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COMMUNITY FORESTRY IN BANGLADESH – A CASE STUDY OF BETAGI-POMRA COMMUNITY FORESTRY MODEL

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ABSTRACT

A case study of Betagi-Pomta Community Forestry Project was done at Chittagong district in Bangladesh. The project started functioning at Betagi with 82 settlers each alloed 1.62 ha of land in 1979 and Pomra with 152 settlers each alloted 1.62 ha of land in 1980. The main objective of the study was to extend the knowledge gained from the Betagi-Pomra experence in unproductive hilly areas to other areas in the country. A complete enumeration of the settlers at Betagi and sampling of the settlers at Pomra were carried out in both 1985 and 1994. Data on family members, land utilization, growing stock, income, expenditure, financial assistance, marketing, training, etc., were colleted in a designed questionnaire. The land expectation value was estimated to be Tk. 46000 at Betagi and Tk. 43333* at Pomra indicating prospective land use pattern. The input-output ratio stood at about two at Betagi and two at Pomra without considering future cost and benefit of planted stock. The internal rate of return was found to be 104% at Betagi and 90% at Pomra. Annual farm farm income per family in 1994 was increased to more than double both at Betagi and Pomra compared to family income in 1985. In view of the estimated characteristics, the Betagi-Pomra model porvided employment opportunities, conversion to denuded hills into green crops, ideal cropping pattern, proper market mechanism, community stability, self-sufficiency, decrease in social crimes, etc. The model may be replicated to other denuded and unproductive hilly areas in Bangladesh.

Key Words : Community forestry, landless, land expectation, internal rate of return, input-output ratio, self-sufficiency, social crimes, unproductive

INTRODUCTION

Traditionally forestry has remained the function of the Bangladesh Forest Department (BFD). It ignores local needs and helps to divert forestry benefit to richer people. Forest resources in Bangladesh are being depleted rapidly by increasing population pressure on forest land. About 69% of the total population of the country are landless (BBS, 1994). A change is felt essential and development, management and protection of forest should become the function of the entire population of the country (Chowdhury and Hossain, 1989). To increase the tree cover on private land and involve the masses in it, government and non government organizations (NGOs) have made several attempts towards participatory forestry programmes. This is the recent development in the field of forestry for proper management. Consequently, the participatory projects, viz., the Betagi-Pomra Community Forestry Project (Chittagong), the North Bengal Community Forestry Project (Dinajpur), the Thana Banayan (Plantation) and Nursery Prokalpa (Project), the Proskika Roadside Forestry in Serajganj and other leading NGOs Social and Community Forestry Projects among others have been undertaken. The Community Forestry Projects were initiated by the government while the roadside projects were an NGO initiative. The primary

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objective of the Community Forestry Projects was to rehabilitate the landless and to augment the supply of fuelwood, timber, edible fruits, fodder and other tree products. The present study is confined in the Betagi-Pomra Community Forestry Project.

A large are of khas (land under Ministry of Land Resource) and protected forest land have remained unproductive and contribute very little to the national economy. There is acute shortage of fuelwood in some regions. Cowdung is used as a fuel is areas where declining fertility in agriculture land (Abedin and Quddus, 1988). Supply of rural construction and that ching materials is acute. The existing forest laws have not proved efficient in protecting forest resources. The income of landless and small farmers is low and declining. A number of projects have been undertaken to find a solution to this national problem. These efforts have three directions they are: protecting the existing forests; expanding the forest area through utilization of khas and protected forest land; and regenerating the denuded hills.

Bangladesh Forest Research Institute (BFRI) undertook a study to investigate the socio-economic impact of the Betagi-Pomra community forestry project in 1985. The Community Forestry Project was undertaken in the two villages of Betagi and Pomra under Rangunia thana of Cittagong district in Bangladesh. The two villages are about 15 miles from Chittagong City. They are situated at eastern side of the city and at both sides of Chittagong-Kaptai Road. The river Karnafully flows at the southern side of the project area. Both areas are hilly and close to government reserve forest. Betagi is on hilly khas lands under the jurisdiction of the Ministry of Land Resource.

