets. More than three fourth of the participant respondents indicated that the project meant to help communities to produce their own fuelwood and timber requirements. About half of the non-participant locals too were aware of this objective, having come to know of it through participant farmers and village level officials.

In general, both participant and non participant locals at the two localities were aware of a range of benefits resulting from the project, i.e protection of soils, water springs, growing trees as a wind break and the provision of fuelwood and timber products. Protection of spring water at both localities was identified as a major benefit. The impact of the community forestry in the locality was also seen by non-participants as mainly positive. As for, disadvantages, several farmers expressed their concern that the project activities would restrict their access to common land for grazing cattle, shifting cultivation and collection of firewood. The non-participant Nuwathalawa locals feared that the project would result in restricting the availability of land for housing in the area in the future.

7.7 Fuelwood vs. Timber

Farmer preference for growing of timber trees to fuelwood, and fruit trees can readily be understood. Envisaged economic returns from timber trees are many fold: besides the trees would yield fuelwood as a by-product. In addition, increasing scarcity of fuelwood at both localities has not resulted in an increased dependance on market sources for many locals. These factors appear to have influenced the present preference.

Where soil is suitable and a tradition exists for cash crop agriculture, the farmers are inclined to get a cash crop going by way of intercropping until the tree plants are mature enough. Intercropping on farmer woodlot appear to be mainly beneficial as they receive better and frequent attention from the farmers and tree crops receive plant nutrients. However, given the immediate high returns from cash crops such as potatoes at Nugathalawa, farmers are likely to continue with the practice even when the tree crops are matured. The farmers would adopt the practice of prunning shady branches. This may affect the steady tree plant growth if allowed unchecked.

Unavailability of planting material in time, drought, and lack of additional funds for tree planting and related operations and damage from animals and insects were the major snags that affected the progress in planting and maintenance of trees. As the selected sites are unirrigated lands the distribution of planting materials, one of the major tasks of the FD, has to coincide with the onset of Maha rains. It should be noted that the main factor responsible for the low survival rates of tree plants was the drought. In order to overcome problems associated with damages by animals and pest attacks, project's assistance by way of extension back up becomes imparative. Financial assistance may be required for fencing. While the project attempts to provide drought and insect resistant varieties of tree plants, care should be exercised in the selection of tree plant varieties that are preferred by the locals so that they will be readily acceptable to them.

7.8 Forest Fire

A greater majority of the respondents believed that the forest fires were man made. Main reasons for setting fire to forests stated as follows to obtain fuelwood or timber, for shifting cultivation, to chase wild animals and control reptiles for fun and for controlling extensive weed growth. Despite this, many respondents were aware of the damages caused by wild fires which destroyed forest resources, reduced moisture content of the soil and caused soil erosion.

7.9 Scarcity of Fuelwood and Timber

Most of the respondents claimed that both fuelwood and timber were now more scarce than three years ago and their prices were moving up. Deforestation and housing expansion schemes were the major reasons observed. By way of suggestions to obviate this situation participant farmers were inclined to plant trees on homegardens for fuelwood, and believed in further expansion of the CFP and the state reaforestation. The non-participant locals at both sites agreed with the former suggestions.

Despite the expressed scarcities, the majority of respondent families at both sites relied on their own sources of fuelwood. They collected fuelwood from homegarden trees. Instances of fuelwood purchasing were more amongst the Nugathalawa respondents and more so among the non-participant families. As to the non-owned source of fuelwood, Ambatenna families were blessed with nearby forest lands and tea estates where they could still collect their family requirements. Data obtained from the record keeping exercise indicates that all components of biomass available to the household, twigs, poles, small and large branches of trees, coconut husks and shells, paddy shafts, saw dust, tree roots were used for cooking purposes. Mainly women and children collected biomass where an average family spent some seven hours a week for this prupose.

Suggesting improvements for the CFP, a majority of the participant respondents indicated the necessity for proper extension advice which was endorsed by the non participant locals, as well. Most of the non-participant locals pointed out the need for providing necessary funds to the allottees, a factor duly recognized by the participant farmers too. Some 40% of the Nugathalawa participant families indicated the need to deliver planting material in time the absence of which was one of the factors that retarded the progress at this site.

