

Household Forest Conservation and Environmental Literacy: Does the Participation in the Microcredit Based Social Forestry Program Matter? Experience from Proshika in Bangladesh

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Abstract:

The study intends to assess impact of the participation in the social forestry program of Proshika in Bangladesh on household forest conservation and environmental literacy of participating households. The number of trees planted by a household on its own land in a year has been used as an indicator of the level of household forest conservation of that household. The level of environmental literacy of the same household has been determined through determining the level of knowledge of the household about 16 important environmental issues. The analysis is based on a household-level survey of 420 households. The results indicate that the participation in the SF projects of Proshika significantly enhances the awareness of households about the importance of household forest conservation. And it also enhances the environmental literacy of participating households.

Keywords: Microcredit, Social Forestry, Environmental Literacy, Trees, Proshika, Bangladesh

1.0 Introduction

The rapid reduction of forest resources has posed a serious threat to the ecological balance in Bangladesh. There is a positive correlation between poverty and deforestation. Approximately 40% of the population live under the poverty line. People are poor because they have lack of entitlement on absolute minimum necessities of life. Absolute minimum necessities of life include food, education, clothing, housing and health. Poverty of households contributes significantly to deforestation as poor households are dependent on local forest for their livelihood and for fuelwood. Firstly, the poor do not have the purchasing power to procure firewood from market. Secondly, to intensify the dependence, for large number of poor household local forest becomes the main source of income due to lack of employment opportunities and lack of capital required to start an independent business. Thus, poverty represents one of the many contributors to deforestation and consequently, to deterioration of environment. According to studies, deforestation occurs due to the use of fuelwood, fodder and other forest products by local poor people (WCED, 1987; Timberlake,

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1985; Anderson and Fishwick, 1984; IUCN *et al.* 1980). Currently the coverage of natural forest is 835,000 hectares (excluding parks and sanctuaries), which accounts for 5.8 percent of the total land area of Bangladesh (Forestry Master Plan, 1993). At present, the per capita forestland is less than 0.02 hectares, which was 0.035 hectares per person in 1968-69 (Huq and Alim, 1995).

Against backdrop, non-government organizations (NGOs) have come forward with the objective of improving the environment and alleviating poverty through social forestry programs. Some of these NGOs, for example Proshika and BRAC, are using microcredit (small collateral-free loans to jointly liable groups) to motivate poor households to participate in the social forestry programs. Social forestry consists of all programs and activities at the community level dealing with tree planting in farms and other categories of lands, caring for the trees and using them for economic and environmental benefits. The activities under the social forestry include tree nursery establishment, tree planting on farms and other categories of land, management and utilization of wood and non-wood forest products for a variety of goods and services. Social forestry programs are aimed primarily at helping small farmers and landless to meet their consumption and income needs. The main goal is to induce a large number of poor people to plant trees for their own benefits. These programs often attempt to promote collective actions for tree planting and protection and also for institutional development.

The present study intends to assess of the impact of the participation in the SF projects of Proshika on household forest conservation and the environmental literacy. The number of trees planted by a household on its own land in a year has been used as an indicator of the level of household forest conservation of that household. The level of environmental literacy of the same household has been determined through determining the level of knowledge of the household about 16 important environmental issues. Due to time and financial constraints, the present study looks into only strip and block plantation programs of Proshika to achieve its objectives. The second section describes the Proshika's social forestry program. The third section defines the issue of environmental literacy and the methodology of calculating environmental literacy score. The fourth section deals with the methodological issues. The fifth section presents the results of the analyses and the final section draws the conclusion.