The Betagi-Pomra project was started with the following objectives; (a) to regenerate denuded hill by planting trees, (b) to rehabilitate landless farmers, (c) to protect the forest from the illegal felling with the help of the settlers and (d) finally to suggest how the Betagi-Pomra experience can be effectively extended to Chiitagong Hills as well as other hilly areas in Bangladesh. The project began functioning in Betagi in 1979 and the number of settlers is now 82 was each allotted 1.62 hectare land. Similarly the project started functioning in Pomra in 1980 and number of settlers is 152 at present with the same allotted land of 1.62 hectare per family.

A committee was formed for the selection of landless families settled in the project. The committee was constituted with the thana executive officer. Rangunia (Chairman); Range officer, Pomra Range (Member-Secretary); Manager, Bangladesh Krishi (Agriculture) Bank, Pomra Branch; Chairman, Pomra Union; Chairman, Betagi Union; Thana Revenue Officer; Thana Krishi Officer; Thana Shamabya Karmakarta (Cooperative Officer); Thana Project Officer; Thana Police Inspector; Chief of Thana Village Defence Party; Chairman of Thana Kendria Shamabaya Shamity (Central Cooperative Society), President of Betagi Bhumihin Shamity (Landless Association) and President of Pomra Bhumihin Shamity. The criteria for the selection of landless families were as follows ; they should :

a) have no land at all

b) possess a homestead only, or

c) possess a homestead, pond and other land that together do not exceed 40 decimal.

The terms and conditions of allotment of land to the selected landless families were as follows:

a) the settlers would follow the suggestions of BFD

b) they would construct their huts on the top of the hills and live there permanently

c) they would not work outside for additional income

d) the would enjoy 100% of all products

Previously, these people worked as daily labour for about seven days on average every month. When they could not manage to do any work, they used to cut trees in the forests to sell the fuelwood. The average income was only about Tk 7000* per annum per family. In 1987, each of the families settled in Betagi received a lease deed for 25 years with a restriction on selling the plot. The tenurial arrangement of Pomra is still under a one year temporary lease basis. After settlement the families started their works in respective plots without any financial assistance. In 1981, a credit facility was introduced the Krishi Bank through Grameen Bank procedure for the people of Betagi and Pomra. The Bank relaxed some conditions and loans were provided without taking any security. But in Betagi in 1987, they were required to mortgage the deed to the Bank as a security against the loan. The people of Pomra, however, received their loans without security. Until 1987, the maximum loan per family for both the areas was Tk.12000*. In the Beginning of 1987, the maximum loan per family was raised to Tk.10000* for Betagi and to Tk.5000* for Pomra. After settlement the families started to develop their land and produced some agricultural, horticultural and forest crops in order to meet their immediate and future needs. There is a president in each area elected by the settlers for one year. The president sorts out the overall project problems, helps the group members in taking loan from the bank, conducts weekly meetings and submits reports. These activities are required for the cancellation of allotment for undersirable families and selection of a new family in lieu of, as entrusted by BFD or Thana Project Committee. The meeting of the committee is organized twice a year for reviewing the progress of the project such as recruiting fresh members, cancelling undersirable families, discussing different problems and taking policy decisions. A Range Officer and some field staff have been instructed to extend all possible cooperation in respect of plantation, garden management, receiving loans from the bank, conducting cases in court and other related matters.

