CONTRIBUTION OF RDRS SOCIAL FORESTRY PROGRAMME AND ITS SOCIO-ECONOMIC IMPACT ON LIVELIHOOD OF THE BENEFICIARY

QUAZI LIAQUAT ALI[1], ABUL KHAIR[2] and M. GIASHUDDIN MIAH[3]

ABSTRACT

The study was accomplished to assess the contribution of Social Forestry Programme (SFP) of RDRS Bangladesh (Rangpur-Dinajpur Rural Service) in improving level of knowledge on tree plantation, poverty alleviation and socio-economic development of its beneficiaries. Information was gathered during 2006-2008 through interview schedule and group discussion with the beneficiaries of Nilphamari district, a major SFP unit of RDRS. The beneficiaries of this programme were women. Before participation in the programme, most of the beneficiaries did not know about SFP, tree species selection, management practices and other benefits. After participation in the SFP with training received from RDRS, and working in the field, majority of them acquired knowledge and experiences about those activities. The main benefit accrued from SFP was the improvement of economic solvency of the beneficiaries. Most of the respondent reported that they had invested their income for purchasing land and domestic animals for farming. Some of them leased land, some built new houses or repaired the old one and some others had spent money for marriage of their daughters. The cash income provided them a new status in their family and social life. Some problems, which were encountered during implementation of SFP, are discussed in the present study to make the SFP a more effective one.

Keywords: Social forestry, Management, Lesson learning and Livelihood.

INTRODUCTION

Historically, forest is an integral part of our natural heritage and plays a significant role in meeting the diversified needs of the people, socio-economic development and environmental stability. Bangladesh was never very rich in forest resources and even the north-western part of the country is devoid of natural forests. The ever-increasing population and poverty have already caused significant depletion of this limited natural forest, which is likely to be more severe in the future. Current information revealed that much of the state owned forestland does not have satisfactory tree cover and part of the forestland has been encroached by the local people (Forest department, 2004). The government and concerned agencies are well aware of this issue and have recognized that past forest policies have placed strong emphasis on centralized decision making, ownership, control of forest resources, but the non-chalant attitude and absence of local people in forest management have failed to achieve the target. Realizing the necessity of conservation of natural forests, the government has changed the state managed forest policy towards people's participatory approach, which is called social forestry/participatory forestry/agroforestry. The Betagi-Pomora community forestry project was the first social forestry programme ever implemented in Bangladesh (Ahmed and Azad, 1987). Participatory forestry started in Bangladesh in 1981 and was implemented in the north and northwestern part of Bangladesh covering 23 districts (Anonymous, 2000). 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 programme for the last three decades (Anonymous, 2006). This concept was adopted through New National Forest Policy in 1994. In the mean time, government implemented several large scale tree plantation programmes through the Department of Forest to increase the tree resources (Anonymous, 2006). Besides these, different non-government organizations have made significant progress in this regard through social forestry programme. Among the different NGO's, RDRS Bangladesh – the leading NGO launched a programme for "Greening the North" through roadside tree plantation in the greater Rangpur and Dinajpur districts in 1995 (Rahman, 1996). The main goal of RDRS social forestry programme was to develop group consciousness to

[1]Ph. D Student, [2]Professor, Department of Botany, Jahangirnagar University, Savar, Dhaka-1342 and [3]Professor, Department of Agroforestry and Environment, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur-1706, Bangladesh

increase the natural resources, improve the skill of the participants and change the livelihood and lifestyle of the rural poor living in the north-western region of the country through its manifold benefits. In the mean time, large areas of marginal land especially road sides and slopes of roads have also been brought under Social Forestry Programme. RDRS has been claiming that this programme has created a great impact on the knowledge and skill development of the participating farmers as well as socio-economic development from ecological benefits. There is a need to investigate the extent of impact of the SFP approach regarding its goal and objective that would provide information about its actual benefits and lesson learned from it for future improvement. With these aims, a study was undertaken to document the experiences gathered and lesson learned by the beneficiaries and RDRS personnel as well as to assess the socio-economic changes in the livelihoods of the beneficiaries.

METHODOLOGY

The study was conducted at the strip plantation areas of RDRS in Nilphamari during the period of 2006-2008 through field survey and group discussion.