7.10 Implications of Findings

The formal agenda of this study included, generating of information for project benefit monitoring. This aspect where appropriate, has been given due consideration in the text itself. This section is directed to a discussion on certain aspects that deal with the implications for project implementation and benefit monitoring.

Covering the broader aspects involved in project implementation, three major factors - two related mainly to the local Kachcheri administration and one to the FD itself, - appeared to have caused delays in planting trees specifically at the Nugathalawa site. First two factors are the selection of suitable sites and the beneficiaries. The other is the supply of tree seedlings.

7.11 Selection of Land Sites for the Project

The selection of suitable sites for the project in the selected districts was a straightforward task for which the responsibility devolved on the Kachcheri administration. Nevertheless, it involved tedious and complicated aspects and caused delays due to certain practical and procedural problems. To start with, from a general view, all three districts in the Wet-Zone up country, i.e., Nuwara-eliya, Badulla and Kandy that come under the purview of the project, found it difficult to get lands for agricultural purposes. The available arable lands in these three districts are under plantation estates, resulting in highly unfavourable land-man ratio in real terms. This

unfavourable condition was revealed in both study localities. Villages are situated in the fringes of estate plantations.

In both study villages, except for homegardens, some of Ambatenna and of Nugathalawa families were absolutely landless in terms of lowland or highland agricultural holdings. In addition availability of land on an average per family for any purpose excluding the plantation estates in the village Nugathalawa was .21 ha (.53 acres).

In site locations, the FD prefers those situated close to main roads so that the "demonstration effect benefits" of the project would be easier. Ideally they should be situated adjacent to the villages where most of the participants come from and these sites have to be fertile and well protected. Unfortunately, such crown lands in the project area appear to be already alienated for housing and village expansion schemes, agriculture or other similar purposes. Arable lands suitable for the project are scare while the lands available are generally fairly remote, infertile, rocky or windswept.

In addition, the Kachcheries are restricted by other procedural, political and socio-economic factors influencing their work. For example, crown lands that are suitable and disposable for the project are vested not only with the Kachcheri but also with other agencies such as the Land Reform Commission. Similarly, the political thinking may pivot round the idea that crown lands should be alienated for more urgent needs such as agriculture, housing and village expansion schemes. Furthermore, villagers and their local institutions seem to think that the village common land should be put into purposes that they think to be the most appropriate. Such purposes too include, housing, village expansion, play grounds and other common amenities. Villagers themselves or their organisations are not powerful enough to wield any influence over the Kachcheri decisions, and seek the help of local political leaders to do so. On top of that, as to the project consultant on Community Forestry "some AGA's are often unwilling to release

lands and some of the most surprising areas have become alienated for village expansion".

In the circumstances acquisition of land for the project involves extended negotiations, compromises and involvement with tortuous procedures and approvals, resulting in inevitable delays at the very first stage of project implementation.

The project's Community Forestry consultant with over, 2 years of experience in the project claims "... that access to additional land of some potential for agricultural development is the single strongest motivating factor in successful community participation". This is of course true in the context of the two study sites of this report. By December 1985, one year after the initial study, more than 75% of the beneficiary families had undertaken planting at Nugathalawa site while the progress made at Ambatenna was discouraging. As mentioned elsewhere in this report, the land at Ambatenna site was rocky, steep and infertile and even the plants that had established roots at this site had been severely damaged by termites discouraging the farmer. Conversely, at Nugathalawa site, many plots which had been planted in 1984 thrived well absorbing nutrients applied for intercropping, to the satisfaction of both project officials and the locals. It is obvious that land alone would not provide the proper incentive unless the land is arable and fertile and the farmer is assured of getting a good return on his investment.

If these observations are generally applicable, the project implementation might find itself in a dilemma. In the first instance, if the blessings of the local political authority (M.P.) is not forthcoming, it would be very difficult for the FD to obtain prescribed type of project sites generally suitable for agriculture in the three wet-zone up country districts.