2.0 Proshika and Social Forestry

Proshika, one of the three largest microfinance institutions in Bangladesh, was established in the year 1976 and it envisages a society which is economically productive and equitable, socially just, environmentally sound, and genuinely democratic. The organization's mission is to conduct an extensive, intensive, and participatory process of sustainable development through empowerment of the poor. Through empowerment, the poor are organized and made aware of the real causes of their impoverishment, a leadership is developed among them, their material resources are mobilized, income and employment are increased, and capacities are developed to cope with natural disasters. Empowerment makes the poor functionally literate, enables them to take better care of their health, to get involved in environmental protection and regeneration, get elected in local government bodies and community institutions, and provides the poor with better access to public and common property resources. Up to December 2004, Proshika has mobilized 2.6 million members through out the country and disbursed a cumulative amount of Taka 20.6 billion.

Forestry is one of the key components of the activities of Proshika from the beginning. Forestry activities are divided into two parts. The first part belongs to the Forest Management Program that supports forestry protection in degraded *sal* areas and promotes agro-forestry and woodlots in forest areas. But the size of the activities of the first part is comparatively small. It has presence in only six upazillas² in Bangladesh. The second part of the forestry program belongs to Social Forestry. The activities of the social forestry are comparatively larger than the activities of the Forest Management program. Currently, Proshika operates in 150 upazillas in 57 districts in Bangladesh. Under the social forestry program, Proshika promotes two types of activities: (1) Strip and Block Plantations, and (2) Institutional plantation.

Under the strip and block plantation program, Proshika members plant trees alongside roads, railways or canals or privately owned land. Before starting a strip and block plantation project, Proshika helps members of one or two groups to negotiate with owner of the land, who may be a government agency or a private individual. After the completion of the negotiation and legal

² In Bangladesh, every district is divided into several administrative proportions, each proportion is known as Thana. Currently, the word 'Thana' is replaced by the word 'Upazilla'. Upazilla means sub-district.

formalities, members complete the plantation. The members of the groups that are involved in the plantation select some caretakers who are paid to protect the seedlings for the first two to three years, when the seedlings are especially at risk from grazing animals. Thereafter, the members are expected to protect the trees from the theft and carry out the required maintenance, especially periodic pruning and thinning. In return, these members are allowed to use the biomass produced from trees. At the end, when the trees reach the maturity stage, they are cut off for selling as timber and the proceeds that come from the sale are divided in agreed proportions among the parties, Proshika members, landowner and Proshika that are involved in the plantation. During the period 1976 to 2002, Proshika completed 14, 671 kilometres of strip (Table1) plantation with the involvement of 6,729 groups and planted 7.3 million trees. Under the block plantation programs, Proshika planted 48.9 million trees on 17, 731 hectares of land during the period 1976 to 2002 (Table 2). Under this program Proshika involved 8,981 groups of their members.

Proshika implements the institutional plantation on the campuses of the educational institutions with the objective to create a more pleasant environment for the teachers and students. Sometimes Proshika also implements this project as part of joint research into newly introduced species. During the period 1998 to 2002, Proshika brought 552 institutions into its coverage under the institutional plantation program. During the same period, Proshika planted 472, 378 seedlings in these 562 institutions.

3.0 Environmental Literacy

Environmental literacy can be defined as knowledge and understanding of individuals about the factors and issues related to environment and also about how environmental factors affect the quality of life of individuals. It can also be defined as the quality or state of being able to understand environmental issues and the consequences of the changes in the factors that constitute the environmental on the quality of life of individuals. Roth (undated) identifies the following factors that environmentally literate people should know and understand: (a) The physical process that shape the patterns of the Earth's surface; (b) The characteristics and spatial distribution of ecosystems on earth's surface; (c) The characteristics, distribution, and migration of human populations on earth; (d) The patters and networks of economic, social, and political

interdependence on Earth; (e) The patterns and networks of economic, social, and political interdependence on earth; (f) The processes, patterns, and functions of human settlement; (g) How human actions modify the physical environment; (h) How physical systems affect human systems; (i) The changes that occur in the perception, use, distribution, and importance of resources.

