APN CAPaBLE

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Scientific Capacity Building & Enhancement for Sustainable Development in Developing Countries

Socio-Economic Impacts and Lessons Learning from the Management of

Social Forestry Programme of Bangladesh

Final Report

of APN CAPaBLE Project:

2005-CB06-NMY-Ali

The collaborator and collaborating Institutions worked on the project are:
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Final Report Submitted to APN

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Part One: Overview of project work and outcomes

1. Introduction and background:

Bangladesh is located in between 20°34' and 26°38' north latitude and 88°01'and 92°41' east longitude. The land is mostly composed of flood plains (80%) except some hilly areas (12%). The country enjoys a sub-tropical monsoon climate and one of the most densely populated (901 persons per sq km) countries of the world with scarce land per capita. The population stood at 130.5 million in 2001(Statistical Year Book of Bangladesh, 2006). Forest area of the country as well as forest resources have been depleting continually due to unplanned human activities. The contribution of forestry towards Gross Domestic Product (GDP) at current price has been estimated at 3.28%(???? Ref).

Therefore, marginal land such as road sides and slopes of roads, embankments and railways, encroached and fellow lands have also been brought under participatory forestry for raising plantations to meet the increasing demand of the country as well as for ecological balance throughout the country. Participatory forestry started in Bangladesh in 1981 which was implemented in the north and north western part of Bangladesh covering 23 districts. Subsequently two more participatory forestry projects were implemented. After that government implemented a follow up project known as Extended social forestry project for two years. Different approaches were followed in the participatory forestry of social forestry program for the last three decades. The present proposal is aimed to analyze the best suited approaches for the country for ensuring sustainable development for placing before the policy makers for policy decision.

2. Participating countries: Bangladesh

3. Objectives:

1. To examine and document the interventions adopted by the GO and NGO in the Social Forestry Program
2. To assess the socio-economic changes in the livelihood and the income of the beneficiaries
3. To document the experiences gathered and lessons learned by the concerned GO, NGO and beneficiaries
4. To find out the constraints/ impediments and potentials of the program
5. To make recommendations for overcoming the impediments and to develop strategy for future improvement of the program.

4. Funding received for 2006/2007: US$ 16,000.00

6. Outcomes and products against original proposal objectives:

One paper submitted and hope to publish very soon and preparing another paper. Final Report Attached herewith.

7. Self evaluation of work performed to date:

a) A detailed questionnaire have prepared, field tested and revised accordingly for data collection through interview and completed.
b) A number of meetings and discussions (with Agroforestry and Environment Department of BSMRAU, Forest Divisions:- Mymensingh, Tangail, Comilla, Chittagong, Dhaka, Rangpur, Dinajpur, Bogura etc., and also with NGOs RDRS and Proshika) took place during and before starting the project work in the field level.
c) Review of literatures is a continuous process and nearly completed.

d) A number of field visits and Group Discussions along with the related stakeholders took place at the grass root / field level. Survey and also necessary information/data collection is completed. Field visits going for back up support to the information collected according to the need arises.
e) Discussions with GO and NGOs and secondary data collection through retrospective survey also completed.
f) Field work completed. It was some what delayed because of the current natural calamities affecting the whole country as well as current socio-political-economic situation of the country i.e., the price of everything tremendously increases from 60 to 100 percent of everything and it would be difficult to keep the cost of the project work with in the budget.
g) Formatting the software table, input data in the formatted table, data compilation, tabulation completed and analysis completed and the final report is attached.

ACKNOWLEDGMENTS

First, special thanks are due to Mr. Sombo T. Yamamura, Director, Mr. Yukihiro Imanari, Executive Manager, Dr. Linda Anne Stevenson, Scientific Officer, Mr Herbert L. Benzon, Programme Fellow for Scientific Affairs and also the staff members of Asia-Pacific Network for Global Change Research (APN) for their continuous support in the implementation of the project.

I would like to express my deep appreciation and gratitude to the major collaborator of this capacity building study project Dr Md Giashuddin Miah, Professor and Head, Department of Agroforestry and Environment, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Dr Syed Samsuzzaman, Director, Livelihood, RDRS and Ms Nasima Akhter for their full support, ideas and supervision, valuable guidance, suggestion and encouragement throughout the period of research work as well as the preparation of the interim and final report.
I am also grateful to the Ministry of Establishment and Ministry of Environment and Forests for their cooperation in this regard.
I would also like to thank Mr Zahir, Mr Nazir, Mr Alamgir, Mr Shafiq Master's student of the Agroforestry Department, Bangabandhu Sheikh Mujibur Rahman Agricultural University and Ms Rokeya, Statistician, Mr Rashed, Mr Mohsin, SPSS software specialist and also some others for all their assistance and attentions throughout the study period .
Thanks due to the officials of the Forest Department, Bangladesh, the staff members of RDRS, Nilfamari unit and the staff members of Proshika, Shakhipur and Mirjapur Area Development Centres (ADCs) for their cooperation and support during fieldwork.
Finally, I am indebted to my family for their support and cooperation all along.

Technical Report

Preface

Bangladesh was not very much aware of the benefits of forest resources. Therefore no serious attempt was made in the past for expanding the area under forest. It may be noted that the country's major areas (thirty five districts out of sixty four districts) particularly north-western part are devoid of natural forests. The ever-increasing population and poverty have already caused significant depletion of limited natural forest, which is expected to be more severe in near future. The depletion of tree resources and high population growth have been identified as potential threats for the country. The government of Bangladesh has recognized and given top priority on these vital issues to combat the future challenges. Promoting and institutionalizing the Social Forestry Programme (SFP) is a good example of among many attempts. The principal approach of this programme is wider participation of local poor communities in the implementation (planning, designing, management etc.), protection, harvesting and regeneration of forest resources. The forest coverage varies from country to country depending on land availability of the respective country. It is arbitrarily said that for better environment 25 % land of Bangladesh should be brought under forest vegetation.

In view of this social forestry programme of Bangladesh was started in 1981, and in the mean time, a large number projects has been undertaken, some of those have recently been completed and some are in the process of implementation both in Government and Non-Government sector. It has been claimed that SFP became a viable techno-socio-economic process towards forest resource development and upliftment of rural poor.

The present study was accomplished with the financial assistance of the Asia-Pacific Networks for Global Change Research (APN) with the view to examining the aforementioned statement. Studies on SFP are very limited in Bangladesh. This report encompasses the gradual development of SFP in Bangladesh in respect of methodological and technological aspects, capacity building of the stakeholders, benefits received and socio-economic development of the beneficiaries, extent of governance and assistance provided by the Government Organization (GO) and NGOs to its beneficiaries and the constraints. The findings of the study are expected to hope to enrich the knowledge and capacity of the policy maker, academician and practitioners on SFP nationally as well as across the region.

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INTRODUCTION

Rationale of the Study

Bangladesh is one of the most densely populated countries in the world. The country is burdened with huge population of 132.9 millions within the area of 1,47,570 square kilometre having 901 persons per square kilometre (Anonymous, 2005). In other words, the total area of the country excluding areas under inland water bodies is 13.017 million ha (equivalent to 1,33,967 square kilometre) having population of 140.494 million, this corresponds to 1079.3 persons per square kilometre which is second highest in the world (GFRA,2006). About 77 percent of the total population live in the rural areas where in per capita land availability is 0.12 ha. Among the rural population, about 60 percent are functionally landless owning nothing or having a homestead area only and depends on daily wages. Under the challenging situation, the country needs to produce more food and other basic needs from the decreasing land to meet the demand of the hungry millions and at the same time conserve the degrading natural resource base upon which these needs depend (Anonymous, 2004).

Among the various natural resources, forest is an important sector that has been playing a significant role in meeting the diversified needs of the people, their socioeconomic development and conservation of environment. The total forest land area in Bangladesh is estimated to be 2.53 million ha corresponding to 17.50% of the surface area of the country. This forest area is the lowest per capita forest resources in the world. This limited forest coverage includes 1.53 million ha of Forest Department (FD), 0.73 million ha of Unclassified State Forest (USF) of the district administration and 0.30 million ha village forest land (mostly homestead). This limited forest resources of Bangladesh is unevenly distributed among 35 districts in the central and northern regions where the population is the highest, have no natural forest. However, much of the Government/state forest land (2.26 million ha) has poor forest coverage due to massive human interferences. Recent information ventilated that much of the state forests remain unproductive and only 0.84 million ha (about 5.8% of the state forest land) has acceptable forest vegetation (Anonymous, 2004).

The depletion of forest resources is a common phenomenon in Bangladesh and severely threatening our food and energy security as well as quality of life. The people of Bangladesh have already been adversely affected both economically and environmentally due to degradation of forest resources. Though forest products are

massively harvested, there remains a wide gap between supply and demand. In another way this gap is widening steadily as the time passing away due to increasing population and decreasing forest resources. Due to progressively reduced supply and increasing cost of fuel wood, the farmers are compelled to burn crop residues and animal dung to meet household fuel energy, which otherwise could have been recycled to replenish or augment soil organic matter. This has a direct bearing on progressive deterioration of soil health and environment. Hence this alarming situation indicates the urgency of making all out efforts to increase or conserve the forest resource base for maintaining food and energy security and conserving the environment. Under the scenario, social forestry has become a viable option to combat the whole range of issues for the present and coming centuries.

The role of social forestry in rural development and balancing environment has drawn the attention of the Government of Bangladesh. With the recognition of contributions of social forestry, Government have given top most national priority for planting trees in roadside, farmland, homestead, or in any other vacant lands/places. Different approaches particularly participatory forestry and social forestry programmes have been followed for the last three decades. During that period, Government implemented several programmes in the name of "Community Forestry Project (1982-87), Thana Afforestation and Nursery Development Project (1989-92), Extended Social Forestry Project (1995-96)" and at present implementing "Forestry Sector Project (2000-2006)" for increasing tree resources with the active participation of rural poor. All these efforts have been made through the Department of Forests (FD). FD is under the Ministry of Environment and Forests is entrusted with the task of looking after the total management of the existing forests and plantation of new areas. Aside from these, most of the Non-Government Organizations (NGOs) have also taken up huge tree plantation programme under the banner of Social Forestry Programme. A large number of NGOs have been working on this aspect along with other socio-economic and development activities. Among the NGOs, Proshika Manobik Unnayan Kendra (Proshika) and Rangpur Dinajpur Rural Development Service (RDRS) are the two leading and pioneer organizations who have become involved with tree plantation programme for a long time. Proshika has been working throughout the country but uptil now its work is concentrated in the central part of the country, while the working areas of RDRS lie in the north-western part of the country. However, although a large number of social forestry programme has been implemented, but most of those programmes have been implemented in roadsides which are commonly called Roadside Social Forestry.

Achievement of those activities has already become visible. Both GOB and NGO are proudly claiming their success of contribution in the socio-economic activities of the participants particularly the poor women, landless as well as marginal farmers. National mass media, some social bodies, local government, non-Government and private organizations, environmentalists and other groups who are also supporting the claims of the implementers about the large scale positive impacts of the SFP in poverty alleviation as well as improvement of environment. However, along with the positive views, a number of impediments from implementation to harvesting and share distribution stages have been reported. The aforementioned social forestry programme and its benefits and impacts among the participants and society as a whole, should be critically evaluated for its better management and maximum benefit. With the above views in mind, a systematic and in-depth research programme was undertaken with the following objectives:

Objectives of the Study

1. To examine and document the interventions adopted by GO and NGO in the Social Forestry Programme
2. To assess the socio-economic changes in the livelihood and the income of the beneficiaries
3. To document the experiences gathered and lessons learned by the concerned GO, NGO and beneficiaries
4. To find out the constraints/ impediments and potentials of the programme
5. To make recommendations for overcoming the impediments and to develop strategy for future improvement of the programme.