Secondly, most of the beneficiary farmers, are likely to continue with the cultivation of cash crops, where they might even attempt to prune and cut shady branches of already grown trees to allow sunlight, on their cash crops. However, all parties that are involved may have to compromise and try to look for alternatives which will satisfy the immediate income requirements of the farmers. Thridly, population pressure in the project areas might necessitate reallocation of land amongst the competing end uses. Most probably the political decisions will be in the direction of popular demand such as land for landless, land for housing and so on.

An alternative to existing land suitable for agriculture is to accept generally infertile, rocky and steep lands for which the demand is low in relation to these other competing purposes. This may mean heavy expenses and necessity to build up of institutional infrastructure. Public work programmes or food for work programmes may be launched during lean agricultural periods in an attempt to improve upon degraded and neglected lands of the localities. These improved land later could be distributed amongst the landless in the area and among those who laboured for improving them. Perhaps local organization's help eg. Gramodaya Mandalayas or active N.G.O.s, could be enlisted for this purpose. Their basic involvement will include the enlistment of people, supervision of work and distribution of food or other subsidies under the guidence of the FD.

7.12 Practices Adopted and Criteria of Selection of Beneficiaries

The Gramasewaka, (GS) was the principal functionary, subject to the approval of the AGA, in announcing land kachcheries through notices calling for applications, and in providing field level information for screening applications for final selection purposes.

At the Ambatenna site local response to land procurement by way of application received, was low and inadequate while this was very high at Nugathalawa. Due to the inadequate number of applications received at Ambatenna, it was revealed that the AGA of the Passara Division at a meeting with special invitees and field level officers had called upon them to nominate suitable locals to participate in the project. At the Nugathalawa site applications had to be screened prior to the selection of beneficiaries by the AGA with the help of his local officers. At both sites a list of selectees was prepared by the AGA which then was sent to the appropriate local Member of Parliament for his approval. This process indicates, a continued Politicobureaucratic involvement in determining eligibility of applicants.

The demand for land for agricultural purposes and the general suitability of the project site for farmers at Nugathalawa, resulted in competition and pressure to gain access to land. This ended up with the local political interference to an inordinate degree. The selected farmer's list suffered several revisions on account of such actions, and eligible farmers selected on the earlier occasion tended to be left out. This has resulted in creating local tension, and frustration, within the local community.

The experience gained at the sites, poses several implications for future location of project sites, selection of beneficiaries in particular and project planning and benefit monitoring in general.

Unlike in other conventional schemes of land alienation, the project has given heavy emphasis to the selection of wealthy families of the locality by way of the selection criteria. This is contrary to what was envisaged in the agreement between ADB and GOSL. Despite the landless as well as poorer families being selected at both sites, participant farmers have reported higher per capita incomes than non-participant locals possibly due to the selection criteria adopted. In this respect the project deviates

from an established form of giving priority to the landless and poor families as is practised elsewhere in the country. Also political involvement results in effectively excluding a substantial proportion of the village community, a criterion that is not comparable with project objectives.

When scarcity of land for agriculture and other purposes is acutely felt, many, especially the landless and near landless want to gain access to land. When criteria other than "landlessness", are applied, it is quite natural for the people to get disillusioned, creating the need to evolve a method of selection acceptable to them.

In consideration of the project's anticipated local level participation, together with the anticipated "spread effect" of the project in growing of agro-forestry by local communities, the competition and the resultant frustration emerging from alternative land use allocation crises over "village commons" should be kept to a minimum. Firstly, the hostility of the displaced villagers may have a negative effect on proposed village forests. Either those disappointed may try to damage the established miniforests of the village or refrain from extending support. It should be remembered that the Nugathalawa beneficiary farmers claimed that their plants were damaged or stolen by locals. In the Pantabanagan Forestry Development Project of the Philippines it has been suspected that the temporarily laid-off labourers started some of the fires which continually damaged the forestry under the project (Alejandro B. Lbay 1984, p.240) indicating deep economic and sociological genesis related to village forestry. Therefore it is for the best interests of the project to avoid local antagonism associated with local level resource allocation.