In the weekly meetings, the following topics are discussed :

a) reporting of weekly sales of vegetables, fruits and other products and recording
them in the record book

b) discussing all community problems and taking decisions for their solution

c) depositing weekly instatments and repayment of bank loam. In addition, every group member pays Tk. 1* as saving

METHODS

The objective of this case study was to evaluate the economic benefits of the agro-forestry practices and socio-economic impacts of the Betagi-Pomra community forestry model. A socio-economic survey was conducted in each area separately. The crops and the cropping pattern, development of crops under agriculture, horticulture and forest, live-stocks resources, input-output ratio, internal rate of return, land expectation value, etc., were the characteristics investigated in the survey. A complete enumberation of 74 families in Betagi and a simple random sample of 24 families out of 126 families in Pomra area were considered in the survey. A questionnaire was developed for collecting data from the two areas during the survey. Address of a settled family, family members, areas and utilization, homestead and farm lands, rehabilitation, growing stock of agricultural, horticultural and forest crops, livestock resources, outside and farm land income, financial assistance, training and marketing of the products were the main components of the questionnaire. Data were collected as per developed questionnaire by a group of Field Investigators and staff. The major characteristics were found out on the basis of average calculation. The land expectation value was estimated by the formula given below.

* 1 US$ = Taka 40.00 only.

$$L_e \frac{a(1+i)^n - 1}{i(1+i)^n} = \frac{a}{i}$$

Where L_e = Land expectative value
i = Rate of interest (15%)
n = Number of years (large)
a = Stream of annual revenue

The internal rate of return was estimated

$$IRR = (n\sqrt{\frac{R}{E}} - 1)100$$

by the following formula :

Where IRR = Internal rate of return
R = Income
E = Expenditure
n = Number of years

In 1994, a similar type of socio-economic sample survey was conducted in both Betagi and Pomra. The sample families 23 from Betagi and 37 from Pomra were considered for the survey. The main objective of this survey was to see overall socio-economic development of the settled families after about 10 years settlement. The same questionnaire was followed for the collection of about same data as in the survey of 1985. Family size, occupation, growing stock per hectare, annual farm income and labour contribution were estimated and compared with the estimated values for the two areas.

RESULTS AND DISCUSSION

The Crops and Cropping Pattern:

The settide families of Betagi and Pomra planted short rotation agriculture crops (barbati, beans, lady's finger, brinjai, potato, tomato, etc.), medium rotation horticultural crops (Papaya, banana, lemon, guava, pineappie, etc.) and long rotation forest crops (jackfruit, mango, coconut, beteinut, etc.). The cropping pattern of some selected species for both areas are given in Table 1. It was found that a considerable number of fruit and forest species have been planted without maintaining any idea of cropping pattern in both areas. No specific area for different types of crops have also been maintained. The average number of fruit trees per family and average growing stock of forest trees (both planted and natural) were estimated to be 926 and 676 respectively at Betagi up to 1985. These averages provided total number of 68500 fruit trees, growing stock of 50000 forest trees (both planted and natural) and 101 bamboo clumps. On the other hand at Pomra, average number of fruit trees per family, average number of forest trees planted per family and average number of bamboo clumps per family were estimated to be 550,225, and 2 respectively up to 1985. These averages give the total number of 69,375 fruit trees 28,312 forest trees (planted and natural) and 252 bamboo clumps. A total of 252 cows, 100 goats and 441 hens were also estimated at Pomra in 1985, though cows and goats are restricted to keep in families.

Table 1. The cropping pattern of some selected species in Betagi and Pomra.

Species	Plantation site	Spacing (m)
Lemon	Slope and bottom	3.6 x 3.6
Jackfruit	Slope and bottom	9.1 x 9.1
Guava	Slope and bottom	3.6 x 3.6
Papaya	Slope and bottom	1.8 x 1.8
Coconut	Bottom	3.6 apart in line
Betelnut	Bottom	1.8 apart in line
Pineaple	Slope	1.2 apart in line
Forest species	Top and slope	1.8x1.8 (mostly)

The major inputs which are normally required for production are seeds and seedlings fertilizer insecticides, hand tools and physical labour. The input-output situation in Betagi and Pomra is in Table 2. The cost of input and amount of income were recorded on the basis of statement of the settled families as well as on discussion with related field staff. The income did not include family consumption of vegetables, fruits, sungrass, fuelwood and timber for Betagi and Pomra. Under the circumstances, the output input ratio stood at about two in Betagi and two in Pomra. In 1985. The input cost made for planting and developing new fruit trees were taken into consideration, although they were expected to give return later.