Development of Social Forestry in Bangladesh

The Concept of Social Forestry

Social Forestry is a techno-socio-economic process of land use towards socio-economic amelioration of rural poor and sustainable development of degraded and marginal lands with their environmental rehabilitation. People's participation in all stages of Social Forestry project implementation (planning, designing, monitoring and evaluation) is imperative as it can only ensure the success of this kind of project. Worldwide development practitioners recognized Social Forestry as an important component of rural development approaches. It is very much realized that many developing countries are facing land scarcity with high population pressure, to undertake Social Forestry as a strategy for socio-economic upliftment and ecology improvement (Ahmed, 1991b). In Bangladesh, the term is used rather flexibly as an umbrella for public, private and community initiatives which aim at ensuring ''active participation by the rural people in planning, implementation and benefit sharing of tree growing schemes'' (Task Force, 1987).

SF is viewed within the broader framework of rural development in Bangladesh. It primarily includes afforestation programmes in marginal and degraded forest lands and community forest lands; village woodlots; farm forestry; homestead forestry and home gardens; strip plantations alongside railways; highways and embankments; 'community plantation' on public or communal lands with joint management and benefit-sharing arrangement between the government and local communities and various other manifestations of agro-forestry (Alim, 1988 and Khan, 1998).

Characteristics of Social Forestry

Social Forestry has following three basic characteristics (Mango, 1991):

1. It involves the people;
2. It is designed to meet the basic needs of the people for fuel, food, fodder and small timber and
3. It encourages the development of self-reliance (''shonirbhor'' in Bengali) among the people.

In order to meet these criteria, Social Forestry Programme must be developed through consultation with the people because it is an integral part of the country's rural development scheme.

Objectives of Social Forestry

The principal emphasis of Social Forestry is on wider participation of local communities in the protection and regeneration of forest resources. Social Forestry primarily refers to those public initiatives, which enable local people to participate in the planning, implementation, and management of local forests for their own benefits. The main objective of Social Forestry is to uplift the socio-economic well being of the rural people. Its ultimate objective, however, is not ''physical but human''. In other words, the physical targets, which are set under a social forestry programme, are for achieving the objectives of enhancing the lives of human beings (Magno. 1991). However, some common objectives of Social Forestry Programmes stated by several authors (Task force, 1987; Alim, 1988; Arnold et al., 1988 and Oakley, 1990) are summarized below.

i) To empower local communities by involving them in the planning, implementation and benefit-sharing of forestry activities to cater local needs (especially the subsistence needs of fuel wood, fodder, timber and pools).
ii) To maximize land productivity through planting of fuel wood and timber species in any land specially marginal land like those alongside the feeder roads, highways, railway lines, canal and embankments.
iii) To enhance ecological stability through the "greening" of open ideal and otherwise unproductive land areas such as those along roads and highways, railway lines, canal embankments, bank of ponds, premises of public buildings and other fallow areas.
iv) To promote self–reliance and social equity among local people.
v) To augment their income, productivity, socio-economic status and living standard.
vi) To check environmental degradation, ensure conservation of soil and water resources.
vii) To foster the development of local cooperative institutions.
viii) To optimize the land use of forest land by ensuring multiple uses i.e., agro forestry practice.
ix) To restore and develop the degraded and denuded forests especially Plain and Sal forests.

Development of Social Forestry

Social Forestry has recently become a household term among the rural development circles in the developing countries including Bangladesh. International experiences from the developing countries show that Social Forestry is not only an alternative resource development approach but also a viable rural development tool (Rebugio, 1985).

Social Forestry in Bangladesh came in to the current status through a series of efforts and experimentations. NGOs are the pioneer in initiating Social Forestry programmes in Bangladesh. Bangladesh Rural Advancement Committee (BRAC) and RDRS started SF programmes as a component of their development strategies in 1977. The Betagi-Pamora Community Forestry Project was the first successful SF programme ever implemented in Bangladesh (Ahmed and Azad, 1985). During the last three decades, Forest Department (FD) of Bangladesh implemented several projects such as Community Forestry Project, Upazilla Afforestation and Nursery Development Project, Forest Resource Management Project, Coastal Greenbelt Project, Forestry Sector Project etc. of which Social Forestry was a major component. The projects were also successful in terms of socio-economic development of the rural people (Khan et al., 2004). Along with the government efforts, side by side, many of the NGOs such as Bangladesh Rural Advancement Committee (BRAC), Proshika Manabik Unnayan Kendra, Caritas, Mennonite Central Committee (MCC), Rangpur Dinajpur Rural Service (RDRS), Cooperative American Relief Everywhere (CARE), Village and Farm Forestry Project (VFFP), Save the Children (USA), World Vision, Kusthia Social Service Committee (KSSC) etc. have recognized Social Forestry as one the major components of their development strategies. It has evolved as a new approach of forestry management/operation with active involvement of the people for the development of forest and enriching socio-economic conditions of the community. Many of the social forestry projects implemented by NGOs have shown immense promise in ameliorating the socio-economic conditions of rural poor as well as environmental stability (Ahmed, 1991a). The NGOs are acting as facilitator and motivator: putting the poor in touch with resources (Shah and Weir, 1987). Some of the successful Social Forestry Projects of the studied organizations are briefly mentioned below:

Betagi-Pamora Community Forestry Project

The first community forestry programme in the country was started at Betagi under Rangunia Upazila of Greater Chittagong District in a khash denuded hilly forest in 1980. The main architects of the programme were

Prof. Abdul Alim, the then Conservator of Forests, Chittagong. Prof. Muhammad Yunus (Nobel Laureate) the founder of the Grameen Bank and Mahbubul Alam Chasi, the founder of Shawnirvar (self-reliance) movement. At first 101 families were selected and the land was allocated to all the participants, but ultimately only 83 participants remained in the programme. The participants were agriculture labourers owning less than 32 decimal of land including their homesteads. They agreed to live on the land and develop it with their own labour in accordance with the land development plan, and were not allowed to sell their labour outside but to devote full time on their own plots. They were not also allowed to receive any grants from outside. A credit contract was agreed with the Krishi Bank with the condition that Grameen Bank would supervise the utilization and realization of credit. After one year, Krishi Bank evaluated the project and rated it successful. Based on the experience, the project was extended to Pamora, an adjacent area which was a part of protected forest but devoid of any tree and was started with 243 families.

After seven years of continuous monitoring of the activities, it was found that the participants utilized the land at its maximum potential through growing short, medium and long term vegetables, horticulture and timber trees. It also revealed that due to participatory approach the land was managed almost as home gardens and the trees were protected from illegal felling due to their ownership (Ahmed and Azad, 1987).

Community Forestry Project (CFP) (1981-1988)

This is the second ADB funded participatory forestry development initiative in northern part of Bangladesh by the Department of Forest. The project represents one of the earliest attempts towards introducing a participatory approach to forest resource generation and management in the country. Its primary objectives included benefiting the rural poor by producing fuel wood for domestic uses, fruits, timber for construction and fodder, catalyzing community awareness of the values of tree planting and developing a permanent institutional capaci ty within the FD to undertake social forestry programme throughout the country. The project area encompassed seven north-western districts of Rangpur, Dinajpur, Pabna, Rajshahi, Bogra, Kustia and Jessore. The physical targets, such as establishment of strip plantations, fuel wood plantations, agro-forestry, training, institutional support, were mostly achieved.

Limited headway was made in achieving the social goals (Anonymous, 2000).

Thana Afforestation and Nursery Development Project (TANDP) (1989-1996)

This project was basically a sequel to the Community Forestry Project which aimed at increasing the production of biomass fuel and enhancing the institutional capacity of FD to implement a self sustaining nation-wide Social Forestry Programme. The project covered 61 out of 64 districts, i.e. 85% of the total land area of Bangladesh. The project was judged to be partially successful by various assessment reports. The level and content of farmer's participation in the project activities varied greatly. The expected participant's contribution was mainly to protect the plantations. Generally, farmers actively participated in protecting trees in their agro-forestry plots. In the woodlots, the intensity of participant's protection involvement varied with the degree of fuel scarcity and the value they attached to the provision of tree by products (e.g. leaves and small branches or twigs). In some instances, the projects preference and perception of benefits and use of products were in conformity with farmer's views and field realities.

Forest Resources Management Project (FRMP) (1992-2001)

Among other activities, this project contained a component of Participatory Forestry Development (PFD) which represented the major SF activities within the project. The PFD component planned to establish 850 ha of plantation through participatory arrangement with the help of local people within the Chittagong and Cox's Bazar Forest Divisions. The physical target of establishing 850 ha of agro-forestry plantations in Chittagong and Cox's Bazar was achieved involving especially the encroached forestlands. Some 610 farmers were included in the project which extended over the districts of Chittagong and Cox's Bazar (Under the administrative purview of Chittagong South, Chittagong North, Cox's Bazar south and Cox's Bazar North Forest Divisions) Out of these 610 farmers, 200 participants were allotted 2 ha of land each and 410 participants have been allotted 1ha of land each. Prior to the project most of these lands, although designated as government forestlands, were encroached and denuded. Although the participants were allotted

plots, a good number of the participants did not receive formal benefit sharing agreement. The formation of participants' groups seemed more of an attempt to fulfil a procedural requirement of the project and then move towards developing a genuine collective activity.

Coastal Greenbelt Project (CGP) (1995-2002)

The development goal of this project was to protect and improve the coastal environment by increasing tree cover and to reduce poverty by creating supplementary income opportunities for the poor. The progress of implementation and achieving the development objectives was rated satisfactory and partially satisfactory, respectively. The progress toward physical targets was generally satisfactory. Some 8934 km of strip plantations and 665 ha of foreshore plantations were established and about 143936 participants and more than 100 NGOs were engaged. Through this programme, 12.56 million seedlings were distributed free of cost for planting in homesteads and institutions. Participants received direct benefits from intercropping vegetables and extracting fuel wood, fodder and fruits. Some 10,000 participants received payment for planting activities in the year 2000. The project helped generating employment for more than 3.5 million man-days. Initially few women were involved in the project activities, however, female participations had increased in the last two years.

Forestry Sector Project (FSP) (1998-2006)

The FSP is currently the largest public sector SF intervention in the country. Its stated aims included: conservation of forests in selected protected areas, increase production of wood, institutionalization of forest resource management through local community participation and institutional capacity building and policy reform. The strip and institutional plantations showed good progress. ADB Mission found that the overall achievements were fairly good. Considerable progress was achieved in initiating reform of institutions and policies. The government had amended the Forest Act in the year 2000 and undertaken multi-stakeholder consultations to finalize the draft rules and regulation to institutionalize Social Forestry. However, some indigenous and ethnic minority associations and environmental advocacy groups have raised concern about the efficacy of the regulations and the mode and

inclusiveness of the consultative meetings (Roy and Halim, 2000) A considerable number (460) of NGOs were involved as partners of Forest Department(FD) in implementing the project activities.