Given the socio-economic and political context in which the project is being implemented it is very difficult to make workable suggestions to minimize local competition for land. A solution one can think of is to avoid the site location in areas where landlessness is

high. Where landlessness is high the pressure for alternative use of land particularly for housing and for substantial short-run income gain is equally high.

Also in such areas political decisions may reverse the arrangementsin order to accommodate competing other users of land. For example, at Nugathalawa the local M.P. appeared to be under pressure to reallocate a part of the community forestry site for a house for the aged. In such locations the establishment of miniforests for timber and firewood purposes, would be self defeating.

Perhaps the project in the process of site selection might seek the assistance of a sociologist with some economic orientation who might be able to advise the project on: socio-economic aspects of prospective project beneficiaries and localities which may have a bearing on the expected local level participation. Aspects such a professional sociologist should look into include factors affecting social solidarity and fractions at the village which might inhibit the attainment of project objectives, general socio-economic conditions of prospective beneficiaries, issues related to landlessness and demand for labour use and availability, and socio-psychological predisposition towards acceptance or rejection of Community Forestry project in the locality by the locals. Of course, these aspects should be assessed using techniques of rapid appraisal methodology of social sciences.

Certainly some locals will be affected by redistribution of "village commons" such as common grazing lands. If affected they should be remedied. At this initial stage these parties should not only be taught of the project's rationale and objectives, but should also be enlightened as to how they would be benefitted and their interests looked after.

The proposed education training programme for involved locals could include aspects such as problems of forest depletion in relation to water shed management, soil erosion, fuelwood and timber scarcity and how it benefits the locals in the near

future, project objectives and rationale, and procedures adopted and the manner in which the project will be implemented. It is envisaged that awareness so created of forestry related problems and project objectives would increase a sense of responsibility amongst officials as well as locals, while also increasing the scope for cooperative interaction among them.

It should be noted that the selection procedures adopted at the two sites lead to misunderstandings and discontent among the locals. In addition procedures were also time consuming and defeating the purposes of the community forestry programme. This was especially so at the Nugathalawa site. These, possibly, could be overcome if the selection was undertaken at a meeting such as at land Kachcheri where all interested parties are assembled and the selection is undertaken once and for all. At such a meeting the objectives of the project and selection criteria as well as any problems or complications in the selection of beneficiaries could be discussed in the presence of the locals. The final list may also be completed, and the political approval may also be received at the land Kachcheri.

7.13 Other Aspects Related to the Project Implementation

7.13.1 Participation and Training

Agro-forestry as is undertaken under this project is a new concept to the country, as well as to the Forest Department. A necessary element of the project is the expected active participation of the local people in growing useful tree crops on lands allocated to them. Benefits in the form of tree products are generally derived after a long gestation period. In this context participating farmers may tend to look into short-run economic costs and benefits associated with alternative uses of the given land. Therefore, for the agro-forestry programme to survive, not only should the farmers be trained on agro-forestry practices, but they also should be motivated and organised in such a manner that their objectives conform to the objectives of the implementation programme. This necessitates on the part of the programme implementers to derive an in-depth understanding of local farming,

social and economic systems. In addition the officials at the grassroots level entrusted with the implementation of the programme should possess the ability to work with locals, communicate with them efficiently and also to organise the local people in a manner appropriate to the achievement of project objectives.
Besides the technical training of forest officers on agro-forestry, they should also receive an adequate training on community development.

Besides the officials of the Forestry Department, the AGA and his local level staff such as GSs are expected to participate in the project at various stages. Their functions, at present are limited to the allocation of land, selection of beneficiaries and administrative matters related to the allotted and alienated lands. The rural backgrounds of many of these persons should be of help in gaining a higher relationship with the project beneficiaries and other villagers. It is likely that a higher commitment among these officials may lead towards a smooth and speedier implementation of the project.