In this paper, the households have been asked to answer one question and to give their opinion on 16 environmental issues to understand the level of environmental literacy of those households. The question that has been asked is related to the number of trees the household planted during the last one year on own land. The 16 environmental issues are: (1) I do not believe that human being are not polluting environment; (2) Dust, smoke fro brick fields, and chemical wastage from factories are polluting environment; (3) Lack of environmental knowledge is causing massive climate change; (4) Use of the pesticide and fertilizer for agricultural purposes is not bed for environment; (5) A portion of the pesticide and fertilizer that we use for agricultural purposes remains in food and that is bad for health; (6) Environmental degradation, especially arsenic contamination, will create shortage of drinking water in the near future; (7) Modern agricultural activities today lead to the destruction of natural biotopes and to a reduction in wildlife as well as wild plants; (8) The incremental use of pesticide and fertilizer reduces the natural productivity of the land and the product quality; (9) The incremental use of pesticide and fertilizer reduces the product quality; (10) The use of pesticide and fertilizer in agriculture works against nature; (11) Environmental problems resulting from agricultural activities are exaggerated by the media; (12) The use of pesticide and fertilizer in agriculture is causing water pollution; (13) In spite of limitations, farmers can protect the environment; (14) The use of pesticide and fertilizer is not harmful for the environment, rather they promote high quality production; (15) The use of pesticide and fertilizer makes sense as long as it brings greater return than costs; (16) The governmental and non-governmental organizations will have to become more active for protecting environment.

3.1 Environmental Literacy Score

The responding households have been asked to give their opinion on a 5-point scale, ranging from strongly disagree to strongly agree. On the basis the responses of households related to the above mentioned 16 points, an environmental literacy score has been calculated for every household. In

the case of an affirmative statement, the highest 5 points have been awarded to a household if the response is “strongly agree” and the lowest 1 point has been awarded to “strongly disagree”. In contrary, 5 points have been awarded to “strongly disagree” and 1 point has been awarded to “strongly agree” in case of a negative statement. The highest achievable environmental literacy score is 80 and the lowest achievable environmental literacy score is 16 for a household. A household has been identified as an environmentally literate household if the total environmental literacy score is more than 63. On the other hand a household has been considered as an environmentally illiterate household if the total environmental literacy score is less than 63.

4.0 Methodology

The assessment of the impact of the participation in the SF program of Proshika on environmental literacy has been done in two stages. In the first a comparison has been made between SF households and non-social forestry households. And in the second stage, the multivariate analysis has been conducted.

4.1 Simple comparison using pipeline comparison group households

Under this method, comparisons have been made between two groups of households: those who have already taken more than one loan from the microcredit based social forestry program of Proshika (Program households) and those who are the members of microcredit program of Proshika, but have not participated in the social forestry program (comparison group). Although, all non-social forestry households were divided into two groups, CG1 and CG2, during the period of data analysis these households were combined together (CG households) and were compared with social forestry households. The impact of social forestry has been assessed though comparing means and distributions of outcome variables of these two groups. The differences in the means and the distributions of outcome variables of these two groups capture the impact of the participation in the social forestry program at the household level.

4.2 Multivariate analysis using the cross sectional data:

Keeping in mind the limitations of the simple comparison method, the multivariate analysis method will be used to assess the impact of social forestry on outcome variables at the household level. The main advantage compared to the simple comparison method is that it enables the study to control those household and village level variables, which influence the outcomes of the social forestry programs.

Under this method the program impacts can be estimated through using a single equation:

$$Y_{ij} = H_{ij} \alpha_b + L_j \theta_f + M_{ij} \beta_1 + v_{ij} \quad (6)$$

where Y_{ij} is the outcome of the household i in the village j on which we want to measure the impact.; H_{ij} is the vector of household characteristics; L_j is the vector of village level characteristics; M_{ij} is vector of microcredit variables; and V_{ij} represents the error of the model that arises from the household and village level variables that are not included in the model. In the equation 6, M_{ij} , represents the participation of the household j in the area i in the SF projects of Proshika.