Beyond Government Initiative

Alongwith Government controlled programmes, most of the non-government organizations (NGOs) have taken up the SFP as their core progrmme and as a tool for poverty alleviation of rural poor and for improving tree resources in the country. Besides the government and non-government efforts in the SF, some initiatives were taken by individuals, informal groups and specialized voluntary institutions. These efforts were largely voluntary, localized and relatively less formal in nature. For example, Bangladesh Center for Advanced studies, Bangladesh Unnayan Parishad, Center for Policy Dialogue and Center for Sustainable Development conducted seminars on environment, public dialogues, published academic and popular literature on various aspects of forestry including Social Forestry. Besides, there are a number of small research and consulting institutions, which occasionally cover forestry and SF studies (Khan et al., 2004).

Methodology

The study was conducted during rotational period of completed woodlot and strip plantation areas under Government Organization (GO) and Non-Governmental Organization (NGO). The Government Organization was the Forest Department (FD) and Non-Government Organizations were Proshika Manobik Unnayan Kendra (Proshika) and Ranpur Dinajpur Rural Service (RDRS). The criteria used for this study was field survey, group discussion with the beneficiaries, and meetings with the concerned personnel of the relevant organizations. The working approach, social forestry programme, study site and sampling procedures, data collection and data analysis of the studied Social Forestry Programmes of the concerned organizations are briefly described below:

Forest Department, Bangladesh

Forest Department (FD) in Bangladesh is the only Government Organization under the Ministry of Environment and Forests which is solely responsible to administer and manage forestry sector including the forestry activities of the NGO, private and/or other organizations in Bangladesh. FD has nationwide network for conservation, extension, protection and preservation of the forests. Moreover, this department has its own technical and non technical manpower, logistics as well as necessary financing arrangements from the government to perform those activities in the demarcated forest areas. Sometimes they do hire manpower and/or make partnership with the local people/community, GO/NGOs, private organizations for specific purposes.

Working Approach of FD: Forest Department has 47 Forest divisions throughout the country, of which 22 divisions are engaged in overall forest management at field level including Social Forestry Programme (SFP). In addition, Government has created 12 Social Forest Divisions to achieve the objectives of the SFP. The enlisted NGOs work with the FD to motivate the rural people to participate in the SFP for their development and the society at large. Forest Department usually selects the participants in consultation with the local government bodies and the related NGO, if any. Usually they select landless, marginal farmers, land owners having less than 50 decimal land, distressed women, backward and less advanced or less privileged group of the people

of the locality. They give preference to those who are living within one kilometre radius of the project area. FD has their own denuded, encroached forest land, and those lands are distributed among the beneficiaries/participants. FD makes formal agreement among the different stakeholders mentioning their due shares and responsibilities. FD provides all kinds of support like saplings, rope, stake, cow dung, fertilizer etc., free of cost to the participants for plantation. They have their own nursery, and therefore, they can supply quality saplings for SFP. They also provide technical support to groups and also to individual participants. FD supervises and supports the total program round the year from implementation to harvesting as well as disposal of the final product.

Social Forestry Programme (SFP) of FD: SFP has been considered as a rural development strategy of FD in addition to their regular forest management programmes throughout Bangladesh. The main objectives are to increase tree coverage, improve environment and upgrade socio-economic status of the participant farmers. The Betagi-Pamora Community Forestry Project was the first Social Forestry Programme ever implemented in Bangladesh (Ahmed and Azad, 1987). Having the experiences of this program, a well structured programme in the name of "Participatory Forestry Programme" was started in Bangladesh in 1981 under the control of FD and it had covered 23 districts in the north and north-western part of Bangladesh. Subsequently two more participatory forestry projects were implemented. After that, government implemented a follow up project known as "Extended Social Forestry Project". Therefore, participatory forestry of social forestry programme was practiced for the last three decades (Social Forestry in Bangladesh: Bulletin No. 5, June-2006) and then this concept was adopted in the New National Forest Policy in 1994.

With this process, 63898 ha of land have been brought under forest plantations in the name of woodlot, agroforestry, buffer zone plantation, block wood plantation, char land plantation etc., up to the financial year 2005-2006 where 85000 beneficiaries are directly involved. The first harvesting of planted forests was started in 2001 and due shares were distributed among the different stakeholders. In the mean time, out of 29095 ha of woodlot and 23544 km of strip plantations, about 16720 ha woodlot and 9495 km strip plantation were harvested, and benefits were received and utilized by the concerned stakeholders. .

Plate: Photographs of discussion meetings showing that most of the respondents represent the middle aged group.

Plate: Household family members were interviewed by Project Leader

Plate: Interviewing the beneficiaries by other interviewers at RDRS Federation office

Study Area and Sampling Procedure: Although FD has good SFP programmes in 12 Forestry Divisions, but major SFP programmes were concentrated in Dhaka, Tangail and Rangpur Social Forestry Divisions. As these three Divisions have major SFP and a large number of plantations were felled down after completion of their rotational period, and therefore, these three Divisions were purposively selected as sampling Divisions. The beneficiaries of these Divisions have already received the expected shares from the SFP and invested the benefits for different purposes. Similarly, keeping the objectives of the study in mind, Gazipur Sadar Upazila and Sreepur Upazila of Dhaka Division; Shakhipur Upazila of Tangail Division, Mithapukur and Badargonj Upazilas of Rangpur Social Forestry Divisions were selected for data collection through survey, monitoring and group discussion. In Gazipur Sadar and Sreepur Upazilas under Dhaka Division, there were 21 and 15 km strip plantations, respectively, of which 30 (15 + 15) km plantations were harvested and beneficiaries received their due shares. Similarly, in Shakhipur Upazila under Tangail Division, there were 218 hectares of woodlot plantations of which 114 hectares were harvested. Likewise, in Mithapukur and Badargonj Upazilas under Rangpur Division, there were 130 hectares of woodlot and 27 km of strip plantations of which 46 hectares of woodlot and 21 km of strip plantations were harvested, respectively. Therefore, in all those strip and woodlot plantations, 202 beneficiaries in Dhaka Division, 114 beneficiaries in Tangail Division and 257 beneficiaries in Rangpur Division were directly involved; among them, 65 (out of 202), 40 (out of 114) and 75 (out of 257) beneficiaries, respectively, were selected as sample beneficiaries. Among 573 beneficiaries, altogether 180 beneficiaries were selected as sample beneficiaries for data collection.

Proshika

Proshika is one of the largest leading NGO in Bangladesh because of its coverage and diversified group co-operative approaches for its development activities. Proshika, started its operation in 1976 in Bangladesh by taking massive field programmes and experimenting various strategies of rural development and yet remained consistent and dynamic over the years for its existence as the largest Non-Government Organization (NGO) with broad spectrum of activities including Social Forestry Program (SFP). Proshika is operating in 23,522 villages of 271 upazilas in 57 districts. It has also programmes in 1836 unions (rural units) and 328 wards (urban units) (Proshika, 2005).

Working Approach of Proshika: Proshika has considered its Social Forestry Programme as a rural development strategy like other programmes. Proshika motivates the rural people to form groups to involve them for their development as well as the society. Proshika usually grouped the marginal farmers, day laborers, poor and distressed women, and 15-25 members formed a group. Male and female members are grouped separately and got registration from Proshika. These groups availed of the opportunity to participate in the strip or roadside and block or woodlot tree plantation programmes. Proshika provides financial and technical support to groups and also training to the President, Secretary and Cashier of the individual group or *samiti* on different development issues for individual as well as societies development. Usually President, Secretary and Cashier act as trainers to sensitize the group members for specific purposes.

Proshika usually arranges lease of land for the member groups from the land owners/land owning agencies for a period of 15-20 years under a benefit sharing arrangement. A deed is normally signed among the members, land-owning agency and Proshika before plantation. Apart from block plantation on private land, Proshika group members were involved in block plantation on forestland in the form of agro-forestry and woodlots since 1989-1990. Women were specially engaged as caretakers/beneficiaries. If women are not available or willing to be the caretaker, in that case, males are engaged as caretakers. All the members of a group or groups are engaged with SFP as the beneficiary.

Social Forestry Pogramme of Proshika: Proshika launched its SFP in 1985 at Sirajgonj district involving members of its organized groups. It has mediated to arrange lease of 22.5 km of Upazial Parishad roads for the participants for a period of 5 year and assisted them to plant fast-growing Babla tree (*Acacia nilotica*) inter-cropped with Arhar (Pigeon pea) (Fattah, 2003). Proshika provided training to participants on nursery management and plantation skills with the technical assistance from FD, and distributed seeds and other inputs after completion of the training. Initially, the inputs were given free of cost, but subsequently those were distributed on interest bearing loans. The outcomes of the programme were considered satisfactory and the participants obtained significant return from it. Proshika also encouraged the participants to plant trees in homesteads and set up their own nurseries at the village level. It provided them with necessary technical training. The SFP of Proshika includes

homestead plantation; institutional plantation; strip and block plantation; protection of Sal forest and nursery development.

As of June 2005, nearly 1.3 million households, through the involvement of 161174 groups, planted nearly 13.78 million seedlings. Proshika also planted trees in educational and government institutions that showed willingness for plantation and cover a portion of the cost (20%). Proshika supports caretakers, drawn mainly from the groups, to nurture and protect the trees for two years. Proshika has already planted 472378 trees in 552 institutions. Strip plantation is the largest component of SFP and covered 14926 km with the different species; and block plantation covered 14290 ha (Proshika, 2006).

Study Area and Sampling Procedure: It has been mentioned earlier that Proshika has SFP nationwide, but the largest activities are done in Tangail district. This Tangail district was selected purposively as sampling area because of the large scale activities; as well as major areas of strip and woodlot plantations were harvested and impacts of those benefits were visible in socio-economic development of the beneficiaries. Not only that, the beneficiaries have already started plantation of second rotation in the same areas.

Tangail district is situated at a distance of 125 km from Dhaka. It has a total area of 3375 square kilometer and a population of 32,91,000 (BBS, 2006). This district consists of 11 upazilas and Proshika has SFP in 8 of them. The SFP of Proshika in each upazila is called Area Development Centre. Therefore, Tangail district has 8 Area Development Centres (ADCs) of which two of them i.e. Mirjapur and Shakhipur were randomly selected. In Mirjapur ADC, there were 14 hectares of woodlot plantation of which 5 hectares were harvested. In these 5 hectares of plantation, 198 beneficiaries were involved, and among them 60 beneficiaries were selected as sample beneficiaries. On the other hand, in Mirjapur ADC, there were 54 km of strip plantation of which 23 km were harvested. In these 23 km of plantation, 191 beneficiaries were involved, and among them 60 beneficiaries were selected as sample beneficiaries. Therefore, from 389 beneficiaries of two ADCs, 120 beneficiaries were randomly selected for detail investigation.

RDRS Bangladesh

RDRS is a well known and leading NGO in the northern part of Bangladesh because of its unique approach for development activities. RDRS started its operation in 1972 in the North-western part of Bangladesh by taking massive field programmes and experimenting various strategies of rural development. It remained consistent and dynamic over the years of its existence as the largest non-government organization (NGO) working specially in greater Rangpur and Dinajpur Districts. RDRS has a wide spectrum of activities including Social Forestry Programme (SFP).