One other party whose support should be elicited is the area's local level organisations. A primary concern in this effort should be the establishment of a training programme for local level organisations on the project objectives, the manner in which the project is launched, and on its intended benefits. Not only should their participation in project implementation be sought but they should also be formed into "agro-forestry committees" to take an active interest on matters related to forestry in the target locations.

With our present experience at both sites and observations on local level organisations, it is our understanding that the people's participation in the cultivation of woodlots should be sought on an individual or family basis rather than on a community basis. This is because village level social and political fragmentations are reflected in village level organisations too. National level political changes too affect village level

leadership and effect changes on their standings. Due to the political affiliation of village level leadership and certain RDSs and most of all to Gramodaya Mandalaya which can be thought of for this purpose, were looked upon with doubts by certain locals. Therefore, with continuing changes in leadership and interests together with their inability to organise the communities as a whole on common objectives, it is doubtful whether these organisations can carry long term interests of the project continually for a long period until the village forestry produces goods. At these final stages issues will arise in relation to the tree ownership and their fair distribution. However, the importance of a community or group organisation should also not be lost sight of. For example, if participant farmers are formed into 'Local Forest Farmer Committees or Groups" certain activities could be undertaken more effectively. Such activities include : the clearence of lands on a collective or mutual help basis· collective decisions on date and time of plantation; pest and disease control, and, collective or group responsibility in protecting the cultivated woodlots. It will also be easier to direct seedlings, credit and other services to groups. Such committees may form a forum for dissemination and enhancing of knowledges on agro-forestry and related matters in a given area.

7.13.2 Question of Fuelwood vs Timber Trees

The project appraisal report gives preference to the cultivation of fuelwood trees. The farmers at both sites reported that they experienced shortages and price increases in fuelwood. However, inspite of these facts majority of the farmers indicated quite distinctly their preference to grow timber wood trees. Those preferred are straight, fast growing, hardwood trees. Reasons for this preference is mainly economic given the anticipated substantial financial returns after 12-15 years of growth. The farmers also claimed that the timber trees, in addition, produce firewood as a secondary product to cater to their fuelwood needs.

7.13.3 Publicity

It is anticipated that in the future the project will use mass-media for publicising the objectives of the project and related matters. An attempt was made during the study to find out the type of mass media that the respondents were exposed to and their main sources of information. Indications are that a majority of participant and non participant farmers of the two localities owned and listened to the radio. Reading news papers as a source of information was second to radio listening. A majority of the respondents did not own or had no access to a T.V. and T.V. viewing was an irregular activity. It should also be mentioned that many locals learned about the project from the beneficiaries and/or from other villagers, thus highlighting the importance of inter-personal communication in disseminating information.

7.13.4 The Provision of Seedlings

At the time of the study only planting material was being provided to the allottees. Adequate supplies of planting material appeared to be a problem particularly where non participant locals were also interested in planting some useful trees in their own lands. This is a useful tendency and it shows that the people want to grow trees. It was also observed that almost all the fairly old habitation of the area was covered with vegetations which one can term as "garden forests". These small vegetations around homes and home gardens and upland areas had trees of fruit, timber, herbs, with a particular tree variety serving multiple purposes. These small tree vegetations appeared to be well adopted to the agro-climatic conditions of the area. Perhaps a much higher utility could be derived from these garden forests through a higher rational arrangement. In terms of benefits to the individual family, project, and national objectives, higher gains may be achieved if these "garden forests" are more systematised and people are encouraged to plant more productive tree crop varieties.

In this context, at Ambatenna most of the steep and relatively infertile lands may possibly be cultivated with useful agroforest crops with some external support. The families of this village also showed a keen interest in such a venture. The farmers of the Nugathalawa site claimed that the tree plants were stolen from their allotments, presumably by those interested in specific varieties of tree plants. To provide a further inducement to this undoubtedly high demand for specific tree varieties it is appropriate to provide more of such varieties in order to:

- increase the number of economically useful trees planted in the area and systematise the practice of tree gardening that already exists in the locations:

- reduce the stealing of plants from project sites and damages caused by such action : and,

- create a condition whereby the non-participant locals feel that they are benefitted from the project, and thereby identify themselves with the project and its objectives.