RDRS Bangladesh: RDRS is a leading NGO in 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).

RDRS working approach: RDRS has been working with the target 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 roots groups. On an average, 15-20 members form 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 people's 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.

RDRS Social Forestry Pogram: 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 planting 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 685 acres 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 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 (Statistical Year Book of Bangladesh, 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 Upazillas, 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 Upazilla have major areas completed the first rotation of plantation and received financial benefits as per agreement. These eight Federations of two Upazilas completed 48 km felling 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 and received direct benefits during the implementation stage and they were selected/named as Caretakers. Each Federation 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 kilometer 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: Primary data were collected from the selected 60 beneficiaries through interview schedule as well as focal group discussion. Secondary information and relevant official information such as growth and yield of tree species etc, were collected from the RDRS concerned offices. Then the data were compiled, tabulated and analyzed in line with the objectives.

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

The age of the respondents ranged from 32 to 60 years, having a mean of 43 and Standard Deviation (SD) of 6.80 years. Interestingly, cent percent respondents were female. The education level of the respondents was poor as 73 percent respondents were illiterate and about one-fourth (27%) could only read and write, while none of them had any formal schooling. The average family size of the respondents was 4.5 where the highest number of the respondents (53%) had small size family (<5 persons per family) closely followed by medium size family (47 % having family size of 5-8 persons), while none was under large size family (>8 persons per family). Farm size of the respondents was dominated by marginal group (67%) followed by landless group (23%), while, small farm size group was very minor (10%). The occupation of respondents was mostly house manager (93%) and few respondents (7%) had other occupations such as service (nurse), day laborer etc. The annual income level of beneficiaries before getting involvement in social forest programme (SFP) of RDRS stated that majority of the respondents (63%) fell in the low income level (Tk <10,000) followed by medium income level (37% having income of Tk. 10,000-50,000) but none of them was found in high income level (Tk. >50,000).

Main activity of RDRS in the roadside SFP

RDRS facilitated the federation (which is the base working unit of RDRS) of respective locality to take lease of the roads from the local government for strip plantation and made agreement among the parties. The benefits sharing arrangement among the parities were 65, 10 and 25 percent for the Federation, RDRS and local land owner agency respectively. RDRS also helped the Federation to select the beneficiaries (known as caretakers) to participate in the SFP. Then RDRS arranged four day training on technical aspects of the social forestry and benefits of the programme for all the caretakers. It provided all cash/kind incentives to the caretakers engaged by the federation to implement SFP and supervised the activities. Cash/kind received by each caretaker from RDRS ranged from US$ 412 (Tk. 28800) to US$ 538 (Tk. 37700) for the period of three years with an average of US$ 13 (Tk. 924) per head per month. RDRS had remained in close contact with the beneficiaries for providing technical support throughout the implementing period.

Technique adopted to implement the roadside SFP

Species Used: RDRS technical expert in consultation with the beneficiaries had selected different tree species. RDRS supplied quality saplings free of cost including the inputs. A total of 10 different tree species including 2 fruit species were selected and planted in the SFP sites (Table 1). The result of the study indicates that Ghora neem (*Melia azedarach)* alone covered 40 percent of the total species because of its fast growing habit and good demand in the locality.

Table 1. Tree Species used and its coverage in the strip SFP of RDRS, Nilphamari

Local name/English name	Species name	Coverage (%)
Raintree	*Samanea saman*	5
Korai	Albizia lebbek	*15*
Silkorai	Albizia procera	*5*
Ghora Neem	*Melia azedarach*	40
Neem	*Azadirachta indica*	5
Sisso	*Dalbergia sissoo*	12
Ipil-ipil	*Leucaena leucocephala*	3
Mahogany	*Swetenia mahogany*	5
Mango	*Mangifera indica*	6
Jackfruit	*Artocarpus heterophyllus*	4

Source : (Khan, 1977)

Establishment of plantation: Saplings were planted following the line planting method in both sides of the road. A total of 1000 saplings were accommodated in one kilometer area of roadside. About 1.0 to 1.5 years old saplings were planted in pit having a size of 0.45 m x 0.45 m x 0.45 m. Most of the respondents (47 percent) planted saplings in the month of May, whereas, 40 percent and 13 percent of the respondents planted saplings in the months of June and July respectively. Saplings were planted by maintaining a distance of 1.5 meter between saplings. The findings of the study revealed that age of the planted seedlings was higher as compared to the standard recommended age of the seedlings.