Working Approach of RDRS: RDRS has been working with the target disadvantaged group through Federation Approach. Federation acts as the apex body in each Union for the development programmes. Each Federation consists of a number of grass root groups. On an average, 15-20 members formed a group following the guideline of RDRS. RDRS monitors the development activities of the Federation and provide necessary technical and other supports. The development of Federation as self-sustaining organization is now a central strategy of RDRS development intervention (Rahman, 1996). Every Federation has its own infrastructure (office building, hall room, storehouse etc) and an executive body headed by a chairperson.

Social Forestry Pogramme of RDRS: Social Forestry Programme (SFP) of RDRS was initiated in 1977. Roadside plantation programme, apart from homestead plantation programme, was one of the major components of RDRS Social Forestry programme initiated on experimental basis on 36 miles equivalent to 58 km of roads, for growing trees which were planted and protected by women caretakers only. Based on the success, the programme was extended throughout the region. At present, RDRS covers 6108 km of strip and 277 ha of block plantation, and there are 13,586 households under 260 federations, who were involved with the SFP (RDRS, 2007).

Study Area and Sampling Procedure: Nilphamari district is one of the seven major comprehensive project units (CPUs) of RDRS. It is situated at a distance of 65 km to the North-west of Rangpur town and 395 km from Dhaka. It has a total area of 1581 square kilometer and population of 15,71,690 (BBS, 2006). This district has been selected purposively as the study site, because of tree plantations of many areas in this district has already been harvested and the beneficiaries received benefits from

SFP. Nilphamari district consists of six Upazilas, among them, four Upazillas had RDRS Social Forestry Programme. Among four Upazilas, two Upazilas i.e., Domar and Jaldhaka were selected randomly. There were 10 Federations in Domar Upazila and 12 Federations in Jaldhaka Upazila, those have SFP. Among these Federations, four Federations from each Upazila were selected for sampling as major areas of these Federation had completed the first rotation of plantation and received financial benefits as per agreement. These eight Federations of two Upazilas had completed 48 km felling of trees where 96 caretakers were involved. Out of 96 caretakers, sixty three percent of them i.e., 60 caretakers were selected as sample respondents. These 60 caretakers were used as unit of analysis.

Caretaker in Social Forestry Programme of RDRS: An important feature of the Social Forestry Programme of RDRS was that the beneficiaries/respondents who were involved with SFP received direct benefits during the implementation stage and they were named as Caretakers. Each Federation had selected and employed two women members from their Federation for one kilometer of roadside plantation. The selections were made taking in mind the criteria that they were landless/old/ divorced/without any major income source. Each caretaker was responsible to look after 500 trees equivalent to half kilometre of road. Each caretaker received 5 kilograms of wheat or equivalent Taka per day for the period of three years during the implementing periods.

Data collection and analysis: Procedures for data collection, processing and analysis for all studied areas were almost similar. Primary data were collected from the selected beneficiaries through pre-tested questionnaires as well as focal group discussion. Secondary information and relevant production related information such as growth and yield of tree species etc, were collected from the concerned offices of FD, Proshika and RDRS. Then the data were compiled, tabulated and analyzed in line with the objectives of the study. Data were analysed using SPSS programme.

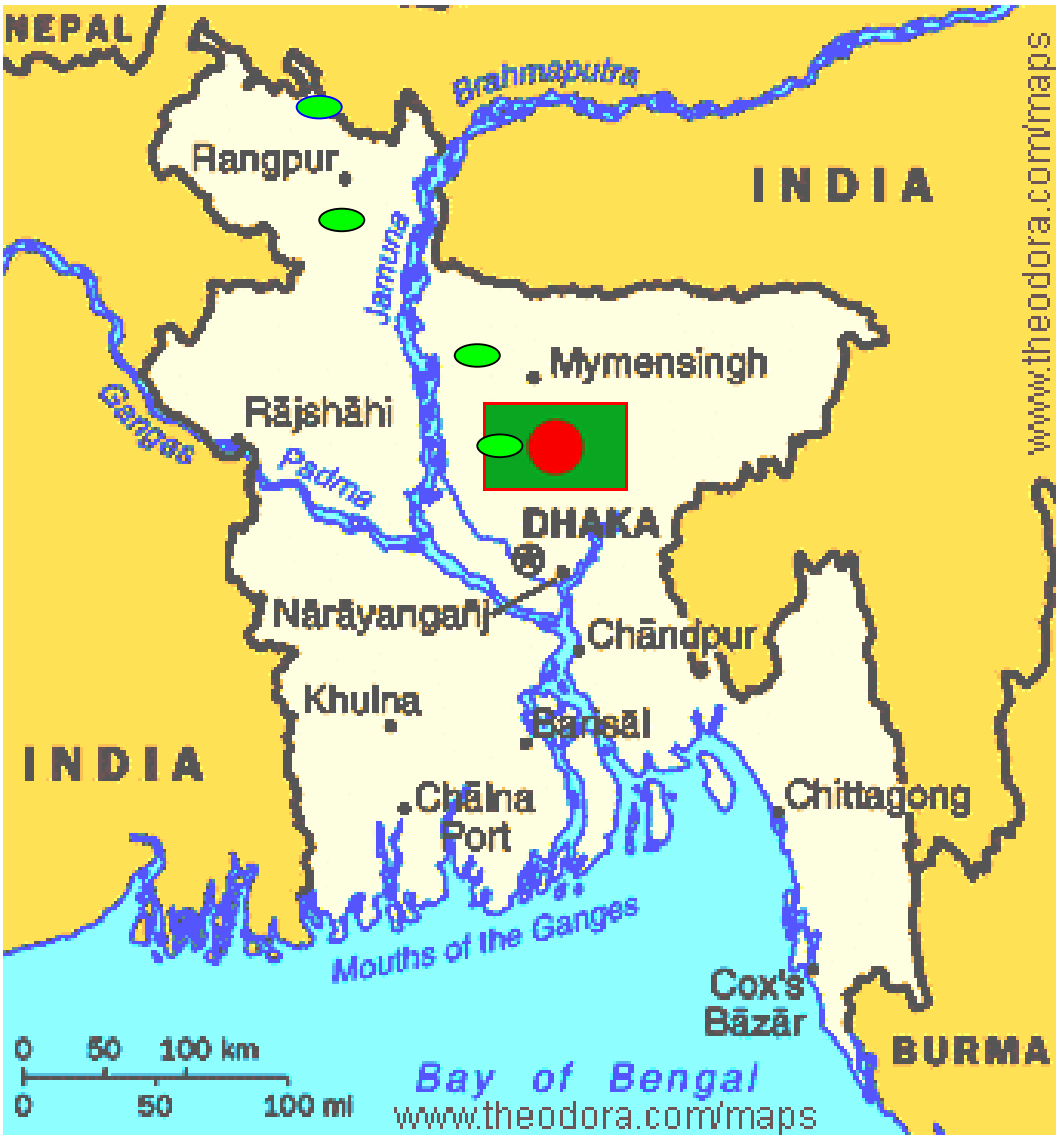

Figure: Bangladesh Map where the Green Points are the study sites

Results and Discussion

Keeping the objectives of the study in view, necessary data were collected from randomly selected 360 beneficiaries of the selected SFP of the GO (FD) and NGOs (Proshika and RDRS) located at Central part and Northern part of Bangladesh. The information were verified and enriched through Focal Group Discussion (FGD) with the concerned beneficiaries, groups and individuals. The findings have been discussed under the following heads:

Socio-economic Characteristics of the Respondents

Age: The age of the respondents varied within and across the organizations. The average age of the respondent beneficiaries of three organizations (FD, Proshika and RDRS) showed that 18 percent of them were in the young age group, 60 percent in the middle age and 22 percent in the old age group. In case the respondents were involved in the SFP of FD, it ranged from 20 to 96 years, having an average of 47 years, where 47 percent were middle age group, 34 percent old and 19 percent young age beneficiaries. In case of Proshika, age of the respondents ranged from 22 to 65 years, having an average of 43 years of which 67 percent were middle aged, 20 percent young and 13 percent old aged. Age of the RDRS respondents varied from 32 to 60 years, having an average of 43 years of which 80 percent were middle aged, 13 percent young and 7 percent in old age category (Table 1).

Education: Average education level of the respondents of three organizations revealed that 47 percent of them were illiterate and rest 53 percent were literate of different categories which ranged from only reading and writing to Bachelor degrees (Table 2). Whereas, the education level of the respondents involved with the SFP of FD, Proshika and RDRS were found to be 37, 42 and 73 percent illiterate, respectively, and the rests were literate of different categories. The findings indicated that education level of the RDRS respondents was very poor where maximum respondents (73 percent) were illiterate, about one-fourth can only read and write, while none of them had any formal schooling (Table 2).

Sex: The sex distribution pattern of the respondents involved in SFP of GO and NGOs showed that 51percent of them were male and 49percent female. Interestingly, cent percent respondents were female in the RDRS command areas, and it was 83 percent in Proshika, whereas it was only 11 percent in FD (Table 3).

Family Size: Family size of the respondents varied within and across the organizations as well. The average family size of the respondent beneficiaries of three organizations (GO and NGOs) showed that 51 percent respondents had medium size

family (5-8 persons per family), 44 percent had small family (<5 persons per family) and 5 percent had large sized family (>8 persons per family). Among three organizations, the average family size of the respondents involved in FD, Proshika and RDRS was 6, 5 and 4, respectively. The distribution pattern of the family size across the three organizations revealed that the highest portion of the respondents family size was in FD and Proshika had medium size (49 and 60, respectively), whereas in RDRS, the highest portion of the respondents (53 percent) had small family size (Table 4).

Farm size: Farm size of respondents' beneficiaries varied from landless to medium sizes. The average farm size of the respondents involved with the SFP of GO and NGOs indicated that 44 percent of them had marginal category of farm, 38 percent had small, 5 percent medium sized and 13 percent landless categories of farms. It was clear that small and marginal sizes of farms dominated the total respondents, whereas, the targets of the SFP are to get involved with the landless and disadvantaged groups of farmers. Among the three organizations (GO and NGOs), RDRS respondents represented relatively the poorer group of farmers, whereas FD and Proshika respondents represented relatively larger groups (marginal to upward) (Table 5).

Occupation: The distribution of occupation of the respondents showed that agriculture and house-keeping (household activities) were the main occupations. Among the three organizations, the main occupation of the FD respondents was agriculture (51 percent) whereas, it was house-keeping for Proshika (78 percent) and RDRS (93 percent) respondents (Table 6). It evident that respondents of the NGOs had relatively limited livelihood options and depended upon homestead activities. However, the minor occupations of the respondents were business, rickshaw/van pulling, service and livestock keeping etc.