4.2 Sample Survey

The analysis reported below is based on a household-level survey of members of a Proshika branch carried out from February to April 2007 (450 households). The data were collected through face-to-face interviews following a four-stage sampling design. Bangladesh is divided into 64 administrative districts. In the first stage a district has been selected. The name of the district is Gazipur. In the second stage, a list of the ‘branches’ of Proshika in the district was constructed. A branch usually consists of 50 to 60 ‘centers’, with each center having 30 to 40 members. The selected branch was about 80 km distant from Dhaka, the capital of Bangladesh. In the third stage, centers were selected from the selected branch. All the centers in the branch were divided into three categories of membership: (1) centers with social forestry projects (SF group); (2) centers without social forestry projects (comparison group 1); and (3) centers of new members who had just received their first loan, or were waiting for receiving the first loan (comparison group 2). In the fourth and final stage of sampling, individual households were selected. Lists of member

households were obtained from the branch office of Proshika and households were randomly selected from each center and each membership category. In case of the non-availability of households in the third category of membership, these households have been replaced by households from the first and third categories. During the data entry and data cleaning stages, some questionnaires were dropped due to inconsistent responses and missing data. Finally, these resulted in total 420 households (Table 4) from the branch for data analysis. In total, information was collected from 152 households from the social forestry group; 174 households from the comparison group 1 and 94 households from the comparison group 2.

Besides information on social forestry and environment, the survey collected detailed information on a variety of factors. For example, demographic information (age, sex, marital status, etc.) and socio-economic information (education, employment, food consumption, expenditure on health, etc.) was collected for all household members. Detailed village-level information was also collected, such as distance to nearest primary school, secondary school, market and district headquarters, along with variables describing village infrastructure, such as the presence of schools, markets, roads, electricity, etc. Information relating to the size of loan received, date of joining and other membership characteristics was provided by branch officials and matched to the data.

5.0 Results

Table 1 shows the results related to the number of trees the households have planted on their own land. It indicates that the households that belong to the SF group (SF households) plant on an average 22 trees. On the other hand, the households that belong to the non-social forestry group (CG households) plant only 5 trees in a year. The t test has been conducted to examine whether the SF households are significantly different from CG households in term of planting tress. The t test results show that SF households have planted significantly higher trees than CG households.

Table 2 illustrates the determinants of the number of trees planted by households. A dummy variable (sf) for SF (1 for SF households, and 0 for CG households) has been included to examine whether the participation in the SF program of Proshika motivates participating households to plant more trees. In addition to this variable, a variable (sfd) for the duration of the membership in the SF

program has been included to examine the impact of the membership duration on the behaviour of households in terms of planting trees. A square term of membership duration (ssfd) has also been included to examine the non-linearity in the relationship between the membership duration and the number of trees planted. Besides the variables related to SF, some other variables, which represent the characteristics of households, have been included on the right hand side of the model to control impacts of those variables on the tree planting behavior of households. The results on table 2 show that the participation in the SF program significantly increases the number of trees planted by a household in a year. The membership duration in the SF program also increases significantly the number of trees planted, but it increases the number of trees planted at a declining rate. The reason that might working behind this result is that SF households plant more trees at the beginning of their membership and plant lesser number of trees later on due to the shortage of land. Besides SF related variables, the variable (land) for the total area of land has come out as a significant positive determinant of the number of trees planted on own land. It means that the number of trees planted on own land increases with the increase in the total area of land. But, the total area of land increases the number of trees planted on own land at a declining rate. It indicates that the households with very large area of land plant comparatively lesser number of trees. The reason might be that these households are not dependent on agriculture for their livelihood and they care less about planting trees for economic reasons. In Bangladesh, the larger area of land represents economically richness of a household. The total number of household members (tm625, tm2660, and tm60a) in different age categories has not appeared as a significant determinant of the number of trees planted. The expected relationship between the number of household members and the number of trees planted is positive. But, the variables (tm625 and tm2660) for the total number of household members in the age categories of 6-25 and 26-60 show negative sign, which means that an increase in the number of household members in these two categories does not increase the number of trees planted. On the contrary, the variable for the total number of household members in the age bracket of 60 and above shows the expected positive sign. These results indicate that older and retired people play the main role in planting trees in a household as they have idle time and conversely, people in the working age do not find planting trees as financially rewarding. Although, the variable for the age of the household head (v2ag) shows the expected positive sign, it has not appeared as statistically significant. The two variables that have been included in the model to represent the education level of household members show the expected positive sign. It means that an increase in the education