Present demand will have to be increased if the plants are made available to the non participant locals too. However, adequate supply of plants by the Forestry Department nurseries appeared to be a problem. It is possible that the supply could be increased and the costs in terms of supply delays could be reduced if selected farmers from the locality are trained and provided with basic facilities to produce seed plants locally.

7.13.5 Monitoring the Progress/Project Activities at Individual Sites

It appears that there is a distinct need for monitoring the progress/project activities at the site level. A Range Forest Officer or a Beat Forest Officer attended to the work of community forestry at each sites. Overall supervision was undertaken from the project office in Badulla. Main contact

and communication between the centre and field level officers was mainly through writing notes and letters as the necessity arose. At best most of the Range/Beat Forest Officers are trained and experienced in Forest Conservation. There is a community development aspect involved with the project. Farmers may perceive and bring problems that they experience with regard to cultivation of their individual lots to the notice of these field level officers. And these problems, requests and suggestions have to be understood in their proper context and if possible appropriate action has to be taken to encourage the farmers. Some of the problems and requests of the farmers are directly reported to the Forestry Office and some never reach this level or are delayed so that action cannot be taken in time.

A good example here is the delivery of seedlings. The farmers and Beat Forest Officers at Nugathalawa were disappointed several times because the vehicle promised by the project office in Badulla did not arrive on days promised to transport seedlings from the nursery to the project site. It does not need to be emphasised, given the nature of the project and its innovative aspects, the successful implementation of the project requires a secure and long term foundation of trust between programme promoters and local people. Also occasional checks should be made to establish how well the plants distributed are surviving. Occasional but indepth discussion with farmers on their experience on tree growing might prove useful for feed back purposes, decision making at the 'Project Implementation Committee' level as well as to find out actual progress at the project site levels.

It is hard to blame the Forestry Department for shortcomings that have been observed in the study sites. This is for the innovative nature of the project, new orientation it had to take from conservation and reforestation. Also the institutional infrastructure appears to be still being built up. However, necessity to work with thousands of farmers when the project

expands and the complications that might arise with the development should be forseen. Therefore, the necessity for the application of management techniques such as network analysis should be adopted. The use of such techniques with a monitoring desk with necessary information classified and readily available might be useful at these initial stages.

7.14 Methodological Implications

Given the innovative aspects of the project, the range of type of data to be gathered on a community forestry survey includes such areas as socio-economic information of beneficiaries and non beneficiaries, consumption patterns, measurement of a range of attitudes, functioning of local institutions and politics appropriately in relation to the achievement of the given objectives. The method of data collection also varies according to the scope of information gathered. Each aspect that is being investigated has to be represented in each of the location.

The methodology followed has been proved useful in this study. However, it is time consuming and costly. Given a number of sites, to be studied, careful sampling could have reduced the workload.

The profiling of baseline information for a post project evaluation cannot be considered very appropriate considering the long time lag falls in between which may range from 10-15 years. The period is long enough to have the project effects and impacts which are limited in scope mixed up with that of natural changes on the socio-economic conditions of the beneficiaries.

Most of other informations required for project benefit monitoring purposes could be generated through rapid appraisals combined with mini surveys and spot checks.