Table 1. Distribution of the respondents involved in the SFP of the GO (FD) and NGOs (Proshika and RDRS) according to age

Age Category	FD	Proshika	RDRS	Mean
	Percent	Percent	Percent	
Young (20-35)	19	20	13	18
Middle aged (36-50)	47	67	80	60
Old aged (51 years and above)	34	13	7	22
Total	100	100	100	100

Table 2. Distribution of the respondents involved in the SFP of the GO (FD) and NGOs (Proshika and RDRS) according to educational level

Level of Education	FD	Proshika	RDRS	Mean
	Percent	Percent	Percent	
Illiterate	37	42	73	47.00
Only can read and write	27	40	27	30.00
Up to V	12	8	0	8.00
Education in Madrasha	1	0	0	0.50
VI to X	15	10	0	10.00
SSC	2	0	0	1.00
HSC	4	0	0	2. 50
Bachelors and above	2	0	0	1.00
Total	100	100	100	100.00

Table 3. Distribution of the respondents involved in the SFP of the GO(FD) and NGOs (Proshika and RDRS) according to sex

Sex	FD	Proshika	RDRS	Mean
	Percent	Percent	Percent	
Male	89	17	0	51
Female	11	83	100	49
Total	100	100	100	100

Table 4. Distribution of the respondents involved in the SFP of the GO (FD) and NGOs (Proshika and RDRS) according to family size

Category of Family (person/family)	FD	Proshika	RDRS	Mean
	Percent	Percent	Percent	
Small Family (<5)	42	38	53	44
Medium Family (5-8)	49	60	47	51
Large Family (> 8)	9	2	0	5
Total	100	100	100	100

Table 5. Distribution of the respondents involved in the SFP of the GO (FD) and NGOs (Proshika and RDRS) according to their farm size

Farm category (ha)	FD	Proshika	RDRS	Mean
	Percent	Percent	Percent	
Land less (<0.02 ha or <5 dec)	11	7	23	13
Marginal (0.02-0.19 ha or 5<50 dec)	41	28	67	44
Small (0.20-1.0 ha or 50 <247 dec)	40	62	10	38
Medium (1.01-3.03 ha or 250< 750 dec)	8	3	0	5
Total	100	100	100	100

Table 6. Distribution of the respondents involved in the SFP of the GO (FD) and NGOs (Proshika and RDRS) according to their occupation

Occupation	FD	Proshika	RDRS	Mean
	Percent	Percent	Percent	
Agriculture	51	18	0	30
Business	18	0	0	9
Service	4	0	3	3
Day labor/household work	8	2	4	5
Rickshaw/van pulling	7	0	0	4
Poultry Farming	0	0	0	0
Livestock Farming	2	2	0	1
House wife	1	78	93	43
Others	9	0	0	5
Total	100	100	100	100

Technique adopted to implement the SFP in Bangladesh

Several techniques/steps are used to implement the SFP. Essential steps used by the studied organizations starting from motivation of the respondent to harvesting of the products have been described briefly under the following heads:

Motivation of the respondent and land allocation

Motivation of the respondents' beneficiaries, and land allocation to them for plantations are the most important activities at the initial stage of the SFP. Motivational approach and amount of land allocation to the different groups by the GO (FD) and NGO (Proshika and RDRS) are not similar (Table 7). Each organization has its own motivational and group formation approaches, and similarly land allocation of individuals as well as groups are done in accordance with the policy of each implementers. However, motivation of the respondents to get involvement in SFP was very tough work at the beginning of the SFP but the situation has now changed. Presently, instead of motivation, competitions among the participants to get involvement with SFP are noticed as huge financial benefits have already been received by the beneficiaries. However, participants motivational and land allocation systems used by the studied organizations are briefly mentioned below:

Forest Department: Forest Department through its own approach motivated the beneficiaries/respondents to get involved in roadside/block plantation in SFP along with the cooperation of the linked NGOs working with them in SFP. The study revealed that about 72percent of the respondents were motivated by FD and the rest were motivated by linked NGO, neighbour of the participants, local government's officials and political leaders. Then FD allocated its denuded or encroached land to the participants with a formal agreement. In strip plantation, FD allocated 1 km of road to 4-5 beneficiaries, and in block plantation, it had allocated 1 ha of forest land to 2-3 beneficiaries. FD had remained in close contact with the beneficiaries by providing technical support throughout the implementing period from nursery development to final harvesting and distribution of shares.

Proshika: Proshika motivated the rural poor as beneficiaries/respondents to get involved in roadside/block plantation following its own approach. Proshika grouped the marginal farmers, day laborers, poor and distressed women and then formed groups. Male and female members were grouped separately and gave registration from Proshika accordingly. Proshika firstly trained the President, Secretary and Cashier of the individual group and then they sensitize the other group members for specific purpose. The finding of the study was that Proshika motivated cent percent of beneficiaries to get involved in SFP without the help of others unlike Forest Department. Proshika had arranged to take lease of roads or public land or private land from the owning agencies or persons for plantation for the groups of the respective locality, and after that they signed agreements among the parties. Proshika allocated 1 km of road for strip plantation to a group where 15-20 beneficiaries were involved, while it had allocated 1 ha of land to 50-60 beneficiaries for block/woodlot plantation. Proshika engaged one member as caretaker from the group for protection of seedlings from animals and thief, and provided cash of TK. 924 per person per month. Proshika had remained in close contact with the beneficiaries for providing technical support throughout the implementing period.

RDRS: RDRS motivated the rural poor people as beneficiaries/respondents to form groups of 15-20 members for each group and then a number of groups formed a Federation. RDRS has been maintaining Federation approach in its all development programmes. RDRS arranged to take lease of the roads from the local government for strip plantation through the federations of the respective locality and made agreement among all the parties. Then RDRS arranged motivational training for getting necessary cooperation from the beneficiaries in

all aspects. The study revealed that RDRS like Proshika motivated cent percent of the beneficiaries to get involve in its SFP. RDRS allocated 1 km of road among 25 to 30 members. RDRS engaged caretaker like Proshika for protecting the plantation but cent percent of the caretakers were distressed women. Each caretaker received cash/kind incentive equivalent of Tk. 924 per head per month. RDRS had remained in close contact with the beneficiaries for providing technical support throughout the implementing period.

Training offered by the implementers

Training of the respondents beneficiaries on different aspects of the SFP including technical knowledge, protection, benefits and responsibilities is very essential for smooth implementation of SPF. With these views, training programmes were organized by the GO and NGOs implementers for the beneficiaries but duration of training varied among the implementers. In case of FD (GO), 42 percent of the respondents received very short duration training, 29 percent received short duration training but the rest 29 percent did not received any training. In case of Proshika (NGO), 55 percent received one type of training (short duration) and the rest 45 percent did not receive any training. In case of RDRS (NGO), cent percent of the respondents received very short duration of training. Finding showed that RDRS had organized training programme for all the respondents though duration training was very short, while other two implementers had arranged selective training. However, the overall training arrangement status for the SFP of Bangladesh revealed that 46 percent of the respondents had received very short duration training, 28 percent received short duration training and 26 percent did not take part in any training programme (Table 8). During interviewing the individual respondent or in group meetings with the respondents, it was noted that benefits of the SFP would have much more better if all the respondents could get time to time training on several aspects of the programme.

Table 7. Distribution of the respondents involved in the SFP of GO (FD) and NGOs (Proshika and RDRS) according to influence by different elements

Motivated by	FD	Proshika	RDRS	Mean
	Percent	Percent	Percent	
Forest Department officials	72	0	0	36
NGO Personnel	8	100	100	53
Residence near to the project area	4	0	0	2
Work in SFP site as labor	3	0	0	2
Local Government Representatives	3	0	0	2
Local political leader	10	0	0	5
Total	100	100	100	100

Table 8. Distribution of the respondents involved in the SFP of GO (FD) and NGOs (Proshika and RDRS) according to training received

Duration of training (days)	FD	Proshika	RDRS	Mean
	Percent	Percent	Percent	
Very short duration (<4 days)	42	0	100	46
Short duration (4-7 days)	29	55	0	28
Medium duration (>7 days)	0	0	0	0
No training received	29	45	0	26
Total	100	100	100	100

Species Used: The species used in SFP of both strip/roadside and block/woodlot plantations were selected by the technical experts of the concerned organizations (FD, Proshika and RDRS) in consultation with the beneficiaries of their respective areas. A large number of tree species were found to grow in SFP, but diversity of species was almost double in GO programme (FD) than those of NGOs programme (Proshika and RDRS). In SFP of FD, 24 different species were found to grow, while the number of species grown in SFP of Proshika and RDRS were 14 and 10, respectively. The use of more diversified species in FD programme was because it had own nurseries across the country, whereas, NGOs had to buy seedlings either from market or from forest nursery or private nurseries. However, the common species used in three organizations were:

- *Acacia auriculiformis (*Akashmoni)
- *Eucalyptus camaldulensis*
- *Albizia lebbek (*Korai)
- *Swietenia mahogany(*Mahagoni)
- *Samanea saman (*Rain tree)
- *Melia azedirach (*Ghora neem)
- *Acacia mangium (*Mangium)
- *Azadirachta indica (*Neem)
- *Dalbergia sissoo (*Sisso)
- *Cassia siamea (*Minjiri)
- *Trema orientalis (*Jigni)
- *Albizia procera (*Silkorai)
- *Gmelina arborea (*Gamari)
- *Tectona grandis* (Shagun)
- *Artocarpus heterophyllus* (Jackfruit)
- *Mangifera indica* (Mango)

* Local or common name of the trees are in the parentheses.

Area coverage by Species: Although 29 different tree species including 4 fruit species were found to grow in the SFP sites of the studied organizations (FD, Proshika and RDRS) (Table 9), but few species covered the maximum plantations. In FD programme, *Acacia auriculiformis* alone covered 62 percent of the total plantation followed by *Eucalyptus camaldulensis* and *Acacia mangium* (11 percent by each species). Similarly in SFP sites of Proshika, four species covered 60 percent of the

areas and the rest ten species covered 40 percent areas. Among the four species, *Swietenia mahagoni* occupied the highest (20 percent) areas followed by *Eucalyptus camaldulensis* (15 percent), *Artocarpus heterophyllus* (12 percent) and *Acacia auriculiformis* (12 percent). Likewise, in SFP sites of RDRS. *Melia azedarach* alone covered 40 percent of the total plantation areas followed by *Albizia lebbek* (15 percent), *Dalbergia sissoo* (12 percent) etc. The choice of limited specific species in SFP by the beneficiaries was due to their fast growing nature, and good demand in the locality especially for fuel wood with relatively low price. There is a growing concern from environmentalist to policy makers that the country is loosing valuable native species due to extensive growing of few exotic species.

Table 9. Tree Species used and its coverage in the SFP of GO (FD) and NGOs (Proshika and RDRS) command area

Species Name	FD	Proshika	RDRS	Mean Coverage (%)
	Coverage (%)	Coverage (%)	Coverage (%)	
Acacia auriculiformis	69	12	0	62
Eucalyptus camaldulensis	12	15	0	11
Albezia lebbek	0	0	15	1
Swietenia mahogany	0	20	5	1
Samanea saman	1	2	5	1
Melia azedirach	0	8	40	4
Acacia mangium	12	0	0	11
Terminalia arjuna	1	0	0	1
Azadirachta indica	0	5	5	1
Acacia nilotica	0	0	0	0
Dalbergia sissoo	2	1	12	3
Cassia siamea	2	0	0	2
Anthocephalus chinensis	0	0	0	0
Amoora rohituka	0	0	0	0
Trewia Nudiflora	0	0	0	0
Trema orientalis	0	5	0	0
Leucaena leucocephala	0	0	3	0
Albizia chinensis	0	0	0	0
Alstonia scholaris	0	0	0	0
Ficus bengalensis	0	0	0	0
Delonix regia	0	0	0	0
Bombax ceiba	0	0	0	0
Albizia procera	1	0	5	1
Gmelina arborea	0	6	0	0
Tectona grandis	0	7	0	0
Artocarpus heterophyllus	0	12	4	1
Psidum guajava	0	7	0	0
Olea uropea	0	0	0	0
Mangifera indica	0	0	6	0
Total	100	100	100	100

Establishment of plantation: Techniques used for establishment of plantation in the organizations were almost similar. Regardless of GO and NGOs, saplings were planted following line planting method in both sides of the road (strip plantation), and mostly square method in the woodlot plantation. Number of tree species per km of road/strip on NGOs programme was higher than that of GO programme. In FD (GO) plantation, a total of 800 saplings were accommodated in one kilometer road keeping a distance of 2.4 meter from sapling to sapling, while in Proshika and RDRS (NGOs) programmes, about 1000 saplings were accommodated in the same 1 km of road as the distance between the saplings were closer (about 1.5-1.6 m). Pit size where saplings was planted were similar (0.45 m x 0.45 m x 0.45 m) irrespective of organizations. Regarding age of saplings, FD planted relatively younger saplings (4 to 6 months old saplings), while Proshika and RDRS planted relatively older (1 to 1.5 years) saplings. Time of sapling planting varied slightly among the organizations. In FD programme, almost cent percent respondents (99 percent) planted saplings at the beginning of the rainy season i.e., in the month of May-June, whereas in Proshika and RDRS, 80percent and 40 percent of saplings were planted in the month of June, and the rest of the saplings were planted in the month of July and August.