level increases the number of trees planted. But out of these two variables, the variable (thhmedu) that represents total schooling years of male members has been found as significant. But the remaining variable (thhfedu), which represents total schooling years of female members, has not been found significant. The explanation that might be given for this surprising result is that men usually play the dominant role in the decision making process of a household in a rural setting, and due to that reason, women education become insignificant. Finally, on the basis of the results of Table 2, I can say that the participation in the social forestry program of Proshika significantly motivates people to plant trees on their own land.

Table 3 presents the distribution of the responses of households regarding 16 environmental issues. It shows that the higher number of SF households give environmentally logical responses compared to non-social forestry households. The chi-square test results indicate that the distribution of the responses of SF households are significantly different from that of non-social forestry households. All together, these results indicate that the participation in the SF program enhances environmental knowledge of households and it enables households to give environmentally logical responses in response to the questions related to environment.

Table 4 shows the total environmental literacy score by household groups. It indicates that the average literacy score of non-social forestry households (CG households) is 48. On the other hand, the average literacy score of SF households is 61. On an average, the SF households have 27% higher literacy score compared to CG households. The t test results indicate that SF households have significantly higher environmental score compared to CG households.

Table 5 shows the determinants of the environmental literacy score of households. The total area of agricultural land has been included on the right hand side of the equation as a proxy of total endowment of the household. The higher size of the total area of land of a household reflects that that household has higher amount of total endowment. And the size of the endowment of a household determines the level of entitlement a household has on basic needs like food, education, health and shelter. The higher amount of endowment ensures the higher level of entitlement on education for the household members. It is expected that a household with a higher level of entitlement would have higher level of environmental literacy score. The results show that the total

area of agricultural land (land) positively influences the environmental literacy score of households, but it is not statistically significant. The age of the household head (v2ag) has significant negative influence on the environmental literacy score of a household. The environmental literacy score declines with the increase in the age of the household head. The reason might be that the total years of schooling declines with the increase in the age of the household head. It means that older people are comparatively less educated compared to younger people and because of this reason the environmental literacy score declines with the increase in the age of the household head. The level of the education of the household head (v2edu) is very significant for the environmental literacy score of a household. The total years of schooling of the household members except the household head (teduxxh) has also been included in the model to see its impact on the environmental literacy score. It influences the environmental literacy score positively and significantly. These results are very much logical and expected, as it is considered that education enhances awareness of people about environment. The participation in the social forestry program of Proshika (sf) appears as significant and positive for the environmental literacy score. It means that participating households are more environmentally literate compared to non-participating households and the reason is that participating households receive training from Proshika on social forestry and environmental issues which makes them more environmentally literate. The membership duration in the Proshika's social forestry program (sfd and ssfd) has significant impact of environmental literacy. The membership duration increases environmental literacy score at a declining rate. The reason might be that the older social forestry member households received lesser training compared to newer households and that might have made them less literate about environment.

Table 6 shows the distribution of environmentally literate households by household groups. It shows that 36% of the households that participate in the SF program of Proshika are environmentally literate. On the other hand, only 6% households that do not participate in the SF program of Proshika are environmentally literate. These results indicate that the environmental literacy rate is 30% higher among SF households compared to CG households. This reveals that the participation in the SF program enhances environmental knowledge of households and thus, it makes these households more environmentally literate.

6.0 Conclusion

The study tries to assess the impact of the participation in the SF projects of Proshika on household forest conservation and environmental literacy of households. The number of trees planted by a household on its own land in a year has been used as an indicator of the level of household forest conservation of that household. The level of environmental literacy of the same household has been determined through determining the level of knowledge of the household about 16 important environmental issues.