Management of plantation: Bamboo sticks were used to provide support to the saplings immediate after planting. As the saplings were planted in rainy season, irrigation was not needed at the time of planting; however, samplings were irrigated during dry season (February to April) up to three years. Saplings were earthen up at the base in rainy season and this operation was continued up to three years. The respondents used cowdung, Urea and TSP @ 4.5 to 5 kg, 25 gm and 25 gm respectively per sapling supplied by RDRS. The cowdung and TSP were used as basal dose and urea was applied as top dressing.

Training and pruning operations were done to give good shape of the trees, remove diseased, broken and excess branches and to get intermediate products from tree plantation. About cent percent of the respondents did this operation for three times within the period of three years of plantation. During this period, beneficiaries received maximum and minimum amount of 250 kg and 120 kg pruned materials respectively with an average of 170 kg per beneficiary. However, none of the respondent was found to use thinning operation. All the respondents (100 percent) collected dry leaves and an average amount of dry leaves collected by each beneficiary was 120 kg during the study period which varied from 100 to 155 kg per beneficiary. No pesticide was used by the beneficiaries because no severe pest infestation was observed.

Cultivation of agricultural crop

Some annual crops were grown during the first three years i.e., during the caretaking period of the plantation. Respondents cultivated different types of agricultural crops, among them basela (*Basella rubra*) and bottle gourd (*Lagenaria siceraria*) were the common ones. Others cultivated crops were red amaranth (*Amaranthus gangeticus*), yard long bean (*Vigna sesquipedalis*), pigeon pea (*Cajanus cajan*) etc. Field visits showed the scope of utilizing the understorey niches through shrub or vine type medicinal plants.

Growth performance of the species

Growth performance of the planted tree species in terms of girth at breast height (cm), plant height (m), wood from timber (m^3) and firewood (m^3) were collected from the RDRS official record (Table 2). Comparative girth performance of the species at the age 10 years ranged 67cm (Raintree) to 42 cm (Neem) with a mean of 56.86 cm and SD 11.36 cm; plant height varied from 7.32 m (Ghora Neem) to 5.79 m (Sissoo) with a mean of 6.58 m and SD of 0.55 m; total volume of timber ranged from 0.199 m^3

(Ghora Neem) *to* 0.058 m^3 (Sissoo) with an average of 0.061 m^3 and SD of 0.055 m^3 ; firewood varied from 0.113 m^3 (Raintree) to 0.028 m^3 (Neem) with an average of 0.061 m^3 and SD of 0.028 m^3.

Table 2. Growth performance of the tree species grown at 10 years of age in the strip SFP of RDRS, Nilphamari.

Sl. No	Local/ English Name	Species Name	Average Growth Performance of the Species			
			Girth at breast height (cm)	Height (m)	Wood (m^3)	Fire Wood (m^3)
1	Raintree	*Samanea saman*	67	6.40	0.176	0.113
2	Neem	*Azadirachta indica*	42	6.40	0.071	0.028
3	Sissoo	*Dalbergia sissoo*	40	5.79	0.058	0.079
4	Ipil-ipil	*Leucaena leucocephala*	61	6.10	0.142	0.043
5	Korai	Albizia lebbek	65	7.01	0.184	0.057
6	Silkorai	Albizia procera	57	7.01	0.137	0.047
7	Ghora Neem	*Melia azedarach*	66	7.32	0.199	0.061

Disposal of final product

Final products of the tree plantation were sold by open tender through the direct supervision of RDRS with the consent of concerned beneficiaries. Beneficiaries and other owners got their benefits as per agreement i.e., land owner agency 25 percent, RDRS 10 percent and Federation 65 percent. The concerned caretaker got 10 percent benefit from the federation in addition to monthly wage.

Impact of SFP Beneficiaries

Asset development

The respondent beneficiaries earned different kinds of assets using the benefits received from the SFP. About twelve kinds of assets development were reported by the respondents, among these, the dominant outputs were building new houses purchase of land, cow and goat and money spent for marriage ceremony of daughter etc. (Table 3).