Management of plantation: Management practices applied in tree plantations regardless of GO and NGOs programmes were almost similar except few cases. The main management practices used in both strip and block plantations were putting of bamboo sticks to support the saplings, irrigation during dry seasons, fertilizer application, training and pruning etc. Irrespective of organizations and type of plantations, bamboo sticks were used to support the saplings immediate after planting. As the saplings were planted in rainy season, irrigation was needed in rainy season but it was provided in dry season (February to April) up to two years. Similarly in all cases, saplings were earthen up at the base in rainy season and this operation was continued up to three years. Training and pruning operations were done to give a good shape of the trees and to remove diseased, broken and excess branches from the trees as well as to get intermediate products from tree plantation. About cent percent of the respondents did this operation twice within the period of three year after plantation. The respondents used organic and inorganic fertilizers but rate of these fertilizers slightly varied among the organizations. In FD programme, cowdung, Urea and TSP were applied @ 5 kg, 25 gm and 40 gm per saplings, respectively, while in both Proshika and RDRS programmes, cowdung, Urea and TSP were applied @ 4.5 to 5 kg, 25 gm and 25 gm per saplings, respectively. Respondent's irrespective of GO and NGOs or types of plantations (strip or woodlot) opined that if balance fertilizer were used, both tree and agricultural crop (grown in between the trees) could have been grown much better. However, none of the beneficiaries were reported to use pesticide as no severe pest infestation was noted.

Plate: Professor Dr Md. Giashuddin Miah, major collaborator and Quazi Liaquat Ali, Project Leader visiting a strip plantation site of Proshika

Plate: Pruning and selected thinning activity done by the beneficiaries during second rotation of woodlot plantation under the supervision of Forest Department.

Plate: Beneficiaries planting tree saplings for second rotation in the SFP site of Proshika along with the standing fruit and long duration trees

Cultivation of agricultural crops in association with the plantation

Growing agricultural crops in association with the tree plantation especially at early stage of plantation would have opened an opportunity to make the SFP programmes more lucrative. In the studied GO (FD) programme, no initiative was taken to grow intercrops, while in NGOs programmes, this initiative was taken and implemented by growing several crops in association with the plantations. In these programmes, respondents/beneficiaries themselves had grown the crops and received the benefits without sharing the other partners. In Proshika programme, different types of agricultural crops were grown for the period of early three years, among them *Cajanus cajan*, *Raphanus sativus*, *Vigna sesquipedalis*, *Dolicos lablab*, *Lagenaria siceraria*, *Amaranthus gangeticus* were the common one. Like Proshika programme, respondents of RDRS had also grown some annual species during the first three years i.e., during the caretaking period of the plantation. Among the various crops, the major crop species were *Basella rubra* and *Lagenaria siceraria*, and minor crops were *Amaranthus gangeticus*, *Vigna sesquipedalis*, *Cajanus cajan* etc.

Growth and yield performance of the tree species

Growth performance of the tree species used in SFPs was collected from the official records of the concerned implementers/organizations. Growth performances of tree species were recorded in terms of girth at breast height (cm), height (m), wood for timber (m^3) and firewood (m^3) at the age of ten years. Comparative growth performance of the tree species among the GO and NGO plantations revealed that performance of the species grown under GO plantation was much better than those of both NGO's plantations. The better performance of the tree species in GO programme was possibly due to good quality of planting materials as the seedlings were supplied from their own nurseries as well as due to monitoring of the plantations by the specialized persons as FD has highly qualified technical persons in each location. However, in case of FD plantation, highest growth and yield performance was observed in *Samanea saman* followed *Albezia lebbek*, *Terminalia arjuna*, *Eucalyptus camaldulensis*, *Melia azedirach*, *Dalbergia sissoo* and so on (Table 12). In case of Proshika's plantation, mean girth at breast height of *Eucalyptus camaldulensis* (68 cm) was found to attain the maximum height followed by *Samanea saman* (58 cm); but mean girth of *Trema orientalis*, *Gmelina arborea*, *Melia azedirach*, *Acacia auriculiformis* were almost similar (51 cm), whereas mean girth of *Melia azedirach*, *Dalbergia sissoo*, *Swietenia mahagoni* were in same range (47 t0 49 cm) but this parameter of all those species was much better than that of *Azadirachta indica* (44 cm) and *Tectona grandis* (40 cm). Plant height of the tested species varied from 2.89 m to 6.78 m, where the tallest species was *Eucalyptus camaldulensis* (6.78 m) and shortest plant was

Dalbergia sissoo (2.89 m). Total volume of timber wood and firewood varied widely among the species. In case of timber wood volume, *Eucalyptus camaldulensis* produced the highest wood volume (0.196 m^3) which was much higher that the other species, while poor volume of log was received from *Tectona grandis* (0.037 m^3) and *Dalbergia sissoo* (0.040 m^3). In case of firewood volume, *Samanea saman* exhibited much higher volume (0.066 m^3) than those of the other species (varied from 0.028 to 0.066 m^3) (Table 12). Higher firewood volume obtained from *Samanea saman* species was due to huge branching habit of the species. In case of RDRS plantation, girth of the species at the age 10 years ranged from 67 cm (*Samanea saman*) to 42 cm (*Azadirachta indica*) with a mean of 56.86; plant height varied from 7.32 m (*Melia azedarach*) to 5.79 m (*Dalbergia sissoo*) with a mean of 6.58 m; total volume of timber ranged from 0.199 m^3 (*Melia azedarach*) *to* 0.058 m^3 (*Dalbergia sisso*o) with an average of 0.061 m^3; firewood varied from 0.113 m^3 (*Samanea saman*) to 0.028 m^3 (*Azadirachta indica*) with an average of 0.061 m^3 (Table 10).

Table 10. Growth and yield performance of the tree species grown at 10 years of age grown in the SFP of GO (FD) and NGOs (Proshika and RDRS)

Local/English Name	Average Growth and Yield Performance of the Species											
	FD				Proshika				RDRS			
	Girth at breast ht (cm)	Height (m)	Wood (m^3)	Fire Wood (m^3)	Girth at breast ht (cm)	Height (m)	Wood (m^3)	Fire Wood (m^3)	Girth at breast ht (cm)	Height (m)	Wood (m^3)	Fire Wood (m^3)
Acacia auriculiformis	*59.00*	3.57	0.082	0.037	50.24	4.15	0.066	0.039				
Eucalyptus camaldulensis	*62.59*	4.42	0.115	0.056	68.02	6.78	0.196	0.054				
Albezia lebbek	99.06	3.05	0.198	0.120					65	7.01	0.184	0.057
Swietenia mahogany	51.82	3.48	0.062	0.024	49.28	4.01	0.061	0.046				
Samanea saman	104.14	3.69	0.265	0.101	57.81	3.52	0.074	0.066	67	6.4	0.176	0.113
Melia azedirach	69.34	3.41	0.109	0.046	50.80	4.61	0.074	0.035	66	7.32	0.199	0.061
Acacia mangium	56.18	4.45	0.093	0.044								
Terminalia arjuna	71.12	4.21	0.141	0.024								
Azadirachta indica	53.34	5.09	0.096	0.016	43.69	5.14	0.061	0.028	42	6.4	0.071	0.028
Acacia nilotica	79.45	1.95	0.082	0.051								
Dalbergia sissoo	61.72	4.12	0.104	0.062	47.22	2.89	0.040	0.060	40	5.79	0.058	0.079
Cassia siamea	61.21	3.75	0.093	0.096								
Anthocephalus chinensis	86.36	6.40	0	0.300								
Amoora rohituka	35.56	3.05	0	0.026								
Trewia Nudiflora	80.19	4.79	0	0.262								
Trema orientalis	67.56	3.45	0	0.089	50.88	4.82	0.078	0.031				
Leucaena leucocephala	67.82	4.33	0	0.164					61	6.1	0.142	0.043
Albizia chinensis	113.16	4.73	0	0.431								
Alstonia scholaris	87.88	2.13	0	0.416								
Ficus bengalensis	167.64	2.44	0	0.537								
Delonix regia	53.34	4.88	0	0.182								
Bombax ceiba												
Albizia procera									57	7.01	0.137	0.047
Gmelina arborea					50.80	4.82	0.078	0.029				
Tectona grandis					39.62	3.76	0.037	0.040				

Harvesting/selling of the products

Products of the SFP i.e., trees of the plantation were harvested through open tender method after completion of rotation period of specific species/plantation prior permission of the Upazila Development Committee (UDC). The decision of harvesting of the plantations was taken by the implementers with the consent of concerned beneficiaries. In the process of harvesting the plantation, GO faced less difficulties in getting the permission from the UDC as local forest officer acts as the expert member of the committee. FD (GO) usually does not take land for SFP from private sector; usually does plantation in own land or takes land from other government or semi government or autonomous bodies, therefore, face less obstacles in the process of harvesting. In case of NGOs, the process sometimes becomes very difficult to have the necessary approval for felling of trees from the concerned UDC even after completion of rotational period. In most cases, they have to pursue continually to get permission for felling the plantation. If getting permission for harvesting is delayed, would cause delay in starting the next phase (second rotation). In addition, NGOs usually takes lease of land from private land or local government bodies, so all parties shall have to agree for taking decision for harvesting. All these factors influence the process of harvesting in case of NGOs. On the other hand, considering the climatic condition of Bangladesh, June and July months are the optimum time for any plantation. If the beneficiaries miss the planting season, they shall have to wait for another season for this purpose this demoralizes the beneficiaries as well as the implementers.

However, after selling of the harvested products the sale proceeds were distributed between/ among the stake holders following the agreement (Table 11)

Table 11. Sharing arrangement of benefit among the parties involved in the SFP of GO (FD) and NGOs (Proshika and RDRS)

Name of Agency	Strip/Road side plantation				Woodlot/Block Plantation		
	Beneficiary	Land owner	Agency	Respective Union Council	Beneficiary	Land owner	Agency
FD	65	10	10	5	50	0	50**
Proshika	70	20	10	0	45	45	10
RDRS	65	25	10	0	55	30	15

* In case of FD implemented Strip/Road side plantations, the enlisted NGO coordinating the programme activities get **10 %** share as service charge.
** FD also owner of the land in case of woodlot/block plantation.