Excluding this labour cost, the output-input ratio would be more than above in both areas. In a few years later when the income from fruit, fuelwood and timber will be considered, the output-input ratio can be more than four.

Land Expectation Value (L_e) and Internal Rate of Return (IRR) :

Data regarding volume increment of heterogeneous forest species were not known. It will also be difficult to project their market prices. Moreover, a considerable part of the allotted land was yet to be developed. Under this situation, land expectation value could not be calculated on a rotation basis. The calculation of land values would have to be on the basis of long run annual net income. At Betagi, the land expectation value (L_e) was estimated to be the Tk 7000* (value of products Tk 10000*- cost of input Tk 3000*) were estimated very conservatively. It indicates that the land use pattern is prospective.

Table 2. Input-output situation under Betagi and Pomra community forestry project (1985).

Input	Average cost per plot (Tk.)	
	Betagi	Pomra
a) Seeds and seedlings	700	783
b) Fertilisers, insecticides, etc.	650	711
c) Depreciation and overheads	50	150
d) Labour contribution	3,500	3,000
Total	**4,900***	**4,644***
Input	**Average income per plot (Tk.)**	
	Betagi	**Pomra**
a) Income from vegetables		3,942
b) Income from fruits		2,786
c) Income from sungrass and fuel wood		2,033
d) Income from livestocks	10,000	263
Total	**10,000***	**9,024***

In 1985. The annual average cost per hectare for inputs, labour and overheads was Tk.2953* at Pomra. Assuming a higher cost for developing more areas of plantations and

* 1 US $ = Taka 40.00 only.

barren protected forest plot (PE plot) and a leased over plot in the same area were calculated on the basis of long run annual net revenue per hectare of Tk.600* and Tk.1000* respectively. The IRR values in both areas are high compared to those of many agricultural projects. The L_e and IRR may be summarized below for both Betagi and Pomra (Table 3). It is observed that under three alternative uses for similar types of land, Le values of Betagi and Pomra are 10 and 7 times higher than PF and Leased over plot respectivelys.

Table 3. The land expectation (Le) value and internal rate of return (IRR) for Begagi and Pomra (1985).

Project area	Le (Tk.)	IRR %
Betagi	46000	104
Pomra	43333	90
Leased over plot	6666	-
Protected forest plot	4000	-

In 1994, a separate sample survey specially on family size, growing stock, farm income and labour contribution in each area was conducted. The survey results are compared with the results of 1985 in Table 4 and Table 5.

Table 4. The comparative results of family size, labour hour per day and annual farm income at Betagi and Pomra (1985 and 1984).

Project area	Year	Family size	Labour hour per day	Annual income (Tk)
Betagi	1985	5.6	14.0	14000*
	1994	7.4	11.47	29343*
Pomra	1985	5.7	12.0	9023*
	1994	6.0	7.53	22593*

Table 5. Estimated change in average growing stock per family at Betagi and Pomra (1985 and 1984).

Project area	Year	No. of forest trees	No. of fruit trees	No. of banana trees	No. of bamboo clumps
Betagi	1985	650	870	35	2.5
	1994	746	1557	38	3.0
Pomra	1985	225	530	25	2.0
	1994	514	1083	35	2.3

In Table 4, it is observed that the family members have not increased significantly over a long period of 9 years at both Betagi and Pomra. The annual farm income has, however, increased two to three times more than the same in 1985 with decrease in trend of labour hour contribution per day. In Table 5, it can also be seen that the growing stock of forest trees fruit trees fruit trees and bamboo groves have increased largely in both areas over the same period. It indicates that the landless people have developed their allotted plots with agroforestry farming farming. Previously, they used to live on day labor, rickshaw pulling and fuelwood collection.