Table 3. Asset development of the respondents after participating in the strip SFP of RDRS, Nilphamari.

Nature of Development	Number of respondents	Percent of respondents
Building of new house	6	10.00
Land purchase + New House building	4	6.70
House building + Land lease	4	6.70
House building + Investment in business	2	3.30
House building + loan repay	2	3.30
Land purchase	2	3.30
Purchase of goat	8	13.30
land purchase + Cow purchase	2	3.30
House building + Cow purchase	10	16.70
Land purchase + cow purchase+ House building + Loan repayment	2	3.30
land purchase + Cow purchase + daughter's Marriage	10	16.70
Goat purchase + Daughter's marriage	8	13.30
Total	60	100.00

Annual income

Annual income of the respondent beneficiaries during the financial year 1992-1993, at the time when they engaged themselves with SFP ranged from US$ 60 (Tk. 4200) to US$ 415 (Tk.29000), with an average annual income of US$ 150 (Tk. 10515). After completion of the first rotation (during the financial year 2005-2006) annual income of the respondents ranged from US$ 127 (Tk. 8900) to US$ 672 (Tk. 47,000), with an average annual income of US$ 342 (Tk. 23883). The income level before and after participation in SFP indicates that the mean income level of the beneficiaries was increased by 227 percent. This income improvement is not only the contribution of SFP but also the cumulative effect of all other development activities. It was observed that the number of low income group was reduced

from 63 to 7 percent and medium income group increased from 37 to 93 percent (Table 4). This achievement indicates the economic improvement of the beneficiary due to their involvement in SFP of RDRS.

Table 4. Change in annual income of the respondents after participation in the strip SFP of RDRS, Nilphamari

Category	Change in annual income of the respondent	
	Before participating in the SFP (1992-93)	After participating in the SFP (2005-06)
	Percent	Percent
Low income (<10,000 Tk)	63	7
Medium income (10,001-<50,000 Tk)	37	93
High income (>50,000 Tk)	0	0
Total	100	100

Drinking water source

Sources of drinking water for the beneficiaries were reported to improve because the economic solvency of the beneficiaries were improved as compared to the beginning of their participation in SFP. It was shown that before participation in SF, 53 percent of the respondents used Earthen Well (Kua), 40 percent used tube-well and the rest 7 percent used pond as their source of drinking water, while after getting shares or benefits from SFP, the scenarios were changed where 93 percent used tube-wells of which 60 percent had their own tube-well and none was reported to use pond water thereafter (Table 5).

Table 5. Change in the use of drinking water by the respondents after participating in the strip SFP of RDRS, Nilphamari.

Source of Drinking Water	Change in use of drinking water by the respondent	
	Before participation in SFP	After participation in SFP
	Percent	Percent
Earthen Well (Kua)	53.	7
Own Tube-well	0	60
Pond	7	0
Neighbours' Tube-well	40	33
Total	100	100

Use of latrine

Like sources of drinking water, improvement was also found in the use of latrine. Forty percent of the respondents used unhygienic locally made latrines while the rest 60 percent did not use any latrine but used surrounding thick bushes or ditches (Table 6). After getting benefits from SFP, the scenario were changed remarkably where 50 percent of the respondents were found to use semi pucca or metalled ring latrine and the other 50 percent used kacha or non metalled Latrine (localy made unhygienic) and none was reported to use bushes or ditches.

Table 6. Changes in the use of latrines by the respondents after participating in the strip SFP of RDRS, Nilphamari.

Type of Latrine	Changes in use of latrines by the respondent	
	Before participation in SFP	After participation in SFP
	Percent	Percent
No Latrine/Bush use	60	0
Kacha (non metalled local made) Latrine	40	50
Semi Pucca(metalled) Ring Latrine	0	50
Paka (metalled) Ring Latrine	0	0
Sanitary Latrine	0	0
Total	100	100

Satisfaction of the respondents about RDRS activities

Cent percent of the respondents were highly satisfied with the activities of RDRS. Respondents satisfaction about their livelihood activities such as their housing, healthcare, clothing, education and food habit is shown in table 7.

Table 7. Satisfaction level of the respondents about their livelihood aspects after participation in the strip SFP of RDRS, Nilphamari.