Impact of SFP on Beneficiaries

Annual income and savings

The income level of the respondents before and after participation in SFP indicated that the mean income level of the beneficiaries irrespective of GO and NGO programmes was changed remarkably. The mean values of annual income level (average of three studied organizations) revealed that number of low income group was reduced from 21 to 3 percent, medium income group from 71 to 69 percent but high income group increased from 8 to 28 percent (Table 12). Among the three organizations, change of income level of the respondent beneficiaries involved in FD (GO) programme was more pronounced than that of the income level of the beneficiaries involved in Proshika and RDRS (NGOs). The higher income of the beneficiaries involved in FD programme was due to higher benefits received from the SFP. Compared to the NGOs programmes, size of land allocation to each beneficiary in FD programme was much more higher as well as growth of the plantation of FD was better due to supply of good planting materials and supervision by expert groups. However, this income improvement is not only the contribution of SFP but also the cumulative effect of all other development activities. This achievement indicated the economic improvement of the beneficiaries due to their involvement in SFP. Like annual income level, annual savings was also changed remarkably. The findings showed that before participation in the SFP, 79 percent respondents (combine of three organizations) did not have any savings, but after participation in the SFP, 73 percent respondents had some savings, while number of beneficiaries having no savings was reduced from 79 to 27 percent (Table 13).

Asset Development

The respondent beneficiaries regardless of their involvement in GO and NGOs programmes developed different kinds of assets using the benefits received from the SFP. About Twenty five different kind of assets development were reported by the respondents, among these, the dominant outputs were building new houses; purchase of land, cow and goat; house repair; and money spent for marriage ceremony of daughter etc. (Table 14). Between GO and NGO, assets development in beneficiaries involved in GO programme was remarkably higher as they received much more financial benefits than the beneficiaries involved in NGOs programme.

Sources of Drinking water

Sources of drinking water for the beneficiaries were reported to improve as compared to the beginning of their participation in SFP, because of the economic

solvency of the beneficiaries. It was shown that before participation in SFP, about 52 percent of the respondents used Earthen Well (Kua), 41 percent used Tube-well and the rest 7 percent used Pond as their sources of drinking water, while after getting shares or benefits from SFP, the scenarios were changed where 97 percent used Tube-wells of which 84 percent had their own Tube-well but none was reported to use Pond water thereafter (Table 15). The changes of sources of drinking water were found relatively rapid among the beneficiaries who were involved in FD (GO) programme followed by those who were involved in Proshika and RDRS programmes.

Use of Latrine

Use of unhygienic latrine was a common scenario in the rural areas of Bangladesh. Therefore, use of improved or sanitary latrine is a good indicator of any impact studies programme. The findings of the present study showed that like sources of drinking water, improvement was also found in the use of latrine. About 57 percent of the respondents of the studied areas used unhygienic locally made latrine) latrines, while the rest 33 percent did not use any latrine, but they used surrounding thick bushes or ditches (Table 16). After getting benefits from SFP, the scenario were changed remarkably where 15 percent of the respondents were found to use Pucca or Metalled, 49 percent Semi Pucca or Metalled Ring Latrine and the other 33 percent used Kacha or Non Metalled Latrine (localy made unhygienic) but only 2 percent was reported to use bushes or ditches. This improvement was achieved due to the improvement of financial status gained from the SFP as well as government's awareness raising programmes.

Table 12. Change in annual income of the respondents involved in the SFP of GO (FD) and NGOs (Proshika and RDRS)

Agency	Before Participation in SFP			After Participation in SFP		
	Low Income (<10000)	Medium Income (10001-<50000)	High Income (>50000)	Low Income (<10000)	Medium Income (10001-<50000)	High Income (>50000)
	Percent	Percent	Percent	Percent	Percent	Percent
FD	5.83	80.00	14.17	00	58.33	41.67
Proshika	8.33	86.67	5.00	3.33	66.67	30.00
RDRS	63.0	37.00	0.00	7.00	93.00	0.00
Mean	21.00	71.00	8.00	3.00	69.00	28.00

Table 13. Change in the annual savings of the respondents involved in the SFP of GO (FD) and NGOs (Proshika and (RDRS)

Agency	Before Participation in SFP		After Participation in SFP	
	No savings (%)	Have savings (%)	No savings (%)	Have savings (%)
FD	70.83	29.17	20.83	79.17
Proshika	73.33	26.67	30.00	70.00
RDRS	100.00	00.00	37.00	63.00
Mean	79.00	21.00	27.00	73.00

Table 14. Asset development of the respondents after participation in the SFP of GO (FD) and NGOs (Proshika and RDRS)

Nature of Development	Organizations			Mean (%)
	FD (%)	Proshika (%)	RDRS (%)	
New house building	8.30	3.30	10.00	7.60
Land purchase + New House building	3.30	0	6.70	3.36
House building + Land lease	4.20	0	6.70	3.75
House building + Investment in business	4.20	1.67	3.30	3.36
House building + loan repay	6.70	0	3.30	4.25
Land purchase	5.80	8.33	3.30	5.90
Purchase of goat	0	0	13.30	3.36
land purchase + Cow purchase	3.30	0	3.30	2.50
House building + Cow purchase	5.00	1.67	16.70	7.15
Land purchase + cow purchase+ House building + Loan repayment	10.00	0	3.30	5.00
land purchase + Cow purchase + daughter's Marriage	3.30	0	16.70	5.88
Goat purchase + Daughter’s marriage	0.80	0	13.30	3.78
Land lease + Loan repayment	3.30	6.67	0	3.36
Loan repayment	4.20	5.00	0	3.36
Investment in business	3.30	6.67	0	3.36
House repaire	9.20	0	0	4.62
Purchae of cow	8.30	18.34	0	8.82
Purchase of ornament	0	1.67	0	0.42
Family treatment	0	3.33	0	0.85
House repair + Send son abroad	5.00	1.67	0	2.97
Loan repayment+ Send son abroad	1.70	1.67	0	1.25
Goat purchase	3.30	8.34	0	3.78
Bicycle purchase	1.70	1.67	0	1.25
Motorcycle purchase	0.80	0	0	0.42
None	4.20	30.00	0	9.65
Total	100.00	100.00	100.00	100.00

Table 15. Change in the use of drinking water by the respondents involved in the SFP of GO (FD) and NGOs (Proshika and RDRS)

Source of Drinking Water	Before Participation in SFP				After Participation in SFP			
	FD (%)	Proshika (%)	RDRS (%)	Mean (%)	FD (%)	Proshika (%)	RDRS (%)	Mean (%)
Earthen Well (Kua)	57	42	53	52	1	5	7	3
Own Tube-well	25	22	0	18	97	82	60	84
Pond	2	15	7	7	0	0	0	0
Neighbours' Tube-well	16	21	40	23	2	13	33	13
Total	100	100	100	100	100	100	100	100

Table 16. Change in the use of latrines by the respondents involved in the SFP of GO (FD) and NGOs (Proshika and RDRS)

Type of Latrine	Before Participation in SFP				After Participation in SFP			
	FD (%)	Proshika (%)	RDRS (%)	Mean (%)	FD (%)	Proshika (%)	RDRS (%)	Mean (%)
No latrine/ Bush use	27	20	60	33.00	0	7	0	2
Kacha (non metalled local made) latrine	59	68	40	57.00	21	40	50	33
Semi pucca (metalled) ring latrine	13	4	0	7.50	54	37	50	49
Paka (metalled) ring latrine	0	8	0	2.00	24	13	0	15
Sanitary latrine	1	0	0	0.50	1	3	0	1
Total	100	100	100	100	100	100	100	100

Satisfaction of the respondents about different livelihood aspects

Satisfaction levels of the respondent beneficiaries were measured through their opinions on five important livelihood aspects i.e., housing, healthcare, clothing, education and food habit. Respondents' satisfaction levels about those aspects were measured in the scale of four categories such as 'very satisfied', 'satisfied', 'moderately satisfied' and 'not satisfied'. The opinions of the respondents on those aspects revealed that most of the respondents were satisfied though the level of satisfaction varied among the respondents as well as among the livelihood aspects (Table 17).

Table 17. Satisfaction level of the respondents involved in the SFP of GO (FD) and NGOs (Proshika and RDRS) about different livelihood aspects after participation in the SFP

Agency	Satisfaction level of the respondents (percent) involved in the SFP of GO (FD) and NGOs (Proshika and RDRS)																			
	Housing				Healthcare				Clothing				Education				Food habit			
	VS	S	MS	NS	VS	S	MS	NS	VS	S	MS	NS	VS	S	MS	NS	VS	S	**MS**	**NS**
FD	30	26	8	36	38	31	10	21	60	23	5	12	26	32	3	39	51	26	7	16
Proshika	5	23	17	35	10	32	10	48	23	30	13	33	15	28	2	55	32	33	22	15
RDRS	57	0	0	43	23	43	7	27	43	47	7	3	20	27	17	37	40	33	27	0
Total	35	19	8	38	28	34	9	29	47	31	8	14	22	30	6	42	43	30	16	11

Note: VS = Very Satisfied, S = Satisfied, MS = Moderately Satisfied, NS = Not Satisfied.

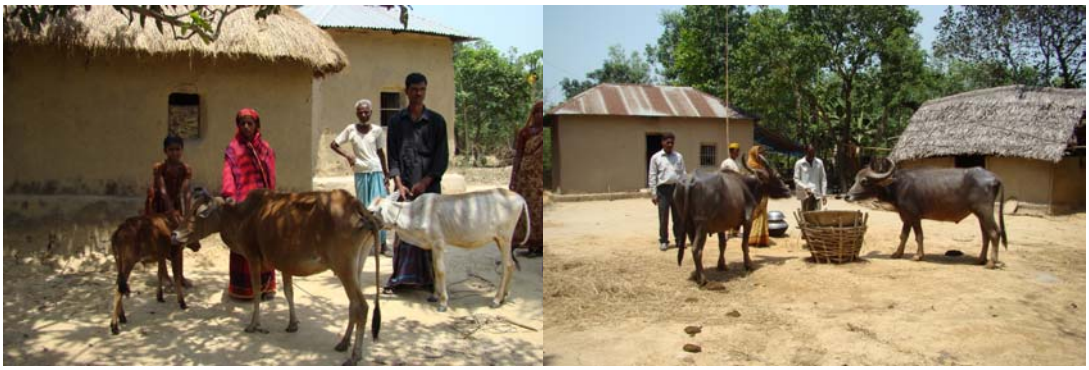

Plate: Beneficiaries bought cattle for milk supply and for ploughing purposes.

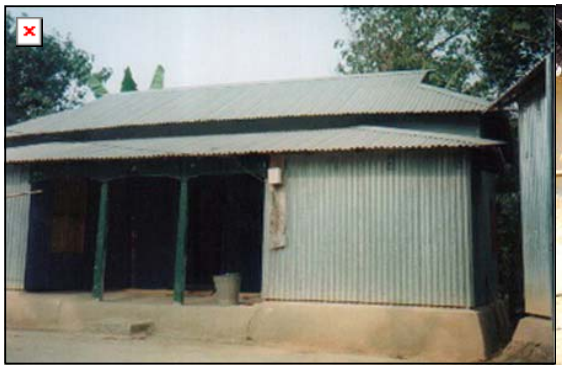

Plate: Newly built house of a beneficiary

Plate: Small scale poultry farm managed by a beneficiary

Plate: A beneficiary lifting water by tube-well and conserving in a dig for irrigation purpose

Plate: Dead small branches and dried leaves collecting from the SFP sites to mitigate fuel crisis of the study areas.