The Basic Problems

At Pomra, a good number of farmers are below the subsistence level. They work outside in violation of the terms and conditions of land alloment. About 40% of

the settled families do not stay in their plots again violating the terms and conditions. They have problems of water, school, medical facilities, communications, etc. At Betagi, these problems are negligible. At Pomra, tenurial conflicts between the farmers and the villagers are acute. At Betagi, these problems have declined. The agricultural and livestock services in the two areas are poor. There are problems with marketing of the products. There is also lack of proper monitoring.

Socio-Economic Impacts

a) Employment opportunities were created for the landless. Their income and quality of live have improved significantly

b) The denuded hills have turned into green crops. The farmers are producing fruits, vegetables, sungrass, fuelwood and timber. The encroachers are now protectors.

c) The farmers have become capable of contributing to a large range of activities.

d) Significant impact on social equity has been achieved. This is the ultimate goal of rural development.

e) The two areas have become self-sufficient in fuelwood and sungrass which are essential commodities for rural livlihoods. The settled families now supply vegetables and fruits to local areas and Chittagong city.

f) Social crimes have decreased. The farmers are now planning for a better life.

g) Economically viable hill farming technology has been developed with sufficient generated information.

h) A community forestry model has been established. It may be used in formulating forest management policy and be replicated elsewhere.

CONCLUSION

The Betagi-Pomra model depicts a way of utilizing denuded hills simultaneously by rehabilitating the landless people. The model is the first systematic effort in the field of social forestry in Bangladesh. It is, perhaps, the unique exercise in South-East Asia in which the settlers developed their land with their own initiatives and without financial assistance. The South Asian Association for Regional Cooperation (SAARC) countries can take advantage of this experience. Except Bhutan (50%) and Sri Lanka (42%), other SAARC countries have a limited percentage of forest area in comparison with their total land and population (BFD, 1986). They have similar problems of encroachment and deforestation for protecting national forest. The Community Forestry Model at Betagi and Pomra has turned out to be a technology in itself. It can be seen that the model can to accelerate and productivity substantially. The growing stock of forest and fruit trees has increased to almost double compared to the survey results of 1985. The socio-economic status of the settled families has improved considerably. Their present income is more than two times higher than their previous income. The project has generated employment opportunities. In spite of the success of the project at Pomra, it there have been problems of internal inconsistency, community instability, lack of ideal cropping pattern and improper market mechanism. These problems need to be solved to make consistency of the model consistent at Pomra. If this type of project is initiated in the denuded unclassed state forests and unproductive hilly khas lands, it will help rural development solving unemployment problems for the landless people and increase the production of food, fuel, timber and other forest products.

REFERENCES

Abedin, M.Z. and Quddus, M.A. 1988. Household fuel situation, home gardens and agroforestry practices at six agro-ecologically different locations of Bangladesh. Proceedings of a national workshop held in July 17-19, 1988, at Joydevpur, Bangladesh. Editors : M.Z. Abedin, C.K.Lai and M.O. Ali. 19-53 p.

BBS. 1994. Statistical year book of Bangladesh. Twelfth edition, Bangladesh

Statistics Division, Ministry of Planning, Dhaka. 628 p.

BFD. 1986. Report submitted to the President of Bangladesh by Bangladesh Forest Department, Dhaka. 25 p.

Chowdhury, R.A. and Hussain, M.Z. 1989. Forest management practices in Bangladesh : Traditional practices and alternative approaches. Bangladesh Forest Department, Dhaka. 20 p. (unpublished)

Davis, K.P. 1966. Forest Management : regulation and valuation (2nd edition). McGraw-Hill Book company, New York. 519 p.

Williams, M.R.W. 1981. Decision making in forest management. Research Studies Press. A Division of John Wiley & Sons Ltd., New York. 143 p.

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