Satisfaction level	Satisfaction level of the respondent on the different livelihood aspects (%)				
	Housing	Health care	Clothing	Education	Food habit
Very Satisfied	57	23	43	20	40
Satisfied	0	43	47	27	33
Moderately Satisfied	0	7	7	17	27
Not Satisfied	43	26	3	37	0
Total	100	100	100	100	100

Wood supply and processing center

Almost cent percent respondents opined that due to social forestry activities, wood supply in the local market had increased remarkably and as a result the number of wood processing mills and other small cottage industries were established in the study area.

Change in attitude of the respondents

Changes in attitude of the respondents were measured in terms of illegal felling, encroachment of government land, interest on SFP related training, women participation in development and in decision making through four parameters i.e., increased, remained static, decreased and highly decreased. In the table 8, It could be seen that in case of illegal felling, majority of the respondents (63 percent) opined that this parameter remained static; in case of encroachment of government land, majority of the respondents opined that this parameter deceased remarkably, while in case of interest in SPF training programme, almost cent percent (97) showed interest to participate. Regarding women participation in development activities, 73 percent of the respondents reported that the trend of women participation in development activities had increased, while regarding women participation in decision making, 50 percent of them opined that women participation in decision making had increased and similar number of respondent (50 percent) opined that it had remained static.

Table 8. Distribution of respondents according to the change in attitude after participating in the strip SFP of RDRS, Nilphamari.

Evaluation parameter	Change in attitude of the respondent (percent)				
	Illegal felling	Encroachment of government land	Interest on SFP related training	Women participation in development	Women participation in decision making
Increased	14	3	97	73	50
Remained static	63	17	3	27	50
Decreased	10	67	0	0	0
Highly decreased	13	3	0	0	0
Total	100	100	100	100	100

Improvement of knowledge of the beneficiary

Participation of the caretakers in SFP of RDRS had improved their knowledge in various aspects. Table 9 showed that the scale of knowledge improvement varied widely among the selected parameters. Before participation in SFP, the scales of knowledge of the caretakers regarding general knowledge about SFP; knowledge about nursery development and seedling production; knowledge about pruning,

thinning, rotational period; and knowledge about improvement of environment were almost zero but these parameters had increased to 100, 20, 93 and 67 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, the scales of knowledge of the respondents had increased to some extent i.e., from 37, 7, 13 and 20 percent before their involvement in SPF to 73, 20, 90 and 91 percent respectively after active participation in SFP. These findings revealed that knowledge of the participating caretakers had improved significantly.

Table 9. Knowledge improvement of the beneficiaries on different management issues before and after participation in the strip SFP of RDRS, Nilphamari.

Knowledge Improvement Parameter	Knowledge improvement of caretaker because of participation in SFP	
	Before Participation in SFP	After Participation in SFP
Knowledge about SFP	0	100
Knowledge about type of plant species	37	73
Knowledge about suitable soil for tree species	7	20
Knowledge about nursery development and seedling production	0	20
knowledge about age of planting materials, method of plantation and management	13	90
knowledge about pit size, fertilization, irrigation and aftercare	20	91
Knowledge about pest management	0	7
Knowledge about training, pruning, thinning, rotational period	0	93
Knowledge about improvement of environment	0	67

Problem faced by the respondent during participation in SFP

The respondent beneficiaries had faced several problems during their participation in RDRS SFP. Among several problems, the major were conflict with nearby land owners because shades of trees, fallen leaves and twins from tree causing harm to their crops and most cases non inclusion of the nearby land owners as beneficiary. 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/land for plantation under SFP from local authorities, lack of irrigation water, damage of saplings by cattle and lack of capital and other logistic support for second rotation of plantation and caretaking.

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 visits by NGO and Forest Department personnel, and (v) arranging intensive training programme about different aspect such as scientific management, as well as social, economic and environment values of social forestry programme.

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Suggested citation:

Ali, Q. L., A. Khair, et al. (2008). *Contribution of RDRS Social Forestry Programme and Its Socio-Economic Impact on Livelihood of the Beneficiary.* Rangpur, Savar and Gazipur, RDRS Bangladesh; Department of Botany, Jahangirnagar University; Department of Agroforestry and Environment, Bangabandhu Sheikh Mujibur Rahman Agricultural University.