Wood supply and establishment of processing centre

The most outstanding outputs of the SFP are easily visible tree resources in the rural areas that was not present about 10-15 years ago. Due to increase in tree resources across the country, the availability of wood and firewood increased greatly. The information was confirmed with the findings of the present study as cent percent of the respondents opined that due to implementation of intensive social forestry activities, wood supply in the local market increased remarkably, and as a result, the number of wood processing mills and other small cottage industries were established in the study areas.

Improvement of knowledge of the beneficiary

Participation of the respondents/beneficiaries/caretakers in the SFP of GO and NGOs had improved their knowledge in various aspects (Table 18). From Table 20 it can be seen that the scale of knowledge improvement varied widely among the selected parameters. Before participation in SFP, general knowledge about SFP; knowledge about nursery development and seedling production; knowledge about pruning, thinning, rotational period; and knowledge about improvement of environment, the scales of knowledge of the respondents were very shallow or narrow but these parameters had increased to 98, 55, 67 and 74 percent, respectively after participation in SFP. In case of other parameters i.e., knowledge about type of planting material (species); knowledge about suitable soil for tree species; knowledge about age of planting materials, method of plantation and management; knowledge about pit size, fertilization, irrigation and after care the scales of knowledge of the respondents had increased to some extent i.e., from 53,29, 23 and 36 percent before their involvement in SPF to 72, 48, 88 and 93 percent, respectively, after active participation in SFP.

Table 18. Knowledge improvement of the beneficiaries involved in the SFP of GO (FD) and NGOs (Proshika and RDRS) on different management issues

Knowledge Improvement Parameter	Level of knowledge improvement of the beneficiaries (percent) because of participation in SFP							
	Before Participation in SFP				After Participation in SFP			
	FD	Proshika	RDRS	Mean	FD	Proshika	RDRS	Mean
Knowledge about SFP	10	3	0	6	99	93	100	98
Knowledge about type of plant species	67	40	37	53	80	55	73	72
Knowledge about suitable soil for tree species	41	27	7	29	67	38	20	48
Knowledge about nursery development and seedling production	11	8	0	8	73	57	20	55
knowledge about age of planting materials, method of plantation and management	28	22	13	23	91	80	90	88
knowledge about pit size, fertilization, irrigation and aftercare	48	27	20	36	96	87	91	93
Knowledge about pest management	8	2	0	4	35	18	7	24
Knowledge about training, pruning, thinning, rotational period	7	2	0	4	73	27	93	67
Knowledge about improvement of environment	6	0	0	3	78	73	67	74

Problem faced by the respondent during participation in SFP

The overall cooperation of all stakeholders from implementers to the local authority for making SPF programme a successful one was very satisfactory. Never the less, the respondent beneficiaries had encountered several problems during their participation in SFP. Among several problems, the major were conflict with nearby land owners because of (i) shading of trees to nearby crop fields, (ii) fallen leaves and twigs from trees causing harm to their crops, and (iii) in most cases, non inclusion of the nearby land owners as beneficiary in the SFP. Illegal felling of the trees at night, poor support from the local government offices against illegal felling in particular, lack of availability/complexity in getting lease of roads from local authorities, influences of buyers including local political leaders during tender bidding process, lack of irrigation water, damage of saplings by cattle, and lack of capital and other logistic support for second rotation of plantation and management/caretaking were the potential problems.

Suggestion made by the respondents for making the programme a sustainable

To get more benefits in a sustainable way, the respondent beneficiaries gave a number of valuable suggestions based on their long experiences gained from this programme. Among various suggestions, the most important suggestions were (i) timely support from the local law enforcing agency and in particular local government for proper implementation and protection of plantation, (ii) proper execution of social forestry regulations and the conditions written in national social forestry policy, (iii) involvement of nearby/surrounding land owner as beneficiary for avoiding conflict among them and for protection of plantation, and (iv) ensuring availability of irrigation water especially during dry season at early stage of plantation, (iv) strengthening of visits by GO and NGOs and Forest Department personnel, and (v) arranging intensive training programme on different aspects such as scientific management, as well as social, economic and environment values of SFP.

Lesson Learned from SFP

The Social Forestry Programme of Bangladesh is relatively a new approach because only one rotational period (about 10 years) has been completed in selective SFP areas. Though it is a new programme, yet its potentialities and impact on different aspects have already been observed through this study. In the mean time, different stakeholders involved in SFPs have gained or learned some lessons that could play more significant role in harvesting the benefits and sustaining it as a permanent programme. With this view in mind, some important lessons or knowledge gained through the active participation of this programme are described below:

1. The technical knowledge of the beneficiaries/caretakers on various aspects of SFP (knowledge on nursery development, seedling production, planting material (species), soil type for tree species, age of planting materials, method of plantation, pit size, fertilization, time of irrigation, pruning, thinning, rotational period; and environmental benefits) that were almost zero has been developed remarkably. These knowledges would be helpful for them to implement the future programme with minimum assistance from the organizers.

2. Group approach/participatory approach was found very effective than that of individual approach in implementation, management and protection of the plantation.

3. Benefits of SPF programme not only provided economic solvency of the rural poor participants but also provided them with improved status in the society.

4. The people who were once the potential threat to the government forests became good protector of the same.

5. It was noted that the group with limited members perform better than that of group with larger number. It was opined by the implementers as well as beneficiaries that the group should not be compose of less than 5 and more than 15 members.

6. It was observed that the SFP would have more productive and sustainable if the members of the group were selected from the real marginal, poor or landless sections of the society.

7. It was learned both from the implementers as well as from the beneficiaries that group would work more effectively if the beneficiaries were allowed to form groups with like-minded people of similar status.

8. Confidence has developed among the concerned forest officers and authority of the FD as well because of proper implementation of SFP. The SFP guidelines and rules would be the best option to protect, conserve and even extend forest resource base in the country.

9. It was noted that NGOs controlled SFPs could not be implemented smoothly due to less cooperation of the local upazila administration especially in respect of giving timely permission for harvesting the plantation. This created frustration among the beneficiaries and NGO implementers of the programme. This also delayed their second phase SFP.

10. Performance of the plantation and financial benefits of NGOs controlled programme could be improved smore through supply of quality planting materials and deployment of personnel having knowledge and experience on forestry for supervision of their programme like those of FD programme.

11. SPF has opened up an unique opportunity to bring the encroached and denuded forest land, and the other vacant land into productive uses. This has created employment opportunity for the less privileged group of the society.

CONCLUSION

The social forestry programme of the GO and NGOs is being implemented in Bangladesh since 1981 and it has been playing a vital role in contributing to increase tree resources almost uniformly all over the country and in promoting the living standard of rural people by generating employment opportunities and better income. This impact study was done to assess the contribution of Social Forestry Programme (SFP) in tree resource development, knowledge development of the beneficiaries, poverty alleviation, socio-economic development, extent of assistance provided by the Government and NGOs to its beneficiaries as well as to draw suggestions for mitigating the constraints and sustaining the SFP.

SFP programme have indeed changed the quantity and quality of indigenous productive resources through increased tree coverage in project areas and notably improved the economic condition of the beneficiaries. Before participating in the program, most of the beneficiaries were not aware of SFP, plant species selection, management practices and other benefits. After participating in the SFP, receiving training provided by GO and NGOs and directly working in the field, majority of them acquired knowledge and experiences about those activities and techniques. The beneficiaries were satisfied on the activities and assistance provided both by GO and NGOs to them.

The programmes have improved the socio-economic condition of the beneficiaries greatly. Beneficiaries of the FD who implemented SFPs got more benefit than those of the NGO administered SFPs. This was mainly because of the higher allocation of land per head in FD and better growth of the plantation as FD has own planting materials and highly technical expertise. It was noted that on an average land allocation in FD programme was 15-20 times higher than that of NGOs. Regarding the investment of savings showed that most of the beneficiaries have invested their income for different income generating livelihood activities such as poultry and livestock rearing, agricultural farming, business, etc., and some of them have bought or taken land on lease, some built new houses or repaired the old one. Many have spent money in the marriage of their daughters, some for sending son abroad.

The income of the programmes, and establishment of income generating activities using the benefits of SFPs has given beneficiaries a new status in their families and societies through considerable access to pure drinking water, sanitation, health and education; improvement in housing pattern over time; advancement in intake of

quality food and improvement in confidence, awareness, decision making and empowerment. The governance of the programmes was somehow satisfactory without few exceptions. The beneficiaries expressed their satisfaction regarding transparency in the payment of wages, provision of training and technical assistance for plantation establishment and management.

Therefore, the study proved that Social Forestry Programmes have significantly contribution towards tree resource development outside the forest land, technical knowledge development of the rural poor and socio-economic development of its beneficiaries, but several problems were documented that negatively affected the programmes as well. Important of them includes conflicts between the landowners adjacent to the plantations and the beneficiaries; inadequate management practice (irrigation, thinning, pruning); weak cooperation and support from the local government for protection, insufficient organizational training and bureaucratic process in tree harvesting/ disposal; lack of functional co-ordination and collaboration between or among the agreed parties and other concerned agencies (Union Council, Thana Nirbahi Officers office, Deputy Commissioners office and Forest Department etc). However, concerned stakeholders strongly believe that interventions on those issues would be highly effective in improving and sustaining the programme, protecting environment, alleviating poverty and contributing more towards socio-economic development of its beneficiaries as well as society as a whole.

Future Directions

This study was conducted with limited resources which might not provide the pros and cons of information. Therefore, it is suggested that the study be conducted in a wider scale for extrapolation covering other ecological zones, incorporating some more key issues and dimensions of such social forestry projects. This would be more useful in contributing to the existing body of knowledge for much more improvement of the programme.

●Forest Department managed SFP should pay more attention during selection of participants. This is crucial for poverty alleviation as well as for environmental improvement. It would be achieved if the SFP Rules are strictly followed.

●In case of NGOs the support and cooperation from the local government agencies should be streamlined. For overcoming the barriers forestry act should be revised for proper functioning of SFP.

●A national as well as a regional cell for SFP should be established for getting baseline information on present status, coverage, future programme, knowledge and experiences in implementing different SF programmes at different socio-political and cultural situation. This would be kept for use for further strengthening and sustainability of the programme.

●In the education sector possibly at the secondary as well as in the higher secondary level course on social forestry should be incorporated in the syllabus for proper understanding, for dissemination and proper implementation of the program, for socio-economic improvement and maintaining the ecological balance.

●Success or benefits of SFP should be circulated through mass media for wider awakening of the people. The hazards of indiscriminate felling of trees should be restricted to safeguard our existence.

●Leaflets, handouts etc. with coloured pictures may be circulated to the concerned people for updating their knowledge and disseminating among the group members.

●People willing to initiate this kind of programme should be provided with all out support and inform them the sources of getting good quality planting materials, management practices and methods of record keeping etc.

●Depending on the locality and demand the concerned people should be advised to grow those specific types of trees.

●Measures should be taken so that the beneficiaries can get fair price of the product at the time of harvesting.

●People should be encouraged to incorporate more fruit trees to meet their nutritional problem and fulfil other needs as well as food for other lives to maintain biodiversity.

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