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APPENDIX I

PROJECT COMPONENTS

Component	Sub Component	General	Rationale & Implementation
1. Village Woodlots	1.1 Farmers Woodlots	Establishment of 4,055 ha of farmers Woodlots of ½ to 1 ha in size in 90 villages of the project area. 71 villages of these are located in wet intermediate zone districts and 19 in the Batticaloa district.	Selected farmers who are allotted state land are responsible for planting and maintaining these Woodlots. CFD will provide necessary technical assistance, planting materials and seedlings.
	1.2 Community Woodlots	Five woodlots (each 25 ha in size) will be established in each project district.	Aimed at testing the value and efficiency of collective responsibility in forest products and in sharing benefits. These woodlots be located in villages where Rural Development Societies (RDSS) are active and prepared to accept the responsibility for distributing seedling, mobilizing labour for planting and maintaining the woodlots as well as distributing the final products in a mutually accepted manner. CFD provides technical assistance and seedlings.
	1.3 Demonstration Woodlots	Four woodlots of 25 ha in each of the wet-intermediate zonal districts and one 120 ha lot in Batticaloa district.	These woodlots are aimed at demonstrating planting techniques, after care and other agroforestry. These woodlots will be established, maintained and protected by CFD - employing the village labour.
	1.4 Seedling production	34 small nurseries each having a capacity to produce about 100,000 seedlings per year will be established in the project area.	These nurseries are aimed at creating community awareness of agro-forestry, and closer availability of seedlings to the participating villages. These will produce a part of the estimated requirements of 9 million seedlings of the village woodlot programme and remaining seedling requirements will be met by a Central Research Nursery that will be established in Badulla.

Component	Sub Component	General	Rationale and Implementation
	1.5 Plantation Design and Establishment	Woodlots are designed to plant trees in following proportions. 60-80% fuelwood, 10-30% fruit and 10% small timber and pole trees.	Two basic plantation models have been developed based on the climatic variations and the size of the farmer, community and demonstration woodlots in the project area.
2. Block Fuelwood Plantation	2.1 General	14,000 ha. of block fuelwood plantation in Badulla district. This also involves division of the area into six compartments, land preparation and planting. A general reconnaissance survey in the first year of the project implementation is also planned.	Implementation is solely done by the CFD with the use of manual labour.
	2.2 Seedling	Six nurseries to produce 1.2 million seedlings per year will be established in the first two years of the project in the selected compartments.	Aimed at producting estimated seedling requirements of the project.
	2.3 Plantation Design and Establishment	Site surveys, land clearance, site preparation, and digging of pits by contract labour.	FD is the implementation agency
3. Protection		Organisation for the protection and supervision	Protection of plants will be in the following manner. Farmer woolots by family members, Community Woodlots by local community organizations such as RDSs and Block fuelwood plantation by FD employers.
4. Institutional	4.1 Creation of a New Community Forestry Division in FD	A division for this task is established under a Deputy Conservator of Forests, equipped with necessary officers, housing and communication facilities.	Organizing project staff, training them efficiently for the planned planting programme and to providing necessary equipments.

Component	Sub Component	General	Rationale & Implementation
	4.2 Communication Support	Two mobile audio-visual units, films on community forestry and educative aids with the help of Department of Information.	To convey the message of community forestry and motivate villagers to community forestry
	4.3 Monitoring	A system to be devised for this by the executing agency.	Monitoring of progress especially at the indivudual participant level.
	4.4 Research	Five field research centres of 5 ha each in the demonstration woodlots to be established under the Project Central Research Nursery in Badulla to conduct Nursery Research.	Research activities will be field oriented and related to evaluating fast-growing multipurpose tree species.
5. Consultancy Services and Training	Expatriate consultant Services in the fields of community forestry.	Expatriate consultancy on community forestry for 75 man months, Agroforestry 6 man months, Information and recording 2 man months, Seed storage 4 man months and mid term review 3 man months.	To help project implementations in areas where expertise and experience are inadequate and assist in plan implementation and progress control in the given aspects.
	In Country Training	Training for community foresters on operating procedures of community forestry and to familiarize them with villages, their institutions and problems, Also to train 13,500 village participants and 1,800 village extention workers.	To disseminate necessary skills and to familiarize them with work involved in aspects of community forestry.

Component	Sub Component	General	Rationale & Implementation
	Overseas Training	118 man months of followships of 1-12 months	Aimed at building a nucleus of 12 professional foresters, who will acquire expertise in forest economics, forest management and valuation, conservation planning urban forestry and landscape planning, forest extension communications and public relations and plantation management.
6. Baseline survey and Mid-Term Review		An initial Baseline survey on villages and villagers in the first year and Mid-term Review in the third year of project implementation.	Considering the innovative nature of the project, these studies are aimed at assessing the progress, evaluating the impact, to re-design the project if necessary according to the changing conditions.