The results indicate that the households that participate in the SF Program of Proshika plant significantly more trees on their own land compared the households that do not participate in SF program of Proshika. The findings show that the households that participate in social forestry program have on an average higher environmental literacy score compared to non-participating households. The households that have an environmental literacy score of more 63 have been identified as environmentally literate. The environmental literacy rate is 30% higher among the households that participate in the social forestry program of Proshika.

These findings indicate that the participation in the social forestry project of Proshika in Bangladesh significantly contributes to the household forest conservation through enhancing the awareness about the importance of planting more trees on own land. The results also indicate that the same participation also significantly enhances the environmental literacy of households.

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Table 1: Strip Plantation of Proshika

Years	No. of Seedlings Planted	Strip I (n kilometres)	No. of Groups Involved
1976 - 2002	7, 346, 269	14, 671	6,729

Table 2: Block Plantation of Proshika

Years	No. of Seedlings planted	Area (in hectares)	No. of Groups involved
1976 - 2002	48,915,016	17,731	8,981

Table 3: Institutional Plantation of Proshika

Years	No. of Institutions	No. of seedlings planted
1998 - 2002	552	472,378

Table 4: Sample Distribution

Sample Group	Frequency	Percent	Cumulative Percent
SFG	152	36.19	36.19
CG1	174	41.43	77.62
CG2	94	22.38	100.00
Total	420	100.00	

SFG = Social Forestry Group; CG1 = Comparison Group 1, Households (HHs) with Proshika membership more than 1 year belong to this group; CG2 = Comparison Group 2, New member households belong to this group;

Table 5: Variables Used in Analysis

Variable	Definition
v121	The number of trees planted on own land
tnvs	Total environmental literacy score
land	Total area of land
sland	Square of the variable "land"
tm625	Total household members in the age category of 6 to 25
tm2660	Total household members in the age category of 26 to 60
tm60a	Total household members in the age category of 60 and above
V2edu	Total years of schooling of the household head
thhmedu	Total years of schooling of all household male members
thhfedu	Total years of schooling of all household female members
teduxxh	Total years of schooling of all household male members except the household head
sf	Dummy variable representing the participation in the social forestry

	project
sfd	Duration of the membership in the social forestry program
ssfd	Square of the variable "sf"

Table 6: Number of Trees Planted on Own Land

Sample Group	Mean	SD	Min	Max
SF	21.71	43.03	0	100
CG	5.02	10.96	0	340

Table 7: Determinants of Number of Trees Planted on Own Land

Tobit estimates Number of obs = 407
LR chi2(11) = 103.29
Prob > chi2 = 0.0000
Log likelihood = -1446.1802 Pseudo R2 = 0.0345

v121	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
land	.1525451	.0293732	5.19	0.000	.0947982	.210292
sland	-.0000151	2.95e-06	-5.12	0.000	-.0000209	-9.30e-06
tm625	-2.245641	1.507184	-1.49	0.137	-5.208724	.7174422
tm2660	-1.619385	2.016175	-0.80	0.422	-5.583129	2.34436
tm60a	3.83674	4.180245	0.92	0.359	-4.381507	12.05499
v2ag	.0063917	.0126842	0.50	0.615	-.018545	.0313284
thhmedu	.4599388	.227063	2.03	0.043	.0135392	.9063384
thhfedu	.0194631	.2560303	0.08	0.939	-.4838853	.5228116
sf	38.63441	5.273091	7.33	0.000	28.26766	49.00116
sfd	-.3104473	.0917943	-3.38	0.001	-.4909124	-.1299822
ssfd	.001028	.0003403	3.02	0.003	.000359	.0016971
_cons	-13.92687	7.019109	-1.98	0.048	-27.72624	-.127493
_se	31.80046	1.369059	(Ancillary parameter)			

Table 8: Distribution of the Responses of Households on Environmental Related Issues

Statement SL Number	Household Group	Strongly Agree (%)	Agree (%)	Indifferent (%)	Disagree (%)	Strongly Disagree (%)	Chi Square
1	SF	16.56	21.85	1.99	25.83	33.71	144.29*
	Non SF	36.02	9.96	39.85	9.58	4.60	
2	SF	58.94	36.42	1.32	2.65	0.66	65.26*
	Non SF	25.29	42.91	1.15	11.88	18.77	
3	SF	42.38	37.09	13.25	6.64	2.65	65.68*
	Non SF	16.48	23.75	28.35	13.41	18.01	
4	SF	10.60	16.56	11.92	21.85	39.07	75.89*
	Non SF	29.12	16.86	26.82	19.92	7.28	
5	SF	49.67	38.41	5.30	5.30	1.32	76.60*
	Non SF	16.86	33.72	16.48	13.41	19.54	
6	SF	56.95	32.45	4.64	4.64	1.32	56.39*
	Non SF	29.12	28.35	5.75	16.86	19.92	
7	SF	54.30	33.77	1.32	7.28	3.31	96.03*
	Non SF	16.48	26.82	16.09	21.46	19.16	
8	SF	47.02	36.42	4.64	9.93	1.99	78.41*
	Non SF	14.94	29.50	18.39	17.24	19.92	
9	SF	44.37	33.77	6.62	11.92	3.31	56.93*
	Non SF	19.16	24.90	20.69	14.56	20.69	
10	SF	45.70	30.46	15.23	6.62	1.99	72.19*
	Non SF	14.56	24.14	24.52	15.71	21.07	
11	SF	11.26	15.89	25.17	14.57	33.11	94.17*
	Non SF	32.18	35.25	18.77	10.73	3.07	
12	SF	52.32	35.76	5.30	3.97	2.65	78.86*
	Non SF	16.48	36.40	9.58	17.24	20.31	
13	SF	48.34	29.14	12.58	7.95	1.99	68.14*
	Non SF	15.71	29.89	16.86	16.09	21.46	
14	SF	9.27	24.50	12.58	18.54	35.10	76.55*
	Non SF	28.35	38.31	15.33	12.64	5.36	
15	SF	15.89	29.14	7.95	13.91	33.51	98.99*
	Non SF	31.03	47.13	14.94	4.98	1.92	
16	SF	68.21	27.81	0.00	3.31	0.66	67.54*
	Non SF	37.55	22.22	8.43	14.56	17.24	

* Significant at 1% level.

Table 9: Environmental Literacy Score

Sample Group	Mean	SD	Min	Max
SF	60.96	9.26	43	73
CG	47.90	12.18	25	67

Table 10: Determinants of the Environmental Literacy Score

Source	SS	df	MS	Number of obs = 397		
Model	22214.7071	7	3173.52958	F(7, 389) = 29.65		
Residual	41630.2148	389	107.018547	Prob > F = 0.0000		
				R-squared = 0.3479		
				Adj R-squared = 0.3362		
				Root MSE = 10.345		
tnvs	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
land	.0007282	.0010344	0.70	0.482	-.0013056	.0027619
v2ag	-.008633	.0032628	-2.65	0.008	-.0150478	-.0022182
v2edu	.3932168	.1311619	3.00	0.003	.1353418	.6510917
teduxxh	.0909306	.0485275	1.87	0.062	-.0044785	.1863397
sf	5.358794	1.678969	3.19	0.002	2.057805	8.659782
sfd	.100156	.0293164	3.42	0.001	.0425177	.1577944
ssfd	-.0001746	.0001082	-1.61	0.107	-.0003873	.000038
_cons	49.52225	1.893873	26.15	0.000	45.79874	53.24576

Table 11: Environmentally literate Household

Environmentally Literate	Participation in the Social Forestry Program		Total
	No	Yes	
No	251	98	349
	(93.66%)	(64.47%)	(83.10%)
Yea	17	54	71
	(6.34%)	(35.53%)	(16.90%)
Total	100%	100%	100%